D.4.1.1 Roadmap and evaluation report with description of spatial, technical and organizational context in each pilot site and guidelines for pilot actions

WP4: Pilots: small technological investments,
equipment installations and new services start-up

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Responsible partner: University of Split **Involved partners: All**			
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Table of contents

Executive summary

This document represents deliverable D.4.1.1 Pilot roadmap and evaluation, setting the overall framework for DEEP-SEA pilot implementation, monitoring and evaluation. Coordinated by University of Split, this document presents a description of project pilots, provide the steps for pilot implementation and the KPIs useful for pilot monitoring and evaluation. It finally provides the structure of pilot reports, where results of pilot preparation, implementation, monitoring and closure should be reported periodically by partners responsible for each pilot, in order to compile a final list of lessons learnt and recommendations which will be used for service continuation and improvement in pilot areas and replication of experience outside DEEP-SEA sites.

1. Introduction

WP4 will develop and implement new sustainable mobility solutions in selected pilot sites to enhance the available services for passengers and tourists in Adriatic marinas. A new integrated approach for the inland, costal and maritime mobility services will be promoted during the project life and will continue after, thanks to its transferability actions. In order to achieve the highest impact on the marinas since the very beginning, partners will fine-tune their pilot actions according to the analysis performed in WP3, i.e. of best available solutions (Act.3.1), best practice in management and investment models (Act.3.2) and AS IS analysis of passengers' flows, needs and expectations, current mobility patterns, energy consumption and emissions (Act.3.3).

Marinas operators of DEEP-SEA pilot sites and relevant PAs are expected to keep the sustainable mobility services and energy efficiency solutions installed during the pilots fully operational in the coming years, as a starting point for further installations and increase of the range of e-sharing services, thanks to the investment plans defined for each pilot site in DEEP-SEA Act. 3.4.

The installation of the ECS for e-vehicles and e-boats will boost e-mobility in the marinas and in nautical sector in general: DEEP-SEA pilot sites will trigger further new installations along the Adriatic Sea considering the increasing demand of charging services for e-cars. The availability of e-charging stations for e-boats will support the increase of e-mobility, affecting also shipyards, operators involved in boat and yacht retrofitting and production of new boat models with electric engines.

The micro-grid installation will allow the production of energy from renewable sources and demonstrate the economic sustainability with reduction of costs in electric grid distribution and energy self-sustainability, particularly in sensitive island areas.

This document is intended to define a roadmap for the set-up of pilots, selection of results to implement in WP3 Investment Plans and to include in WP5 Guidelines, with particular attention

to terms of coherence with the overall programme and project objectives. It provides the monitoring framework for pilot evaluation through the KPIs here defined.

Pilots monitoring and measurement methodology will ensure coherence with project and Interreg Italia-Croatia Programme objectives as well, according to the agreed time plan and economic - financial sustainability. Designed as internal tool, this roadmap will ensure the correct monitoring and measurement of the new installations and e-services as well as action viability and transferability to other Adriatic Sea sites and beyond. Once the project is over, the monitoring system developed during the project life-time will be used as a tool for future monitoring of mobility services by MOs, defining KPIs for the evaluation of pilot impacts in terms of accessibility, quality of mobility services, eco-social sustainability, environmental impacts and energy efficiency. Stakeholders (MOs, PAs, end-users and others) will be called to validate the set of selected criteria and the pilot results.

Evaluation results will be collected by each pilot site every 6 months through specific pilot evaluation reports (D 4.1.2).

2. DEEP-SEA pilot description

DEEP-SEA implemented 5 pilot actions targeting marinas in 5 areas across the Italy-Croatia region, as follows:

- Venezia Giulia area, Italy, coordinated by LP ARIES and University of Trieste;
- Foggia area, Italy, coordinated by Province Foggia;
- Krk Island, Croatia, coordinated by Ponikve Krk;
- Malinska, Croatia, coordinated by the Municipality of Malinska-Dubašnica;
- Maslinisca-Solta, Croatia, coordinated by HL Dvorac.

The **Venezia Giulia pilot** area will be characterized by the:

- Startup of 1 e-car sharing services;
- Installation of 6 e-charging stations for e-vehicles;
- Installation of 3 racks with electric and muscular bicycle for sharing system;
- Installation of 1 microgrid system.

The **Foggia pilot** area will be characterized by the:

- Startup of 1 e-car sharing service for the Province of Foggia, linked to the main transport HUBs;
- Installation of 6 e-charging stations for e-vehicles and/or e-boats in the marinas selected;

- Installation of 2 racks with e-bike sharing system in the areas of Manfredonia and Vieste.

The **island of Krk pilot** area will be characterized by:

- Installation of 1 rack with electric and muscular bicycles for bike sharing services;
- Purchase of 3 e-scooter for sharing services and startup of 1 e-scooter sharing;
- Installation of 2 e-charging stations for e-cars;
- Installation of 2 e-charging stations for e-cars e e-boats;
- Installation of 1 microgrid system.

The **pilot Malinska Municipality** pilot area will be characterized by:

- Installation of 2 e-charging station: 1 combined for e-cars and 1 mooring for e-boats (in Porat Marina), a and 1 e-charging station for e-cars in Malinska;
- Installation of 1 rack with electric and muscular bicycles for bike sharing services;
- Purchase of 4 muscular and 4 e-bikes;
- Charging system for e-bikes and software for rental;
- Installation of 1 microgrid system.

The **pilot Maslinica-Solta** pilot area will be characterized by:

- Installation of 1 e-charging station for e-vehicles and 1 e-charging station for e-boats;
- Installation of 1 rack with electric and muscular bicycles for bike sharing services;
- Installation of 1 microgrid system;
- Startup of 1 e-car mobility service for tourist transport.

At the end of pilot implementation, each partner responsible produced a final report with results achieved during pilot implementation such as local experience, findings and proposal for seamless integration (Act. 4.2.1, 4.3.1, 4.4.1, 4,5.1, 4.6.1).

2. Pilot phases

The implementation of pilots is divided into 3 individual phases:

- In the **preparatory phase** partners will have to deal with the concept design and its technical issues requirements, choose the location and arrange relations with the landowners in order to obtain permissions, if necessary, considering the related social aspects and the stakeholders involved. The partners, will then have to deal with the financial aspects, seeking negotiations with potential contractors and eventually preparing the technical specification and documentation required for the tender. Furthermore, partners will define the KPIs, the Key Performance Indicators needed to monitor and evaluate the implementation. Each

partner should select the relevant KPIs and the method of measuring them, on the basis of the type of pilot, local context, SHs involved, technical features and so on. In this phase partners should also define how the achievement of KPI targets will be measured and set the current situation for each KPI.

- In the **implementation and monitoring phase** partners will start to implement the pilot, including installation of equipment and small infrastructure, their testing, validation, service start up and operations. The progress will be closely monitored by each coordinating partner and KPIs measured periodically; progress should be reported back to the WP leader and reported into the 6-month evaluation report, one for each pilot. The pilot development will also involve local stakeholders, such as PAs responsible for local public transport, marinas operators, local and regional associations, tourism and promotion institutions. A direct action will be focused on the involvement of end-users testing the services quality and their usability. Pilots responsible will also provide feedbacks to both investment plans (Act. 3.4) and guidelines (Act. 5.1).

- In the **closure phase**, partners will compile the final documents with the results from the pilots, the lessons leant and recommendation for service continuation and replication. This information will be collected through the following documents:
  - A final 6-month evaluation report (D 4.1.2) in February 2021, delivered by University of Split;
  - The final Reports with pilot results, one for each pilot, by December 2022 (Act. 4.2.1, 4.3.1, 4.4.1, 4,5.1, 4.6.1);
  - The final results of KPIs measurements in the present Roadmap by December 2022.

  The documents above will be used for the transfer of results outside the project, as described in the Transferability Plan (D 5.4.1). The implemented services and installed equipment will remain on usage of the passengers and tourists for their inland and coastal mobility and will indirectly support the increase of e-boats in nautical mobility following project's closure.

3. Pilot monitoring and evaluation: KPIs

Below a list of KPIs is provided related to energy efficient and sustainable mobility and micro grids. Partners responsible for each pilot will select the more relevant KPIs for their sites and monitor them throughout the project.

3.1. Micro grid KPI

N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)
	KPI Description			**Values**
1	Energy produced using the photovoltaic system. This can be achieved using a meter at the DC MPPT output.	kWh (per month)	0	J F M A M J J A S O N D
2	Energy used for charging the e-cars should be logged. This can be achieved using a meter inside the CS.	kWh (per month)	0	J F M A M J J A S O N D
3	Energy from the grid used to fuel the car. When the car is charging, the difference between the CS energy and the ugrid energy (storage + PV).	kWh (per month)	0	J F M A M J J A S O N D
4	Charging station occupancy: the amount of time when e-cars are charging at the station should be logged.	hr (per month)	0	J F M A M J J A S O N D
5	CO_2 emissions reduction due to the use of an e-car instead of a conventional car. This value should be calculated by multiplying the e-car travelled distance per month by the average CO2 emission of a conventional vehicle (123.4 g CO2/km Source: www.eea.europa.eu)	CO2 kg./month	0	J F M A M J J A S O N D
6	Number of users using the CS	# People	0	
7	Stakeholders / users satisfaction / benefits from DEEPSEA pilot(s) through interviews / questionnaires	%	0	
8	Number of e-car monitored	# Car	0	
9	Number of e-cars involved in the project	# Car	0	
10	Number of E-CS monitored	# E-CS	0	
11	Number of implemented E-CS by DEEPSEA	# E-CS	0	
12	Number of stakeholders involved (municipalities, regional authorities, investors, companies…)	SH	0	
13	Photovoltaic self-consumption energy, i.e. the percentage of energy locally consumed compared to that produced.	%	0	
14	Number of e-car charging profiles collected (e-car charging power vs. time)	# profiles/year	0	
15	Number of e-car discharging profiles collected (e-car discharging power vs. time)	# profiles/year	0	

N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)
16	Number of main battery charging profiles collected (charging power vs. time)	# profiles/ year	0	
17	Number of main battery discharging profiles collected (discharging power vs. time)	# profiles/ year	0	

3.2. E-sharing services KPI

KPI Description		Values		
N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)
1	Number of e-vehicles monitored	# Car	0	
2	Number of e-vehicles involved in the project	# Car	0	
3	Number of users using the e-sharing services	# People	0	
4	Number of charging hours	#Hours/ year	0	
5	Number of charging calls	#calls	0	
6	Stakeholders / users satisfaction / benefits from DEEPSEA pilot(s) through interviews / questionnaires	%	0	

3.3. ECS for e-vehicles KPI

KPI Description		Values		
N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)
1	Number of e-car monitored	# Car	0	
2	Number of e-cars involved in the project	# Car	0	
3	Number of E-CS monitored	# E-CS	0	
4	Number of implemented E-CS by DEEPSEA	# E-CS	0	
5	Number of stakeholders involved (municipalities, regional authorities, investors, companies…)	SH	0	
6	Number of users using the CS	# People	0	
7	Number of charging hours	#Hours/ year	0	
8	Number of charging calls	#calls	0	

3.4. ECS for e-boats KPI

KPI Description		Values		
N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)
1	Stakeholders / users satisfaction / benefits from DEEPSEA pilot(s) through interviews / questionnaires	%	0	
2	Number of e-boats monitored	# boats	0	
3	Number of e-boats involved in the project	# boats	0	
4	Number of E-CS monitored	# E-CS	0	
5	Number of implemented E-CS by DEEPSEA	# E-CS	0	
6	Number of stakeholders involved (municipalities, regional authorities, investors, companies…)	SH	0	

N.	KPI	Unit	Baseline (current sit.)	
7	Number of users using the CS	# People	0	
8				

3.5. Rack for bicycles and e-bikes

KPI Description				Values	
N.	KPI	Unit	Baseline (current sit.)	Target (to be achieved)	
1	Number of e-bikes monitored	# bike	0		
2	Number of e-bikes involved in the project	# bike	0		
3	Number of E-CS monitored	# E-CS	0		
4	Number of implemented E-CS by DEEPSEA	# E-CS	0		
5	Number of users using the CS	# People	0		
6	Number of bicycles monitored	# bike	0		
7	Number of bicycles involved in the project	# bike	0		
8	Number of implemented E-CS by DEEPSEA	# E-CS	0		
9	Number of users using the CS	# People	0		
10	Stakeholders / users satisfaction / benefits from DEEPSEA pilot(s) through interviews / questionnaires	%	0		

4. The pilot report structure

In this chapter the structure of the pilot report is provided. Partners responsible for each pilot are asked to fill in the sections according to the deadlines set for each section below.

4.1. Pilot description and selection of KPIs

4.1.1. Short Description

Pilot general description to be filled by each Pilot

4.1.2. Context analysis

To be filled by each Pilot

4.1.3. The goal

To be filled by each Pilot

4.1.4. Chosen key performance indicators

To be filled by each Pilot

4.2. Preparation phase

> To be filled by each Pilot
>
> *Description about the preparation process e.g. (depending on the case):*
>
> - *analysis of public charging stations locations and charging service providers, payment for charging, challenges and obstacles faced, choosing location, stakeholders' involvement, analysis of good practices in the field of intervention;*
>
> - *description of preparation on concept design: checking technical requirements / factors for choosing the dimension (locker, the solar panel, the material, part of the e-system or not, selling/not selling the electricity, system of locking, open/closed system);*
>
> - *factors for planning on location: arranging relations with the landowners and obtaining permissions, parcel ownership, cultural heritage limitation;*
>
> - *elements for financing that have been considered: estimation of costs, preliminary budget, negotiations with potential contractors, tendering procedure, insurance etc.;*
>
>   - *social elements (participation and contribution of stakeholders and other factors).*

4.3. Implementation and monitoring phase

> **Implementation phase**
>
> To be filled by each Pilot
>
> *Descriptions of installation, process of implementation, challenges and barriers, main factors for success, pictures, etc.*

Monitoring phase

To be filled by each Pilot

Description of selected key performance indicators (KPI's), base lines of indicators, targeted values, description of evaluation process, etc

4.4. Pilot closure

Lessons learnt and recommendations for service continuation, improvement and replication of experience in other sites

To be filled by each Pilot

5. Final pilot evaluation and lessons learned with list of KPIs to be filled in by task leader

This data will be crucial for the structure and the content of the interlinked project deliverable such as WP3.4 review, Guidelines, etc

6. GANTT

Partners responsible for each pilot are asked to fill in the sections according to the deadlines set for each section below.

activity	R = responsible P = partecipation					start	end	2020										2021												2022										
	Venezia Giulia	Prov. Foggia	Krk Island	Mun. Malinska	Maslinica - Solta			3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
KPI definition	P	P	P	P	P																																					
Preparatory phase	R	R	R	R	R																																					
Implementation phase	R	R	R	R	R																																					
Monitoring phase	R	R	R	R	R																																					
Final Evaluation Report	R	R	R	R	R																																					