

## EnerNETMob

*Mediterranean Interregional Electromobility Networks for  
intermodal and interurban low carbon transport systems*

<b>Work Package</b>	WP 3 - Studying
<b>Activity</b>	3.3 – Guidelines for Sustainable Electro-Mobility Planning
<b>Deliverable</b>	3.3.1 – Planning model to develop “Sustainable Electro-Mobility Plans” for electric transport network and services
<b>Partner Responsible</b>	University of Palermo – Department of Agricultural, Food and Forest Sciences (UNIPA)
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### Deliverable 3.3.1

### Planning model for “ Sustainable Electro-Mobility Plans”

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# 1. Introduction

The aim of the Activity 3.3 is to define common guidelines and models for sustainable electric transport planning in order to adopt shared strategies and plans, which will be implemented by project partners at local level within the pilot actions planned in WP4.

Therefore, as reported in the application form, the Activity 3.3 is preparatory to start all the studying and testing Activities 3.4 and 3.5 of the WP3 as well as the next WP4 and WP5 actions.

As confirmed during the 1<sup>st</sup> Steering Committee held in Tripoli on May 3<sup>rd</sup> and 4<sup>th</sup> 2018, the WP3 Scientific Committee Working Group (SCWG) is coordinated by UNIPA (Project Partner 8) and CIMNE (Project Partner 13) that, as research institutions, will support the partnership in the Studying Phase and will assess the progress implementation and effectiveness of activities.

After a first draft edited by SCWG, the partners will share and use the guidelines in order to plan and design the electric transport infrastructures/services to be implemented in WP4 pilot actions according to common technical standards, best available technologies and legal requirements.

The Activity 3.3 will affect the definition of common planning models on the basis of electromobility policies and Regulations/Directives which were analyzed during previous Activity 3.2. Therefore the Activity will develop 2 kind of deliverables:

- Deliverable 3.3.1 - *Planning model to develop “Sustainable Electro-Mobility Plans” for electric transport network and services* (1 report);
- Deliverable 3.3.2 - *BAT and Technical standards to be used for charging infrastructures and ICT tools* (1 report).

The **Deliverable 3.3.1** is a planning model to develop “Sustainable Electro-Mobility Plans” with common indicators and procedures. UNIPA coordinates the drafting of guideline, to be used by partners to plan parallel regional “Small-Scale Infrastructure Network”.

The **Deliverable 3.3.2**. develops the guidelines with BAT and Technical standards to be used for charging infrastructures and ICT tools. Such guidelines, drafted also with the support of CIMNE, will be used by partners in order to design the infrastructures and ICT by using same communication protocols and technical standards.

The purpose of Activity 3.3 is to provide common technical standards and legal requirements to be used by partners to plan and design electric transport infrastructures/services to be implemented in WP4 pilot actions for the implementation of the *Mediterranean Interregional Electromobility Network* and connected *Small-Scale Infrastructure Networks*.

Moreover, such “*Mediterranean Interregional Electromobility Network*” has to be interoperable with other electric transport infrastructures which are implemented on European Union according to the Directive 2014/94/UE.

### **Purpose of the document within the project**

Main expected result of EnerNETMob project is the creation of a pilot “*Mediterranean Interregional Electromobility Network*”, constituted by pilot regional “*Small-Scale Infrastructure Networks*” connecting cities, rural areas and intermodal terminals at transnational as well as at interurban level.

As reported in the Application Form, the “*Small-Scale Infrastructure Network*” consists of pilot modular systems of “*Electric Vehicle Supply Equipment*” (EVSE), which are connected to the public electric grid and in some cases are also co-powered by RES.

An amount of 13 local “**EVSE Networks**”, as single modules of the overall “*Mediterranean Interregional Electromobility Network*”, are placed in different nodes of the partner regions in order to allow longer interurban/interregional displacements by Battery Electric Vehicles (BEVs).

Each “*EVSE network*” will be managed independently by its owner Authority, and at meantime it will be interfaced and interconnected with other infrastructures of “*Mediterranean Interregional Electromobility Network*”, according to the Directive 2014/94/UE.

Therefore, for each local “*EVSE Networks*”, every appointed partner will draft:

- a *Structural Knowledge Framework*, with the analysis of the local context;
- a *Sustainable Electro-Mobility Plan*, with the preliminary design of the infrastructures and transport services.

Thus, EnerNETMob partners will test the abovementioned networks through **3 pilot actions**:

- *Pilot 1 – Intermodal Sea-Road Electromobility Networks*, linking cross-border islands and/or coastal regions;
- *Pilot 2 – Sharing Electromobility Services*, such as e-car pooling, e-car sharing, e-bike sharing;
- *Pilot 3 – City Logistic Electromobility Services*, for the last mile freight transport connections in urban and rural areas.

To develop and test such local “*EVSE Networks*” during pilot actions, the partners will develop some **small-scale investments** in all participating regions, by including the following **main outcomes**:

- “Battery Electric Vehicles” (BEV) to be used by all the partners for the testing phase of pilot actions;
- “E-Bikes” to be used by some involved partners for the testing phase of pilot actions;
- “Charging points” to be installed in all participating regions in order to provide electric energy to BEVs;
- “Photovoltaic charging points” to be installed in all participating regions in order to provide electric energy to BEVs, also through Renewable Energy Sources (RES);
- ICT tools for remote control of charging services using common communication protocols in all participating regions.

Given the above, the **Deliverable 3.3.1 – Planning model to develop “Sustainable Electro-Mobility Plans” for electric transport network and services** is drafted in order to be used by all involved partners to develop “Sustainable Electro-Mobility Plans” with common indicators and procedures.

These common guidelines aim to define the procedures to be followed and the long-term strategies for the

regional and transport planning of the parallel “EVSE Networks” within the framework of “*Interregional Electromobility Network*”, in order to allow each partner:

1. to analyze the local context/region according to common data collection forms and set of indicators, during the drafting of “*Local Framework Analysis on Electro-Mobility and Energy Supply State of Art*” (Activity 3.4 coordinated by CAPENERGIE);
2. to draft “*Sustainable Electro-Mobility Plans*” (SEMPs) to define the transport/regional planning of local “EVSE Network” for electromobility which will be implemented in their territories (Activity 3.5 coordinated by UNIPA).

The sections affecting the data collection to be implemented during the Activity 3.4 will be defined together with CAPENERGIE, since it is coordinating such Activity.

After the testing phase of WP 4, the deliverables of Action 3.3 (“*Guidelines for Sustainable Electro-Mobility Planning*”) will be upgraded and finalized with the Deliverable 5.2.2 (“*Electromobility Implementation Guidelines*”) to be developed within WP 5 – *Transferring*.

### **Structure of the document**

This Guidelines will be drafted on the basis of the *Directive 2014/94/EU of the European Parliament and of the Council on the Deployment of Alternative Fuels Infrastructures* (DAFI), that establishes a common framework of measures for the deployment of alternative fuels infrastructure in the European Union in order to minimize dependence on oil and to mitigate the environmental impact of transport.

Moreover, the guidelines will consider also (only for the relevant fields) the recommendations reported in the *Communication COM(2013) 913* of European Commission as well as the *ELTIS Guidelines* for the drafting of “*Sustainable Urban Mobility Plans*”.

According to Directive 2014/94/EU and according to mobility EU policies, the Guidelines set out the common contents, procedures and key indicators to analyze the local state-of-art on Electromobility implementation and to draft *Sustainable Electro-Mobility Plans*.

With this purpose, the document has been structured in the following chapters:

1. *Introduction*;
2. *Involved partners and distribution of roles and tasks*;
3. *Main legal references*;
4. *Main reference documents*;
5. *Introduction to “Local Framework Analysis on Electro-Mobility and Energy Supply State of Art”*;
6. *Introduction to “Sustainable Electro-Mobility Plans” (SEMPs)*;
7. *Minimum requirements for SEMP reports*;
8. *Key monitoring indicators*;
9. *Data Collection Forms*
10. *Templates for analysis and planning*.

Finally this methodological paper will be completed with annexes including following templates to develop subsequent Activities 3.4 and 3.5:

1. *Template to edit the deliverable 3.4.1 - “Local Framework Analysis on Electro-Mobility and Energy Supply State of Art”;*
2. *Template to edit the deliverable 3.5.1 - “Sustainable Electro-Mobility Plan”.*

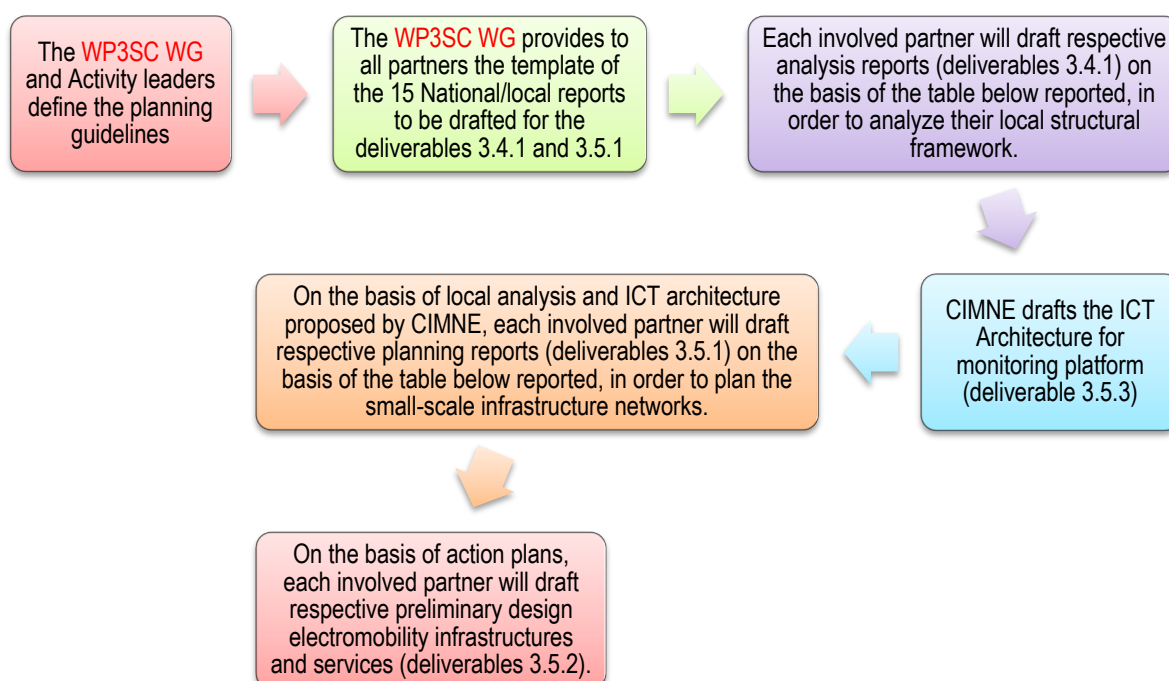
## 2. Involved partners and distribution of roles and tasks

As confirmed during the 1<sup>st</sup> Steering Committee held in Tripoli on May 3<sup>rd</sup> and 4<sup>th</sup> 2018, the WP3 SCWG is coordinated by UNIPA-SAAF (Project Partner 8) and CIMNE (Project Partner 13) that, as research institutions, will support the partnership in the Studying Phase and will assess the progress implementation and effectiveness of activities.

According to the Working Plan of the Application Form, below it is reported the involvement of partnership **within Activities 3.4 and 3.5**:

No. partner	Partner	Member State	Involvement in the activity
LP	Region of Peloponnese	Greece	Involved
PP1	Transport Malta	Malta	Involved
PP2	RAM logistica infrastrutture e trasporti Spa	Italy	Not Involved
PP3	Ministry of Transport Communication and works	Cyprus	Involved
PP4	Albanian Institute of Transport	Albania	Involved
PP5	Region of Thessaly	Greece	Involved
PP6	County of Primorje and Gorski Kotar	Croatia	Involved
PP7	Northern Primorska RDA	Slovenia	Involved
PP8	University of Palermo -Department of Agricultural Food and Forest Sciences	Italy	Involved
PP9	Energy and environment Agency of Arrábida	Portugal	Involved
PP10	Free Municipal Consortium of Ragusa	Italy	Involved
PP11	Dynamic vision	Greece	Not Involved
PP12	Port of Bar Holding Company	Montenegro	Involved
PP13	International Center of Numerical Methods in Engineering	Spain	Involved
PP14	Capenergies	France	Involved
PP15	Austrian Mobility Research FGM – AMOR	Austria	Not Involved

The activities 3.3 and 3.4 will be developed according to the following flow chart:





### Distribution of tasks for Deliverable 3.4.1 - *Local Framework Analysis on Electro-Mobility and Energy Supply State of Art*

No. partner	Partner	Member State	Title of report	Territorial level	Deadline
LP	Region of Peloponnese	Greece	Local Framework analysis on Electro-mobility and Energy Supply state of art in Region of Peloponnese	Regional	April 30 <sup>th</sup>
PP1	Transport Malta	Malta	Local Framework analysis on Electro-mobility and Energy Supply state of art in Malta	National	April 30 <sup>th</sup>
PP2	RAM logistica infrastrutture e trasporti Spa	Italy	-	-	-
PP3	Ministry of Transport Communication and works	Cyprus	Local Framework analysis on Electro-mobility and Energy Supply state of art in Cyprus	National	April 30 <sup>th</sup>
PP4	Albanian Institute of Transport	Albania	Local Framework analysis on Electro-mobility and Energy Supply state of art in Albania	National	April 30 <sup>th</sup>
PP5	Region of Thessaly	Greece	Local Framework analysis on Electro-mobility and Energy Supply state of art in the Region of Thessaly	Regional	April 30 <sup>th</sup>
PP6	County of Primorje and Gorski Kotar	Croatia	Local Framework analysis on Electro-mobility and Energy Supply state of art in the County of Primorje and Gorski Kotar	Regional	April 30 <sup>th</sup>
PP7	Northern Primorska RDA	Slovenia	Local Framework analysis on Electro-mobility and Energy Supply state of art in Region of Northern Primorska	Regional	April 30 <sup>th</sup>
PP8	University of Palermo -Department of Agricultural Food and Forest Sciences	Italy	Local Framework analysis on Electro-mobility and Energy Supply state of art in Province of Trapani	Local	April 30 <sup>th</sup>
PP9	Energy and environment Agency of Arrábida	Portugal	Local Framework analysis on Electro-mobility and Energy Supply state of art in the metropolitan area of Lisbon	Local	April 30 <sup>th</sup>
PP10	Free Municipal Consortium of Ragusa	Italy	Local Framework analysis on Electro-mobility and Energy Supply state of art in Province of Ragusa	Local	April 30 <sup>th</sup>
PP11	Dynamic vision	Greece	-	-	-
PP12	Port of Bar Holding Company	Montenegro	Local Framework analysis on Electro-mobility and Energy Supply state of art in Montenegro	National	April 30 <sup>th</sup>
PP13	International Center of Numerical Methods in Engineering	Spain	Local Framework analysis on Electro-mobility and Energy Supply state of art in Region of Catalonia	Regional	April 30 <sup>th</sup>
PP14	Capenergies	France	Local Framework analysis on Electro-mobility and Energy Supply state of art in Bouches-du-Rhône	Local	April 30 <sup>th</sup>
PP15	Austrian Mobility Research FGM – AMOR	Austria	-	-	-

### Distribution of tasks for Deliverable 3.5.1 - *Sustainable Electro-Mobility Plan*

No. partner	Partner	Member State	Title of report	Territorial level	Deadline	WP4 Pilot Action to be affected
LP	Region of Peloponnese	Greece	Sustainable Electro-Mobility Plan in Region of Peloponnese	Regional	April 30 <sup>th</sup>	Pilot 2
PP1	Transport Malta	Malta	Sustainable Electro-Mobility Plan in Malta	National	April 30 <sup>th</sup>	Pilot 1
PP2	RAM logistica infrastrutture e trasporti Spa	Italy	-	-	-	-
PP3	Ministry of Transport Communication and works	Cyprus	Sustainable Electro-Mobility Plan in Cyprus	National	April 30 <sup>th</sup>	Pilot 2
PP4	Albanian Institute of Transport	Albania	Sustainable Electro-Mobility Plan in Albania	National	April 30 <sup>th</sup>	Pilot 1
PP5	Region of Thessaly	Greece	Sustainable Electro-Mobility Plan in the Region of Thessaly	Regional	April 30 <sup>th</sup>	Pilot 1
PP6	County of Primorje and Gorski Kotar	Croatia	Sustainable Electro-Mobility Plan in the County of Primorje and Gorski Kotar	Regional	April 30 <sup>th</sup>	Pilot 1
PP7	Northern Primorska RDA	Slovenia	Sustainable Electro-Mobility Plan in Region of Northern Primorska	Regional	April 30 <sup>th</sup>	Pilot 2
PP8	University of Palermo -Department of Agricultural Food and Forest Sciences	Italy	Sustainable Electro-Mobility Plan in Province of Trapani	Local	April 30 <sup>th</sup>	Pilot 3
PP9	Energy and environment Agency of Arrábida	Portugal	Sustainable Electro-Mobility Plan in the metropolitan area of Lisbon	Local	April 30 <sup>th</sup>	Pilot 3
PP10	Free Municipal Consortium of Ragusa	Italy	Sustainable Electro-Mobility Plan in Province of Ragusa	Local	April 30 <sup>th</sup>	Pilot 2
PP11	Dynamic vision	Greece	-	-	-	-
PP12	Port of Bar Holding Company	Montenegro	Sustainable Electro-Mobility Plan in Montenegro	National	April 30 <sup>th</sup>	Pilot 1
PP13	International Center of Numerical Methods in Engineering	Spain	Sustainable Electro-Mobility Plan in Region of Catalonia	Regional	April 30 <sup>th</sup>	Pilot 2
PP14	Capenergies	France	Sustainable Electro-Mobility Plan in Bouches-du-Rhône	Local	April 30 <sup>th</sup>	Pilot 3
PP15	Austrian Mobility Research FGM – AMOR	Austria	-	-	-	-

### 3. Main legal references

The project partners have to consider the following EU legal references for the electromobility planning and related technical reports/designs for the thematic equipment and the small-scale investments to be developed, purchased and/or implemented within the project.

For the implementation of WP 3 (Activities 3.4 and 3.5) and WP 4, each project partner has to develop the actions and deliverables according to at least the following European legal framework:

- **Directive 2007/46/EC** of the European Parliament and of the Council of 5 September 2007 establishing a framework for the approval of motor vehicles and their trailers, and of systems, components and separate technical units intended for such vehicles (Framework Directive);
- **Directive 2009/28/EC** of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC;
- **Directive 2009/72/EC** of the European Parliament and of the Council of 13 July 2009 concerning common rules for the internal market in electricity and repealing Directive 2003/54/EC;
- **Directive 2012/27/EU** of the European Parliament and of the Council of 25 October 2012 on energy efficiency, amending Directives 2009/125/EC and 2010/30/EU and repealing Directives 2004/8/EC and 2006/32/EC;
- **Directive 2014/94/EU** of the European Parliament and of the Council of 22 October 2014 on the Deployment of Alternative Fuels Infrastructures;
- **Regulation (EU) N. 168/2013** of the European Parliament and of the Council of 15 January 2013 on the approval and market surveillance of two- or three-wheel vehicles and quadricycles.

The aforementioned list of legal references is only a first legal framework on electromobility. Therefore such list is not exhaustive and may be integrated during the implementation of the project on the basis of the shared needs and/or suggestion of the partnership.

Moreover, during the executive design phase each partner has to integrate and detail the above mentioned legal framework with its National/Local regulations.

## 4. Main reference documents

The project partners have to consider the following EU reference documents for the electromobility planning and related technical reports/designs for the thematic equipment and the small-scale investments to be developed, purchased and/or implemented within the project.

For the implementation of WP 3 (Activities 3.4 and 3.5) and WP 4, each project partner can develop the actions and deliverables according to at least the following reference documents:

- **EC Communication COM(2011) 144 final** *“WHITE PAPER Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system”*;
- **EC Communication COM(2013) 913 final** *“Together towards competitive and resource-efficient urban mobility”*;
- **EC Communication COM(2014) 015 final** *“A policy framework for climate and energy in the period from 2020 to 2030”*;
- **EC Communication COM(2018) 773 final** *“A Clean Planet for all A European strategic long-term vision for a prosperous, modern, competitive and climate neutral economy”*;
- **ELTIS Guidelines** on *“Developing and Implementing a Sustainable Mobility Plan* (January 2014);
- **ELTIS Guidelines** on *“The Poly-SUMP Methodology”* (December 2014).

The aforementioned list of reference documents is only a first policy framework on electromobility. Therefore such list is not exhaustive and may be integrated during the implementation of the project on the basis of the shared needs and/or suggestion of the partnership.

Moreover, during the executive design phase each partner has to **integrate and detail** the above mentioned policy framework with its National/Local regulations.

## 5. Introduction to “Local Framework Analysis on Electro-Mobility and Energy Supply State of Art”

Following the data collection and set of indicators reported in guidelines approved in activity 3.3, the aim of the activity 3.4 is to perform a *Local Framework Analysis on Electro-mobility and Energy Supply State of Art*.

These results will be preparatory for the subsequent actions of the WP3 and the next WP4 and WP5.

Therefore, as reported in the application form, before to start all the studying and testing activities, the involved project have to draft the current state of the art of transport supply and demand in all the involved Countries/Regions, focusing on interurban displacements and on electro-mobility integration with intermodal terminals.

Where possible, the local framework analysis will also affect energy supply and demand analysis of local grids, focusing on RES supply systems.

After a first template draft edited by CAPENERGIES, each partner involved will conduct its own local studies. CAPENERGIES will then proceed to the analysis and conclusion of the results.

The Activity 3.4 will affect the analysis of the coherence of transport/energy planning tools adopted at local/regional/national level and will define the benchmarks at EU level based on the contribution of each partner. Therefore the Activity will develop 1 deliverable:

- Deliverable 3.4.1 - Local Framework Analysis on Electro-mobility and Energy Supply State of Art (1 report);

The **Deliverable 3.4.1** is constituted by separate reports drafted by partners in order to analyze the local state of art and to SEMP's and pilot action in each project partner. Moreover, the document will summarize results of the local analysis carried out by each partner in its Country/Region.

The final drawing up of these reports will be summarized by CAPENERGIES.

The purpose is to compare the structural framework of the territories where pilot activities will be implemented, in order to develop a benchmark for the next planning guidelines and technical standards to be adopted for the implementation of the *Mediterranean Interregional Electromobility Network* and connected *Small-Scale Infrastructure Networks*.

## 6. Introduction to “Sustainable Electro-Mobility Plans” (SEMPs)

The *Sustainable Electro-Mobility Plan* (SEMP) with the design of the “*Small-Scale Infrastructure Network*” should be included within the overall integrated transport planning processes.

Moreover, the SEMP has to be coherent with the current needs of the different territorial contexts, on the basis of the services levels and congestion of private vehicle traffic, and the criticalities of the air pollution.

The Regional and Local Authorities, according to their national legal frameworks in respective Member State, can develop their SEMPs within current transport policies by choosing one of following **options**:

- to upgrade/update the current *Logistics and Mobility Plans* adopted or approved by Public Authorities, with a specific section affecting the strategies and/or forecasts for the development of electric mobility;
- to upgrade/update the current *Sustainable Urban Mobility Plans* (SUMPs) adopted or approved by Public Authorities, with a specific section affecting the strategies and/or forecasts for the development of electric mobility;
- to upgrade/update the current *Sustainable Energy Action Plans* (SEAPs) adopted or approved by Public Authorities, with a specific section affecting the strategies and/or forecasts for the development of electric mobility;
- to draft a specific *Sustainable Electro-Mobility Plan*, as separate document that will be complementary to other current Transport Plans.

Anyway, regardless of the chosen solutions, each SEMP must be coherent with the contents of the Mobility Plans and/or the Air Quality Plans adopted at European, National and Regional level.

Therefore, the strategies and provisions adopted by eventual National Plans have to be integrated in regional SEMPs, as well as the guidelines/plans provided by Regional Authorities have to be followed by local/metropolitan/municipal SEMPs, in order to guarantee a coordinated and integrated development at all the territorial levels.

In the absence of indications at National and/or Regional level, Local Authorities may prepare SEMPs following the provisions of following document and the minimum criteria reported in the deliverable 3.3.2. In any case, as soon as the Region prepares its own guidelines, the Local Authorities are called to standardize their Plans also according to the Regional Authorities.

## 7. Minimum requirements for SEMP reports

The *Sustainable Electro-Mobility Plans*, whether at Regional or Local or Municipal level, must be constituted by 3 parts corresponding to the deliverables 3.4.1, 3.5.1 and 3.5.2:

- Part A - *Local Framework Analysis on Electro-Mobility and Energy Supply State of Art* (i.e. deliverable 3.4.1, already explained in previous chapter);
- Part B - *Electric Transport Action Plan* (i.e. deliverable 3.5.1, explained in present chapter);
- Part C – *Preliminary designs of EV charging and transport infrastructures* (i.e. deliverable 3.5.2, explained in present chapter).

This section provides some minimum contents to develop the technical reports and related annexes for the following deliverables:

- Deliverable 3.4.1 - *Local Framework Analysis on Electro-Mobility and Energy Supply State of Art*
- Deliverable 3.5.1 – *Action Plan of Sustainable Electro-Mobility Plan*
- Deliverable 3.5.2 - *Preliminary designs of EV charging and transport infrastructures*

Each partner has to develop some minimum contents for every deliverable according to the index reported in the tables of following pages.

Minimum requirements for <i>Sustainable Electro-mobility Plans</i>		
Deliverable	Typology of document	Index of suggested minimum contents
<b>D.3.4.1</b>  <b>Local Framework Analysis on Electro-Mobility and Energy Supply State of Art</b>	Feasibility study with: - Technical report - Statistics - Project drawings (Plans, etc.)	<p>Local Framework Analysis will be drafted in local/national language of the partner, in order to be attached to the subsequent SEMP and be adopted and approved by competent authorities. Anyway, an executive summary have to be drafted in English, as official language of the cooperation project.</p> <p>Below it is reported a suggested index of possible chapters and contents for the Action Plan:</p> <ul style="list-style-type: none"> <li>- <b>Land use analysis of local system and their connections:</b></li> <li>- <b>Socio-Economic Framework</b></li> <li>- <b>Transport Framework</b> <ul style="list-style-type: none"> <li>o <i>Transport Supply</i> (including electromobility focus);</li> <li>o <i>Transport Demand</i> (including electromobility focus);</li> </ul> </li> <li>- <b>Energy Framework</b></li> <li>- Analysis of ongoing Plans:               <ul style="list-style-type: none"> <li>o <i>Land use and regional plans</i></li> <li>o <i>Mobility plans</i></li> <li>o <i>Energy and environmental plans</i></li> </ul> </li> <li>- <b>SWOT Analysis;</b></li> <li>- <b>Conclusions.</b></li> </ul>



Minimum requirements for <i>Sustainable Electro-mobility Plans</i>		
Deliverable	Typology of document	Index of suggested minimum contents
<b>D.3.5.1</b>  <b>Action Plan of Sustainable Electro-Mobility Plan</b>	Action plan with: - Technical report - Statistics - Project drawings (Plans, etc.)	<p>Action plan will be drafted in local/national language of the partner, in order to be adopted and approved by competent authorities. Anyway, an executive summary have to be drafted in English, as official language of the cooperation project.</p> <p>Below it is reported a suggested index of possible chapters and contents for the Action Plan:</p> <ul style="list-style-type: none"> <li>- <b>General electromobility strategy</b> with time outlook of at least 10 years, following the so-called “<i>Logical Framework Approach</i>” and including:                             <ul style="list-style-type: none"> <li>o General objectives</li> <li>o Specific objectives</li> <li>o Results</li> <li>o Actions/Measures/Investments</li> <li>o Economic resources</li> <li>o Indicators</li> </ul> </li> <li>- <b>Location and sizing plan</b> of the charging infrastructures and their territorial distribution. The plan has to define <u>3 scenarios (1-2 years, 5 years and 10 years)</u> and the related financial and planning instruments to be activated for the following EV infrastructures:                             <ul style="list-style-type: none"> <li>o <i>Public charging points on public soil/places</i> (public parking, intermodal terminals, public roads, public buildings, etc.);</li> <li>o <i>Fuel stations</i> (new construction, upgrading of existing stations, stations on urban areas, stations on TEN-T core and comprehensive networks);</li> <li>o <i>Private charging points that are accessible to public</i> (e.g. charging points in shopping malls, in cinemas, commercial buildings, etc.);</li> <li>o <i>Private charging points in not accessible areas</i> (e.g. residential and private office buildings, etc.).</li> </ul> </li> <li>- <b>Minimum requirements and technical standards of charging infrastructures</b> (following the <i>BAT and Technical standards</i> reported in deliverable 3.3.2);</li> <li>- <b>Minimum interoperability and ICT provisions to access to electric recharging services</b>, specifying any integration with the sustainable mobility systems that are existing or planned at regional and local level;</li> <li>- <b>Parking plans and complementary sustainable mobility services</b> (e.g. car sharing, city logistics, limited traffic zones, reserved lanes for EVs, etc.).</li> </ul>

Minimum requirements for <i>Sustainable Electro-mobility Plans</i>		
Deliverable	Typology of document	Index of suggested minimum contents
<b>D.3.5.2</b>  <b>Preliminary designs of EV charging and transport infrastructures</b>	Preliminary design of EVSE with: - Technical reports - Project drawings (Plans, etc.)	<p>Preliminary design needs minimum contents requested by local legal references on public procurements and on urban planning, in order to reach all the technical and administrative authorizations by competent Authorities operating in the local context.</p> <p>Preliminary design will be drafted in local/national language of the partner, in order to be adopted and approved by competent authorities. Anyway, an executive summary have to be drafted in English, as official language of the cooperation project.</p> <p>Below it is reported a suggested index of possible contents requested by Authorities for the approval and authorization of preliminary plan:</p> <ul style="list-style-type: none"> <li>- General report</li> <li>- Technical reports</li> <li>- Topographic surveys</li> <li>- Urban planning evaluations</li> <li>- Environmental pre-feasibility study</li> <li>- Landscape assessment</li> <li>- Project drawings (from 1:5.000 to 1:100 scales, indicatively)</li> <li>- Energy and Structural calculations</li> <li>- Cost-Benefit analysis</li> <li>- Calculations of technical installations (recharging points, connection to the grid etc.)</li> <li>- Price Analysis, estimative metric computation and economic framework</li> <li>- Descriptive and performance specifications</li> </ul>

## 8. Key monitoring indicators

The common set of *Key Monitoring Indicators* proposed will be used by partners in order to monitor the evolution of local electric transport systems and the next implementation of “*Sustainable Electro-Mobility Plans*” on the basis of previous “*Local Framework Analysis on Electro-Mobility and Energy Supply State of Art*”.

Moreover, the *Key Monitoring Indicators* proposed in following page will be used to develop the *Local Framework Analysis* and the periodic monitoring of the *Sustainable Electro-Mobility Plans*. Therefore, they were designed to allow monitoring of electric transport policies even after the conclusion of EnerNETmob project, by considering the following **time milestones**:

- **2017** as **baseline** for the variables to be monitored; **2020** as final year of current ERDF programming period and short-term deadline reported in 2014/94/EU Directive;
- **2022** as final year of EnerNETmob project, in order to assess the results reached by implemented projects;
- **2025** as mid-term deadline reported in 2014/94/EU Directive;
- **2030** as long-term deadline for the SEMP (10 years starting from 2020 year) to achieve the **target values** to be compared with the baseline data.

Each target value will be established autonomously by every SEMP, according to the local needs and objectives. The creation of a common set of indicators aims to compare directly the changes and the problems between the local transport systems which have been involved by partners.

In addition it develops a common benchmark for the coordinated drafting and implementation of the *Sustainable Electro-Mobility Plans* both during the project and after its conclusion.

The information collected in the key indicators allows to monitor the **development level of electromobility** within the following groups of indicators:

- **Electric Vehicles’ indicators (Ev)**, aiming to check the local diffusion of electric transport means following the adoption and implementation of SEMP;
- **Electromobility Infrastructures’ indicators (EvSe)**, aiming to check the accessibility of charging services and the development of planned Electric Vehicle Supply Equipment (EVSE);
- **Environmental Impacts’ indicators (Env)**, to check the impact of electromobility on local emissions;
- **Electromobility Policies’ indicators (Pol)**, aiming to check the implementation of adopted regulations and plans in order to assess their effectiveness and impacts on involved transport systems;
- **Economic Impact indicators (Ec)**, aiming to check the development of Electric Vehicle Supply Equipment chain value and its economic impact.

For every key indicator the related data source is reported in the same table, so that all the partners will use the same statistic information.

### List of key monitoring indicators for electric transport

Monitoring Field	Indicator Id	Indicator Description	Measure Unit	Baseline Value (2017)	Target Value (2030)	2020	2022 (end of project)	2025	2030	Source
Electric Vehicles	Ev_01	Rate of circulating <b>Electric Vehicles with external battery recharge</b> (BEV and P-HEV typologies) respect to the total amount of vehicles	%							Public register of Automobiles
	Ev_02	Rate of circulating <b>Battery Electric Vehicles</b> (only BEV typologies) respect to the total amount	%							Public register of Automobiles
	Ev_03	<b>Density of Electric Vehicles</b> respect to resident population	n. EVs per 1000 inhab.							Public statistics
Electromobility Infrastructures	EvSe_01	Number of <b>all Public Charging Points</b> (including points managed by public and private bodies)	n.							Local Distribution System Operator
	EvSe_02	Rate of <b>Public Charging Points co-powered by RES</b> respect to the total amount of public charging points	%							Local Distribution System Operator
	EvSe_03	Number of <b>“Normal Power” Public Charging Points</b> (with more than 3,7 kW and up to 22 kW of electric power)	n.							Local Distribution System Operator
	EvSe_04	Number of <b>“High Power” Public Charging Points</b> (with more than 22 kW of electric power)	n.							Local Distribution System Operator
	EvSe_05	Ratio of <b>Public Charging Points</b> respect to <b>Electric Vehicles with external battery recharge</b> (BEV and P-HEV typologies)	n. points / n. EVs							Public statistics
Environmental impact	Env_01	Reduction of <b>GHG emissions</b> for transport at local level (value per year)	Equivalent CO <sub>2</sub> tonnes							SEAPs or local Environment Agencies
	Env_02	Reduction of <b>Air Pollutant Emissions</b> at local level (average daily value per year)	PM <sub>10</sub> µg/m <sup>3</sup> (average)							Environment agencies
Electromobility Policies	Pol_01	<b>Special Plans affecting Electromobility</b> adopted by National, Regional or Local Authorities	n. of plans							Public Authorities
	Pol_02	<b>SUMPs including electric transport measures</b> adopted by National, Regional or Local Authorities	n. of plans							Public Authorities

	Pol_03	<b>SEAPs including electric transport measures</b> adopted by National, Regional or Local Authorities	n. of plans							Public Authorities
Economic impact	Ec_01	<b>Economic investments</b> per capita on electromobility (value committed in approved projects/plans)	€ per 1000 inhab.							Public Authorities
	Ec_02	Ratio of <b>monetary social value of GHG emissions</b> respect to <b>local electromobility investments</b>	€ eq. CO <sub>2</sub> tonnes / € investments							UK Department of Energy and Climate Change
	Ec_03	<b>Rate of employment in the electromobility market</b> with reference to the overall automotive economic chain	<u>EVSE empl.</u> Automotive empl.							Chambers of Commerce

## 9. Data collection forms

The data to be reported in the common set of *Key Monitoring Indicators* can be collected through the datasheets of following pages.

Such forms includes some more details respect to the monitoring indicators and can be filled during the Activity 3.4 and updated during the Activity 3.5 and subsequent implementation of SEMP.

The datasheets for key indicators are grouped according to the monitoring fields explained in previous chapter as reported in following table.

Data collection forms for key monitoring indicators			
Monitoring Field	Indicator Id	Datasheet Id	Indicator Description
Electric Vehicles	Ev_01	Ev_a	Circulating vehicles per fuel category in the territorial area involved by SEMP (yearly data)
	Ev_02		
	Ev_03	Ev_b	Density of Vehicles respect to resident population (yearly data)
Electromobility Infrastructures	EvSe_01	EvSe_a	Electric Vehicle Supply Equipment implemented in the territorial area involved by SEMP (time series)
	EvSe_02		
	EvSe_03	EvSe_b	Public Charging Points data form (one form for each charging point, in order to be used for Electromobility Platform database)
	EvSe_04		
	EvSe_05	EvSe_c	Density of Public Charging Points in the territorial area involved by SEMP (time series)
Environmental impact	Env_01	Env_a	Air quality in the territorial area involved by SEMP (time series)
	Env_02		
Electromobility Policies	Pol_01	Pol_a	Approved Regulations and Plans affecting the electromobility implementation in the territorial area involved by SEMP (time series)
	Pol_02		
	Pol_03		
Economic impact	Ec_01	Ec_a	Approved projects and ongoing interventions affecting the electromobility implementation in the territorial area involved by SEMP (time series)
	Ec_02	Ec_b	Monetary social value of GHG emissions at local level / investments affecting the electromobility implementation in the territorial area involved by SEMP (time series)
	Ec_03	Ec_c	Enterprises and employment in Electromobility Value Chain (time series)

Every partner can integrate the data collection with its proper form according to local needs.

## Field n. 1 – Electric Vehicles

The information collected with this field of datasheets will be used to monitor the local diffusion of electric transport means following the adoption and implementation of *Sustainable Electro-Mobility Plans*. They allow to check the rate of electric vehicles and other alternative fuel vehicles respect to the total amount of circulating fleets.

The indicators will monitor:

- Local transport demand;
- Rate of alternative fuel vehicles;
- Rate of electric vehicles;
- Local density of electric vehicles respect to the local population.

Same data can be supported by diagrams and graphic representations with appropriate scale.

This group of datasheets includes following data collection forms:

- **Ev\_a**      ***Circulating vehicles per fuel category***
- **Ev\_b**      ***Density of Vehicles***

### Source for data collecting

The Public register of Automobiles and National Statistic Institutes should have all the information required on circulating fleets and vehicles with a sufficient level of updating.

If necessary, the regional and municipal data could be required to regional and local authorities, or to Ministries of Transport and Infrastructures.

### Period and temporal unit of reference

For the statistic time series we assume to analyse the period 2010-2017 (up to the end of the project). The statistic time series can be updated up to 2030 with an 1-2 years frequency for data collection.

### Reference Territory

The Reference Territory is the Regional or Local area to be involved by the SEMP.

Every partner can integrate the data collection with its proper form according to local needs.

Datasheet Id	Description
Ev_a	Circulating vehicles per fuel category in the territorial area involved by SEMP

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement	
.....	.....	Local Area / Regional Area	number	1 years	Starting from 2017	

Transport purpose	Vehicle typologies	Unit of measurement	Conventional Fuels		Alternative Fuels				
			Gasoline	Diesel	CNG	LNG	Hybrid (HEV)	Hybrid Plug-in (P-HEV)	(
Passenger	Cars	n. of vehicles							
		% on total amount							
	Buses	n. of vehicles							
		% on total amount							
	Motorcycles (2 wheels)	n. of vehicles							
		% on total amount							
	Quadricycles for passenger transport	n. of vehicles							
		% on total amount							
	Others	n. of vehicles							
		% on total amount							
Total passenger vehicles	n. of vehicles								
	% on total amount								
Goods	LDVs (Light Duty Vehicles with gross vehicle weight up to 3.5 Kg)	n. of vehicles							
		% on total amount							
	HDVs (Heavy Duty Vehicles with gross vehicle weight overcoming 3.5 Kg)	n. of vehicles							
		% on total amount							
	Trucks	n. of vehicles							
		% on total amount							
	Quadricycles for passenger transport	n. of vehicles							
		% on total amount							
	Others	n. of vehicles							
		% on total amount							
Total goods vehicles	n. of vehicles								
	% on total amount								
Total Amount of vehicles		n. of vehicles							
		% on total amount							



Datasheet Id	Description
Ev_b	Density of Vehicles respect to resident population

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement	
.....	.....	Local Area / Regional Area	number	1 years	Starting from 2017	

Transport purpose	Vehicle typologies	Unit of measurement	Conventional Fuels		Alternative Fuels				
			Gasoline	Diesel	CNG	LNG	Hybrid (HEV)	Hybrid Plug-in (P-HEV)	(
Passenger	Cars	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Buses	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Motorcycles (2 wheels)	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Quadricycles for passenger transport	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Others	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
Total passenger vehicles	Vehicles/1000 inhab.								
	Inhabitants/vehicles								
Goods	LDVs (Light Duty Vehicles with gross vehicle weight up to 3.5 Kg)	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	HDVs (Heavy Duty Vehicles with gross vehicle weight overcoming 3.5 Kg)	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Trucks	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Quadricycles for passenger transport	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
	Others	Vehicles/1000 inhab.							
		Inhabitants/vehicles							
Total goods vehicles	Vehicles/1000 inhab.								
	Inhabitants/vehicles								
Total Amount of vehicles		Vehicles/1000 inhab.							
		Inhabitants/vehicles							

## Field n. 2 – Electromobility infrastructures

The information collected with this field of datasheets will be used to monitor the development and service level of local Small-Scale Infrastructure Networks and related charging services. They allow to check the accessibility of charging services and the implementation of planned Electric Vehicle Supply Equipment (EVSE).

The indicators will monitor:

- Local electric transport supply;
- Rate of charging points;
- Implementation of electric vehicle infrastructures pursuant the 2014/94/UE at local level;
- Rate of electric vehicles;
- Local density of charging points respect to the circulating electric vehicles.

Same data can be supported by diagrams and graphic representations with appropriate scale.

This group of datasheets includes following data collection forms:

- **EvSe\_a**    **Electric Vehicle Supply Equipment**
- **EvSe\_b**    **Public Charging Points**
- **EvSe\_c**    **Density of Public Charging Points**

Moreover, the datasheets will provide a first information to create the database of the **electromobility platform** to be implemented during the project. It is important to register the data of all charging point by using the datasheet “EvSe\_b Public Charging Point”.

### Source for data collecting

The local *Distribution System Operator* should have all the information required on their plan tools with a sufficient level of updating.

The Charging Point data could be required also to *service providers* of the local EVSE.

### Period and temporal unit of reference

For the time series we assume to analyse the period 2010-2017 (up to the end of the project). The statistic time series can be updated up to 2030 with an 1-2 years frequency for data collection.

### Reference Territory

The Reference Territory is the Regional or Local area to be involved by the SEMP.

Every partner can integrate the data collection with its proper form according to local needs.

Datasheet Id	Description				
EvSe_a	Electric Vehicle Supply Equipment implemented in the territorial area involved by SEMP				

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	number	1 years	2010-2020

Charging Points	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Private Charging Points pursuant the Mode 2 of IEC 61851-1 standard	n. of CPs co-powered by RES												
	n. of CPs not co-powered by RES												
	Total number												
Public Charging Points pursuant the Mode 3 or 4 of IEC 61851-1 standard	n. of CPs co-powered by RES												
	n. of CPs not co-powered by RES												
	Total number												
TOTAL Charging Points (both Private and Public ones)	n. of CPs co-powered by RES												
	n. of CPs not co-powered by RES												
	Total number												

Public Charging Points	Slow Power Charging Points (electric power up to 3,7 kW) Features: <i>Alternating Current</i>	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	Normal Power Charging Points (electric power more than 3,7 kW and up to 22 kW) Features: <i>Alternating Current</i> with <i>Type 2</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	Normal Power Charging Points (electric power more than 3,7 kW and up to 22 kW) Features: <i>Alternating Current</i> with <i>other</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	High Power Charging Points (electric power more than 22 kW) Features: <i>Alternating Current</i> with <i>Type 2</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	High Power Charging Points (electric power more than 22 kW) Features: <i>Alternating Current</i> with <i>other</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	High Power Charging Points (electric power more than 22 kW) Features: <i>Direct Current</i> with <i>Combo 2</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	High Power Charging Points (electric power more than 22 kW) Features: <i>Direct Current</i> with <i>other</i> connectors	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												
	TOTAL Public Charging Points	n. of CPs co-powered by RES												
		n. of CPs not co-powered by RES												
		Total number												

Datasheet Id	Description
EvSe_b	Public Charging Points data form (minimum data)

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Source	Datasheet n.
.....	.....	Local Area Regional Area	Various	1 years	...	....

**Table n. ....**

Data name		Description (example of informations)
Charging point ID		.....
Charging Point power typology		Slow Power (up to 3,7 kW) Normal Power (more than 3,7 kW and up to 22 kW) High Power (more than 22 kW)
Service Provider managing the charging point		Name Phone number / call center Email address Web site
GPS location (WGS84 system)	Latitude (degrees)	...
	Longitude (degrees)	...
Number of outlets		...
Features of Outlet n.1 (to be replicated if necessary)	Type of socket/connector	...
	Charging mode	IEC62196-Mode 3 IEC62196-Mode 4
	Output power supply	AC single-phase AC three-phase DC
	Output Nominal Voltage (Volts)	... V
	Output Nominal Current (Ampere)	... A
	Output Nominal Power (Watt)	... kW
Accessibility to the service		Credit Card Owner card App ...
Accessibility time		24h From ... to ...
Service cost		€ ... per kWh € ... per month ...

**To be replicated and filled for each Charging Point.**

Datasheet Id	Description
EvSe_c	Density of Public Charging Points in the territorial area involved by SEMP

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	number	1 years	2010-2020

Charging Points	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Ratio of Private Charging Points respect to Electric Vehicles with external battery recharge (BEV and P-HEV typologies)	n. private CPs / n. circulating EVs												
Ratio of Public Charging Points respect to Electric Vehicles with external battery recharge (BEV and P-HEV typologies)	n. public CPs / n. circulating EVs												
Ratio of Private and Public Charging Points respect to Electric Vehicles with external battery recharge (BEV and P-HEV typologies)	n. private and public CPs / n. circulating EVs												

Ratio of Charging Points respect to Electric Vehicles with external battery recharge (BEV and P-HEV typologies)	n. all CPs / n. circulating BEVs												
	n. all CPs / n. circulating P-HEVs												
	n. all CPs / n. EVs												

Ratio of Public Charging Points  (OPTIONAL)	Ratio of Slow Power Charging Points (electric power up to 3,7 kW) Features: <i>Alternating Current</i>	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of Normal Power Charging Points (electric power more than 3,7 kW and up to 22 kW) Features: <i>Alternating Current</i> with <i>Type 2</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of Normal Power Charging Points (electric power more than 3,7 kW and up to 22 kW) Features: <i>Alternating Current</i> with <i>other</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of High Power Charging Points (electric power more than 22 kW) Features: <i>Alternating Current</i> with <i>Type 2</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of High Power Charging Points (electric power more than 22 kW) Features: <i>Alternating Current</i> with <i>other</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of High Power Charging Points (electric power more than 22 kW) Features: <i>Direct Current</i> with <i>Combo 2</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of High Power Charging Points (electric power more than 22 kW) Features: <i>Direct Current</i> with <i>other</i> connectors	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											
	Ratio of TOTAL Public Charging Points	n. CPs / n. circulating BEVs											
		n. CPs / n. circulating P-HEVs											
		n. CPs / n. EVs											

## Field n. 3 – Environmental Impact

The information collected with this field of datasheets will be used to monitor the GHG and other pollutant emissions in the area involved by SEMP. They allow to check the impact of electromobility on local emissions.

The indicators will monitor:

- GHG emissions level at local level
- NO<sub>2</sub> pollutant levels
- SO<sub>2</sub> pollutant levels
- PM<sub>10</sub> pollutant levels
- PM<sub>2,5</sub> pollutant levels

Same data can be supported by diagrams and graphic representations with appropriate scale.

This group of datasheets includes following data collection forms:

- **Env\_a**     **Air quality**

### Source for data collecting

The National/Regional/Local Environment Agencies should have all the information required on their plan tools with a sufficient level of updating.

The regional and municipal data could be found in the Emission Baseline Inventories of the local *Sustainable Energy Action Plans* (SEAPs).

### Period and temporal unit of reference

For the statistic time series we assume to analyse the period 2010-2017 (up to the end of the project). The statistic time series can be updated up to 2030 with an 1-2 years frequency for data collection.

### Reference Territory

The Reference Territory is the Regional or Local area to be involved by the SEMP.

Every partner can integrate the data collection with its proper form according to local needs.

Datasheet Id	Description
Env_a	Air quality in the territorial area involved by SEMP

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	Eq. CO <sub>2</sub> , SO <sub>2</sub> , NO <sub>2</sub> , PM <sub>10</sub> , PM <sub>2.5</sub>	1 years	2010-2020

Monitoring Point n. ....

Location	Monitoring Point ID	Responsible Body
.....	.....	.....

Emissions	Sector	Averaging period	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
GHG emissions (calculated at local level)	Total GHG emissions	year	Equivalent CO <sub>2</sub> tonnes												
	GHG emissions for transport	year	Equivalent CO <sub>2</sub> tonnes												

Pollutant	Limit value	Averaging period	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
NO <sub>2</sub> (Nitrogen Dioxide)	200 µg/m <sup>3</sup> not to be exceeded more than 18 times during the year	1 hour	Number of days overcoming limit per year												
	40 µg/m <sup>3</sup> average value not to be exceeded during the year	year	µg/m <sup>3</sup> (average year value)												
SO <sub>2</sub> (Sulfur Dioxide)	350 µg/m <sup>3</sup> not to be exceeded more than 24 times during the year	1 hour	Number of days overcoming limit per year												
	125 µg/m <sup>3</sup> not to be exceeded more than 3 times during the year	24 hour	Number of days overcoming limit per year												
PM <sub>10</sub> (Particulate Matter)	50 µg/m <sup>3</sup> not to be exceeded more than 35 times during the year	24 hour	Number of days overcoming limit per year												
	40 µg/m <sup>3</sup> average value not to be exceeded during the year	year	µg/m <sup>3</sup> (average year value)												
PM <sub>2.5</sub> (Particulate Matter)	20 µg/m <sup>3</sup> average value not to be exceeded during the year	year	µg/m <sup>3</sup> (average year value)												

## Field n. 4 – Electromobility Policies

The information collected with this field of datasheets will be used to monitor the policy and planning implementation within the *Local Framework Analysis* and during the carrying out of SEMP measures. They allow to check the implementation of adopted regulations and plans in order to assess their effectiveness and impacts on involved local mobility systems.

The indicators will monitor:

- Transposition and implementation of Directive 2014/94/UE at local level
- Specific electric transport plans (including the future approval of SEMP)
- Regional and land use plans
- National and local transport plans (including SUMP)
- Environmental and energy plans (including SEAPs)

Same data can be supported by diagrams and graphic representations with appropriate scale.

This group of datasheets includes only the following data collection form:

- **Pol\_a**      ***Approved Regulations and Plans***

### Source for data collecting

The National/Regional/Local Authorities should have all the information required on their plan tools with a sufficient level of updating.

The regional and municipal data could be required to regional and local authorities, or to Ministries of Transport and Infrastructures (for some ESI Operational Programmes).

### Period and temporal unit of reference

For the statistic time series we assume to analyse the period 2010-2017 (up to the end of the project). The statistic time series can be updated up to 2030 with an 1-2 years frequency for data collection.

### Reference Territory

The Reference Territory is the Regional or Local area to be involved by the SEMP.

Every partner can integrate the data collection with its proper form according to local needs.



Datasheet Id	Description
Pol_a	<b>Approved Regulations and Plans</b> affecting the electromobility implementation in the territorial area involved by SEMP

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	number	1 years	2010-2020

Policy tools	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
<b>Transposition of 2014/94/EU Directive</b> at National/Regional level	n. of national laws												
	n. of regional/local regulations												
<b>Special Plans affecting Electromobility following 2014/94/EU Directive</b> adopted by National, Regional or Local Authorities (including SEMP as target)	n. of national plans												
	n. of local plans												

Approval of <b>Other Plans</b>	<b>Regional Plans</b> drafted by Regional Authorities (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Land Use Plans</b> drafted by Local Authorities and/or Municipalities (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Transport Plans</b> drafted by National/Regional Authorities (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Transport Plans</b> drafted by Local Authorities and/or Municipalities (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Sustainable Urban Mobility Plans</b> (SUMP) including electric transport measures (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Energy/Environmental Plans</b> drafted by Regional/Local Authorities and/or Municipalities (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
	<b>Sustainable Energy Action Plans</b> (SEAPs) including electric transport measures (affecting electromobility implementation in the territorial area involved by SEMP)	n. of approved plans												
		n. of involved population												
<b>TOTAL Plans affecting the electromobility implementation in the territorial area involved by SEMP</b>		<b>n. of approved plans</b>												
		<b>n. of involved population</b>												

## Field n. 5 – Economic Impact

The information collected with this field of datasheets will be used to monitor the economic impact of electromobility market at local level by belonging the *Electric Vehicle Supply Equipment chain value*. They allow to check the development of *EVSE chain value* and its economic impact.

The indicators will monitor:

- Local investments planned and implemented through local plans
- Environmental Benefit of electromobility investments
- EVSE manufacturer employment local level
- EVSE Installer employment local level
- EVSE charging service provider employment local level
- Energy supply employment local level
- Impact of electromobility market on automotive value chain

Same data can be supported by diagrams and graphic representations with appropriate scale.

This group of datasheets includes following data collection forms:

- **Ec\_a**      ***Approved projects and ongoing interventions***
- **Ec\_b**      ***Environmental benefit value of local works/investments***
- **Ec\_c**      ***Enterprises and employment in Electromobility Value Chain***

### Source for data collecting

The National/Regional/Local Authorities should have all the information required on their plan tools with a sufficient level of updating.

The economic data could be required to local Chambers of Commerce.

### Period and temporal unit of reference

For the statistic time series we assume to analyse the period 2010-2017 (up to the end of the project). The statistic time series can be updated up to 2030 with an 1-2 years frequency for data collection.

### Reference Territory

The Reference Territory is the Regional or Local area to be involved by the SEMP.

Every partner can integrate the data collection with its proper form according to local needs.

Datasheet Id	Description				
Ec_a	Approved projects and ongoing interventions affecting the electromobility implementation in the territorial area involved by SEMP				

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	Number €	1 years	2010-2020

Table n. ....

Programme/Planning tool	Responsible Body/Authority					Period of Planning					T
.....	.....					.....					€ .....

Investment/works on local electromobility system	Unit of measurement	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Approved executive designs of investments/works included in the Plan (affecting electromobility implementation in the territorial area involved by SEMP)	n. of projects												
	Investment amount [€]												
	Population involved by plan												
	Investment per 1000 inhabitant [€]												
Ongoing investments/works included in the Plan (affecting electromobility implementation in the territorial area involved by SEMP)	n. of projects												
	Investment amount [€]												
	Population involved by plan												
	Investment per 1000 inhabitant [€]												
Completed investments/works included in the Plan (affecting electromobility implementation in the territorial area involved by SEMP)	n. of projects												
	Investment amount [€]												
	Population involved by plan												
	Investment per 1000 inhabitant [€]												
	n. of involved population												
All planned projects for investments/works included in the Plan (affecting electromobility implementation in the territorial area involved by SEMP)	n. of projects												
	Investment amount [€]												
	Population involved by plan												
	Investment per 1000 inhabitant [€]												

Datasheet Id	Description
Ec_b	Monetary Social value of GHG emissions at local level / investments affecting the electromobility implementation in the territorial area involved by SEMP

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	Number €	1 years	2017-2020

Calculation of environmental benefit value	Unit of measurement	2017	2018	2019	2020	2021	2022	2023	2024
Equivalent CO <sub>2</sub> tonnes of GHG emissions calculated at local level per year	Equivalent CO <sub>2</sub> tonnes								
Unitarian Social Cost of Carbon (SCC) of GHG emissions (according to the official value published by UK Department of Energy and Climate Change)	€ per eq. CO <sub>2</sub> ton								
Total Social Cost of Carbon per Equivalent CO <sub>2</sub> tonnes (according to the official value published by UK Department of Energy and Climate Change)	SCC * Eq. CO <sub>2</sub> tonnes								
Completed investments/works included in the Plan	Investment amount [€]								
Monetary social value of GHG emissions at local level / investments	$\frac{\text{SCC} * \text{Eq. CO}_2 \text{ tonnes}}{\text{Investment amount}}$								

Datasheet Id	Description
Ec_c	Enterprises and employment in Electromobility Value Chain

Implementing Partner	Transport System	Reference Area	Unit of measurement	Frequency of monitoring	Period of measurement
.....	.....	Local Area Regional Area	number and %	1 years	2010-2024

Calculation of environmental benefit value	Unit of measurement	2017	2018	2019	2020	2021	2022	2023	2024
New <b>EVSE Manufacturer enterprise</b> opening a branch in the country/region	Number								
New <b>EVSE Installer enterprise</b> opening a branch in the country/region	Number								
New <b>EVSE Manufacturer enterprise</b> opening a branch in the country/region	Number								
<b>Energy Supplier enterprise</b> opening a branch in the country/region	Number								

<b>Employment in Electromobility Value Chain</b> in the Country/Region	Empl. Units								
<b>Employment in Automotive Value Chain</b> (including Electromobility) in the Country/Region	Empl. Units								
<b>Rate of employment in the electromobility market</b> with reference to the overall automotive economic chain	<u>EVSE empl.</u> <u>Automotive empl.</u>								

## 10. Templates for analysis and planning

Final version of Methodological Paper will contain following annexes to develop analyses and plans within Activities 3.4 and 3.5:

**1. Template to edit the deliverable 3.4.1 - “Local Framework Analysis on Electro-Mobility and Energy Supply State of Art”**

Word file containing the template and the index for the parallel editing of the reports that will be developed by partners.

Each Implementing Partner uses this format to edit its own deliverables affecting the “*Local Framework Analysis on Electro-Mobility and Energy Supply State of Art*”. The document should be written both in the official language of the project (English – Synthesis version). In any case, the partners can also edit a parallel version in their national language, if they found it appropriate. The index and the contents of the document are summarized in Chapters 5 and 7 of this methodology.

**2. Template to edit the deliverable 3.5.1 - “Sustainable Electro-Mobility Plan”**

Word file containing the format and the index for the parallel editing of the reports that will be developed by partners.

Each Implementing Partner uses this format to edit its own deliverables affecting the “*Sustainable Electro-Mobility Plan*”. The document should be written in the official language of the project (English – Synthesis version). In any case, the partners can also edit a parallel version in their national language, if they found it appropriate. The index and the contents of the document are summarized in Chapter 6 and 7 of this methodology.

