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CAMPus sustainable University mobility plans in MED areas

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Deliverable D3.4.2: Action plan of sUmp outside Urban Area

ACTION PLAN RATIONALE

This Action Plan is a strategic guide with a sequence of steps that planners are encouraged to follow in order to create a sustainable *university* mobility plan (SUMP). This plan takes into consideration universities situated within the urban fabric (Urban), and campuses located outside the city centre (Suburban), providing specific suggestions for these two categories. This document describes the action plan for university **campus outside the urban context**.

This plan offers suggestions to satisfy in particular the needs of students and university members considering the technical, economic, social and environmental sustainability of the proposed mobility solutions. Moreover, the action plan considers the fact that a University Campus is embedded into the overarching mobility context that see other end-users of the mobility services sharing with the University's end-users infrastructures and services.

This document proposes an Action Plan including a comprehensive methodology, guidelines and tailored studies to simplify the adoption of sustainable urban mobility measures by the decision maker or mobility planners of universities (MPUs).

This document identifies the MPU as the coordinator and facilitator towards other stakeholders for managing and strategically planning the main steps of a University's sustainable mobility action plan.

The Action Plan for University campuses located within the urban fabric as well as those campuses located at the periphery of cities share the same methodology, which in this document is being subdivided into four main sections:

1. *Study* -> STUDY SOCIETAL TRENDS AND URBAN MOBILITY SCENARIO. Definition of the most relevant trends of the area where the considered university is situated;
2. *Plan* -> PLAN OF SUSTAINABLE UNIVERSITY MOBILITY. Creation of the SUMP following a detailed step-by-step procedure which suggests and proposes possible solutions for the university mobility;
3. *Do* -> DO IMPLEMENTATION OF PLANNED SOLUTIONS. Implementation of the mobility solutions defined in the previous section
4. *Check and act* -> CHECK AND ACT OF IMPLEMENTED SUSTAINABLE UNIVERSITY MOBILITY SOLUTIONS. Result evaluation through adequate KPIs and feedback actions to target the defined goals.

This subdivision suggests a loop approach, when the context has been studied and plan's measures have been prepared (respectively through section 1. *Study* and 2. *Plan*) the plan is concretely implemented and monitored (respectively through section 3. *Do* and 4. *Check & act*). If, during monitoring phase, some relevant issues occur, countermeasure or adjustment are planned, implemented and monitored again on the basis of Section 2 guidelines.

Each of the four phases (Study, Plan, Do, Check & act) is in turn characterised by a series of sub-topics where are lying the main differences between the action plan for campuses inside urban context and action plan for campuses outside urban context. Indeed subtopics are dealing about most specific features.

In particular, the subsection *1.1 DECARBONISATION AND AIR QUALITY* presents some differences between the two documents: the one dedicated to urban context asserts urban areas local air quality lows are generally more restrictive than those of suburban contexts (e.g. presence of circulation permissions only for certain categories of vehicles in cities). However, the potential presence of natural protected areas could determinate very restrictive regulatory frameworks even for suburban contexts. In addition, data could be easier to obtain in big city districts, due to the presence of more powered institutions with more resources at their disposition. In small towns' districts far away from big cities instead lack of resources and competence may occur. The subsection *1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS* (which aims to evaluate local geographical area's dynamics where the University is located. Trends about urban development, university future and public transport are the most relevant aspects to take into consideration), provides some alerting rows concerning delays due to consultation mechanism among different territorial institutions. These delays are more probable if the University's campus pertains to a district far away from a big city. Big cities institutions are often more powered and have a preferential position for dialogue with upper territorial institutions. Moreover, other rows (present in the same subsection) are adding that

when campuses are located far away from urban context but near to protected natural areas, during consultation mechanism could have to take part particular institution (e.g. National park institutions) and further delays may happen. On the contrary, during the study phase, the presence of many constraints could arise due to the nature of the historical urban framework of cities' centres. The subsection *1.3 DEMOGRAPHIC CHALLENGES* contains some differences between action plans for campuses outside urban context and those embedded in urban context due to the different demographic compounds, which characterise the different campus' surrounding context. Moreover, differences arises for trips and the used means of transport for reaching the campus. However, every context is a specific case with its specific features hence it is important maintain the same methodologic approach both for campuses inside and outside the urban contexts. The subsection *1.4 DIGITAL SOCIETY* identifies opportunities or barrier to the development of the digitalisation of mobility. In this regard in case of campus outside the urban area, the plan should support specific analysis to understand if networking infrastructures are seamless or need for specific interventions. In case of campus inside the urban context, need for understanding if it becomes useful to map internet access points to easy users' internet urban connection (or other interventions). The subsection *1.5 SHARING ECONOMY* is linked to the uptake on large scale of shared mobility systems, and has the target to understand the actual acceptance and take up of shared systems, behavioural aspect of the users and mobility as a service. This part can potentially differentiate, as in suburban campuses, long run travels have different impact on the choices of the users and on the decisions of the public urban planners.

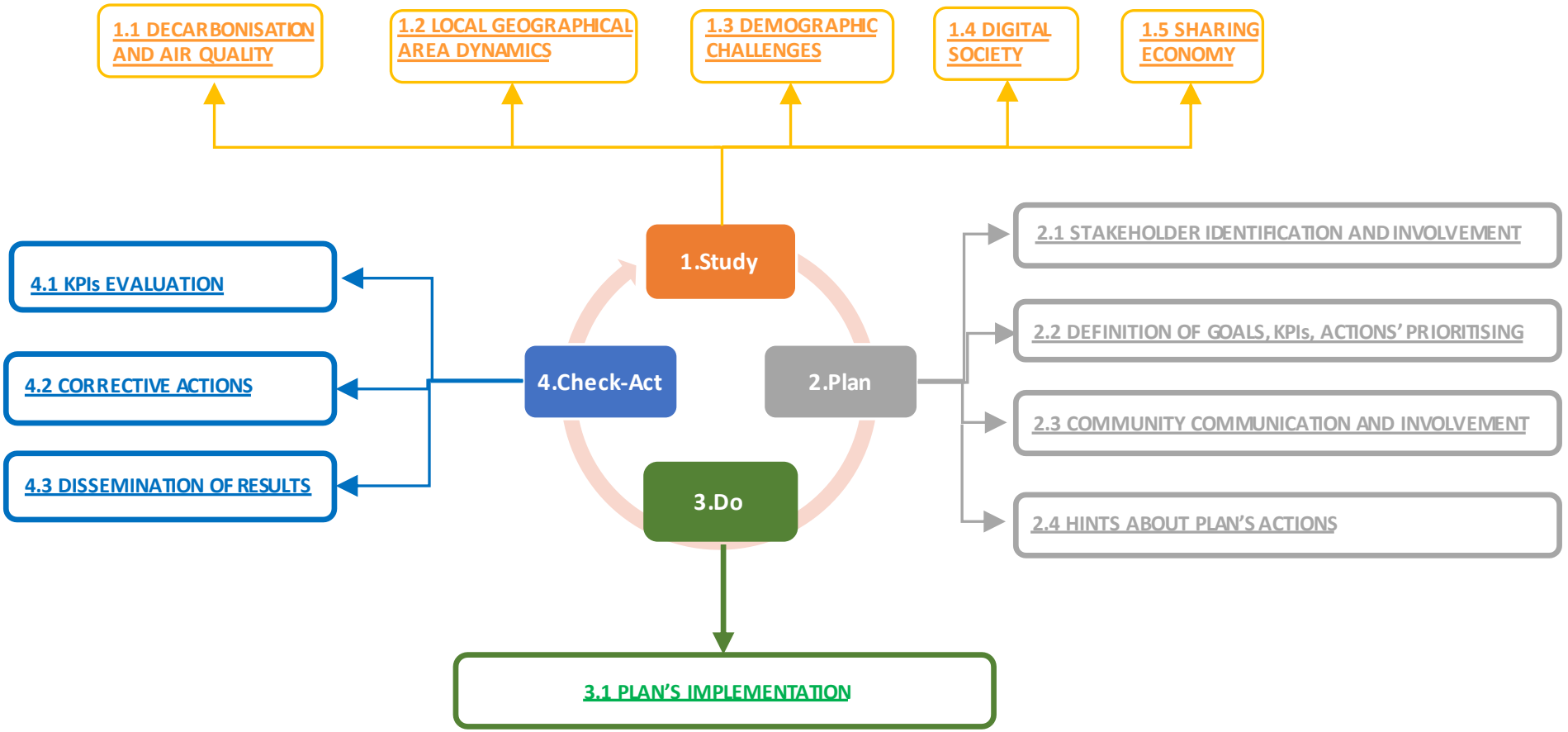
Subsection *2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT* contains differences as public and private transport mobility solutions see the involvement of different actors according to the position of the campus, in fact, not all the operators provide the same services. Also in case of private mobility solutions, different operators maybe can be involved considering that means and distances differ in case the campus is inside or outside the urban context. A further subsection, *2.4 HINTS ABOUT PLAN'S ACTIONS*, presents differences between the action plan for campuses inside and outside the urban contexts, due to the different nature of the surrounding context, which obligate the planners to take different solutions. However it should be reminded that each specific context is different and it is not possible to know before which are the most suitable measures.

The preparation of this CAMP-sUmp's Action Plan is the outcome of the work performed by the project partners contributing to assess the proposed structure, and that has seen the project partner University of Bologna as key responsible institution for its design and preparation. University of Bologna benefit of the expertise of the Institute for Transport and Logistics of the Emilia – Romagna region as expert in the SUMP planning and with a qualified experience on sustainable mobility.

Finally, a relevant aspect which distinguishes the developed Action Plan deals with the modularity of the proposed approach. Indeed, considering the most relevant features of the University which adopt the plan, it is possible to exploit a portion of the presented Sections and Activities. In particular, the modular structure of the Action Plan enables the Universities with a limited amount of available resources to focus their effort on those specific portions of the plan which are the most relevant for their scenario. For instance, a certain University could consider important to invest more effort for studying the surrounding environment than to develop and implement a detailed check and act loop, whereas another University could focus on a detailed definition of the implementation portion of the Action Plan rather than on the execution of the activities their selves.

This document is completed with:

- a ready-to-use guide for the implementation of the action plan in university campus with different settings, characteristics and in MED countries (please refer to D3.5.1 road map for decision makers);
- It aims to obtain new communication model for university campus mobility, its management and monitoring (please refer to D3.5.2 ICT tools model and requirements for communication between different actors and planning instruments).


1.1 DECARBONISATION AND AIR QUALITY
1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS
1.3 DEMOGRAPHIC CHALLENGES
1.4 DIGITAL SOCIETY
1.5 SHARING ECONOMY
1.Study
2.Plan
3.Do
4.Check-Act
2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT
2.2 DEFINITION OF GOALS, KPIs, ACTIONS' PRIORITISING
2.3 COMMUNITY COMMUNICATION AND INVOLVEMENT
2.4 HINTS ABOUT PLAN'S ACTIONS
3.1 PLAN'S IMPLEMENTATION
4.1 KPIs EVALUATION
4.2 CORRECTIVE ACTIONS
4.3 DISSEMINATION OF RESULTS

The approach we have followed in this document is recreated in the table below, customised for the purpose of this project.

ACTIVITY NUMBER	NAME OF THE ACTIVITY
Short description	Description of the activity
Objective of the action	Description the objective of the action
Responsible stakeholder	List type of stakeholder(s) and describe responsibility
Stakeholder involved	List of potential stakeholders
Way of proceeding	Description of the way of proceeding and way of involving stakeholders
Target(s)	List of targets and envisaged qualitative/quantitative indicators to be reached
Duration of the activity	Describe the duration of the activity in days (d) or months (m)[1]
Resources	Human or financial resources necessary
Key elements of the action	List the key elements of the action and operational description

[1] Duration of activity: time of each activity depends to many factors and variables (complexity of system, employees, etc). For each activity will insert a time plan a minimum and a maximum period of time for accomplish the task

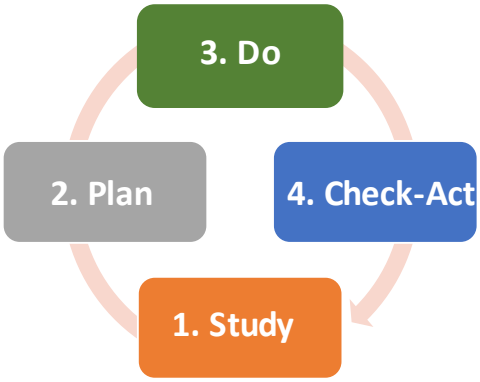
1. STUDY SOCIETAL TRENDS AND SUBURBAN MOBILITY SCENARIO

This section focuses on the context analysis, this part is fundamental in order to understand which are the main features and characteristics of the campus and its background. In the first subsection *1.1 DECARBONISATION AND AIR QUALITY,* the MPU is to look at European, national and local regulatory frameworks to collect best practices from other experiences in order to improve the air quality and contrast climate changes (furthermore assess possible innovative and efficient interventions to reduce the environmental pollutants) and finally collect data about air quality in University's Campus.

In the second subsection *1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS*, the MPU is invited to analyse the territorial and university dynamics and the local mobility services.

The third subsection *1.3 DEMOGRAPHIC CHALLENGES* ask to the MPU to analyse the demographic compounds and related future trends of the Campus and of the surrounding context. Moreover the MPU is asked to investigate which are the end-users' mobility habits with a particular focus on University's users.

In the following subsection *1.4 DIGITAL SOCIETY*, the MPU is invited to study the technology (future) trends, the adoption rate of new mobile devices and mobile applications. Finally, the last subsection, *1.5 SHARING ECONOMY*, encourages the MPU to analyse the potential of sharing economy measures. It should be highlighted that some parts of this section have to be led in parallel with some activities of the section *2. SUSTAINABLE UNIVERSITY MOBILITY PLAN* in particular with subsection *2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT*. The stakeholders' involvement and commitment is necessary in order to successfully achieve the required sensitive data and to collect useful information.



1.1 DECARBONISATION AND AIR QUALITY

- Collect an overarching overview of European, national and local regulatory framework.
- Collect best practices, assess possible innovative and efficient interventions to reduce the environmental pollutants.
- Achieve data about of air quality in University's Campus.

1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS

- Territory/suburban master plan , territory development and territorial characteristics.
- University's future trends about zooning regulation and buildings' management.
- Local public transportation: current situation and future trends.
- Transport infrastructure and services connecting the campus to the rest of the city.
- Social inclusion.

1.3 DEMOGRAPHIC CHALLENGES

- Analysing the surrounding demographic context.
- Analysing the University's demographic context.
- Commuters in Suburban Context.

1.4 DIGITAL SOCIETY

- Technology (future) trends.
- Web access through mobile devices.
- Adoption rate on mobile applications.
- Paperless payment.

1.5 SHARING ECONOMY

- Acceptance and take up.
- Behavioural aspects of users.
- Profile of the user.
- Behavioural analysis.
- Willingness of data sharing.
- Sharing Mobility in Suburban areas.

1.1 DECARBONISATION AND AIR QUALITY

Most human activities (such as heating, industries and transport) are taking advantage of a chemical reaction (a redox reaction) which mainly involves carbon (the combustible or the reductant) and oxygen (the combustive or the oxidant) by producing carbon dioxide, which is the primary contributor for Green House Gases (GHGs) resulting in unprecedented climate changes. Furthermore, the most part of combustibles (such as diesel fuel or gasoline) produces other air pollutant substances both noxious for the climate and human health. For this reason, worldwide efforts (but in particular at European level) are nowadays spent in changing the way energy is produced and used by shifting from a "carbon-based" economy to a low-carbon or carbon neutral economy

This first section of this Action Plan is about the analysis on decarbonisation and air quality. It will produce a report to analyse the current situation in terms of air quality, policies and regulations affecting the University. This preliminary analysis focuses on the (1) European, National and Local legislation and regulation background, (2) Current policy interventions and operative actions to mitigate climate change, (3) Analysis of air quality and finally (4) Assessment of possible innovative and efficient interventions to reduce the environmental pollutants.

Objective of the action	The aim is to analyse the **overarching** European, national and local legislation and **regulatory framework** and the current **policy** and **operative actions** (i.e. experiences and good practices) to **mitigate climate change** at local level in University Campuses. Following this analysis, the MPU **studies** the **local air quality** through a list of preselected **KPIs** determined during the first phase of the analysis. This concerns the University area's air quality analysis.
Responsible stakeholder	- *University Mobility manager* (or other university competent members) guides the analyses and contacts other relevant stakeholders to collect necessary information - *Local public authorities* (e.g. Municipalities) to support the analysis of the regulations and policies at local level related to the mobility of people inside the City or outside the City - *Other stakeholders* with competence in the specific matter related to air-quality monitoring (e.g. agency for air quality management for example ARPA in Italy)
Other involved stakeholders	- Other potential stakeholders able to provide useful data on mobility such as *research institutes, consulting companies*, *public transport authorities* (Region, Metropolitan City, Police) - *University staff and student* questionnaires
Way of proceeding	- Meeting with local authorities and other stakeholders to discuss the existing regulatory framework, policy initiatives and any initiative for mitigating air pollution - Desk research for collecting information beyond that gathered from meeting with local experts - Desk research on the city's sustainable mobility good practices - Definition of the key performance indicators together with the stakeholders - Contacting other stakeholders to support the calculation of key performance indicators concerning air quality monitoring at the University.
Target(s)	- Collect an overall regulatory framework for pollution reduction - Collect information about the University and its impact on the environment

	- Assessment of possible innovative and efficient interventions (best practice)
Duration of the activity	Depending on the availability of information and on stakeholders' availability, this phase should take about 1 month.
Key elements of the activity	- **An overarching overview of European, national and local regulatory framework** such as directives, regulations, lows, and current policy intervention and operative actions (i.e. experiences and good practices) to mitigate the climate and air quality change potentially interesting to Campus mobility. Generally **suburban contexts**, air quality lows are less restrictive form many reason (low population density, the wide use of private cars due to the presence of scarce demand of mobility and the low possibility of activating an economically-favourable public transport service due to high presence of scattered settlements[2]). However, the potential presence of natural sanctuaries or protected areas could determinate very restrictive regulatory frameworks. - **Collect best practices** in order to improve the air quality and combat climate change, furthermore **assess possible innovative and efficient interventions to reduce the environmental impact**: o Low emitting vehicle usage (electrical and non polluting) o Car and bike sharing and other innovative solutions - **Achieve data about air quality in University's Campus.** Very preliminary list of suggested KPIs: Air quality index (an averaged value amongst the maximum daily values of PM10, NO_2, CO_2, O_3, CO_2 CH_4 N_2O, SO_2, NO_X, COVNM and NH_3). In each City, the panel of involved experts will build a consensus over of these topics. Some general considerations can be explained as follow: in ***University campuses outside urban context,*** some difficulties could occur for information access (less tools and information available), but, on the contrary, change implementing is easier as less parties are to be involved and solutions are potentially smoother (time, decisions, views etc…). When a new study is led, having an updated database is fundamental in order to have a realistic baseline. Available data should be assessed for reliability and gaps

1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS

This part aims to evaluate local geographical area's dynamics where the University is located. Trends about urban development, university future and public transport are the most relevant aspects to take in consideration.

[2] This problem affects many local realities and even thought Camp-SUMP's main goals are focused on University users' mobility, the Camp-SUMP plan may be careful about the possibility of improving the local mobility from an environmental point of view.

Objective of the action	At a first step is important to **contextualise** the Campus by relating it with the surrounding background deriving hints from the suburban Master Plan [3]and suburban context development trend. Furthermore, the project has to relate with the **future suburban** demographic and residential patterns (related also to zoning and building management) and **service/infrastructural dynamics** (presence of station, airport, commercial activities, etc.) should be taken into consideration. However, for areas located outside urban context located, demographics assumes a lower relevance. Secondly, it is important to determinate which are the **University's current and future dynamics**. Such information about the University's institutional regulations and regulatory local framework, zoning and building management is critical.. Finally, the third step of this study is to analyse the public transport offers and its future trends, the existing **transport infrastructures** and others mobility measures already implemented by the universities (car rental services, special tariffs for students, etc.).
Responsible stakeholder	- University mobility manager to organise contacts, meetings or local working groups
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc.): - *Public authority*: Municipality, metropolitan city or other authority with planning competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency (where existing)*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Commercial associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Research and Academia*: to participate in the planning phase with results of their research. Can be very useful as supporting entity to support surveys, analysis or other studies - Other potential useful stakeholders able to provide skills on mobility; - *Utility and infrastructure providers* (e.g. Energy provider …) USERS (students, employees, visitors, etc.) - *Students*: main users of the transport services. Main target of the change of behaviours paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means

[3] Even though the Campus is located outside urban context, a Master Plan, which regulates buildings and infrastructures, should exist.

	- *Employees*: as for students, but less flexible and with more financial means. - *Occasional workers*: occasional workers for maintenance or for meeting with Campus workers - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): all other activities embedded in the Campus.
Way of proceeding	- **(relevant to 1st Step) Meeting** with public authorities (e.g. Municipality planners, Civil Protection Authority…), University mobility manager (or other competent members) and other potential stakeholders to evaluate how the University's Campus (in particular University's Campus mobility) fits, interfaces and interferes with potential emergency plans, urban/suburban plans (present and planned infrastructures) rules, restrictions, geographical constraints. Particular attention is to be given to mobility and infrastructure frameworks as already in place in order to understand how University's generated mobility integrates, and interferes with the surrounding context. - **(relevant to 2nd Step) University's Internal Meeting** for getting information about University's existing and future dynamics such as information about its institutional regulations and its zoning and building management. A particular attention is paid for those areas that are generating or will generate mobility demand. - **(relevant to 3rd Step)** made in parallel with the 3rd step of the previous activity. o **Interviews** to students and University's personnel through **on-line questionnaire** to gather any specific information; o **Interviews** to personnel of any external entity whose activity is embedded inside the campus. o **Interviews / Meeting with public transport authority** in order to investigate current and future offering of public transport service (also new planned infrastructures have to be put in consideration if these are directly or indirectly interesting the Campus area). This preliminary analysis is a base of discussion with the competent stakeholders to eventually understand the needed services or related activities/changes to plan.
Target(s)	- Achieve an overall image of how the present and future University's mobility and institutional regulations and its zoning and building management are embedded into the territory planning tools. - Achieve an overall image of current and future University trends (zoning and building) that will generate mobility. - Achieve an overall image about present and future public transport service. A particular focus is given also on the current public transport pricing and a comparison among current mobility alternatives is carried out.
Duration of the activity	Depending on stakeholder availability and time scheduling for on-line questionnaires. The duration is assessed about 3 months

Key elements of the activity	The following key elements represent a detailed list of topics, which have to be studied and considered in order to prepare state of the art report.
	
	- **Territory/suburban master plan[4], territory development and territorial characteristics[5]**. Information to achieve for ***outside the urban context*** are reported below:
	  o Town/place characteristics: rural town, presence of mountains, hills, rivers, lake, sea, islands, areas of naturalistic interest, cross border areas, etc. (a fast search about context with reference to risks connected with weather, earthquakes, industries and restrictions linked to the environment and/or to the historical heritage safeguarding).
	  o Further information about the surrounding area:
	  ▪ Present and/or planned residential areas near the campus;
	  ▪ Distance from the main present and/or planned transport hubs (Rail or Metropolitan station, Bus station, Airport, …
	  ▪ Description of surrounding area: in term of main present and/or planned services and traffic generating poles
	  o Weather condition during year (rain day/year, mean temperature, etc.)
	  o Urban development trends of the nearest urban areas close to the campus.
	
	- **University's future trends about zooning, land use , regulation and buildings' management (present situation and future trends)**. It concerns in particular information from University's institutional regulations and local regulatory framework about zoning and building management.

[4] Town planners consider universities as centers able to supply relevant public services (such as hospitals, trade fair centers, big supermarkets, etc.). Due to their importance and their relevant effects on transport and on environment, these are usually thought and planned at territorial (regional or even national) level and or by consultation mechanisms among different and adjacent local authorities (territorial consultations, agreements, etc.). If the university is located out of an urban context, consultation mechanisms among adjacent local authorities in order to tackle university's related issues could require long duration. In addition, if the university is located near natural sanctuaries such as protected areas, National parks, etc. (a remote but possible circumstance when the university is located out of urban context). Hence, the consultation will probably need the presence of these particular institution, which in the most of case have even the power of veto (which means that they can actively participate to discussions and can be decisive actors).

[5] Generally planning (also for air quality) includes three main levels: strategic, tactical and operative. The higher is the level the higher is the strategical content: usually strategical planning is the responsibility of vast territorial Authorities such as States, National States, Regions, etc. and it provides mainly guidelines to follow. The tactical level instead is mainly the responsibility of local authorities, and it takes efforts in order to find strategies and targets for following the guidelines set at the superordinate level. Finally, the operative level concretely reaches targets by finding resources and skills and making agreements in order to ensure the actual realisation of measures focused on supply the above-mentioned targets set at the superordinate level.
This threefold structure can be present also inside the plan itself. The CampSUMP itself reflect this structure with goals (strategical level), targets (tactical level), and actions (operative level).

	○ Campus' present and/or planned organisation (areas dedicated to libraries, gardens, canteens, sport facilities, rooms for events etc.); ○ Present and/or planned commercial activities inside the campus: restaurants, companies (start-up), bicycle shop, Other ○ Present and/or planned schools inside the Campus, where and how these are located in the urban/suburban context. ○ Campus's present and/or planned surface total area; ○ Work in progress area and planned utilisation; ○ Abandoned areas; ○ present and/or planned legislations which limit the vehicle circulation in a specific campus area or time slot; ○ Present and/or planned specific regulations for urban streets of interest for the University Campus. - **Local public transport: current situation and future trends**. It concerns current situation and future trends about local public transportation by describing the most relevant features. The MPU has to find out with local public transport authorities if public transport authority's future planning interests directly or indirectly the Campus. A suggestion to proceed: MPU gathers needs of mobility and prepare a first hypothesis for transport service improvement. - **Transport infrastructure and services connecting the campus to the rest of the city:** *Unless otherwise indicated, for each question indicate the number of* ▪ Bus dedicated line, Underground line, Tram lanes, Trolleybus, etc… ▪ Cycling paths, ▪ Pedestrian areas (presence of pedestrian areas that surround the campus) ▪ Other ways for reaching the campus: roads, railways, motorway, waterway, etc. ▪ Existing carpool, car or bike sharing services ▪ Taxi or other type of service dedicated infrastructure ▪ Connecting lanes which should be enhanced and new potential links ○ **Transport modal share**. The MUP has to investigate the most used transport solutions and to find out their sustainability and impacts. Information about ***vehicles in suburban context***: ▪ Vehicle types used to reach the campus; ▪ Vehicles used to connect campus with the city centre; ▪ Percentage of population which daily adopts public transport; ▪ Vehicle impact on pollution; ▪ Availability of car sharing/pooling systems to reach the campus.

	▪ Time-schedule and service level of public transportation to connect the area with the closest city centre. ▪ **Pricing policies**. Information about transport pricing (How much traveling by bus or shuttle costs; How much traveling by car costs; How much traveling by bicycle costs; How much students are willing to spend for moving into the campus or toward the university) - **Social inclusion** (e.g. disadvantage transport users and relevant quality of service). In this subchapter the planner will extend and analyse the existing practices to analyse if and how the existing City's context is dealing with mobility solutions that take into account social disparities.

1.3 DEMOGRAPHIC CHALLENGES

In this part, planners have to study ongoing demographic trends of the considered geographical area.. Demographic trends are able to modify the transport demand and thence the infrastructural network. Therefore, these considerations help to understand how to adapt the Action Plan to a particular Campus.	
Objective of the action	The demographic surrounding context in which the University lies is crucial, both with reference to present and future scenarios. This information would contribute significantly to understanding future suburban and territorial development It is important to determinate the University's socio-demographical features in order to better adapt University's future mobility measures. The final step in this section aims to understand mobility habits of University's users and workers such as time scheduling and mobility preferences (in particular with focus on multimodal mobility preferences)
Responsible stakeholder	University mobility manager to organise contacts, meetings or local working groups
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc.): - *Public authority*: Municipality, metropolitan City or other public authorities able to give information about the living population in the city/town (or in the area in which the campus is inserted if the campus is outside the suburban context) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car sharing) or regional/national level (railway companies) in order to support on potential surveys and to give other useful information. - *Mobility agency (where existing)*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets,

	car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Research and Academia*: to participate in the planning phase with algorithms or results of their research. Can be very useful as supporting entity to support surveys, analysis or other studies - Other potential useful stakeholders able to provide skills; USERS (students, employees, visitors, etc.) - *Students*: main users of the transport services. Main target of the change of behaviour paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means - *Employees*: as for students, but less flexible and with more financial means. - *Occasional workers*: occasional workers for maintenance or for meeting with Campus workers - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): all other activities embedded in the Campus.
Way of proceeding	- **(relevant to 1st Step) Meeting with public authorities** (e.g. Municipality, local General Register Office), University mobility manager (or other competent members) and other potential stakeholders to evaluate the contextual demographical trends. - **(relevant to 2nd Step) University's Internal Meeting** for getting information about University's today and future socio-demographic trends such as information about enrolments, presence of international students and working students. **(relevant to 3rd Step)** made in parallel with the 3rd step of the previous activity. - **Interviews** to students and University's personnel through on-line questionnaire to gather any specific information; - **Interviews** to personnel of any external entity whose activity is embedded inside the campus. - **Interviews / Meeting with public transport authority** in order to establish if foster the present transport offering and plan related activities in light of needs gathered form University's users (and workers) through above mentioned interviews.
Target(s)	- Achieve an overall image about the surrounding demographic context with reference to present and future scenarios. - Achieve an overall image about the University's socio-demographical features with reference to enrolment trends, the presence of international students and of working students. In addition, attention is paid also for University's personnel. - A particular attention is paid for understanding how University's students and workers reach the University and their way of traveling in order to achieve an overall image of users' habits and everyday life concerning paths time scheduling, type of vehicles, required average time, etc.
Duration of the activity	Depending on stakeholder availability and time scheduling for on-line

	questionnaires. The duration is assessed about 2 months.

Key elements of the activity	Demographic trends inside and outside the University's context are able to shape and modify the suburban context. These considerations help to understand how to adapt the Action Plan to a particular campus.
	
	- **Analysing the surrounding demographic context:** even though areas outside urban context are not densely populated, some interesting features about local population can be achieved
	  o Demographic trends such as birth and death rate in order to understand future suburban and territorial development (Distribution of population, Distribution of population rate, Past and future trends of the population birth and rate, Household membership evolution which foresees two sub-activities, one is Considerations and analysis about the composition and feature of families that are living in the considered geographical area, the second is Analysis of the average number of people which compose families and its evolution over time)
	  o Distribution of population wages
	  o Migration features from foreign countries (Expat and immigrant rate, Period of the year when there is the maximum number of migrations, Actual and planned regulations at local, national and European level)
	  o Employment(Number of family members which have an occupation; Typical occupation of family members of family; Distribution of family member between civil servant, private employee, private workers and freelance professional).
	- **Analysing the University's demographic context**
	Considerations about university are useful to understand how to adapt the Action Plan to a particular campus.
	  o **Enrolments trends** One of University's most characterising aspect is the number of enrolled students (Average number of enrolments for the entire university; Average number of enrolments for each course; Course of study that has the maximum number of enrolments per year).
	  o **International students** University generally works together with other universities within Erasmus or other framework of collaboration (Number of international students which study every year in the considered university, Incoming and out-coming students due to Erasmus programme and its evolution over the year; The course of study distinguished by the largest number of international students)
	  o **Working students** Lots of students work and study at the same time (Number of students that work and study at the same time; Reasons why students work and study at the same time; Typical occupations of students).
	  o **University's personnel (**Number of University Employees6, Number of other permanent Employees7);

[6] University Employees are: professors, researchers, PhD students, administrative and technical staff

	- **Commuters in suburban Context:** In this paragraph planners have to consider students who do not live inside the campus area located outside the city centre but which travel every day to and from the university: ▪ Number of students (and University's workers) that are commuters; ▪ Average time spent to reach the university (Time required reaching the campus adopting public transportations or a combination of these; Time spent by people to move into the campus area; Time-schedule of public transport services during rush hours to connect the campus area with the city centre; Available transport services during the night) ▪ Distance between university and the location where they live; ▪ Time sent every day to travel from the arriving city to the university campus; ▪ Comfort to arrive at the university campus. ▪ Travel cost and number of transport mode interchanges required to reach the city. ▪ Number of occasional Accesses[8]. ▪ Presence of seasonal traffic (if the University's campus is interested by seasonal traffics) o **Multimodality**: The following information has to be achieved: ▪ Number of students or university members who use multi-modality transport solutions; ▪ Vehicle types used for multi-modality travels; ▪ Time spent to travel adopting multi-modality solutions; ▪ Situations which facilitate the adoption of multi-modality; ▪ Current percentage of modal share by transport mode ▪ (private car, bus, pedestrian, shared mobility, train, underground, other) o **Origin of frequent transport demand to reach the campus** (*especially for Students*) *Is possible use numbers, percentages or both if available* ▪ metropolitan[9] (if same Province or functional urban area) ▪ regional (if same Region) ▪ national (if from the same Country) ▪ transnational (if other Country)

[7] Permanent Employees i.e. cafeteria workers, barmen, etc.
[8] Maintenance workers, gardeners, etc.
[9] "Metropolitan" meaning outside city area, more than 10km far from city centre

1.4 DIGITAL SOCIETY

Personal mobility all over the world is undergoing a profound transformation as a result of digitisation. This is affecting persons, vehicles and infrastructures. Planning the future mobility of University's campuses cannot be carried out without taking into consideration the future trends in technology.

The digital society indicates the web's evolution from a simply infrastructure of communication to a mass phenomenon of sociological interest. In this paragraph, planners have to study the developing digital society in a particular period of interest. Studies concern present and future trends including some considerations about used devices applications and paperless payments.

Digital innovation is key leverage of sustainable mobility solutions with a direct impact on shifting away from personally owned modes of transport and towards mobility solutions that are consumed as a service.

This chapter of the plan will investigate the technology future trends, how mobile devices are relevant to mobility, the adoption rate of mobile applications and digital payments.

Objective of the action	The objective of this activity is guiding the planner to understand the impact of technologies on University Campus's sustainable mobility, in order to integrate its choices with future technological trends.
Responsible stakeholder	- *MPU* investigating existing technological practices and future trends.
Other involved stakeholders	- Any stakeholders involved in mobility that already has developed technological solutions (public authorities and transport operators)
Way of proceeding	- MPU will analyse existing technologies or experiences supporting mobility through desk research (local, regional but also international experiences). MPU can even decide to contact specific stakeholders to collect specific information. - MPU can also investigate future technological trends for mobility by submitting questionnaires to the users (students, professors, etc…) to understand their level of utilisation or willingness to use such technologies (from an on-line questionnaire, for instance, the MPU can indeed derive hints for solutions for the future, and even collect information on working good practices. Through the questionnaire, the MPU can even obtain interesting data on the use of devices as smartphone, iPad, and their preferences etc… as depicted afterwards) Note: For **campuses outside the urban context,** it would be interesting to analyse the potential barriers to internet application accessibility (e.g. weather, tunnels, no internet coverage, low internet speed, etc…) to understand if barriers are heavily affecting the level of service and consequently on the mobility choices).
Target(s)	- Develop a kit of existing technological solutions, or future trends, that could be integrated to standard mobility information systems (e.g. Artificial intelligence, Applications for mobile, Infrastructures for device or Vehicle to Infrastructure communication) as part of the University's mobility planning.

	- Develop a set of barriers to the use of technological mobility solutions, gathered through the interviews to users or stakeholders - Identify people's habits in using technologies, with a focus on Students, but also understanding the current status and trends for citizens - Boost the use of mobile technologies through understanding the current and future behaviours / or training needs - Assess the potential of paperless payment as leverage to choose sustainable mobility solutions
Duration of the activity	This is based on a survey campaign and a collaboration with main stakeholders. Basically 1,5 or 2 months of activities, included of the elaboration of the results, should be sufficient.
Key elements of the activity	*Technology (future) trends*: Concerning all these different and relevant technology trends, the MPU has to assess the following aspects to develop a proper SUMP: - Average number of people that have a computer or a smartphone to surf on internet to be used for mobility's reasons; - Number of students or university members that use internet every day at least one time per day; - Daily time that students and university members spend on internet. *Web access through mobile devices*: Nowadays people usually surf on internet by smartphone. Certain information has to be collected concerning this topic: - Average number of accesses on internet by mobile per day; - Average time surfing on internet by mobile; - Satisfaction of costumers on using mobile phone to access on internet to option transport solutions. *Adoption rate on mobile applications*: Aim of this paragraph is to facilitate the understanding of how mobile applications are typically used. Thus, planners have to be aware of: - Web/mobile Applications which are the most used by students or university members (University's APP, City's APP, Public Transport operator's APP, Tools to see transit data, etc…); - Daily use of applications by students and university members; - Existing monitoring systems of local / regional stakeholders (e.g. Mobility agencies, transport operators, Hubs and Infrastructure stakeholders etc…) - Applications for mobility services, such as car sharing or ride sharing, which people normally use; - People categories (classified by age, employment or residential area) who are more willing to use mobile applications; - Customer satisfaction concerning mobile applications. - Accessibility level of internet application and related services *Paperless payment* Assessment of the potential of paperless payment must consider:

	- Type of paperless payment system and future trends (e.g. integrated ticketing, payment by smartphone) - Number of people which usually adopt paperless payment systems; - People categories (classified by age, employment or residential area) which usually use paperless payments; - Customer satisfaction concerning paperless payment.

1.5 SHARING ECONOMY

Sharing economy promotes form of consumption based on re-using instead of purchasing. It is possible thanks to internet applications and a global connected people and things. Planners have to consider what is linked to shared systems and habits of sharing inside and outside the university's campus.	
Objective of the action	Planning of societal trends and suburban mobility scenarios go in parallel to the development of the sharing economy, and specifically **on sharing mobility solutions**. For this reason, the objective of this sub chapter of the plan is to understand the actual acceptance and take up of shared systems, behavioural aspect of the users and mobility as a service.
Responsible stakeholder	- *MUP* is responsible of collecting City's and campus practices on sharing mobility. - *Companies* operating on mobility (Public Transport Operators, Car sharing services, Bike sharing services) - *Private sharing & Carpooling systems*
Other involved stakeholders	- Citizens
Way of proceeding	- MUP defines a set of mobility and non-mobility typologies of shared services. If not autonomously, also other stakeholders can give support and provide knowledge. - MUP integrates into questionnaires requests on knowledge of shared mobility solutions in the City the user currently know or utilise and the degree of satisfaction. This part of the questionnaire is supposed to collect information on the existing trends in the City and related to the Campus. - MUP can even plan a questionnaire or a set of focused interviews with share mobility operators to collect overall status of the art, positive or negative practices and trends - MUP need to analyse through interviews the practices to behavioural change towards alternative mobility solutions. MUP can also analyse good practices of change of behaviour in Cities to be transferred at local level
Target(s)	- Derive a clear overview of the existing services in the City and specifically related to the Campus, if inside or outside the City - Understand the actual understanding and utilisation of practices for sharing mobility - Derive a set of initiative requested by the users
Duration of the activity	This is expected to last 1.5 or 2 months, even can be embedded in a

	overarching questionnaire – see previous steps of the plan
Key elements of the activity	The activity is, as described above, related to a set of questionnaires or interaction with the practitioners and users of shared mobility solutions to derive the status of the art and understand how to promote/facilitate the adoption of such solutions, **Acceptance and take up:** - Type of shared systems in the considered area (such as: heating, car sharing, room for sleeping, etc.); - Frequency of sharing; - Developed applications for sharing; - Shared services that impact on economy; - Types of shared systems that are more used in the university; - Satisfaction of people who use shared services; - Problems connected with sharing system The elements become priorities of investigation through questionnaires or interviews. These represent a minimum set of information to be requested, that in each City/Campus the planner can customise or modify accordingly. **Behavioural aspects of users:** - Average age of shared system users; - People categories (classified by age, employment or residential area) which use shared system; - Number of students or university members who actually use shared services; - Categories of students or university members who use shared mobility every day; - Reasons why people choose shared system; - Satisfaction of people who use shared system **Profile of the user:** - Profile of the user (citizen, student, professor, business operator) - Provenience (define a distance in km or other) - Sex - Type of employment - Availability of private car or other motorised transport mean - Availability and utilisation of smartphone or mobile with internet access **Behavioural analysis:** - utiliser or provider of shared solutions - frequency of shared systems' use - type of shared systems' utilisation - positive and negative impact - reason for sharing / using shared mobility solutions - degree of satisfaction for each services - proposal of not implemented sharing solutions **Willingness of data sharing:**

	- what type of information the user already shares (e.g. gps position, internet data tracking, …) - Define personal data which people could decide to not want to not store in the database system; - Define personal data which people could decide to not want to not share with other users of the shared mobility services; - Identify the reasons why people do not want to share certain information; - Be aware of data which are protected by privacy defined by national and European regulations All these information are then elaborated by the University's staff with the support of competent stakeholders, if needed. Data analysis is also necessary to derive information and plan strategies of intervention. **Sharing mobility suburban areas:** - Availability of ICT solutions which foster and ease the adoption of share mobility services; - Interchange/intermodal hubs to facilitate aggregation of potential customer in few and relevant locations; - Willingness of students and university members to modify their habits and time-schedule to adopt shared mobility solutions

MILESTONE: At the end of this section, the MPU should have analysed and achieved information about the active air quality regulatory framework, about the university campus context its future trends (and even information about campus' air quality level).

2. PLAN OF SUSTAINABLE UNIVERSITY MOBILITY

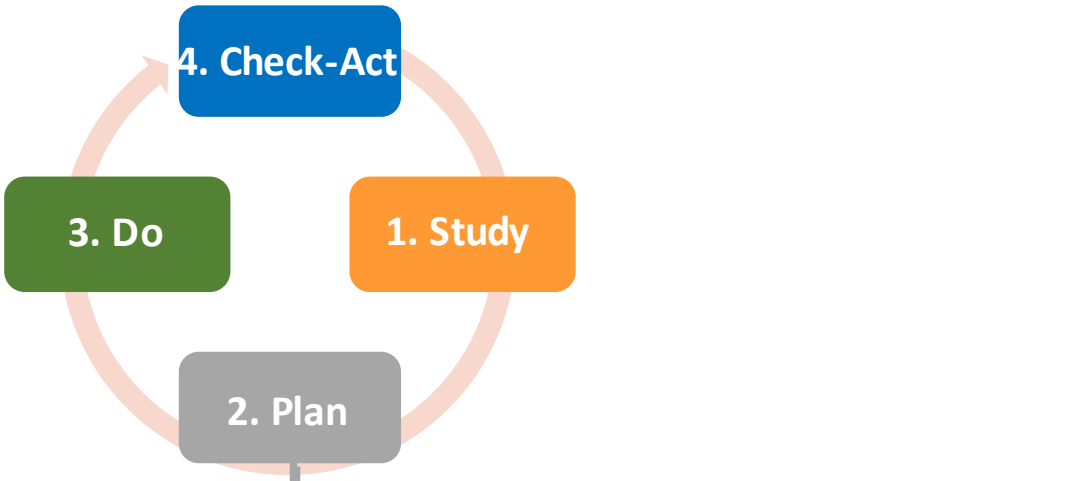
This section describes the stakeholder involvement. This phase of the SUMP is essential, which makes it the most challenging by far. It is likely that the presence of contrasting interests among different stakeholders will result in long discussions. However this is what determines the projects acceptance and feasibility. The MPU should be aware that a perfect agreement among all stakeholders is very difficult to reach and fair compromises often lead to a balanced solution.

The first subsection *2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT* exhorts the MPU to select CAMP-sUMP plan's relevant stakeholders and gives instructions for how to start and manage their involvement and commitment. In the second subsection, *2.2 DEFINITION OF GOALS, KPIs, ACTION PRIORITISING,* the procedure to determine CAMP-sUMP plan's, goals, targets, KPIs, where their actions and prioritising are described.

The third subsection, *2.3 COMMUNITY COMMUNICATION AND INVOLVEMENT,* describes the communication activities required in order to inform the end users and achieve valuable feedbacks which would enable the MPU to optimise the plan before, during and after the execution.

Finally, the last subsection, *2.4 HINTS ABOUT PLAN'S ACTIONS,* presents some feedbacks concerning plan's actions (measures). It might be highlighted that these provided hints are constituting only a suggestion which can be discussed among the involved stakeholders in order to achieve the measures' effective future feasibility and acceptance. Indeed, each context constitutes a particular and singular case, which could require specific measures related to contexts' needs, resources and stakeholders' availability to be adopted.

Moreover, it might be added that the involvement of the stakeholders is not only functional for this section in order to define plan's goals, targets and actions, but it is essential also for achieving useful information for the plan's study phase. Hence, this section is strictly linked to section 1. STUDY SOCIETAL TRENDS AND SUBURBAN MOBILTY SCENARIO.



2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT

- Local authorities and organizations.
- University authorities .
- Community and university end-users.

2.2 DEFINITION OF GOALS, KPIs, ACTIONS' PRIORITISING

- Define achievable goals and "SMART" targets.
- Define KPIs.
- Action definition and its prioritizing-
- Action prioritizing.
- Communication.

2.3 COMMUNITY COMMUNICATION AND INVOLVEMENT

- Communication to end users.
- Data collection activities.
- Feedback actions and next improvements.

2.4 HINTS ABOUT PLAN'S ACTIONS

- Improve the efficiency of existing infrastructures.
- Pillars.
- Cross cutting objectives.
- Other hints.

2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT

This section propose specific guidelines to be followed to create a SUMP. In particular, the main aspect of this part is the Stakeholders' commitment and the community involvement in order to ensure a successful implementation of the SUMP. A stakeholder may be anyone (people, association, organisation etc.) who influences or could be influenced by the project.

Hence, in this phase, it is essential to define needs and wishes, and match together people with the same interests. The nature of stakeholders depends on where the University is situated.

Collaboration and cooperation with organisations' spokespeople or directly with relevant associations let the University to obtain a competitive advantage by limiting the risks related to the project.

The Stakeholders' involvement is important in order to ensure the participation of involved people or associations. This phase should follow these ten main features[10] in particular for end user involvement who are the main target on which the project is focusing:

1. Collaboration
   - A participative process positively involves institutions (public and privates) by promoting cooperation among the different parts in order to reach the public weal
2. Trust
   - A participative process promotes trust among participants, promoters and decision makers. From maintaining the initial trust it is important that the process results are applied
3. Communication
   - A participative approach promotes transparency and provides accessible and understandable information about the process, its objectives and results to all involved actors.
4. Inclusion
   - A participative process does not only involves decision makers but it is based on active listening and inclusion of all interested parts
5. Effectiveness
   - The end-users' opinions are important and these can improve final choices
6. Productive interaction
   - Participation should ensure dialog among parts in order to find shared solutions by saving time
7. Equality
   - Who plans, organises and manages a participation process or event has to maintain its neutrality and it valorises all presented opinions (even though these are in minority).
8. Harmony (or reconciliation)
   - A participating process must not be divisive, even though different opinion are present, the process must spend efforts in order to guarantee harmony among part by not accentuating the different point of views but rather evidencing the common intentions.
9. Accounting for results
   - A participative process provides results and motivates its choices with transparency by arguing the reason of proposal acceptance or refusal (this last aspect mainly concerns decision makers)
10. Judgement

[10] www.inu.it

	○ Results might have to be valued by all participants with adequate methodologies. Results have to be accessible and understandable.
Objective of the action	The aim of this section is to select and activate the stakeholders in order to involve them into the project. Their participation ensures the whole project effectiveness. In this section the Stakeholders (subdivided in three main bunches: local authorities and organisations, university authorities, and finally University community and users) have to be identified. Moreover, their involvement have to start by assuming different forms depending on the Stakeholder's nature. Round table are more suitable for decision makers, forums are instead suitable for both Decision-makers and End-users. Finally, interviews, exhibitions, information activities thought media (e.g. web) and alternative form of involvement are suitable only for End-users. It might be highlighted that the kick-off meetings are organised in order to collect stakeholders will, availability, opinions and habits (these two last aspects are more linked to End-users) and to inform about the intention to create a University's sustainable mobility plan.
Responsible stakeholder	- *University mobility manager* (and its[11] potential collaborators) able to organise contacts, meetings or local working groups
Other involved stakeholders	Stakeholders can also be split in two main categories: Decision-makers and End-users (Users). DECISION MAKERS (University services, city/transport authorities, etc.): - *Public authority*: Municipality, metropolitan city or other authority with planning territorial competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility

[11] The use of neuter is because the MPU can be also a legal entity as a pool of experts.

	- *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Research and Academia*: to participate in the planning phase with algorithms or results of their research. Can be very useful as supporting entity to support surveys, analysis or other - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) USERS (students, employees, visitors, etc.) - *Students*: main users of the transport services. Main target of the change of behaviour paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means - *Employees*: as for students, but less flexible and with more financial means. - *Occasional workers*: occasional workers for maintenance or for meeting with Campus workers - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): all other activities embedded in the Campus - *Citizens* that where necessary become part of the initiative
Way of proceeding	The relevant Stakeholders are selected, by the MPU, informed and some information about their points of view are collected. It is important to start their involvement in order to assure a complete participation process: indeed here, the MPU and Stakeholders' categories to interview are identified. After this phase 1.2, 1.3, 1.4 and 1.5 of the STUDY SOCIETAL TRENDS AND SUBURBAN MOBILITY SCENARIOS can start. The information phase can be lead in different modalities: face-to-faces or meetings (if few people are involved), or plenary sessions (in case of many attendants), however exist other alternative ways for involve and/or inform a large public such as web, workshops and exhibitions. In this phase local working group with representatives of the panel of experts and practitioners for mobility are opened and chaired by the MPU. University or specifically the Mobility Manager sends invitation to relevant contacts and provides process to inform and/or interview the wide public (internet, papers, media, etc.).
Target(s)	- Select relevant Stakeholders in order to inform and inteview them (through the first phase). - Activate a participative process in order to inform achieve first impressions and give process transparency.
Duration of the activity	Depending on stakeholders' availability, however this phase should could take about between 1-3 months.

Key elements of the activity	This activity 2.1 is structured in two main phases (First and Second phase), each described in details below. Relevant Features: for the stakeholders' involvement and its further commitment, it is essential to define needs and wishes, and match together people, association and institutions with shared interest. Therefore, first of all stakeholders have to be defined and informed, and then meetings and events have to be set in order to achieve useful information and share ideas. Stakeholders' type depends on where the university is situated. Moreover, it is important to create collaboration and cooperation between the University and public and private organisations. This aspect lets the University to obtain a competitive advantage in order to limit the risks related to the implementation of the plan.
	
	First phase
	In this phase, relevant stakeholders are selected. Stakeholders' type depends on where the university is situated.
	
	Local authorities and organisations. Each public organisation is a potential stakeholder of the SUMP. Thus, this paragraph has to provide clear guidance to the MPU, be understandable and always revised for each pf these sub-categories. Whether the campus is outside the urban context but it adjoins with several regions, it is advisable/mandatory considering all the local authorities, also the neighbouring ones.
	
	- **Public authority:** MPUs have to consider the following suggestions
	  o Define stakeholders of public authority starting from the local zone (such as city, district, region) to the national administration;
	  o Understand how much local administrations are available to take decisions to change the reality;
	  o Consider problems related to legislations or time. It is important to understand which aspects are possible to define, delete and maintain;
	  o MPUs have to define agreements concerning the economic commitment, guaranteed by local administration as well as possible collaborations and co-operations with European institutions.
	
	- **Public Transport operators:** The MPUs should consider the peculiarities which distinguish campuses outside urban area and define proper requests to the public transport authorities to satisfy needs of students and university members.
	  o Identify every public transport authority which offer mobility services in the city centre and/or in the suburban area;
	  o Ensure the public transport authorities commitment to decision making and SUMP endorsement according to their geographical responsibility;
	  o Contact all the different public transport authorities that could potentially offers in the future mobility services for the campus. A specific analysis of the desired mobility's services is to plan or request to the authority where not already available.

Private Mobility (service) **provider:** Not every supplier of transport service has to be necessarily public. Thus, the MPUs which have to efficiently and effectively plan a SUMP have to:

- Identify all the private suppliers of transport services who can support the university's SUMP (taxi, car sharing services – not exhaustive list);
- Identify all the offered transport services, defining;
- Inform separately or together about the project and preliminary collect contacts to fix the following activity as below
- Understand the type and quantity of transport suppliers willing to be involved in the SUMP's action plan, by understanding their potential level of involvement, support and future investments' plan.

University authorities Analysis of the university authorities potentially involved in the project. Assessment of the possible interest and commitment to the project by the different university groups and authorities.

- **Mobility manager** The key role of university concerning mobility is the mobility manager. Thus, it is necessary to:
  - Identify who is the mobility manager;
  - Assess the decisional power he has;
  - Clarify the willingness of the mobility manager to change the reality;
  - Discuss with him about the activities he already planned;
  - Compare the goals of the mobility manager with the one declared in the project definition;
  - Assess with him the organisational and financial economic plans already.

- **Student organisations (representing the Students)** Proper organisations directly represent the students, their habits, needs and problems. Thus, the MPU should:
  - Identify student organisations which represent as much as possible all the student categories;
  - Assess the decisional power they have;
  - Compare the goals of the student organisations with the one declared in the project definition.

- **University rector and department directors (part of the Employees category)** University rector and department directors represent relevant stakeholder to be considered. Indeed, they manage the organisation of each course and they have the power and resources to contribute to the mobility service improvement.
  - Be aware of problems and requirements deriving from the course organisation;
  - Discuss with them about the activities they already planned;
  - Compare the goals of the University rector and department directors with the one declared in the project definition;

Community and university end-users Every member of the local community, university student and end-users of the offered mobility service have the opportunity to contribute to the plan

realisation. This contribution could be economic or social and sometime not direct, e.g. questionnaire. Some of the most representative community end-users are described in the following.

- **Local citizens*:*** On the other hand, when campus is far from the city centre, it is essential to understand:
    - The quantity, type, distribution and profile of the transport demand;
    - Meet public authorities or transport operators to identify the local citizen categories who are more willing and prone to use the offered mobility services; Identify the citizen category willing to use the transport services offered to students and university members;
    - Set up a campaign to analyse the followings: Analyse which public lines are the most used by citizen and the covered geographical area; Understand relevant problems of citizen linked to mobility services actually offered outside the city centre, e.g. transportation time-schedule.

- **Merchants:** For universities situated far from the city centre there are usually not enough commercial activities to satisfy the student needs. Thus MPUs should be particularly aware of:
    - Identify the merchant categories that are willing to contribute to the project;
    - Identify services which they can offer to the university community;
    - Analyse the unsatisfied demand of commercial services of the university population;
    - Understand which are student needs that still have to be satisfied by commercial activity;
    - Analyse how merchants can contribute and their benefit from this activity.

- **Students** The people enrolled to the university are among the ones mostly affected by the development of a SUMP. Their needs and potential contribution to the project have to be carefully assessed to maximise the success of the initiatives to be implemented. For all these reasons the MPU has to:
    - Identify the student categories the project wants to target;
    - Identify the student needs and problems concerning the mobility services.
    - Assess the most relevant actions to maximise the student adoption of the proposed mobility solutions;
    - Identify and involve the most relevant and prestigious student organisations which can ease the project promotion among students.
    - Analyse possible strategies to involve the students in the promotion and further development of the planned SUMP solutions.

- **Administrative and technical staff (Employees)** University end-users also include other categories who can benefit from and collaborate to the project. Between these people administrative and technical staff represent a relevant source of knowledge and expertise for a project contribute:
    - Identify the most relevant and urgent problems and needs of the administrative and technical staff concerning mobility;

- Analyse how much of their personal time and which kind of knowledge they offer.
- Analyse possible strategies to involve administrative and technical staff in the promotion and further development of the planned SUMP solutions.

- **Researchers and professors (Employees)** Researches and professors are both end-users of the solutions proposed by a SUMP and potential developer of further initiatives and actions to improve the mobility for universities. MPUs should:
  - Identify researches and professors willing to share their knowledge and competences to improve and develop mobility services solutions;
  - Analyse the differences and similarities in the demand for mobility of professors and the other categories of the university population;
  - Analysing needs and necessities which can be satisfied by the same solutions developed for students;
  - Assess specific initiatives to adapt the SUMP to the peculiar needs of professors and researchers.

Other type of stakeholders can be proposed in each local action plan. We still support the full list of them listed in above *Other stakeholder involved section*.

Second phase

Once stakeholders are selected, this phase concretely organises interviews, meetings and events. Further information coming out from these organised events will be collected. Arose suggestion from meetings and events can give added value to the project. Afterwards, these information and hints will be useful for the following section 2.2 in order to define goals. It should be important to underline that participation can give more longevity and effectiveness to the plan because of the increased presence of hints and transparency. The MUP will decide time and modalities how to organise meeting and events.

For helping the reader (and the MPU) herein his reported a schematic schedule which describes how stakeholder should be involved. Each bullet of the schedule does necessarily represent a specific meeting but rather an involvement phase which can require more than one meeting/event; however, could happen even an opposite situation, more bullets can be grouped in a same meeting/event if it is required (for instance some parts of bullet 1 and 2 can be arranged together). A certain degree of freedom is allowed in order to adapt the CAMP-sUMP to the specific context and local resources:

1. Kick-off phase: kick-off meetings in order to present and inform about the wish to prepare a Campus mobility plan, which are the motivations, the leading themes and the ultimate aims.
   a. MPU organises meetings/calls with public Authorities;
   b. MPU organises meetings/calls with public transport provider;
   c. MPU organises meeting/events with end users: events, workshop, websites etc. in order to catch the attention of end users and sensitise the public.
2. Data gathering[12]: in this phase the MPU involves stakeholders in order to get data useful for achieve a realistic context view (this phase is strictly linked with **1. STUDY SOCIETAL TRENDS AND SUBURBAN MOBILITY SCENARIO**). This phase is very delicate and

[12] Data gathering can be arranged with the kick-off phase if it is suitable.

important at the same time since data gathered will influence the MPU vision and the future Campus mobility planning. Hence it is important that achieved data are realistic, updated and that the analysed samples are representative.

a. MPU organises meetings (or establishes agreements and obtain permissions) with public Authorities in order to obtain useful data about Campus context (Air quality, local geographical are dynamics, demographic trends, etc.)
    i. At this moment the MPU can prepare questionnaires (potentially even with the help of public Authorities and – if it is suitable – taking in consideration some aspect came out from point 1.a of this list) to submit to end-users. The MPU can commit the public Authorities (or request permissions) to collect information from questionnaires.

b. MPU organises meetings/calls with public transport providers in order to achieve information about local transport services.
    i. At this moment the MPU can prepare questionnaires (potentially even with the help of public transport provider and – if it is suitable – taking in consideration some aspect came out from point 1.a of this list) to submit to end-users. The MPU can commit the public Authorities (or request permissions) to collect information from questionnaires.

c. MPU prepare and submit questionnaires to University's end users and collect data from these questionnaires.

3. Definition of goals and targets: once that the MPU has studied and analysed the context and has achieved useful information about, CAMP-sUMP plan goals and targets need to be defined (this point is strictly linked to **2. PLAN OF SUSTAINABLE UNIVERSITY MOBILITY**).

a. MPU organises meetings/forums with public Authorities and public transport provider in order to discuss about the plan's target and goals though considering data achieved form point 2. of this list;

b. MPU organises facultative meeting/events with end users: events, workshop, websites etc. in order to inform and achieve further useful hints.

4. End users' judgement: once decision are taken, the public (end-users) have to be informed about. Events, exhibitions and websites could be the right means of communication. At this place, end users can express their opinions about and present constructive observations. Then the MPU will decide if apply small variation and adjustment in accordance with considerations and opinions provided by end users. The MPU will inform the public (and the decision makers) by media (web) or further meeting and/or events about refuse or acceptance of end users' observations and opinions.

NOTE: Universities campuses are classified as service provider hubs (since these are centre able to provide relevant services for the surrounding population) and, due to their elevate attractiveness, they need for their management the involvement of superordinate territorial institution and/or the activation of consultation procedures amongst interested surrounding local Authorities.

Whether University Campus is located outside the urban context, ruled by a small town/village, the presence of low powered subordinate Authorities, and the rare but possible presence of natural sanctuaries and protected areas (whose presence could be required during the decisional process) could determinate longer time for decisions and delays.

2.2 DEFINITION OF GOALS, KPIs, ACTIONS' PRIORITISING

This section constitutes a guide to the formulation of the plan's goals, definition of the KPIs and the actions necessary to reach the respective goals and priorities for intervention. It comes with the support of the stakeholders involved in the previous phase.

Objective of the action	Whilst the MPU and its collaborators analysed the context and achieved stakeholders support, the plan should start to take shape. Firstly, goals and targets have to be strategically selected in order to mainstream the plan's process into specific planning choices. Once goals are defined (in accordance with data gathered from the Study phase such as rule restrictions and regulation target and with meeting results), corresponding KPIs are selected in order to evaluate the plan's effectiveness. Later, actions are defined in order to give concrete measures to the plan. This phase should involve key Stakeholders and consider their will. Once actions are defined, these have to be prioritised by using a matrix approach (see below in this table).
Responsible stakeholder	- MUP and its collaborators to decide goals, actions and target, to organise contacts, meetings or local working groups
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc.): - *Public authority*: Municipality, metropolitan city or other authority with planning territorial competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Research and Academia*: to participate in the planning phase with algorithms or results of their research. Can be very useful as supporting entity to support surveys, analysis or other - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) USERS (students, employees, visitors, etc.) - *Students*: main users of the transport services. Main target of the change of behaviour paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means - *Employees*: as for students, but less flexible and with more financial means. - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): all other activities embedded in the Campus - *Citizens* that where necessary become part of the initiative
Way of proceeding	- **(relevant to 1st Step) Goals and targets:** the MPU with its collaborators defines goals of the University Campus' SUMP project. Goals are very important since, once these are defined, they will mainstream the whole plan. However, in this preliminary phase goals should maintain a strategical level. Goal formulation should be follow rules and regulation identified earlier in the study (implemented in section 2.1). Once goals are selected, targets have to be defined. Targets specify a quantitative measures to evaluate the goals (e.g. 10% CO_2 reduction). In accordance to ELTIS Guidelines plan's targets have to be SMART (Specific, measurable, Achievable, Relevant, Time-bound).[13]

[13] ELTIS Guidelines *Developing and implementing a sustainable urban mobility plan,* 2013

	- **(relevant to 2nd Step) Definition of KPIs:** The list of KPIs have to be seen as a pool of indicators providing the MPU with the possibility to monitor the project and to give a final evaluation. The MPU is free to increase the list of provided KPIs. [14] - **(relevant to 3rd Step) Definition of actions and priorities**: This step concerns the definition of actions that have to be defined in order to ensure the plan's goal achievement. This phase should ensure a strong stakeholder participation since is one of the plan's cornerstone: meetings, forums, workshops should be useful in order to achieve Stakeholder engagement. Once those actions have been identified, these have to be prioritised. The prioritising process uses a matrix whose columns indicate the decreasing level of importance and the rows indicate the growing level of urgency. NOTE: In order to guide the reader and the MPU into the identification of actions, these are classified trough pillars and cross cutting issues. Pillars and cross cutting issues constitute the thematic areas of the CAMP-sUmp project.
Target(s)	- Selection of goals and targets. - Selection of KPIs: KPIs can be divided in: o quantitative, in order to monitor quantitative measurable performances; o qualitative, in order to monitor non- quantitative measurable performances; Moreover, KPIs can be grouped by following a different criterion: o KPIs describing the plan's context o KPIs describing the plan's implementation The MPU is requested to monitor the plan both o during its implementation in order to evaluate the actions' effectiveness o In the final phase in order to evaluate the whole plan effectiveness - Selection of plan's actions and its prioritising: MPU with its collaborators, in accordance with preselected goals, identifies the plan's actions after a consultation phase with stakeholders (meetings, forums, workshops …). Once actions have been identified, these are prioritised.
Duration of the activity	Depending on stakeholder availability. The duration is assessed about 3 months
Key elements of the activity	- **Define achievable goals and "SMART" targets:** this paragraph focuses on the project goals' definition and targets selections. Goals are lying in the plan's strategical level (e.g. congestion reduction due to private mobility), once goals are defined, these have to be targeted (private cars' matriculation reduction). Hence, targets should define "numerically" the objective to reach. The definition of deadlines helps to monitor project effectiveness and possible deviations can be constantly monitored. A further characteristic of goals and targets is that these can be modifiable during the process running. However, their update during the project execution have to be communicated to project members. o **Goals:** goals can be divided into categories (short, medium and long terms) as proposed in the following subsections. Goals are important since they constitute the plan's shape and direction, hence their nature should be strictly strategical. They do not have to define specific measures but rather indicate a direction or a particular aspect (e.g. air quality improvement) that have to be concretely followed or threated through plan's actions (e.g. introduction of electric busses by public transport provider). The data gathered

[14] Source: SUMPORT Sustainable Urban Mobility in MED PORT cities

during the plan's *Study* phase are essentials in order to find out threats and weakness, which have to be solved and mitigated through the identification of goals.
Meetings, forums, media (web), and events could be useful in order to find out further hints and needs from End-Users.
Furthermore a first involvement of Decision-makers could be useful in order to achieve their availability and resources.

- **Short-term:** The definition of short-term goals is a complex process, which should consider the urgency and time-schedule of each specific objective as its most relevant features. The MUPs have to define a bunch of short-term goals for a SUMP by assessing for each goal the following features:
  - Time-bounding:
    - duration of the required activities related to each specific goal;
    - Importance and Urgency;
  - Involved skills and resources;
  - Relevancy:
    - Links with other targets
    - Producible changes to the society;
    - Impact on local economy.

- **Medium and long term**: Medium and long terms goals have similar features to short-term ones but are distinguished by a longer time horizon. For this reason, planners have to consider different aspects in order to define them more properly.
  - Socio-economic trends and challenges;
  - Environmental framework;
  - Goal relevance in a wider framework, e.g. national, European, etc.;
  - Kind and skills of stakeholders involved for goal achievements;
  - Service level and end-user satisfaction;
  - Breakeven period and investment return.

- **Targets**: In accordance to ELTIS guidelines targets have to be SMART:

  - *Specific* – precisely described by using qualitative and/or quantitative terms in order to be understandable by all stakeholders.
  - *Measurable* – the context is known since it has been measured. Resources are also available in order to measure the changes (quantitative and qualitative) that occur.
  - *Achievable* – based on the financial, operational and technical competencies in place and on commitments/agreements that have been made.
  - *Relevant* – targets should concern and lead suburban mobility and support and/or be aligned with other targets
  - *Time-bound* – key dates for the target achievement are clearly defined[15]

- **Define KPIs:** KPIs (Key Performance Indicators) are indicators, which measure the performance of a preselected goal. They are distinguished in quantitative and qualitative KPIs as proposed in the following. The main features which should distinguish KPIs are:

[15] ELTIS Guidelines *Developing and implementing a sustainable urban mobility plan,* 2013

	○ Their definition before the project begin; ○ Linkage to the project goals and aims; ○ Measurable on short and long term; ○ Measurable and comparable; ○ Quantitative or Qualitative. ○ **Quantitative:** for quantitative KPIs it is important to define thresholds and values which simplify their assessment and comparison. Quantitative KPIs should be: ▪ Measurable; ▪ Univocal; ▪ Available to the public; ▪ Traceable; ▪ Understandable; ▪ Representative. ○ **Qualitative:** qualitative KPIs are of strong help for monitoring and comparison of non-quantitatively measurable performance. Thus, they should be: ▪ Linked to project goals; ▪ Assess the project progress; ▪ Available to the public; ▪ Represent stakeholder needs; ▪ Understandable and univocal (for this reason is suggested the use of a Likert scale from 1 to 5) - **Action definition and its prioritising:** in this phase, actions (or measures) have to be defined by the MPU and its collaborators in order to ensure the plan's goal achievement. This phase should ensure a strong stakeholder participation since is one of the plan's cornerstone: meetings, forums, workshops should be useful in order to achieve hints needs and availability. It should be important that Stakeholders could be divided (as reported in this table) in Decision-makers and End-users. The latter's involvement is mostly advisory but they are crucial in the definition of local needs. The former are instead important for their skills, competences and resources and they closer take part during decisional moments. Due to their different nature, Stakeholder's involvement assumes different form. End-user involvement is led by MPU in order to: ○ find out unsatisfied needs which could potentially become demand for services; ○ analyse and select demand components based on specific drivers; ○ help the MPU to prioritise and mainstream the demand towards action to implement If all these aspects are followed during End-users involvement, the MPU can foresee the future demand trend and supply the demand of mobility services. When needs are collected, the MPU convenes the local Decision-maker in order to find out suitable actions able to satisfy the collected end-users needs in accordance to the local context, to the local and national regulatory framework and to potential international guidelines (in particular those concerning environmental subject matters) whose data and information gathered during phase *1. Study*. In this phase stakeholder can provide their skills, resources and competences, even though the decision always compete to the MPU. For each action definition, respective competent Stakeholders (Decision-makers) have to be involved.

When decisions are selected the MPU has to communicate to the public (End-users) its decision through media (web, forums, meetings, events, etc.) in order to collect their opinion about. If, in this place, there are some disagreements, the public is allowed to make observations. Then, if MPU decides to refuse them, it has to communicate by motivating its decision.

The effective and efficient use of budget and resources give the MPUs the opportunity to inform the end users of the existence of the SUMP project for their university and keep them updated in case of changes. Some suggestions for the MPUs are the following:

- Define active polices to influence the demand of university mobility service;
- Increase the project visibility with events to persuade people to change their mobility habits;
- Collaborate with different public and private transportation companies to improve your and their mobility services.

Actions are concrete measures constituting the solution (new tram/bus lane creation, carpooling policies implementation, use of IT – Intelligent Transport – to support public transport, etc.) provided by the plan in order to reach the preselected goals and their targets. It should be important underline that actions must not be seen as singular interventions, but they have to be planned in order to connect their effects and create synergies. For instance, the carbon dioxide reduction will be higher if the public transport will be enhanced by also promoting a substitution of old busses with new electrical one and by also supporting the new transport service with IT solutions).

Actions' characteristics are reported below:

- *Relevant*: in order to have a positive and significant impact on the context;
- *Realistic* and *achievable*: in order to be well dimensioned with context resource and needs since the project have to be actually realised;

Pillars: In order to help the MPU in its decisional process, the plan's measures can be grouped in four main pillars and cross cutting focuses. Indeed, even though the MPU have to be suitable for the context, respect the active regulatory framework and international guidelines, consider the End-users' needs, take advantage of Decision-makers' competences and resources, the plan should be mainstreamed by pillars' contents and cross-cutting focuses in order to guarantee the whole plan's sustainability.

Herein the **four main pillars** are reported:

- pedestrian commute,
- use of the bicycle and clean vehicles,
- public transport,
- sustainable motorised private transport (carpooling, low-emitting vehicles, etc...),

Cross cutting objectives related to all the aforementioned pillars.

- ICT;
- Sustainability;
- Safety.

Each pillar is hereinafter presented:

- **Pedestrian commute**: one of the most underrated actions to ensure sustainable mobility for universities is foster the walking to reach the Campus and move inside it. Despite the common believe, pedestrian community could represent a valuable alternative to other transport modes

- **Use of the bicycle and clean vehicles** The average daily distance travelled by a European student to reach those Campuses inside the city centre is about 5 km. A similar distance is experienced for the travelling of students inside Campus area, even far from the city centre. The fastest way to cover this distance is by bicycle. MPUs should consider bicycle option as a competitive transport mode analysing the following aspects (average distance between student housing and Campus; climatic condition of the geographical area involved; integration of inter and multimodal transport with bicycle; perception of cycling as a leisure and healthy activity).

- **Public transport** A traditional pillar of sustainable mobility is represented by public transport. The evolution of the management systems of these fleet of vehicles typically increase its punctuality and average speed. These features, along with its low prices make public transport a competitive solution for the mobility problem of the university community. The MPUs interested in the implementation of such a solution should consider:
  - Punctuality and average speed of the public transport in the geographical area considered;
  - Time-schedule of public transportation offer;
  - Reputation related to public transport usage;
  - Possibility to co-manage and co-plan the public transport with local transport authorities as well as condition its decisions.

- **Sustainable motorised private transport:** This transport mode could still represent a viable solution to mitigate the transportation problem for certain combination of student categories (living in remote and isolated areas), geographical areas (low population density, orographic conditions, etc.) and Campus location (outside urban area). However, recent advances in ICT enable to limit the emissions produced by this transport mode. Thus, a MPU should consider the following aspects:
  - Adoption rate and satisfaction rate of ICT tools for motorised private transport;
  - Car sharing and carpooling solutions;
  - Reputation related to the private transport usage;
  - Financial and economic aspect of motorised transport;

- **Cross cutting objectives:** the aforementioned pillars of the sustainable mobility for European universities requires cross cutting objectives to ensure their harmonisation and the achievement of shared goals. Two are the main drivers that have to be followed by a MPUs:

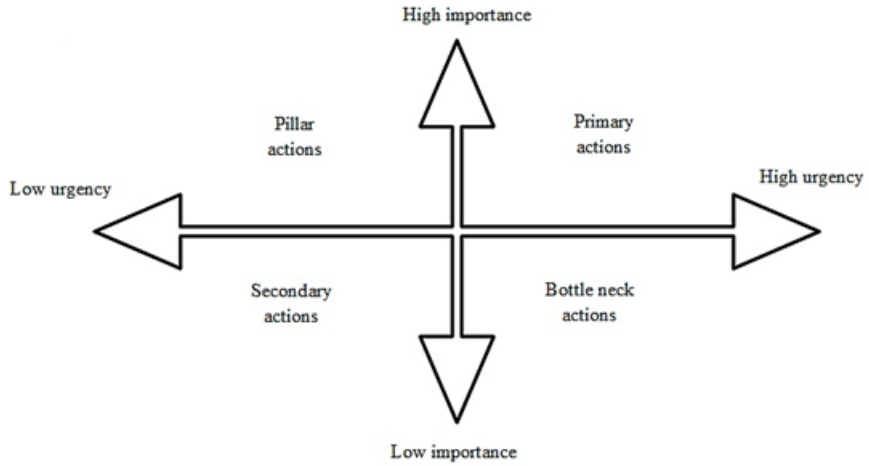
  - **ICT:** Considering the enormous potential of ICT technologies in the 21st century, proper SUMPs have necessarily to leverage the big data generated by the ubiquitous sensor represented by the smartphones always connected through internet. Innovative Artificial Intelligence methods and algorithm adequately mange and process these volume of date to provide meaningful information to the MPUs which acts as a decision maker of the university future mobility.

  - **Sustainability:** The common and final goal of all the aforementioned pillars is the sustainability of the developed solutions to satisfy the mobility needs of the academic community. Thus, MPUs should define indices and metrics to measure and assess the overall sustainability of a

developed and implemented mobility solution, considering its technical, economic, social and environmental sustainability.

- **Safety:** the action plan should select actions that should increase the overall mobility safety. This aspect should have the same importance of Sustainability's theme (and in some way is a part of it). Decrease the accidents rate is very important since it can decrease costs given by traffic externalities.

-Action prioritising: when all actions have been defined, the MPU with its collaborators defines actions' priorities in order to adapt plan's interventions to context's resources, urgencies and needs. Project actions could be prioritised by classifying them in four categories according to the following matrix:



The matrix suggests an original classification in four different classes of actions grouped per urgency and importance:

- **Primary actions** include every activity to be implemented as soon as possible because its importance is vital for the project continuity;
- **Pillar actions** are the activities whose importance is essential for the project execution but it could be implemented in the near future;
- **Bottleneck actions** contains all the activities which have to be done before or after a particular action but that are not essential;
- **Secondary actions** classify the activities of limited important implementable even on the long term.

- **Communication**: communication is fundamental in order to coordinate all efforts, inform collect opinions and needs. Communication assumes different form related to the different Stakeholders' nature.
  - **Communications within the project partners:** Communication among Decision-makers (project partners) takes on characteristics of an internal communication mainly led with private e-mails, meetings with specialised people, conventions and conferences. Transparency have to be always guaranteed (further explanation about are reported at point *3.1 Plan's implementation*). Decision-makers' availability and resources (financial and skills) are important for action's implementation in order to supply End-users needs. Furthermore, it might be underlined that economic and especially environmental sustainability constitute CAMP-sUmp's main aim and hence the MPU have to make efforts in order that

	sustainable matters are actually present within the actions established by the MPU itself and competent project partners. ○ **Communication among End-users**: first of all, during the first End-users' involvement, they have to informed from the early beginning about the existence of a University's sustainable mobility plan with its essence and initial intentions and at this place their needs and characteristics have to be collected from events, meeting, forums, interviews (also on-line). When actions are set by the MPU in accordance with Decision-makers' availability and resources, they have to be informed through other meetings, forums, events, internet (web or apps), etc.... End-users can express their opinion and constructive observations to the MPU that in case of refuse have to communicate his motivations (through media, web, meetings, etc.); however, interesting non-before-considered hints could emerge. Finally End-users acceptance, adoption and satisfaction is monitored also during the whole plan implementation in order to understand if some actions have to be strengthened, improved, or changed. Since the communication with End-users is a relevant aspect for planning, a dedicated section *2.3 Community communication and involvement* is herein inserted and some references are present also in *3.1 Plan's implementation.* NOTE: KPIs can be conceptually divided also by: 🕐 Indicator describing the carrying out of the plan. In particular with reference to those that are referring plan's action.

Some examples of KPIs' concerning **actions** (with related indicator) are herein reproduced in Table 1:

Table 1. Examples of actions and indicators (KPIs) and units of measure

strategy	action	indicator	unit of measure
integration among different transport systems	transport network redesigning (by following a hierarchical and synergistic form); road (and public space) recovering with new infrastructural interventions by giving more usability for pedestrian, cyclist, LPT users, and low impacting private mobility	new transport network and lanes classification (reserved lanes)	added km of reserved lanes
	integrated action to reinforce the accessibility of main transport nodes and their integration in a multimodal transport system, also foreseeing the planning of new transport nodes	number of interchange nodes, interchange parking capacity (for cars, bike, motorcycle); improvement of public transport network connected to interchange parking	number of nodes, number of parking spaces for cars, motorcycle, bicycles Km of roads dedicated to LPT for connecting interchange nodes or parking
	make possible bike transport through LPT vehicles	LPT vehicles adaptation LPT integration of tariffs	number of modified vehicles or % on the total km served with integrated tariffs % on the total
	ITS and application (e.g. call service, ...) utilisation in order to integrate different transport systems (data sharing, innovative service providing)	networks served by ITS	km
collective mobility development by improving service	dedicated lanes (which can improve the LPT speed, safety and the whole quality service)	dedicated lanes extension	km or % of improved dedicated lanes

quality and vehicle speed	number of passengers counting system through installation of devices (also by mobile phone employment)	counting system equipment	% of vehicle with counting system device
	use of different communication channels (displays, social, SMS, smartphone applications…)	real time information about LPT service (parking place availability, presence of other transport service, travel time, ...)	number of installed displays
foster cycle and pedestrian mobility	foster bike sharing services for end-users	stations and shared bikes	number of stations number of bike to share
	bicycle lanes extension (by linking the main places of interest)	lanes extension, lane creation	number of new lanes or km of new lanes
	marketing promotion and awareness campaign	campaign for end users	% of involved population
	dedicated maintenance services for bike along the paths	bicycle stations, bike maintenance areas	number
introduction of shared motorised mobility systems (by fostering low emitting vehicle)	use of ITS system in order to manage the shared mobility system (and facilitation for parking)	carpooling and shared vehicle polices	activation YES/NOT
	recharging places (for electrical vehicles)	recharging points	number recharging points
foster the safety culture in order to decrease accidents	increase the safety of pedestrians, cyclists, LPT users	signals, raised sidewalks, road signage, ...	improved km

impact area	main objective	indicators	unit of measure

mobility system efficiency and effectiveness	LPT improvement	users	passengers/year (each 1000 inhabitants)
	multimodality	% trips by car	dimensionless
		% trips by LPT	dimensionless
		% trips by motorcycle	dimensionless
		% trips by bicycle	dimensionless
		% pedestrian trips	dimensionless
		% multimodal trips	dimensionless
	people accessibility improvement	sum of: population percentage dwelling not more than 400m from a bus/tram stop and a bike/car sharing station and population percentage dwelling more than 800m from train station	percentage
	integration improvement between the mobility system and suburban planning tools	number of suburban planning tools dealing with LPT	number
	air quality improvement	traffic NOx emission per person	kg Nox/inhabitant/year
		traffic PM10 emission per person	kg PM10/inhabitant/year
		traffic PM2,5 emission per person	kg PM2,5/inhabitant/year
		days when air pollutant concentrations overcome European limits	number of days when air pollutant concentrations overcome European limits
		traffic CO2 emission per person	tCO2 or number of days when air pollutant concentrations overcomes European limits

		CO concentration	kg or number of days when air pollutant concentrations overcomes European limits
		SOx concentration	kg or number of days when air pollutant concentrations overcomes European limits
		VOC (Volatile Organic Compounds)	kg or number of days when air pollutant concentrations overcomes European limits
		NH3	kg or number of days when air pollutant concentrations overcomes European limits
		CH4 concentration	kg or number of days when air pollutant concentrations overcomes European limits
		N2O concentration	kg or number of days when air pollutant concentrations overcomes European limits
	noises decrease	traffic noises	dB(A)
			% of people exposed to a level of dB > 55dB(A)
economy and energy	income generated	Estimated operating revenue per measure (total income generated)	EURO (or other monetary unit)

	planning and managerial costs	Estimated cost incurred during the planning and designing phase of the project, policy or measure. Costs associated with the planning process (e.g. setting up a survey or a feasibility study of a project, policy or measure), also includes the managerial costs that occur only during the planning and designing phase (decision making at strategic level)	EURO (or other monetary unit)
	social cost	estimated saved externalities on total social costs	EURO (or other monetary unit)
socio-economic sustainability	accident reduction	accident rate	number
	social inclusion improvement	satisfaction level of people with handicap	Likert scale (1-5)
	employment rate increase linked to sustainable mobility	employment rate	employed number/working population
	mobility cost reduction (private mobility reduction)	annual averaged costs' reduction of car usage (taxes, fuel costs, insurance policy)	euro per person

social acceptance	public acceptance	society acceptance level - social, policy acceptance stated by (the interviewed) citizens. attitude (behavioural change) towards intervention or degree to which people favourably receive or approve the measures, policies and any changes in UFT activities organisation	Likert scale (1-5)
	final user acceptance	percentage of final users or customers using the new service	Likert scale (1-5)
success	success rate	statistic state of the art reviews concerning the replication of city case policies and measures percentage of city case policies and measures planned to be replicated by other cities within or beyond project duration	Likert scale (1-5)

specific objectives	indicators	unit of measure
improve the LPT attractiveness	LTP use	passengers/year (each 1000 inhabitants)
	Travel speed	km/h
	LTP punctuality	Likert scale (1-5) or % of punctuality on total travels
	Security and safety	Likert scale (1-5) or % of security and safety on total travels
	LPT load factor	pax-km/offered places-km in specific time-windows
sharing mobility increase	carpooling use	number of user/inhabitants
	bike sharing use	number of user/inhabitants
	car sharing use	number of user/inhabitants
cycle/pedestrian mobility increase	bike/pedestrian flows	number of bike/pedestrian users per each transport section (arch of the network)
reduce traffic congestion	density of vehicle on movement	number of vehicle equivalent travelling or occupying the way measured on total of kmq

This set of indicators has been proposed since the publication of the Italian decree 'DECRETO 4 agosto 2017. Individuazione delle linee guida per i piani urbani di mobilità sostenibile, ai sensi dell'articolo 3, comma 7, del decreto legislativo 16 dicembre 2016, n. 257. (17A06675)', which provides the guidelines for SUMP's development at national level. It includes a set of KPIs that have been analysed and proposed in this schema.

2.3 COMMUNITY COMMUNICATION AND INVOLVEMENT

This phase ensures a profitable communication with end users. This phase is very important and it is strictly linked to activity 2.1 (Stakeholder involvement) and activity 2.3 (Development of method and approaches) and provides guidelines to MPUs to engage with users.
This activity also includes an element of assessment where stakeholders are required to provide feedbacks on the proposed solutions (see below).
A preliminary list of suggested relevant tools for informing the end-users is also provided. Moreover, relevant tools to achieve community acceptance are also listed

Objective of the action	This section focuses on end users' community involvement in order to both inform and ensure project acceptance and effectiveness before the implementation of the plan start. When data from the context is gathered, the MPU can value the project's effectiveness and address issues through corrective actions (in the sub-activity "*Future improvements*", in to activity 2.3). Maybe some further hints can stand out during this public involvement phase.
Responsible stakeholder	MPU with its collaborators prepares information activities and data collection about acceptance and effectiveness (maybe some other MPU collaborators or decision makers will implement these activities)

Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority with planning territorial competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Research and Academia*: to participate in the planning phase with algorithms or results of their research. Can be very useful as supporting entity to support surveys, analysis or other - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) - *Private companies.* Able to support the MPU in its decisions USERS (students, employees, visitors, etc. who should be informed about) - *Students*: main users of the transport services. Main target of the change of behaviour paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means - *Employees*: as for students, but less flexible and with more financial means. - *Visitors*: occasional visitors - *Occasional workers*: occasional workers for maintenance or for meeting with Campus workers - *Citizens*
Way of proceeding	A non exhaustive list of relevant tools for informing the community is listed here: o Workshops, Gaming or Forums and talks (dedicated to huge mass of people typically in big rooms or in the streets of the City, inside the campus); o Exhibitions (dedicated to present posters, distribute dissemination material; possibility to talk with the experts. It can be organised in the city centre, inside the campus, Libraries also in collaboration with other events, for instance European Mobility Week, etc…); o Media: web, papers, apps, social media etc. A non exhaustive list of relevant tools in order to achieve the community's acceptance is listed here: o Questionnaires (on-line or distributed in specific places, for instance inside the Campus, city's main transport hubs); o Data analysis from public authorities or transport managers (public and private); o Interaction during the events listed above
Target(s)	- Inform the public about the upcoming project implementation - Collect data about plan's acceptance and effectiveness. NOTE: Even though information and data collection are appearing above as separated, they can be 'utilised' together depending on the opportunity or needs for achieving the community.

Duration of the activity	Approximatively the whole duration of the plan implementation as it constitutes a monitoring and information activity.
Key elements of the activity	- **Communication to end users:** information activities are performed as described above and take into account the tools for informing as workshops etc…; these are very important for ensuring the project acceptance and effectiveness. These activities could even follow the project during its whole phase and only be limited to the preliminary phase, in order to maintain a persistent contact with the public and eventually capture potential further hints. - **Data collection activities** o **Adoption of the development solution by end users:** MPUs have to consider if the proposed solution under development will be used or not. A proper analysis should focus on, not exhaustively: ▪ Number of people who will use the service; ▪ Number of people who will find difficult the usage of the new service; ▪ Number of people who download the planned mobility apps; ▪ Number of people who effectively use the mobility app on daily base; - **Feedback actions and next improvements:** MPUs should adopt questionnaires to evaluate the satisfaction of the people involved in the project and questions about the improvements that they considered should be done. MPUs should schedule monthly meetings to gather and analyse the feedbacks. When MPU implement a change to improve a portion of the SUMP it is of extreme importance that as much as stakeholders as possible notice that.

2.4 HINTS ABOUT PLAN'S ACTIONS

This activity reports on specific feedbacks collected that will help the MPU during actions' selection. All the initiatives relevant to the plan must be compliant to the University's campus context (territorial, political, regulatory, social, environmental) and the available skills and resources provided by decision makers. Plan's actions are kindly invited to follow the schema according to the matrix described in 2.2.

Therefore, the below-presented hints can be a further help for the MPU and its collaborators. However, it might be highlighted the Action Plan should maintain a strategical level, that means that Action Plan focuses on how to do rather than what to do.

Objective of the action	This section would give some guidance about measure (actions), which have to be implemented into the action plan. These SUMP actions should be selected through participative processes by agreements among the MPU and Decision-makers in order to respond to End-users' needs. NOTE: This section does not want to give specific and binding instructions to the reader (and to the MPU), but rather it wants to remain at a strategic level. In this way, the reader (and the MPU) is free to reflect and adapt the plan to its specific context. The approach should both consider all Action Plan sections and subsections in order to develop sustainable and virtuous solutions, and take into account the end users will and opinions.
Responsible stakeholder	The MPU and its collaborators.

Other involved stakeholders	Even though final decisions belongs to the MPU, all stakeholders are potentially involved, in order to collect both end-users needs and decision-makers availability and resources. Furthermore, end-users are informed about the plan's direction and they can express their constructive opinions and observations. End-Users are involved also during the plan implementation for providing satisfaction and adoption level in order to find out if some measures have to be strengthened, improved or changed. DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority with territorial planning competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency*: cooperating with Public Authorities and Transport operators to ensure commitment in transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) - *Research, Academia* and *Private companies.* Able to support the MPU in its decisions USERS (students, employees) - *Students and University's employees*: Useful in this phase in order to achieve their hints and opinions oriented to improve the Campus mobility. - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): Useful in this phase in order to achieve their hints and opinions oriented to improve the Campus mobility. - Citizens
Way of proceeding	In accordance with results collected from the *1. Study*'s (End-users needs and characteristics, context's features, regulatory frameworks and international guidelines), the MPU identifies the plan's measures (actions). The action definition has to involve Decision-maker, since they will be the actions' actuators by providing their resources. The MPU have to make efforts in order to guarantee that the defined measures are actually sustainable from an economic and environmental point of view. When plan's actions are defined, in order to guarantee the plan's transparency, these are communicated amongst End-users through meetings, events, forums, web, etc. At this place, End-users can express their constructive opinions and observations. If these are refused, the MPUs have to motivate its decisions (by media, web, forums, etc.). This section would give some hints to the reader in order to find solutions related to

	specific Pillars (pedestrian commute, use of the bicycle and clean vehicles, public transport, sustainable private transport) and cross cutting objectives (ICT, sustainability, safety). It might be reminded that these solutions – if actually selected implemented – should match the stakeholders' availability. Hence, the reported below hints are merely proposals and advices.
Target(s)	Achieve selected and accepted measures.
Duration of the activity	Depending on the stakeholder availability, since this section is strictly linked to the stakeholder involvement. The duration is deemed about 3 months.
Key elements of the activity	The collected feedbacks are grouped into four Pillars (pedestrian commute, use of the bicycle and clean vehicles, public transport, sustainable private transport) and Cross Cutting focuses (ICT, sustainability, safety). **Improve the efficiency of existing infrastructures:** Before implementing new infrastructure solutions to promote a sustainable mobility for universities, it is mandatory to improve the efficiency of the existing infrastructures. Thus, for each of the four pillars of the SUMP possible actions should be investigated and implemented how to increase the efficiency of mobility services through the improvement of the existing infrastructures. Another important leading theme could be the shift towards more sustainable way of travelling. In this field, innovative solutions should be focused on shared mobility fostered by the use of apps and on new electric vehicle introduction. However, other more traditional solution can improve the action plan's sustainability such as improvement of the existent transport fleet by fostering the rail transport (new train lines and trams) and the use of electrical vehicles. It should be reminded that an efficient and cheap public transport matched with adequate restrictive policies could be strong deterrents in order to discourage the private transport, one of the most responsible of traffic congestion and pollution. **<u>PILLARS:</u>** **<u>Pedestrian commute</u>** - **Pedestrian commute: pedestrian area, dedicated apps, event organisation – *Suburban Context:*** For Campuses located outside urban context should be important to ensure the pedestrian safety by creating safe pedestrian paths connecting the local public transport station/stops to the University Campus. As well, pedestrian areas should include areas inside the University's Campus. Dedicated apps should integrate services for supporting pedestrians' trips inside the campus, e.g. meal reservation at the local canteen, book reservation at the library, etc. in order to maximise walking inside the campus. Finally, proper events should be organised to support leisure activities for pedestrian inside campuses located far from the city centre and its recreational events in order to avoid trip demand for destinations out of the Campus. **<u>Use of bicycle and clean vehicles</u>** - **Use of the bicycle and clean vehicles: cycle path, safety and health, sharing and inter-modality – *Suburban Context*** Campuses located outside the urban

context require different upgrades to transport infrastructures in order to foster among University's community the adoption of bicycle as transport alternative. Suburban cycle path should be valued as possible sustainable solutions to reach the campus. Adequate measures should be adopted to ensure the cyclists' safety and health, seriously under threat due to the particular campus' location (outside the urban context). Finally, some other existing infrastructures, as railway stations, rail and tram carriages and bus vehicles, should be adapted to cyclists needs in order to maximise the inter-modality with bicycle. Combining the use of bike with long-distance transport means (such as trains) could be useful to the end users to reach the Campus when it is not located close to the main public transport hub (train station).

Public transport

- **Public transport: punctuality of public transport, real-time and dynamic scheduling, improve end-users satisfaction (i.e. seating capacity) – *Suburban Context*** Aim of this paragraph is the definition of the best methods that have to be implemented in order to improve the public transport offering for campuses outside the urban area. The universities located far from the cities are typically affected by the following problems of mobility: Insufficient service level of public transportation; Long travel time independent by the selected transport mode; Low maintained infrastructures (e.g. roads).

  A bunch of many activities can be implemented to improve the efficiency of the infrastructures related to the public transport. Real time, dynamic scheduling and on-demand mobility services solutions in order to maximise the punctuality, the use of roads and the load factor. In order to ensure a realistic implementation of the aforementioned corrective actions to public transport infrastructures the MPUs should: Immediately implement actions with short-term deadlines; Scheduling actions with long-term deadlines; Keep the action scheduling always revised in order to facilitate its realisation and monitoring.
  Finally, MPUs should monitor and improve the satisfaction of the University's community concerning public transport services through the analysis of the following aspects: Connection of the University's facilities with the closest cities; Easiness in public transport services' adoption in remote areas; If transport modes are suitable, effective and proper for people with disabilities.

  If the campus is far away from big city but not enough from a small town, the studies and solutions about mobility could be interesting also for the small town itself. Indeed the Action Plan could be an opportunity for the small town to be better connected to the nearest cities and related services and infrastructures (airport, main train station, etc.) and hence foster the use of public transport.

Sustainable private transport

- **Sustainable private transport: reduce traffic congestion, improve road safety, dynamic traffic control – *Suburban Context*** MPUs should improve the existing infrastructures for private motorised transport to facilitate the commute of students and university members for campuses outside urban context. Road infrastructures should be monitored through adequate ICT tools to detect incidents, damage and different unforeseen categories. Parking infrastructures should be reorganised to minimise the traffic congestion of private vehicles during the rush hours. Travel time and greenhouse gases

emission reduction are two of the most relevant outcomes of such systems. Proper events and meetings should be organised in order to mainstream the car drivers to shift into more sustainable and shared way of travel distinguished by greater technic, economic, social and environmental performances and sensitise them about safety issues related with road infrastructures. Shared vehicles and trips could be suitable in order to decrease the number of circulating vehicles and increase the load factor. These services could be provided by public transport operators (or maybe by private companies), and in addition managed by apps supplied by the same service providers. Campuses located far away from urban areas could take more advantages of this kind of service since it could provide and optimisation of load factor and decrease the number of circulating vehicles.

CROSS CUTTING OBJECTIVES

- **ICTs and soft solutions** MPUs have to focus on methods and technologies to help the transmission, reception and elaboration of information related to the project. MPUs should focus their effort in the implementation of ICT solutions to help public transport services through mobile application and other integrated services as cyber hubs, stations and stops.

    - **Unique public transport mobile application** As previously mentioned in Section 2.2, mobile apps are of major help for supporting the mobility services offered by public transport authorities. These applications help also MPUs and transport authorities to collect information from end users. The main benefits provided by the adoption of a unique mobile app for managing all public transport services provided to the University's community are: Knowledge of user mobility habits; Integration of promotion from different transport service providers; Direct feedback from end-users; Data exchange between different public and private organisations; Integration in a unique platform of real-time information of different public transport services.

      Campuses outside the urban context could take more advantages of services provided by **digital services** than Campuses located in urban context. Indeed Campuses located far away from cities, could benefit more form services, which provide public transport by booking. Costs for a permanent line can be cut and the load factor can be increased.

    - **Cyber hubs, stations and stops: integrated services – *Suburban Context*** Technology innovations and upgrades can be adopted in railway and bus stations and stops too. MPUs have to implement those integrated services at transport stations that are helpful to university members and students. Some examples of possible integrated services to be offered to university campuses located outside the city centre are: Wi-Fi connection and other amenities (e.g. book sharing) for long waiting time; Proper infrastructure to improve the wealth of university members while waiting for public transport, e.g. air conditioning, heating, chairs and couches, etc. Streaming of advertisement of university events or activities considering the composition of university members at the stop/stations, e.g. scholarships for students, funding schemes for professors.

- **Sustainability:** sustainability is the leading theme of the Action Plan. Sustainability embraces many different branches such as economics, society (and health) and environment. Even though the plan's objectives are focused in order to provide mobility services, the plan's adopted measures should be focused in order to foster policies and habits with a slight impact on the environment, since transports are one of the most polluting human activities. However, it is desired that implemented Action Plan's solutions will not need any or too much external helps when the plan is running. Indeed the plan have to be economically self-sustainable, only in this way its effects can be provided also in long term. For this last mentioned aspect are fundamental the participative events in order to find skills, availability, proposals and opinion among stakeholders (in addition, stakeholders can provide useful information about plan's effects and acceptance also when the plan is running). Therefore Stakeholders' involvement have to be seriously considered since it not constitutes a mere marketing process but it helps the MPU and its collaborators in order to find the most suitable solutions.

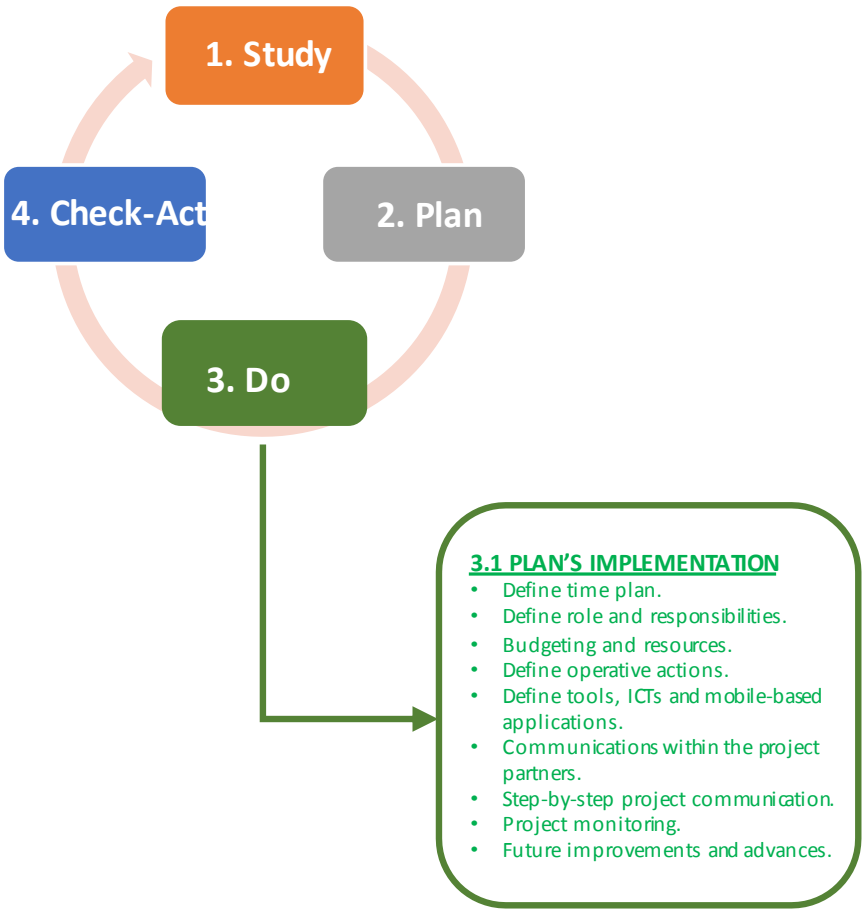
- **Safety** The road accidents are deemed the third cause of death in 2020 with about 1.4 million of death. Traditionally, the solution, in order to increase the road safety, have always been to secure the different users' categories by mode of transport (e.g, dedicated lanes for cycling, road for private cars, etc…). As an instance, benefits given by the introduction of cycle lanes are well known in literature not only in term of sustainable mobility fostering but also in term of users' safety. However, It might be added that this solution is effective only if it is well designed in order to avoid too long paths and an excessive number of dangerous intersections with highways. The same solution has always been adopted for pedestrians, who are allowed to walk in footpath alongside roads. However, recently, some studies – for a restrict number of cases – are revolutionising the concept based on separation of road users: indeed, in some urban central areas the distinction between sidewalk and carriageway does not exist and traditional road signals are substituted with alternative and more intuitive ones. Safety is guaranteed by visive contacts, human instincts and interactions. These measures are bringing a traffic calming and seem to bring good results (an example of this solution have been adopted in Almada, Portugal). Indeed even though road user separation could avoid collisions between different users, this solution fosters the road stronger users' speed increase. Therefore, paradoxically the number of fatal accident could increase if a certain number of necessary intersections are present. Hence, when speed is not a priority and roads are not width enough (such as in historical centres) shared areas among different road user could become the most suitable solution in order to guarantee safety.
  Below are reported some intervention focused on increase of safety for road non-motorised users. In night-time, visibility sense is hindered; hence, the road lighting always assumes a relevant role; Separated lanes such as cycle lanes, underpasses and overpasses (useful in order to avoid dangerous intersections), barriers in order to avoid pedestrian crossing, etc.; Separate lanes for trams (low emitting vehicles with an elevate load factor); speed reduction in urban areas; promote the use of helmet for cyclists, promotional campaign for road safety; devices (trees, humps, zig zag paths, etc.) able to calm traffic speed in urban areas with strong presence of pedestrian (30km/h areas); shared road spaces among different users; Rigorous surveillance of speed limits provided by ITS.

	OTHER FEEDBACKS: - **Infrastructure connections: intermodal and multimodal transports, interexchange hubs, integrated public transport pass, integrated transports scheduling, public vehicle sharing:** MPUs should consider the peculiarities of a campus located outside the city centre to implement and develop proper interexchange hubs. Students and university members who use more than one transport mean to reach the University could appreciate the usage of a unique ticket valid for each mobility service. Furthermore, every type of public or private form of vehicle sharing have to be promoted and supported to limit the number of vehicle which are used to travel from the urban area to the campus and vice versa. The development and usage of customised mobile apps is of strong help to reach this goal. - **Innovative roadway design and solutions for integrated multiple transport modes** the aim of this section is a radical innovation concerning the roadway organisation. MPUs should collaborate with local administrations to develop new concept of shared infrastructure able to evolve dynamically to over time to maximise the efficiency of the entire population of the different vehicle types. That means the same road or (carriageway) become a dedicated public transport lane for certain time band during the day. Dynamic preferred lanes have to be integrated with novel materials and technologies for lightning, pavement and signage to minimise the environmental impact of the entire systems. The different solutions developed by MPUs should be: ▪ Environmental sustainable; ▪ Increase the traffic speed; ▪ Distinguished by a high level of communication and interaction; ▪ Low possibility of damage; ▪ Economic convenient;

MILESTONE: Delivery of operative plan attitude towards sustainable mobility plan. At the end of this section, MPU has to develop a plan of sustainable university mobility. First, a classification of stakeholders that could collaborate with the project is required. Then a set of proper goals have to be defined, along with KPIs and actions. Moreover, community communication activities have to be identified and assessed along with proper feedback loops in order to monitor and assess the implemented improvements to the SUMP and in order to understand the end-users' future acceptance.

3. DO: IMPLEMENTATION OF PLANNED SOLUTIONS

Once the plan's actions are defined, these have to be concretely implemented. Hence, a time plan has to be defined, role and responsibilities have to be assigned, budgeting and resources should be allocated and actions defined for a successful implementation of the CAMP-sUMP measures. Hereinafter we've reported on concrete actions linked to the communication within the project partners, to the Project monitoring, to the step-by-step project communication and future improvements and advances. These last mentioned actions are strictly linked with next section's contents (*4. CHECK AND ACT OF IMPLEMENTED SUSTAINABLE UNIVERSITY MOBILITY SOLUTIONS*). Moreover, it should be underlined that this whole section is linked with subsection *2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT*, since almost likely external resources are required in order to implement the CAMP-sUMP plan and hence competent stakeholders could be needed and involved.



3.1 PLAN'S IMPLEMENTATION

This phase is fundamental for the execution of the project, since it assigns roles and responsibilities to anyone who collaborates with the project and each action is divided in each operative task.	
Objective of the action	This action determines a deadline for each action in order to avoid any postponement and delay. Furthermore, this action assigns roles and responsibilities to anyone who collaborates on the measure and each action is divided in operative tasks. Moreover, communication activities have to be run in order to inform the involved stakeholders. Finally, the plan's future improvements have to be considered in order to improve its effectiveness and potential corrective activities.
Responsible stakeholder	MPU and its collaborators to determine deadlines, roles, responsibilities, operative jobs, communication activities and plan corrections and improvements.
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority with planning competence on mobility services or other connected to (e.g. environmental, etc…) - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) - *Mobility agency*: cooperating with Public Authorities and Transport operators to plan transport services - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): as alternative mobility to private and public mobility - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment - *Research and Academia*: to participate in the planning phase with algorithms or results of their research. Can be very useful as supporting entity to support surveys, analysis or other - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) - *Private companies.* Able to support the MPU in its decisions USERS (students, employees, visitors, etc. who should be informed about) - *Students*: main users of the transport services. Main target of the change of behaviour paradigm of sustainable mobility. They characterise for being flexible, smart and lack of financial means - *Employees*: as for students, but less flexible and with more financial means. - *Occasional workers*: occasional workers for maintenance or for meeting with

	Campus workers - *Non-University workers* (e.g. in case of start-ups, spinoff or other companies inside the campus): all other activities embedded in the Campus. - *Citizens*
Way of proceeding	- **(Relevant to 1st Step) Deadlines:** the MPU with its collaborators determines a deadline for each action in order to avoid any postponement and delay. - **(Relevant to 2nd Step) roles and responsibilities:** the MPU with its collaborators assigns roles and responsibilities. - **(Relevant to 3rd Step) operative action and tools definition:** each action defined in action 2 *Plan of sustainable university mobility* is divided in tasks. Moreover, MPUs and its collaborators have to define proper tools, which have to be used during the project execution in order to ease the implementation of certain actions. ICTs and mobile-based applications represent valuable tools to facilitate the communication amongst the decision makers and the end-users. - **(Relevant to 4th Step) communication:** communication activities have to be run in order to inform the involved Stakeholders. - **(Relevant to 4th Step)** Finally, future **plan improvements** have to be considered in order to improve its effectiveness and potential corrective activities.
Target(s)	- Achieve deadline for each action in order to avoid any postponement and delay. - Assigned roles and responsibilities to anyone who collaborates with the project. - Achieve defined operative action and tools, which have to be used during the project execution in order to ease the implementation of certain actions. - Inform the involved Stakeholders by defining proper communication methods. - Ensure plan's future improvements and potential corrective actions.
Duration of the activity	Depending on stakeholder availability. The duration is assessed about 4 months.
Key elements of the activity	- **Define time plan:** MPUs have to analyse the project time plan to check if the work in progress is following the defined time-schedule. Thus, each action has to be finished within a deadline, to avoid any postponement and delay in the project program. The deadline definition has to be: o Defined considering the prioritised actions; o Clear for each action; o Achievable; o Compatible with resources; o Accepted by stakeholders;

- Schematised with a PERT chart or Gantt diagram.

- **Define role and responsibilities:** Anyone who collaborates within the project has to have a well-defined role. In this paragraph, the MPU gives specific responsibilities to particular person who has the required competences.

In the following, the representation and description of the RACI-VS's matrix help to meet this target. This definition can help MPU in the classification of specific roles.
Six different responsibilities have to be assigned for each activity.

- Responsible is the person who associates the activity to people;
- Accountable is the person who has the responsibility of results of the activity;
- Consulted is the person who helps the responsible to accomplish the activity;
- Informed is the person who has to be informed during the activity;
- Verifier is the person who verifies that the responsible respects certain acceptance parameters;
- Signatory is the person who approves the decision of the verifier.

Here there is an example:

	Director	Product manager	Project Manager	Technical Architect
Budgeting management	R	A		
Communication Management		C		V
Security control			A	I

The MUPs should assign a responsible person to each task of the SUMP project. MPU has to ensure that each task has a responsible person and these people have adequate competences and resources for a successful execution of the assigned activity. For each task a set of objective have to be defined distinguished by a clear contribution to the project final goals. Measurable KPIs should be adopted to ensure the efficient and effective execution of tasks.

- **Budgeting and resources:** MPUs have to consider the budget and resources to define achievable and realistic activities. Of major importance is the cost forecast to be ensure the successful execution of the planned activities.

MPUs should divide the project activities to be executed and assign them a cost, considering all the different resources involved. A proper budget should be:

	○ As precise as possible; ○ Always revised; ○ Linked to the projects goals; ○ Clear and understandable. MPUs should consult similar or horizontal projects to compare and improve their financial plan. Furthermore, planners should define every resources available to reach the targeted aims. Of major importance is the analysis concerning the assessment of which resource is already in possess of the MPUs and which one has to be obtained. The following resources have to be carefully assessed: ○ Identification of the skills of the resources to involve (technical, financial, managerial, etc…); ○ Financial capitals for infrastructure interventions, other technologies, soft interventions like mobile apps or web tools, researches and studies including interviews, communication activities and promotional campaign; equipment, tools and materials. MPUs have to assess the economic budget and resources they have and their allocation to the managers that are responsible for the execution of tasks. The major decisions concerning the allocation of budget and non-financial resources of the project deal with: ○ Identify the different sources of budget and resources; ○ Temporal distribution of available budget and resources and its matching to the project schedule; ○ Allocation of budget and resources to project responsible and tasks; ○ Forecasted contribution of budget and resources to project goals; - **Define operative actions:** Every action defined in section 2.3.3 has to be analysed and divided in each single and operative work. A major help from a specialist is highly encouraged to develop activity. Furthermore, operative actions should be: ○ Entrust to a specific manager; ○ Allocated to a group of people in charge for them; ○ Specific; ○ Distinguished by expected results; ○ Indivisible; ○ Known by all the project managers. At the end of these steps aforementioned, MPUs can develop a PERT graphic to ease the comprehension of the current framework and environment, in order to fix efforts and link the responsible partners to perform the specific actions. - **Define tools, ICTs and mobile-based applications:** MPUs have to define proper tools that will be used during the project execution. Of major help is the association of specific tools to be adopted to ease the implementation of

certain actions. ICTs and mobile-based applications represent valuable tools to facilitate the communication between the project members and the end-users. Tools, mobile-based applications and ICTs , has to be:

- Simple to achieve;
- Simple to use;
- Understandable;
- Efficient;
- Cheap.

- **Communications within the project partners** Project partners can use different ways for internal communication. Proper communication methods could increase and facilitate the knowledge of project partners. Some methods could be:
  - Advertisements;
  - Public events;
  - Private emails;
  - Meetings with specialised people;
  - Meetings with stakeholders;
  - Conventions and conferences.

  All these methods should be ease to be developed, immediate, efficient and right to the point. Operatively these activities refers to the third part of point *4. Check & act.*

- **Step-by-step project communication** This paragraph is essential to evaluate whether the CAMP-sUmp is obtaining success and it will be useful for End-users.
  A project communication plan is represented by a sequence of steps to be followed to communicate project events and changes to the end users. To implement a proper communication plan, MPUs have to:
  - Define the categories of target groups;
  - Define the communication topics;
  - Define the communication budget;
  - Assign responsibilities to people concerning communicate;
  - Choose the communication tools to be used;
  - Organise advertising, events and meetings.

  Operatively these activities refers to the third part of point *4. Check & act.*

- **Project monitoring:** The MPUs have to define a proper project-monitoring plan to have frequent and reliable feedback on the progress of the project execution. Among the several aspects related to an effective and efficient project monitoring, the MPUs should:
  - Assess the tasks completed, in delay, on time and to be processed on

	weekly basis; o Update the project time schedule after relevant unforeseen events with a significant impact on the project; o Monitor the financial performance of the SUMP project; Measure the working team performance and social dynamics. Operatively these activities refer to the third part of point *4. Check & act.* - **Future improvements and advances:** MPUs should prepare future improvements to ensure the further development of the SUMP after the project end. This paragraph has to be clear and achievable, but always revised with corrective actions to ensure the highest quality. A particular method to implement this paragraph is a loop approach. When an action is finished and it does not meet the previously defined quality standards, MPUs have to understand the reasons for this nonconformity and intervene. Finally, the modification of the identified parameters should improve the action results in a feedback loop fashion. This last voice particularly refers to activities of point *4. Check & Act.*

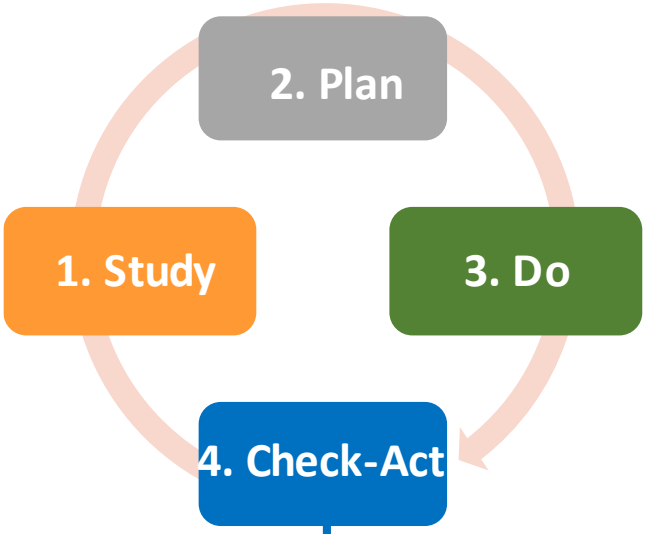
MILESTONE: at the end of this section the CAMP-sUMP plan should have been approved, hence resources, operative actions and related role and responsibilities are defined. Even communication actions in order to inform the project partners are operative. Moreover, further operative actions are set in order to receive feedbacks from the public (for understanding their acceptance about implemented measures) and in order to prepare corrective actions once feedbacks have been collected.

4. CHECK AND ACT OF IMPLEMENTED SUSTAINABLE UNIVERSITY MOBILITY SOLUTIONS

This section gives specific guidelines to the MPU for monitoring CAMP-sUMP measures which would have been implemented and reporting on their progress. If the MPU finds out some deviation with predicted goals and targets (in others words the plan's impacts) the MPU would be in a position to provide suitable corrective actions, maintaining constant communication with the relevant stakeholders. Moreover, in order to promote the diffusion of project results (and hence increase the CAMP-sUMP acceptance) dissemination activities are implemented.

With more details, the first subsection *4.1 KPIs EVALUATION*, invites the MPU to collect KPIs' data and to analyse potential deviation causes. The second subsection *4.2 CORRECTIVE ACTIONS* exhorts the MPU to prepare corrective and its prioritising action in order to fill deviations happening during the plan's implementation, the corrective action and its prioritising are set after an evaluation based on the identification of major drawbacks, strengths, opportunities and weaknesses. hence, methods for collecting post-implementation feedback is required in order to check if the implemented corrective actions have produced the expected results.

Finally, the subsection *4.3 DISSEMINATION OF RESULTS* invites the MPU to inform the public about plan's actions and related results, finally the MPU is exhorted to collect the whole CAMPs-MPU experience since its results can be used as a best practice or case studies for other sustainable urban mobility plans.



4.1 KPIs EVALUATION

- KPIs evaluations.
- Quantitative.
- Qualitative.
- Deviations causes.

4.2 CORRECTIVE ACTIONS

- Identification of major drawbacks and weaknesses
- Prioritization of future actions.
- Implementation of most relevant corrective actions.
- Feedback loop for further improvement.

4.3 DISSEMINATION OF RESULTS

- Ensure the stakeholder's commitment.
- Spread the diffusion of the proposed solution between end-users.
- Monitoring of adoption of implemented actions.
- Inform the public.
- Commitment with the citizens.
- Best practice catalogue.

4.1 KPIs EVALUATION

The goal of this chapter is the action plan implementation and the assessment of results. KPIs are evaluated by comparing forecasted values with those resulting from the effective implementation of the measures, in order to compare the plan's objectives and obtained results based on technical, economic, social and environmental performances. This paragraph is connected with Section *2.3 Community communication and involvement* and *3.1 Plan's implementation* of this document. In general, it monitors the implementation of the plan and expected results (that can happen already during the implementation of the plan or at the end of implementation of the measures).

The comparison between the current and forecasted KPI values could result in two possible outcomes:

- KPI value within the forecasted range. No gap between the forecasted and project implementation results.
- KPI value outside the forecasted range. Gap between the forecasted and project implementation results. MPUs have to understand the possible deviation causes and develop potential solutions.

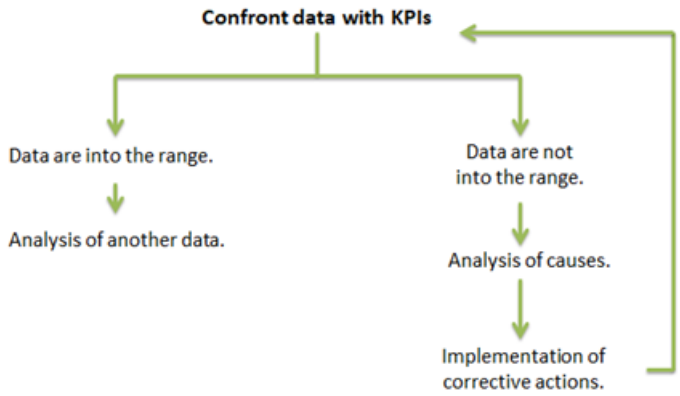
If gaps are modest, then the MPU and its collaborators should continue to monitor with the pre-set modalities, as it is possible that those gaps are due to particular temporary conditions.

If gaps are strong, then mitigating measures should be implemented. Hence, the MPU and its collaborators should analyse the causes and eventually strengthen the monitoring through: potential responsibilities of failure to implement measures and revision of measures; potential responsibilities of already implemented activities with some mitigating measures to improve performance. In extreme cases where activities are ineffective, these should be stopped.

Objective of the action	The aim of this section is to monitor the ongoing plan implementation in order to check if the plan's pre-set objectives are going to be achieved or if there are some potential gaps.
Responsible stakeholder	The MPU and its collaborators
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority able to provide feedbacks (requested by the MPU) in order to evaluate the plan's effectiveness - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies) able to provide feedbacks (requested by the MPU) in order to evaluate the plan's effectiveness - *Mobility agency*: cooperating with Public Authorities and Transport operators

	- *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing): in order to provide feedbacks (requested by the MPU) in order to evaluate the plan's effectiveness - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence and useful data for feedbacks - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment, useful data for feedbacks - *Research and Academia*: useful as supporting entity to support surveys, analysis or other - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) - *Private companies.* Able to support the MPU in its decisions USERS (students, employees) - *Students*, *University's Employees and non-University workers*: they are able to provide useful feedbacks from interviews or with other way of communication (provided or organised by the MPU) - *Citizens*
Way of proceeding	This phase of the action plan process compares the plan's objectives and the achieved results. KPIs' achieved value are compared with the forecast ones. If strong deviations are recorded, the MPU with its collaborators have to find out the deviation causes and understand how to intervene to overcome the risk of implementing a non-effective action.
Target(s)	- Compare plan's objectives against the achieved plan's performance - Find out potential deviation causes
Duration of the activity	Its duration is comprehensive of the whole duration of the plan's implementation.
Key elements of the activity	- **KPIs evaluations:** This paragraph compares the objective and obtained plan's results concerning its technical, economic, social and environmental performances. In particular, the KPIs will monitor the implementation of the plan's performance and the verification in term of objective and goals related to the implementation of specific sustainable measures. The comparison between the actual and forecasted KPI values could result in two possible outcomes: o KPI value within the forecasted range. No gap between the forecasted and actual project results. o KPI value outside the forecasted range. Gap between the forecasted and actual project results. MPUs have to understand the possible devotion causes and develop potential solutions.

	- **Quantitative:** To evaluate the quantitative KPIs MPUs have to:
	  o Evaluate which quantitative KPIs to monitor in each phase of the evaluation;
	  o Analyse all the information about the actual university mobility scenario to offer quantitative data for the evaluation process;
	  o Ask for missing information or data useful for the KPI evaluation process.
	  o Check the integrity and thoroughness of the collected data to avoid any bias in the KPI assessment.
	  o Be aware to invest sufficient resources to obtain the required quantitative data.
	
	- **Qualitative:** MPUs should adopt qualitative evaluations for those aspect of the project which are difficult to be assessed through numeric information. MPUs should define a rigorous and schematic process to collect and evaluate the needed qualitative information to avoid any subjectivity in the monitoring and control process. Define proper alarms in order to inform automatically the project managers of huge and macroscopic problems measured through qualitative KPI.
	
	- **Deviations causes** MPUs have to carefully analyse whether certain KPIs are out of range and the reason behind this unexpected situation. The following steps should be considered as an effective guideline:
	  o Identify the KPIs out of range compared to the forecasted values;
	  o Analyse how much these KPIs are out of the range;
	  o Assess whether the project experienced unexpected events which altered the normal environment.
	  o Define possible causes of experienced deviations. Some reasons can be related to time, resources or behavioural aspects.
	  o Search for other possible consequences, which could potentially derive from the detected problems to prevent others.
	  o Discuss the problems with other Decision makers supporting the launch and implementation of the plan.

4.2 CORRECTIIVE ACTIONS

In order to correct detected Action Plan's deviations, emerging from the monitoring of the selected KPIs, MPU has to implement proper corrective actions	
Objective of the action	After KPIs evaluation, the MPU with its collaborators decide the most suitable countermeasure. In order to select the proper corrective action the MPU should follow a four step procedure: - Identification of major drawbacks and weaknesses; - Prioritisation of future actions; - Implementation of most relevant corrective actions; - Feedback loop for further improvement.
Responsible stakeholder	The MPU and its collaborators
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority. - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies). - *Mobility agency*: cooperating with Public Authorities and Transport operators; - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing); - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence and contributions; - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment. They can provide potential plan's services; - *Research and Academia*: useful for supporting activities; - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …)

<table>
<tr><td></td><td>

- *Private companies.* Able to support the MPU in its decisions;

USERS (students, employees)

- *Students and University's Employees and non-University workers*
- Citizens

- NOTE: Even though decisions belongs to the MPU, Decision-makers and End-users have to be informed about the plan's changes and the MPU should consider their hints during its decision during the selection of proper corrective actions. If hints are refused, MPU has to communicate its decisions through the most suitable media (web, forums, etc.).
</td></tr>
<tr><td>Way of proceeding</td><td>According to the KPIs' monitoring plan and after the KPIs evaluation, the MPU is aware about what have not been working during the plan implementation. Therefore, now the MPU has to identify the major drawbacks and weaknesses, their reasons, the repairing responsible and then decide if strengthen efforts or provide new solutions.
When proper corrective actions are identified, these have to be prioritised and then implemented. Finally further feedbacks have to be collected in order to monitor the effects of implemented corrective actions</td></tr>
<tr><td>Target(s)</td><td>

- Identify major drawbacks and weaknesses;
- Prioritise future actions;
- Implement most relevant corrective actions;
- Activate feedback loop for further improvements.
</td></tr>
<tr><td>Duration of the activity</td><td>The duration depends from the monitoring plan. It is strongly dependent from the type of corrective action to plan</td></tr>
<tr><td>Key elements of the activity</td><td>Four step procedure:

- **Identification of major drawbacks and weaknesses:** MPUs have to identify which are mistakes, which determined the actual project situation. The following table is proposed to ease the MPUs in this procedure. It represents a suggestion to align the MPUs and stakeholders to share the same format of communication.

<table>
<tr><th>Drawbacks</th><th>Principal reasons</th><th>Deriving weaknesses</th><th>Responsible of repairing</th><th>Action to implement</th></tr>
<tr><td>Delay of communication to end-users</td><td>Lack of resources</td><td>Delay of using by end-users</td><td>CEO</td><td>- Urge stakeholders;</td></tr>
</table>

First column describes the problem raised. Second column the main cause for this problem. Third column seeks the consequences which derive from the aforementioned drawback. Fourth column assigns a responsible to ensure the improvement of the actual situation.
The last column is probably the most relevant of the procedure since it suggests the action to be implemented, assigning roles, responsibility, times and potentially re-distributing resources. The MPU has to define at least one action to be implemented for each identified drawback. The decisional process that brings to formulate actions should follow a participative process. Hence, Stakeholders have to be informed and involved during the decisional moment. Their involvement should take different nature related to</td></tr>
</table>

	Stakeholders' skills and competences. End-users' involvement should be mostly advisory (with events, meetings, forums, interviews, etc.). Decision-makers instead collaborate more closely and strictly with MPU due to their resources and competences. Indeed, the MPUs have to convene the Decision makers in order to discuss about possible corrective actions and eventually select what to implement. For each corrective action, competent Decision-makers have to be involved. Even though decisions always compete to the MPU, the Decision-maker involvement is crucial since they can provide resources and competences. When decisions are selected the MPUs have to communicate to the public (End-users) its decision through media (web, forums, meetings, events, etc.) in order to collect their opinion. If in this place, there are some disagreements the public is allowed to make observations. Then, if MPU decides to refuse them, it has to communicate by motivating its decision. - **Prioritisation of future actions** MPUs have to define a priority for all the identified corrective actions. The corrective action importance is typically determined by: o Time needed to react; o Availability of intangible resources (e.g. competences); o Budgetary requirements. o Persons to involve in the process To properly tackle this issue, MPUs have to: o List the corrective actions considered essentials; o Decide which elements have to be considered to classify the action and asses their level of importance; o Define a list of corrective actions to implement considering their importance ranking as well as the time, competences and budget constraints. o Define mandatory actions to execute respect to the total identified - **Implementation of most relevant corrective actions:** Considering the classification proposed in the previous step, MPUs have to implement the identified corrective actions. For each action to be implemented MPU has to carefully assess: o Time, competences and budget constraints; o Consequences to the scheduling of the other project activities; o Potential reactions of end users. It is essential for the MPU to ensure the quality of the project despite the implemented corrective action. A final revision for each of these actions is required to avoid a slight improvement of a certain project KPI compared to a huge worsening of other KPIs. - **Feedback loop for further improvement:** Every implemented action has a reaction. Thus, a feedback loop is required to keep constantly monitored the modified elements of the SUMP. After the implementation, the corrective actions evolve along with the project context and environment. Whether the identified KPI gap is overcome, no further activity is required. Otherwise, the corrective loop starts again from the beginning.

4.3 DISSEMINATION OF RESULTS

Objective of the action	The last activity of the Action Plan to develop a SUMP is the dissemination of the achieved results. Aim of this section is to suggest a procedure to be followed to maximise the impact of the implemented action aimed at a sustainable university mobility.
Responsible stakeholder	The MPU and its collaborators
Other involved stakeholders	DECISION MAKERS (University services, city/transport authorities, etc. who help the MPU or receives, roles and responsibilities): - *Public authority*: Municipality, metropolitan city or other authority. - *Public Transport operators*: operating at local level (bus, underground or other metropolitan services, bike sharing, car-sharing) or regional/national level (railway companies). - *Mobility agency*: cooperating with Public Authorities and Transport operators; - *Private Mobility provider* (taxi or similar operators, bicycle fleets, car sharing); - *Other stakeholders* (infrastructure/network provider, ICT provider/Craft Associations/Other Associations/police/…): giving specific competence and contributions; - *Private Carpooling services*: Principally operated by private travellers to less impact on congestion and environment. They can provide potential plan's services; - *Research and Academia*: useful for supporting activities; - *Financer*: as private financer of innovations, e.g. to set up mobility start ups - *Utility and infrastructure providers* (e.g. EVs, …) - *Private companies.* Able to support the MPU in its decisions; USERS (students, employees) - *Students and University's Employees* - *Citizens*
Way of proceeding	This phase takes the whole plan duration and activities related to stakeholder communication about plan implementation and achieved results and share the plan's achieved experiences through media in order to foster a sense of belonging among stakeholders. Furthermore, at the end of the plan's implementation this phase collects the best practices developed during the project
Target(s)	- Ensure stakeholder commitment; - Spread the diffusion of the proposed solution between end-users; - Monitor the implemented measures; - Commit citizens;

	- Disseminate and share experiences; - Collect plan's best practices.
Duration of the activity	This plan's phase takes the whole plan duration time
Key elements of the activity	- **Ensure the stakeholder's commitment:** Spreading the project partial and final results to the stakeholders (End-users including Citizens, but also Decision-Makers not directly involved in the daily activities for the implementation of the plan) is mandatory to ensure their commitment. The MPUs have to keep the stakeholders updated concerning the SUMP development during the entire project duration and obtain from them continuous contribution and support. The typical information that have to be provided to the stakeholders deal with: o The produced deliverables/results; o The financial effort for the project by steps; o Clearly, present the changes obtained compared to the scenario monitored before the start of the implementation. o Keep the process living and continuously plan future meetings and actions beyond the time horizon of the plan (long-term sustainability of the plan) - **Spread the diffusion of the proposed solution between end-users:** The most relevant category to inform about the project results and the developed solutions for the mobility services are the end users, e.g. students and university members. The information process should focus on the benefit that can be obtained adopting the developed solutions and the massive diffusion of such information. MPUs could adopt the following suggestions to maximise the information spread: o Use mobile apps to promote and illustrate the new offered services and how to use them; o Organise events, meetings or seminars to increase the commitment on the project and create a community of potential end users; o Create mailing lists and news feeds for project updated during the following months; o Use the social media connected to the categories of users o Inform university administrative office to facilitate the procedures required by the end user to adopt the proposed solutions. - **Monitoring of adoption of implemented actions:** The MPU has to define a proper plan to keep the implemented solutions constantly monitored and measure their adoption between the end users. This activity enables to assess whether some activities required additional resources to be invested to ensure the required results. - **Inform the public:** The population affected by the mobility solutions developed through the SUMP has to be informed about the project. In particular, the MPU has to inform them about the time schedule before the project begin, the potential benefit they can obtain and the possible difficulties to encounter. This activity is to plan in collaboration with public authorities and private business operators. The dissemination of the SUMP results and the new mobility

	experience facilitate the transition towards the developed solutions. MPUs should exploit social media to facilitate the sharing of such experiences and create a sense of belonging to a community distinguished by positive values - **Commitment with the citizens:** Obtain the commitment of citizen for a SUMP project is of major importance to facilitate the evolution process towards a sustainable mobility. The MPU has to presents in details the potential advantages the citizen can obtain from the developed mobility services. This activity is to plan in collaboration with public authorities and private business operators. - **Best practice catalogue:** The last step of the dissemination phase deals with a collection of the best practices developed during the entire project duration. The MPU has to catalogue them considering the four pillars and the identified cross cutting focuses.

MILESTONE: Quantitative and qualitative reports about project results and explanations about deviations' causes. Reports about results about implemented corrective actions. Reports of the kick-off, mid-term and final dissemination activities focused on ensure the adoption of the proposed solutions and the commitment of the citizens and stakeholders. Finally reports about plans dissemination in order to provide best practices to other planners and practitioners.

ASSESSMENT OF THE ACTION PLAN DURATION

The presented Action Plan presents 4 sequential Sections, namely Study, Plan, Do and Check & Act. From a temporal aspect, each Section can start immediately after that the previous one is finished. This criterion does not have to be considered for the Check & Act section. Indeed, this duration is comprehensive of the whole duration of the action plan, since the activities involved are highly integrated with different portion of the Action Plan.

The following table summarizes the duration of each Section of the Action Plan, their activities and the entire plan duration. However, the quantitative evaluation of the activity duration is an estimation of the expected duration. Indeed, this value is highly dependent by the features which distinguish the considered University and SUMP. Thus, the MUP which adopts the proposed Action Plan should consider these durations as a proper but indicative estimation.

As shown below, the Study section is the most time consuming one with an expected duration of 10 months equally distributed between the different activities. The Plan section is distinguished by the remarkable duration of 8 months. Between its activities, the "community communication and involvement" has approximatively the duration of the whole plan implementation as it constitutes a monitoring and information activity. The Do action lasts about 4 months, whereas the Check & Act section is comprehensive of the whole duration of the action plan, since the activities involved are highly integrated with different portions of the Action Plan. Finally, considered the presented framework, the developed Action Plan has an estimated duration of about 22 months.

Section	Activity	Duration
1-STUDY SOCIETAL TRENDS AND URBAN MOBILITY SCENARIO	1.1 DECARBONISATION AND AIR QUALITY	1
	1.2 LOCAL GEOGRAPHICAL AREA DYNAMICS	3
	1.3 DEMOGRAPHIC CHALLENGES	2
	1.4 DIGITAL SOCIETY	2
	1.5 SHARING ECONOMY	2
	total	**10**
2-PLAN OF SUSTAINABLE UNIVERSITY MOBILITY	2.1 STAKEHOLDER IDENTIFICATION AND INVOLVEMENT 2	2
	2.2 DEFINITION OF GOALS, KPIs, ACTION PRIORITISING 3	3
	2.3 COMMUNITY COMMUNICATION AND INVOLVEMENT	*Approximatively the whole duration of the plan implementation as it constitutes a monitoring and information activity*
	2.4 FEEDBACKS ON PLAN'S ACTIONS 3	3
	total	**8**
3-DO: IMPLEMENTATION OF PLANNED SOLUTION	***total***	**4**
4-MONITOR IMPLEMENTED SUSTAINABLE UNIVERSITY MOBILITY SOLUTIONS	4.1 KPIs EVALUATION	*Its duration is comprehensive of the whole duration of the plan's implementation.*
	4.2 CORRECTIVE ACTIONS	*The duration depends from the monitoring plan. It is strongly dependent from the type of corrective action to plan*
	4.3 DISSEMINATION OF RESULTS	*This phase takes the whole plan duration and activities related to stakeholder communication*
	total	*Its duration is comprehensive of the whole duration of the action plan*
ACTION PLAN - TOTAL	***Total***	***22***

Duration of each Section of the Action Plan and their activities.