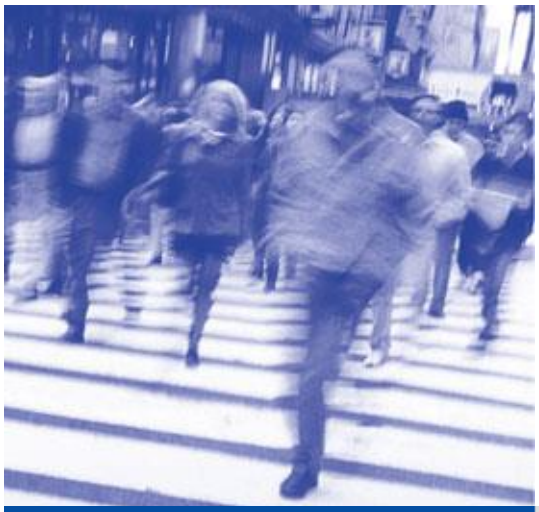

2020 CiViTAS
Cleaner and better transport in cities

DESTINATIONS

D2.1 SUMP Baseline Report

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EXECUTIVE SUMMARY

This baseline report presents the key players and actors in each study area while illustrating the analysis of the mobility context and the structure of mobility patterns at a baseline year for all the six sites as a result of Task 2.2.

Chapter 1 presents the DESTINATIONS Project goals and the SUMP measures objectives and identifies links between these SUMP measures and other work packages within the Project. It also presents the SUMP self-assessment tool which was developed by ELTIS and completed by all the sites as an initial exercise to WP2.

Chapters 2 to 7 are dedicated for the baseline of each of the partner sites where the relevant geography, demographics and transport systems and models are detailed. For each site the current mobility situation and modal split and looked at in detail and in relation to the plans and regulations in force in each of the islands.

1 Introduction

1.1 Objectives of DESTINATIONS project

The DESTINATIONS project implements a set of mutually reinforcing and integrated innovative mobility solutions in six medium small urban piloting areas in order to demonstrate how to address the lack of a seamless mobility offer in tourist destinations.

The overall objective of DESTINATIONS project is articulated in the following operational goals:

- Development of a Sustainable Urban Mobility Plan (SUMP) for residents and tourists focusing on the integrated planning process that forms the basis of a successful urban mobility policy (WP2);
- Development of a Sustainable Urban Logistics Plan (SULP) targeted on freight distribution processes to be integrated into the SUMP (WP5);
- Implementation and demonstration of pilot measures to improve mobility for tourists and residents (WP3-WP7);
- Development of guidelines to sites for stakeholders engagement (WP2-WP8);
- Development of guidelines to sites for the definition of business models to sustain the site pilot measures and the future implementation of any other mobility actions/initiatives designed in SUMP (WP8):
- Development of guidelines to sites for the design, contracting and operation of ITS (WP8).
- Evaluation of results both at project level and at site level (WP9);
- Cross-fertilization of knowledge and best practice replication including cooperation with Chinese partners (WP10);
- Communication and Disseminations (WP11).

1.2 SUMP Innovation

The SUMPS in the DESTINATIONS project will be innovative in various ways. They incorporate tourism and they go beyond the municipal border, providing an overarching approach to urban and regional problems. They also include business modelling and lessons from and for China.

Focus on tourism

The Mobility Plans that will be developed as part of Measure 2.1 will fully take tourism flows, impacts, threats and opportunities into account. The dynamics caused by tourism can sometimes lead to negative impacts on the daily life of the residents of tourist destinations. All of the DESTINATIONS regions are highly affected by and dependent on high tourism inflows. They have to find a balance between good accessibility and an attractive natural environment. Many destinations aim to market themselves as sustainable destinations but have not yet integrated sustainable mobility in their tourism (promotional) strategies. Local mobility planners in tourist areas are struggling with seasonality in traffic demand but, in many cases, have not included visitors as main target group in their Sustainable Urban Mobility Plans. Co-operation between the local tourism and mobility sectors will lead to positive impacts on both the branding of the destination and the use of sustainable transport modes. It will also make tourism an integrated part of policy documents on urban mobility.

Supra-municipal SUMPs

In most sites, there will be a supra-municipal SUMP with an overarching approach to urban and regional problems. This unique approach for the DESTINATIONS islands builds on the former EU project Poly-SUMP. Poly-SUMP was part of the IEE STEER programme and developed and tested a methodology to improve the quality of sustainable regional transport, focusing on "diffuse city" regions whose urban functions are scattered in a polycentric network of compact towns and villages. These types of regions demand that mobility is planned for the whole region, and that the different layers of governments and authorities are involved in the planning process. The project applies the Future search participatory methodology. DESTINATIONS partner ISINNOVA managed the project.

The Poly-SUMP Methodology uses a collaborative working process to bring together key stakeholders of the polycentric region to initiate dialogue across institutional and geographic boundaries, regarding the region's common mobility challenges and issues. Its methodology is based on the conventional SUMP process, but adds elements to further understand polycentric urban regions and enable a more participatory process, including several municipalities and other stakeholders. The Poly-SUMP Methodology consists of three elements – prepare well by understanding your region; create common ground and vision; and use the outcomes and elaborate the plan.

DESTINATIONS is using this methodology as a basis to support integrated mobility planning in the 6 pilot areas, adapting it as much as possible to the tourist destinations purposes. A SUMP data framework was developed, with indicators chosen to match the POLY-SUMP categories. The DESTINATIONS SUMPS will take factors such as tourism inflows, energy & emissions and liveability into consideration.

Link to China

Chinese research and innovation is developing extremely fast and dynamically and China has become a major new actor in the global system for the production of knowledge. At the 2015 annual meetings of China's top national legislative and advisory body four key priorities were announced on sustainable urban mobility, with important takeaways for both national transport strategies and local mobility solutions. They are 1) "creating liveable cities with sustainable mobility", 2) "Integrating transport in the Beijing-Tinajin-Hebei metropolitan region", 3) "Innovating with technology-enabled mobility solutions" and 4) "more public participation, fewer administrative orders". In addition, the World Tourism Organization has predicted China to be the largest outbound tourism market in the year 2020. It's likely that China will face similar needs and challenges that EU tourist destinations will have to meet in order to profit from the income these new tourists will bring. Deepened cooperation focusing on liveable cities with sustainable mobility will enforce the envisaged Mobility Plans of the DESTINATIONS partners.

All islands have budget to travel to China to experience the newest urban mobility (incl. SUMP) developments first-hand. They will also receive a delegation from China to highlight how (tourist) mobility planning was done on their island. This exchange is part of DESTINATIONS' Work Package 10 on Cross-fertilization of knowledge and best practice replication, which a.o. integrates the activities designed to foster international cooperation with China in targeted research and innovation. For example by organizing 2 conferences in China - at mid-term present results and get inputs from Chinese cities, and a final one to disseminate the results in China. Other activities will include: i) study visits for EU partners and Chinese delegations; ii) a manual of how Chinese cities can develop a better quality urban environment to attract more European tourists; iii) develop new mobility and integrated urban planning products and services that make the DESTINATIONS cities more accessible

and attractive for Chinese tourists; and iv) establishing a China-EU Forum of Sustainable Tourist Cities. Various Chinese organizations have already committed themselves to support the project dissemination.

Business Modelling

Innovation related to the mobility of tourists is brought about by a versatile approach throughout the value chain to make the most of available resources from both the mobility and tourism sectors. The project addresses for the first time the issue of building more lasting business models on win-win relationships with the private sector. DESTINATIONS will incorporate business modelling from the very start of the project using a research based, data- and hypothesis-driven, customer experience oriented and iterative approach.

The lack of well-established private-public collaboration schemes and business models are relevant impacting factors preventing the provision of a seamless offer in tourist destinations at current level. The local measures, several of them part of the future SUMP, will introduce different types of innovation depending on the kind of actors and stakeholders involved. A specific Work Package is included in the DESTINATIONS work structure to build capacity among the local actors working on the measures and support them in three critical success factors: stakeholder engagement and cooperation for integrated tourist and urban mobility planning; service design, business modelling and innovation management; and implementation of smart technologies and ITS.

1.3 Objectives and target group of this report

- This report on the SUMP/SRMP Baseline will illustrate the analysis of the mobility context (key players and actors in the study area) and the structure of mobility patterns at a baseline year for all 6 sites, as a result of Task 2.2 (mobility context analysis and baseline).
- The first objective is to understand the study area and define the boundaries in which the SUMP is to be developed. This was done through a mix of desktop investigation (literature research, canvassing own data etc) and qualitative research (interviews with key players and stakeholders in the region) in each site.
- Current framework conditions were analysed to gain insight into how these will influence the mobility planning process and feasibility of measures in the region: i.e. different level of responsibilities (local/regional), regulations, strategies and objectives that might influence a SUMP, past or present initiatives used to coordinate or integrate local and regional transport and land use planning. The current processes were analysed, as well as drivers, barriers and opportunities that may hinder/ assist the development of the SUMP per site.
- The document aims to give a first overall understanding of the preconditions in the regions highlighting regional structures and mobility patterns. Of course the presented data is likely to change over time. Often, additional data collection and surveys are needed. This data collected for the SUMP definition provides the common baseline for the design of all the services planned at site level facilitating its integration in the planning phase.

1.4 The six measures in short

In all six sites the "SUMP measures" are far from identical. This paragraph gives a short overview of the measure on each participating island.

Madeira measure "(MAD 2.1) - Sustainable Regional Mobility Plan (SRMP) in touristic regions"

The measure will include the following actions:

- Draw up a sustainable regional tourism mobility plan in articulation with existing regional strategic framework for transport, tourism and land use.
- Definition of a central framework and implementation of an innovative integrated system/platform to collect mobility data and to support transport planning of all regional transport actors, modes and transport infrastructure.
- Tourist mobility study analyzing transport patterns.
- Evaluation of Public transport network design at local and regional level.
- Citizen participation, mobility stakeholders and tourist involvement platform for city living, with the support of an online platform for citizens to make suggestions andnotify of problems.
- Mobility management for big events, including traffic plans, promotion of the use of sustainable modes of transports, evaluation of how tourists and residents travel to the events.
- The existing Info Mobility Point will be improved to provide touristic and mobility information in Funchal.

Limassol measure "(LIM 2.1) - Sustainable Mobility Tourist Action Plan (SMTAP)"

The Sustainable Mobility Tourist Action Plan will be developed for Limassol city centre. The plan will foster a balanced development of sustainable mobility modes and will minimize the traffic flow within the SMTAP area that has a high tourist influx. Partner Stratagem will cooperate with the Limassol Municipality and other relevant stakeholders in the related sector in order to develop a SUMP taking leisure trips into account.

The SMTAP will include a tourist mobility study to analyse the current situation of the city centre, focussing on roads network, mobility demand and modal split, road safety, traffic, public transport, parking, pedestrians and bicycle services. It will also include citizens and local stakeholders' involvement as well as collection of tourists' inputs from questionnaires in order to share their suggestions for the sustainable mobility future of the city.

Las Palmas Measure "(LPA 2.1) - SUMP observatory and participation":

Las Palmas de Gran Canaria has already developed a SUMP (2009-2012) where a detailed diagnostic of the mobility was set up and the result was a set of strategic measures for urban mobility. However, at the local level there is a need for integrated urban planning to foster sustainable development. In order to achieve this broader goal, a "SUMP observatory", also called "Mobility Office", will be put up. This will coordinate all projects addressed to improve the urban quality by promoting walking, cycling and public transport. Data collection will be an important part. The main tasks under this measure 2.1 are to prepare the tender documentation for the Mobility Office, to award the tender process and to set up the Mobility Office. Then, Monitoring and Evaluation study of the current SUMP takes place.

Valletta, Malta Measure "(MAL 2.1) - SUMP for the Valletta Region"

This measure will introduce the concept of SUMP in Malta and draw up a SUMP for the Valletta Region. A sustainable urban mobility plan shall be compiled for Valletta and its surrounding region which hosts the main commercial districts, the most popular tourist destinations as well as the two main international gateways; the Malta International Airport and the Cruise Port Terminal.

The SUMP shall explore innovative solutions, as yet untested on the island, in order to improve mobility patterns, meet demands in the transport sector and overall contribute towards making transport sustainable. Some of the Measures to be included in the final SUMP shall be tried and tested during the DESTINATIONS project in order to assess their feasibility in practice; thus allowing for the necessary improvements to be made to the measures prior to them being included in the long term plan.

Rethymno, Crete measure "(RET 2.1) - SUMP integrating Tourist Mobility – SUMP Watch"

This measure will refine and implement a pioneering Sustainable Urban Mobility Plan for the city and the greater Rethymno area combining needs of visitors and residents alike, taking into account inter-regional mobility and public transport services. SUMP will put the strategic approach for key demonstration projects within Destinations and involve citizen groups and key local actors through a 360 degree stakeholder engagement process.

A study which maps the seasonal fluctuations in transport patterns of both tourists and residents in the center and main touristic attractions is part of the measure. The SUMP will include studies for mobility patterns, traffic loads, concrete action plans, and public transportation services restructuring. Capacity building workshops for local/regional actors, public authorities, transport planners, hoteliers, and other actors in the tourist industry will be offered to compliment the work in the field and to raise understanding of the rationale of SUMPs and hence acceptance.

Elba measure "(ELB 2.1) - Common Elba SUMP for residents and tourists"

No general mobility plan at the whole Elba level is present. There is a regulation framework inside each municipality that primarily concerns the access and parking within cities. Different municipality documents will be the base for the start of the SUMP activity, including also the Sustainable Energy Action Plan at Elba level that has certain sections focused on possible mobility solutions. The SUMP will consider the main relevant modalities as PT services (including flexible and sharing schemes), mobility services (as parking system), active modalities (bike and pedestrian routes), ferry connections, logistics (in relation with the SULP to be developed in T5.3) and the role of the airport.

Moreover, the ITS and ICT framework form an essential part of the SUMP as the regulation framework (access town rules, parking policy, logistics windows, etc). The peculiarity of this measure is the development of a "PolySUMP" aggregating the different needs and requirements of the 8 Municipalities as a unique entity. The SUMP will include a time plan for its adoption not only for the project measures but also for interventions in the future.

1.5 Report outline

1. All 6 sites have followed a similar structure for this report. First, the geographical area is described, including demographics. Then, the main section is an analysis of the current mobility situation. Afterwards, the measure is introduced. This makes clear if it concerns a SUMP, a SRMP (Sustainable Regional Mobility Plan) or for example a SUMP Observatory. Then follow the SUMP goals and an overview of other DESTINATIONS measures of relevance to the SUMP/SRMP area. And finally a short analysis of the SUMP self-assessment.

2. As part of this report, each site completed the SUMP self-assessment. The SUMP Self-Assessment tool was designed by ELTIS to enable planning authorities to quickly assess the compliance of their plan with the European Commission's SUMP requirements as set out in the EC's Urban Mobility Package. It also enables planning authorities to measure their progress towards a genuine Sustainable Urban Mobility Plan. The self-assessment is based on a set of 100 clear and transparent yes-no questions. It is structured along the first 9 steps of the SUMP Guidelines (see figure 7 below).

3. All filled SUMP self-assessments by each of the participating sites can be found in annexe.

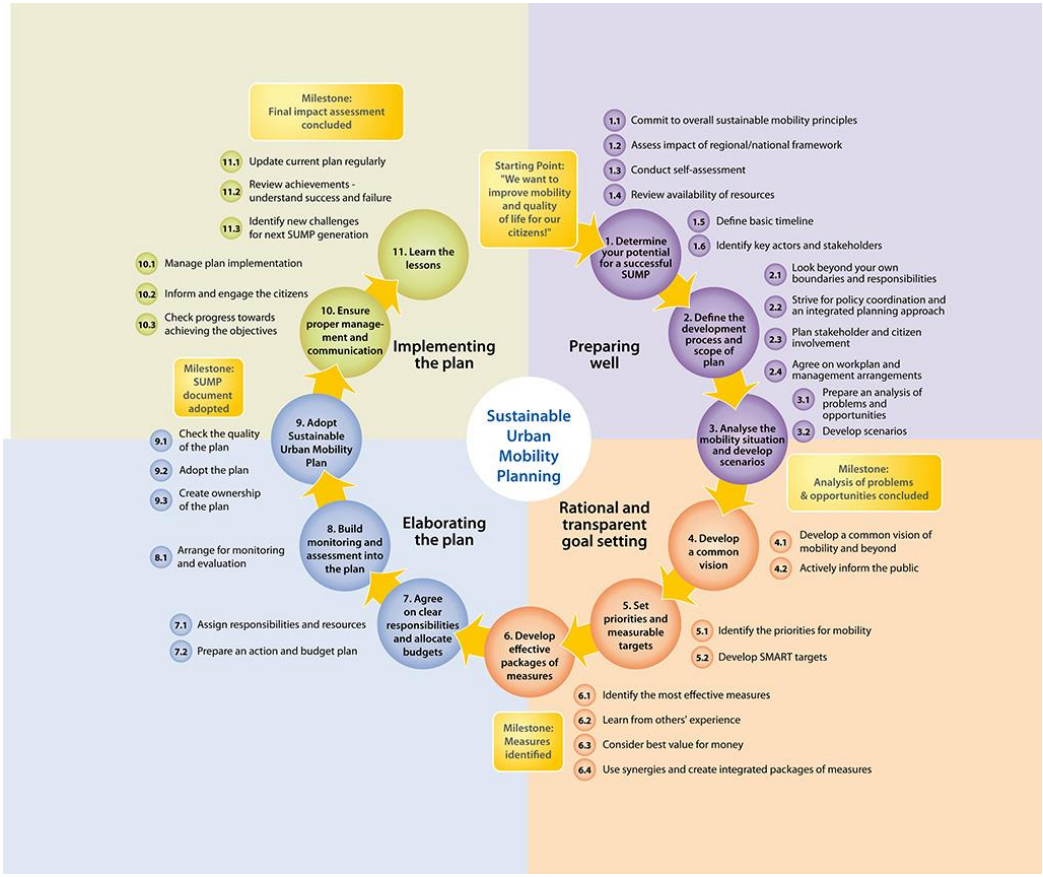


Figure 1 The Steps of the SUMP Guidelines

1.6 Analysis

In this section a first analysis of the baselines of the sites is made. Furthermore a comparison and an analysis are made of the filled SUMP self-assessments.

This deliverable is one of the first within the scope of the Destinations project. It gives an overview of the current situation of the baseline data available. During the investigation it became clear that it was not always easy for the sites to retrieve all the data. This was due to the fact that some data was not available at all, data was too old and not relevant anymore or data was not retrievable by the set deadlines.

For all sites, additional data will become available during the course of the project, most likely already during the first year of the project. This data will then be added to this report: deliverable 2.1 will function as the baseline document and new data will be added. However, an updated D2.1 is not added as an extra official project deliverable.

Modal Split

To get some grip on the situation in the different Destination sites a short overview is made of the modal split of residents (based on the information that was provided). The car has a predominant place. Public Transport is, in most cities, the second important way of travel. Walking is a good third. Only Madeira (Funchal) has figures of the Modal Split of the tourists. For the other sites these numbers are missing. It is important for the SUMP to get a far better insight in the modal choice of the tourists because of their great numbers in the peak season and the corresponding influence on the traffic situation on each island.

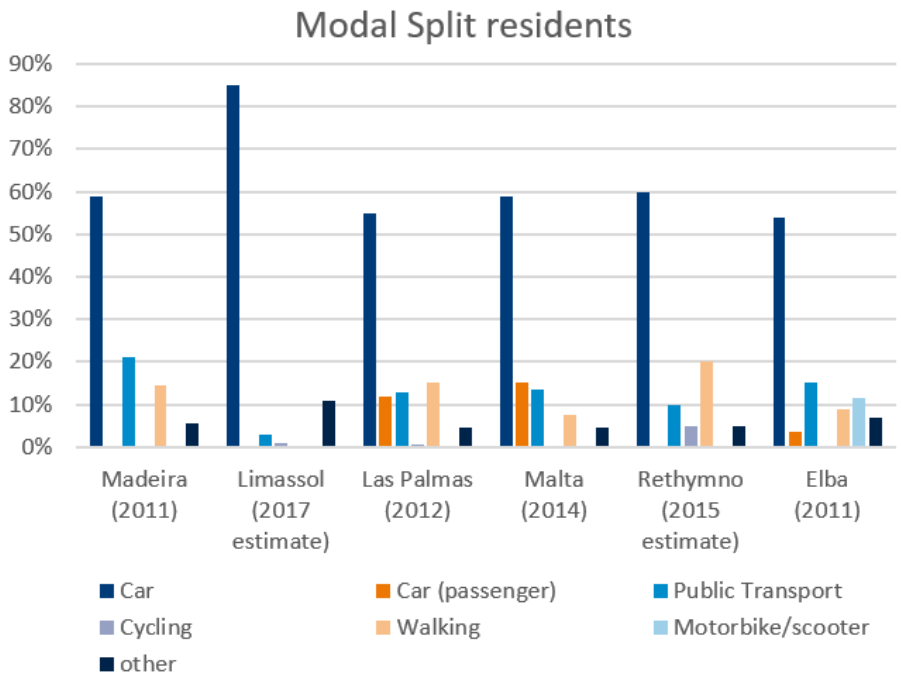


Figure 2 – modal split residents

Residents and tourists

To understand the sites better and to make some comparison, the number of inhabitants and the number of tourists are shown in figure 3

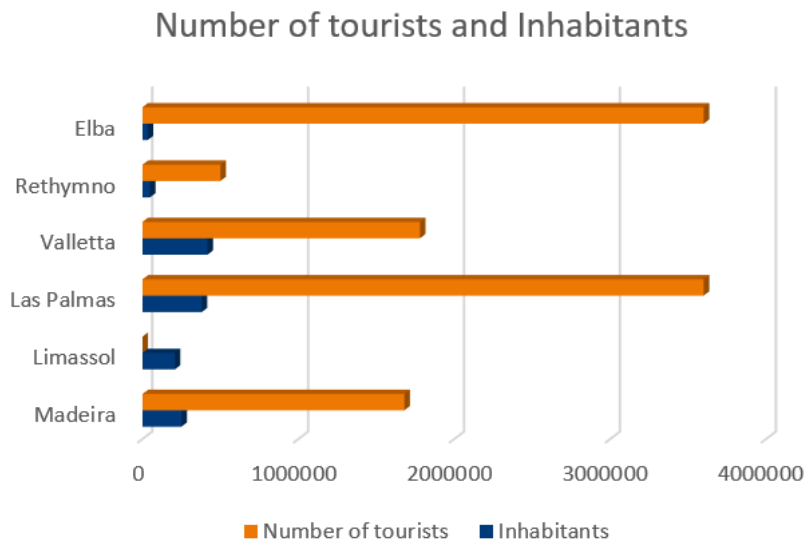


Figure 3 Number of tourists and inhabitants

Not all sites have a good understanding of the number of tourists visiting their city or region. In the cities that have this information, it is clear that the number of tourists has a great impact on the city/region. The residents are in most cases over 10 times outnumbered by the tourists during high season. The existing infrastructure, Public Transport and other traffic facilities that are foreseen for the residents are often not sufficient to fulfil the needs of the tourists.

For all sites it will be good to get a better insight of the number of tourists visiting the SUMP region; the ideal would be to have these figures per week or month. In the course of the project, the sites will do additional research tailored to their data needs. Data will be collected on how these tourists travel or how they would like to travel when they are visiting.

SUMP Self-Assessment

To get a first insight in the state of play of the baseline in each site regarding SUMP, all sites are asked to fill the questionnaire of the SUMP Self-Assessment (http://www.eltis.org/resources/tools/sump-self-assessment-tool). This tool is an outcome of a European project and one of the most easy-to-use tools for cities that are interested in their current mobility policy level and interested in making a SUMP.

Within the given timeframe of D2.1 all sites have filled in the questionnaire. It turned out that filling in the questionnaire proved to be more difficult than expected at first hand. None of the sites, except Las Palmas, currently has a SUMP, although Madeira has a regional strategic document (PIETRAM)

for all transport policies on the island for the period 2014-2020. It was prepared to frame all the required investments due to be implemented during this period and therefore entails a dedicated

action plan of measures. The islands / cities have filled in the self-assessment questionnaire on the basis of the existing plans in their site and have interpreted the answer on the basis of these documents and of their local knowledge. Therefore, the outcome of the questionnaires is in mostcases not the results as such, but gives a good first insight in what is the status of the mobility planning and policy in the city/region.

With the results a short analysis is made in which the total score on the 100 SUMP questions of the different sites is analysed. A distinction is made between the Foundation questions and the Excellence questions. The foundation questions test the basic requirements a mobility planning process must fulfil to be in line with the SUMP concept. The excellence questions highlight planning activities that (often more advanced) cities might undertake, to motivate and award processes and plans of exceptionally high quality.

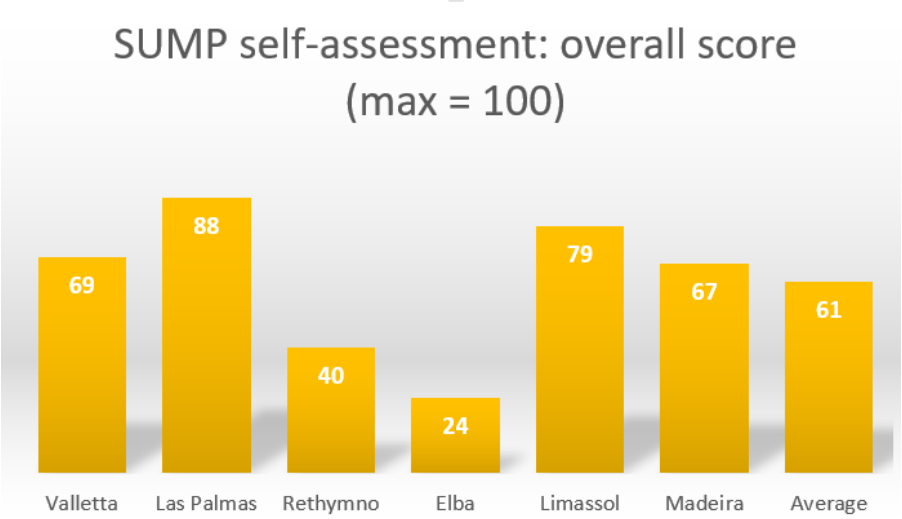


Figure 4 SUMP self-assessment overall scores

The only site that has a SUMP according to the SUMP self-assessment tool is Las Palmas. They have scored as an excellent SUMP, and made the threshold on all foundation questions. Other sites also score relatively well, but didn't tick all the boxes on foundation. This is shown in figure 5.

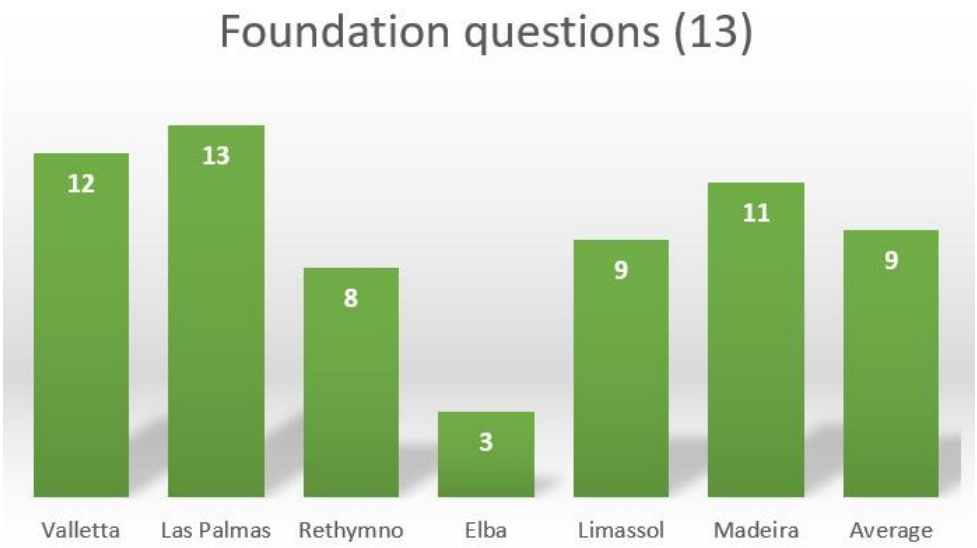


Figure 5 Foundation questions

On excellence the cities scored the following:

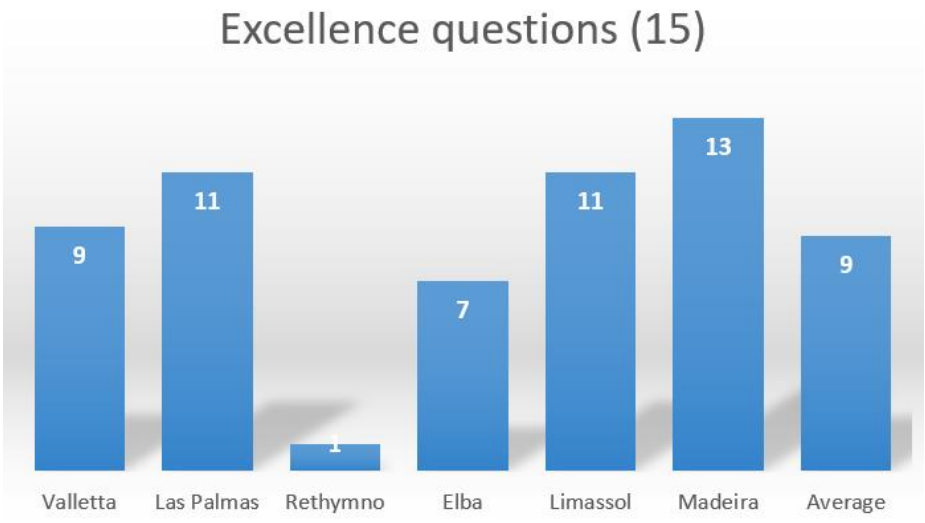


Figure 6 Excellent questions

On the SUMP characteristics the outcome is the following:

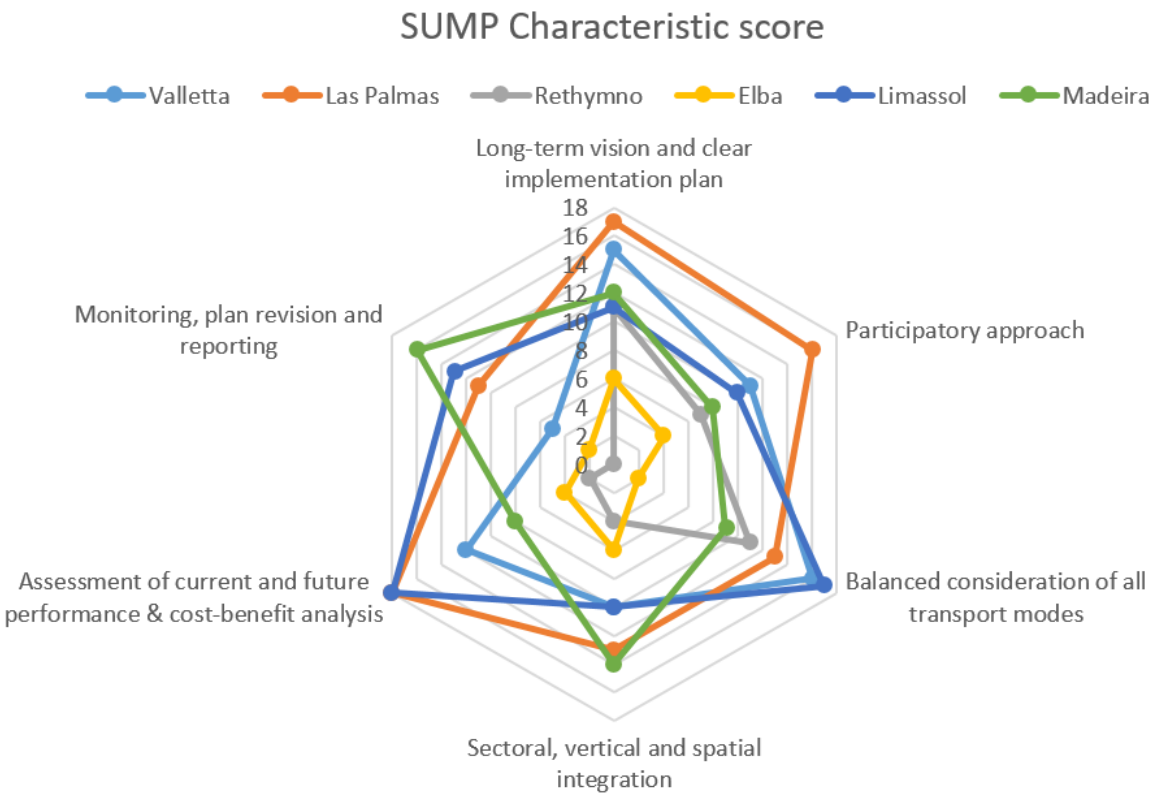


Figure 7 SUMP Characteristic Score

Las Palmas has the most balanced plan based on these aspects. A comparison shows that all sights are looking at a Long-term vision and clear implementation plan. The Participatory approach is the strongest in Las Palmas and getting less attention at the moment in other sites. Monitoring, plan revision and reporting is up to date in Madeira and Limassol.

The outcomes differ strongly per site and some already score quite well. The baseline of the sites also varies. Some sites score low in the SUMP self-assessment but have provided very good baseline information and have a lot of data on different aspects and therefore a very good starting point for a good and thorough SUMP. Whereas others already score relatively high in the self-assessment but have gaps in their baseline (see following chapters). During the Summer of 2017, these gaps and differences will be analysed and discussed. By doing so, all sites can build on their plans in a constructive way.

2 Madeira baseline

2.1 Geographical area

Madeira Island is part of the Madeira Archipelago, along with Porto Santo and Desertas and Selvagens Islands (last two islands are not inhabited). It is located in the North Atlantic Ocean and, according to the last census in 2011, has a population of around 262,000, 112,000 of which live in Funchal, the capital city. The island has a surface area of 740 km^2 (57 km long and 22km wide) and lies in the middle of the Atlantic Ocean, 500km from the African coast and one hour and a half flight from the Portuguese capital city, Lisbon.

The streets in Madeira, especially in Funchal, are very narrow and steep, hence it is not easy to walk or use a bicycle. Also, due to the lack of space, most streets do not have appropriate sidewalks yet, and illegal parking is common when big touristic events take place. Around Madeira Island there is a motorway which has improved accessibility but has also contributed to the increase in use of cars and motorbikes. The increased accessibility to cars has made travel by personal transport more appealing and convenient than public transport.

The network of cycle lanes is almost inexistent; the only dedicated lane is located in a small flat area of the Municipality of Funchal which is roughly 1.6km long.

The overall extent of the road network in Madeira Island is of 608.9km whereas in Porto Santo Island the total extent is of 28.4km.

A geographical map with an indication of the SRMP area was not delivered in time to be part of this report.

Airport

There is only one airport in Madeira Island and another one in Porto Santo Island. The airport in Madeira (Cristiano Ronaldo International Airport) is located about 20km from the capital, Funchal, and can be reached through good road access. A high number of airlines fly regularly to Madeira, including some of the major low-cost companies. There is an Aerobus service linking the airport terminal and Funchal city centre, which passes through the main hotel area along the south-west coastline of the city.

Public transport

In Madeira there are currently **5 companies providing public transport** in different areas: Horários do Funchal (which is a public company exclusively responsible for the urban service in Funchal), Autocarros de São Gonçalo (a subsidiary company of Horários do Funchal, providing interurban public transport service), SAM (interurban service, private company), EACL (interurban service, private company) and Rodoeste (interurban service, private company). Horários do Funchal is the biggest company and serves both the urban area of Funchal and the east part of the island. The main depot is located in Fundoa, nestled in a valley in the middle of the city. The depot of all other public transport (PT) companies lies in the city centre of Funchal. All these PT providers operate in specific

areas determined by the Regional Authority for Transport so there is no direct competition between them. Currently a tender is in process which will reorganise the interurban PT service and is due to have an impact in the PT service as from January 2018 onwards.

There are **two main ports in Madeira**, one in Caniçal which is industrial-oriented, where most goods and commercial cargo arrive and leave the archipelago and another in Funchal, which is an important stopover for commercial and trans-Atlantic passenger cruises between Europe, the Caribbean and North America.

Main tourist destinations

There is a wide range of points of interest for tourists in Madeira. Horários do Funchal has prepared a guide which compiles everything that is worth-seeing within the company concession area (can be downloaded here: http://www.horariosdofunchal.pt/guia-en/) and for which public transport services can be used.

Among the hallmarks, one can mention the traditional farmers market in the centre of Funchal; Monte, which is small village located on the hills of Funchal, at an altitude of 314 meters. Monte can be accessed using the cable car and return using the famous wicker basket cars. Outside Funchal, it is worth mentioning the hilly landscapes dominated by the lush green of the Laurissilva Forest (which is a UNESCO heritage site) and where one can find several Levadas (man-made water channels with pathways) visited by tourists and locals alike for trekking activities. One can also mention Cabo Girão (the highest cliff in Europe) and its glass platform as well as Porto Moniz's natural pools made up of volcanic rock.

Main working locations

There is no heavy industry in Madeira and there are only two industrial zones: one in PEZO, in the borders of Funchal and Câmara de Lobos, and another area in Caniçal, where there is an industrial free trade zone. Most of the workforce is concentrated in Funchal, where most hotels are located and touristic services flourish.

2.1.1 Demography / census

Population

Below, one can find the estimation of the resident population, per council and sex, split into age groups, in 2015 using as source the national statistics agency.

Council and sex distribution		TOTAL
Madeira Region	**MF**	**256 424**
	M	**119 635**
	F	**136 789**
Calheta	MF	11052
	M	4 977
	F	6 075
Câmara de Lobos	MF	34 246
	M	16 308
	F	17 938
Funchal	MF	105 562
	M	48 505
	F	57 057
Machico	MF	20 654
	M	9 924
	F	10 730
Ponta do Sol	MF	8 619
	M	3 921
	F	4 698
Porto Moniz	MF	2 417
	M	1020
	F	1397
Ribeira Brava	MF	12 555
	M	5 664
	F	6 891
Santa Cruz	MF	43 925
	M	21215
	F	22 710
Santana	MF	6 992
	M	3 148
	F	3 844
S. Vicente	MF	5 216
	M	2 395
	F	2 821
Porto Santo	MF	5 186
	M	2 558
	F	2 628

Table 2 Estimation of the Resident Population (as of 31st December) per council

A description of the number of tourists and their demographical characteristics was not available at the time of delivery of this report.

2.2 Analysis of current mobility situation

Modal Split: The **modal split of Funchal** was evaluated in 2007 (in the frame of the Mobility Study of Funchal). It resulted that 55% of the residents travel by car, 33% travel by public bus, and 12% travel on foot.

The **modal shift in all the region of Madeira**, according to the 2011 census and for commuting purposes, can be broken down as follows:

- Private car, 58.9%
- By foot, 14.6%
- Public transport, 21.1%
- Others, 5.4%

In an effort to trace back the **modal split of tourists**, one can take into account the tourist survey conducted in October 2012 at Madeira Airport (in the frame of the SEEMORE project), namely the question about the mode of transport used to get to the main attractions: 24% of the tourists reported that they use rented cars, 19% use chartered/courtesy buses, 18% walk, 14% use public transport, 10% use the cable car, 8% travel using a friend's car, and 6% use taxis.

Registered vehicles: According to data provided by the Portuguese Insurance Institute, in 2015 the **motorisation rate** in Madeira was at 422 cars per 1,000 inhabitants. This motorisation rate is slightly higher in Funchal, the capital city and where most people live and work (nearly 439 cars per 1,000 inhabitants).

Buslines: Horários do Funchal offers 57 urban routes and 12 interurban routes. According to PIETRAM (2016), there are 131 public transport routes in the whole region.

Arrivals by sea and air: The total number of passengers arriving by cruise liners in 2016 in Madeira summed up to 519,700 (517,425 of which landed in Funchal Port). At the airport, the number of passengers reached 3,127,845 in the whole region (2,971,725 in Madeira). The number of guests in Madeira hotels reached 1,153,633 in 2016 which can be a good indication of the number of tourists arriving at Madeira airport in that year.

2.2.1 Traffic models

A description of the traffic / transport models currently in use in the SUMP/SRMP area was not delivered in time to be part of this report.

2.2.2 Existing policy plans, regulations and models

- PIETRAM is the main regional strategic document for all transport policies in Madeira within the period 2014-2020. It was prepared to frame all the required investments due to be implemented during this period and therefore entails a dedicated action plan of measures.
- The Mobility Study of Funchal (2007) was an extensive study focusing solely on Funchal council. It included several data collection campaigns from which an O/D matrix was drawn.
- The Municipality is currently drafting a new plan which is the PAMUS, an action plan for urban mobility. The due date of such plan is still uncertain.

- Other relevant plans include the Energy Action Plan that the municipality of Funchal has in force.

2.2.3 Stakeholders and responsibilities

Stakeholder	Activities / relation to SUMP
Interurban Public Transport Companies	- Participation in the public transport network restructuring to better serve residents and tourists; - Contributions and participation in the mobility management for big events.
Institute of Mobility and Transport (IMT)	- Management of the platform for the public transport network.
Other municipalities	- Participation in the public transport network restructuring to better serve residents and tourists; - Contributions and participation in the mobility management for big events.

Table 2 The Involved Stakeholders and their respective abilities

2.2.4 Tourism

Descriptions of the main tourist destinations in the SRMP area (the ones that generate most traffic) and of recurring tourist patterns were not delivered in time to be part of this report.

It is interesting to note that, according to the survey conducted by the SEEMORE team at the Regional Airport in 2012, a share of 35% of tourists have already visited the Region before and thus 65% are newcomers.

High season of guests at hotels normally corresponds with the cruise liner low season so there is an interesting balance. Therefore, it is not appropriate to identify seasonality issues in Madeira.

The urban Mobility study of Funchal does not calculate tourist mobility patters, but rather makes a rough estimation that they would represent nearly 10% of all generated trips.

Accommodation: In January 2017, the distribution of touristic accommodation in Madeira is as follows:

Hotels	71
*****	12
****	37
***	12
**	8
*	2
Apart-hotels	32
*****	1
****	22
***	9
Touristic apartments	10
****	6
***	4
Resorts	1
****	1
Youth hostals	1
Hostals	25
*****	16
****	2
"Quintas da Madeira" – historic/monument hotels	7
Low cost hostels	37
Low cost hostels	17
1st	17
2nd	3
3rd	0
Rural hotels	16
Local accommodation	107
TOTAL	**881**

Table 3 Accommodation Available in Madeira

2.2.5 Main mobility challenges / problems in the SRMP region

Tourist (in) flow: Tourism in Madeira is growing at a fast pace and the profile of tourists is also sharply changing. Growing use of the Internet has contributed to the importance that this channel currently holds in attracting direct bookings for airlines, hotels and other service providers. CiViTAS Destinations rises here as a strong asset to enhance and develop a realistic vision based upon three founding pillars:

- Madeira has to be at the forefront of information and marketing actions tailored to its visitors so as to highlight the key factors that differentiate green modes of transport from more resource-wasting modal options;
- Incentives to promote sustainable mobility are required as a stepping stone to attract more visitors;
- and finally, stretching the offer of mobility choices so as to fit each visitor's needs is a precondition to have a high quality and sustainable destination.

Cycling: The topography of Funchal severely limits any cycling activity that is not for leisure. Cycling as a form of commuting is barely existent according to recent surveys and data collected.

Pedestrians: As most roads are steep and narrow in Funchal, there are several accessibility challenges which limit walking activities. Nevertheless, in the most central and busiest parts of the city, the

Municipality has been restricting car access and building promenades for tourists and locals to walk along the coastline.

Congestion: Congestion and illegal parking were among some of the features tourists dislike the most, according to surveys conducted by the tourism regional authority carried out some years ago.

Public transport: The number of public transport users has been declining over recent years, especially among locals. Nonetheless, there is evidence that public transport is the mode of transport with the greatest potential for improvement in terms of usage among tourists, as the SEEMORE results have shown (tourists that tend to use PT back home tend to replicate those habits during leisure and holiday time).

2.3 Measure introduction

Madeira Sustainable Regional Mobility Plan (SRMP) in touristic regions (MAD

.) offers a common strategic plan for mobility, tourism and other related macro policy topics at regional level. The measure will act in a broad way to contribute positively to shift tourists and residents to more sustainable transport modes for their leisure and every day trips. The measure will contribute to change people's behaviour improving data and resource sharing between all mobility stakeholders.

The measure will include the following actions:

- Definition of a central framework and implementation of an innovative integrated system/platform to collect mobility data and to support transport planning of all regional transport actors, modes and transport infrastructure.
- Tourist mobility study analysing transport patterns.
- Draw up a sustainable regional tourism mobility plan in articulation with existing regional strategic framework for transport, tourism and land use.
- Evaluation of Public transport network design at local and regional level.
- Citizen participation, mobility stakeholders and tourist involvement platform for city living, with the support of an online platform for citizens to make suggestions and notify problems.
- Mobility management for big events, including traffic plans, promotion of the use of sustainable modes of transports, evaluation of how tourists and residents travel to the events.
- Deployment of both a mobile and fixed structure in order to provide tourists, residents and public transport users several related mobility information.

This measure represents a wide structure to drive the other DESTINATIONS measures, defining the overall regional mobility framework. The results gathered from the mobility study, citizen's participation and stakeholder's involvement will enrich the plan and lead to the implementation and evaluation of the sustainable regional mobility plan in itself.

In addition to this, the project team will seek to use quality management procedures to guarantee that the plan is timely updated and revised according to quality criteria.

The monitoring of implementation plan will be a useful tool to evaluate also the other measures, and to support social and environmental evaluation.

2.4 Aims of the SUMP

The main aim of Madeira SRMP is to focus on mobility and tourism information collection and to share resources and data between different regional actors and markets. CIVITAS Destinations brings exciting opportunities for liaison between the tourism and transport sectors and therefore several tools will be produced to provide information about touristic attraction and mobility solutions to people and hence incentivise them to make wise mobility options. Project partners have found out that as tourism and transport relate with each other very much, a good transport experience is important for the general appraisal of the tourist with regard to their holidays. In the event that the tourist has had pleasant holiday, positive word-of-mouth will be disseminated to their relatives and friends who consequently become potential tourists. Other noteworthy parallel effects rely on the assumption that CIVITAS Destinations can give a boost to a more fluid, smart and green region and thus contribute to reducing the disturbance that traffic congestion creates among tourists that look for a peaceful destination (according to the latest surveys conducted). Tourism can, therefore, provide a decisive contribution to the wellbeing of both locals and visitors.

Macro and specific objectives of the SRMP were drawn and are identified below:

Macro objectives:

- Improved urban accessibility;
- Improve satisfaction of the users;
- Fewer emissions / increased air quality;
- Less energy consumption;
- More attractive tourist destination

Specific objectives:

- Prepare a smart, participative and sustainable regional mobility plan with a long-term vision;
- Better usage of transport infrastructures according the mobility demand.
- Promotion of an attractive and high-quality public transport service
- Promotion of behaviour change among tourists and residents to more sustainable transport modes
- Tourist satisfaction increase due to better mobility solutions.

2.5 Relevant other CIVITAS DESTINATIONS measures in SRMP area

There are several interrelationships and synergies between the SRMP measure and other CIVITAS Destinations measures that are ongoing (just to mention some of the most important ones):

MAD 2.2. – includes the development of a network of smart and low-cost sensors to be installed on-street, which will continuously collect and feed the SRMP with concrete data. In this measure smart sensing/metering and user generated content will be used to improve planning and services related to mobility. The solution will make use of generally available devices to sense and store urban data. The infrastructure will consist of a network of low cost wireless sensors and webcams to be installed in strategic locations, for example fixed at traffic lights, but also

specific apps on smart phones. Information collected about traffic and environmental indicators can be collected and used by the Municipality, SRETC, HF and other relevant stakeholders. The network functions will be counting (cars, people, and cyclists) and monitoring (meteorological information, emissions and air quality). The data will be used for both SUMP measure development/planning and for SUMP evaluation and monitoring purposes.

MAD 5.1. – entails an urban freight and logistics policy plan (SULP) which will be integrated as one of the specific action plans that will be part of the overall SRMP. The SULP will be developed in order to find the best solutions to improve freight delivery services, to optimize the supply in the city centre and to reduce traffic overcrowding in touristic areas. In addition to the policy plan, feasibility studies for various urban logistics measures will be carried out and municipal rules and regulations will be revised and adapted where needed. Awareness raising activities are also of importance.

MAD 6.3. - Currently, the information about sustainable transportation is scattered and not easy to access by tourists. There are different institutions, operators and companies which act in the mobility field but are not connected by unique information channels and layouts. This measure seeks to overcome this problem and implement capacity-building activities to share, and promote sustainable mobility transport modes within tourists and local tourism operators. Tourists will be informed about sustainable mobility options – many of them developed within the framework of the new regional SUMP - with an integrated tool, embedded in the official tourism website and in other relevant touristic platforms. This should increase the awareness for sustainable mobility among tourists and enhance Madeira as an attractive tourist destination.

2.6 SUMP development: Drivers, barriers, resources and planning

Descriptions of the relevant drivers and barriers that may hinder or assist the development of the SRMP were not delivered in time to be part of this report.

Resources and planning

There are currently no other budgets foreseen for the SUMP development other than the designated DESTINATIONS funding. In addition to staff budget, the Madeira partners have DESTINATIONS budget available for computers to support the data collection and planning for the Regional Mobility Plan and for a communication campaign to promote the information mobility point. Also the deployment of both a mobile and fixed structure in order to provide tourists, residents and public transport users several related mobility information is planned. Communication materials to promote the regional plan and materials to promote the use of PT during big events are part of the budget.

The SUMP planning follows the measure timeline in the Measure Description Form, with the first official stakeholder meetings taking place in Summer and Autumn 2017, in order to come to a cooperation plan between the various authorities. In Deliverable 2.2, expected in October 2017, a more detailed planning will be provided.

2.7 SUMP Self-assessment questionnaire analysis

Madeira has scored:

SUMP self-assessment: overall score (max = 100)	
Madeira	67
Average	57
Foundation questions (13)	
Madeira	11
Average	9
Excellence questions (15)	
Madeira	13
Average	**7,5**

Table 4 Madeira Self-Assessment Overall Score

This is already quite a good score. Missing elements are on the Participatory approach, the balanced consideration of all transport modes and especially the Assessment of current and future performance & cost-benefit analysis

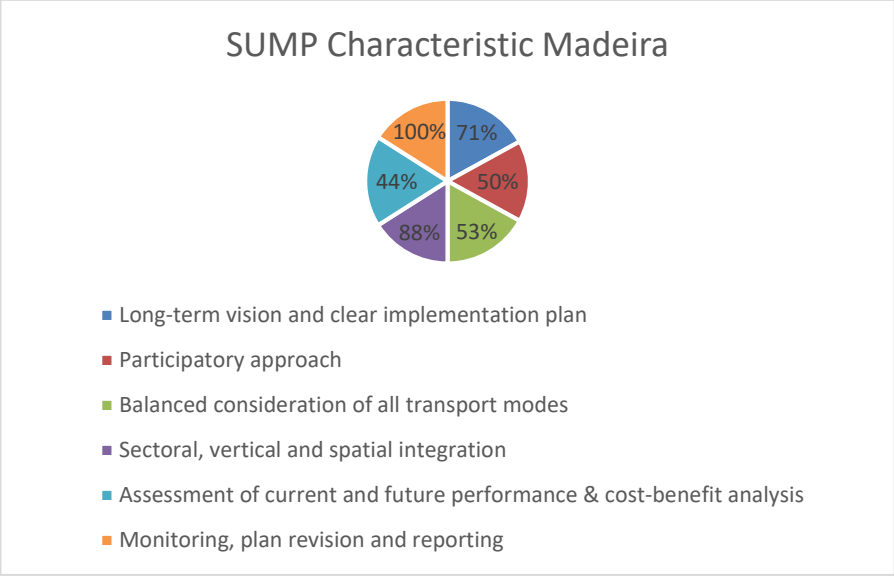


Figure 1 Madeira SUMP Characteristic

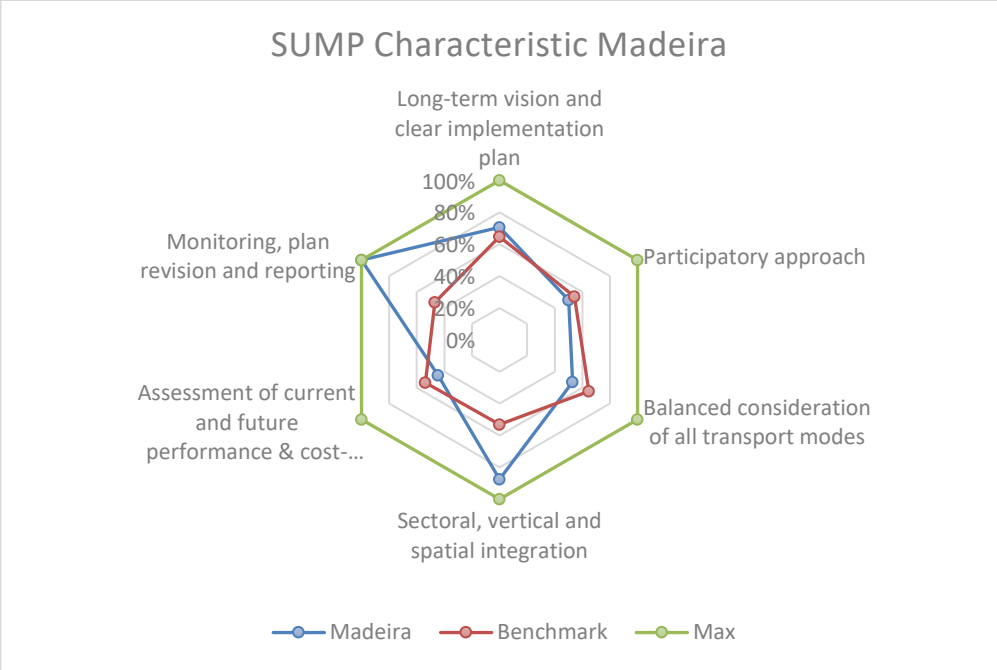


Figure 2 Madeira SUMP Characteristic including maximum score and benchmark

In the above figure the score of Madeira on the SUMP self-assessment is revealed. Next to the score of Madeira, the maximum score and the benchmark are shown.

3 Limassol (Cyprus) baseline

3.1 Geographical area

Located on the southern coast of Cyprus, Limassol is geographically the second largest city on the island with a population of approximately 207,000 inhabitants. It is one of six districts in Cyprus and covers an area of 34.87 square kilometers. Limassol is located on the southern coast of the island, stretching westward to the Paphos district and bordering the district of Nicosia on the north and Larnaca on the east.

Its central position offers easy access to all major cities as well as the Troodos Mountains within a 35 to 45 minute drive. It is also conveniently situated only 40 minutes away from both Larnaka and Pafos airports.

Limassol's historical centre is located around its medieval Limassol Castle and the Old Port. Today the city spreads along the Mediterranean coast and has extended much farther than the castle and port, with its suburbs stretching along the coast to Amathus. To the west of the city is the Akrotiri Area of the British Overseas Territory of Akrotiri.

The City Center of Limassol is about 1.54 square kilometers. It is the central business district of the city and therefore it is very busy. The traffic is high, especially during rush hours. In the Limassol City Center there are existing bus routes and cycling roads that run along the coast in the touristic area.

The coast line of Limassol until the St. Raphael's Hotel, from the central area of Limassol, covers about 0.88 square kilometers. Most of the hotels are located near that stretch of coast line. There are bus stops located along the coast line which are easily accessible.

The central area of Limassol is visited by tourists regularly throughout the year. Some of the main touristic destinations are Anexartisias and Agiou Andreou shopping districts, the Molos promenade, the medieval castle and Limassol's marina. To arrive there tourists use the bus stops from their hotels in the tourist coastline area where their hotels are.

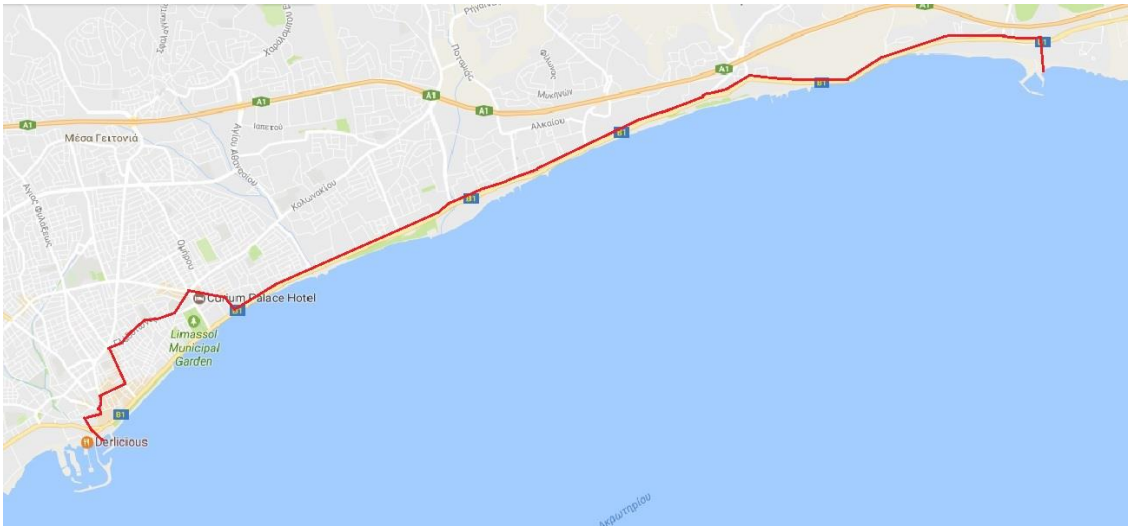


Figure 10 Map of Sustainable Mobility Tourist Action Plan (SMTAP) area highlighted in red

There are not any airports in Limassol. There is a port, but it is not within the SMTAP area.

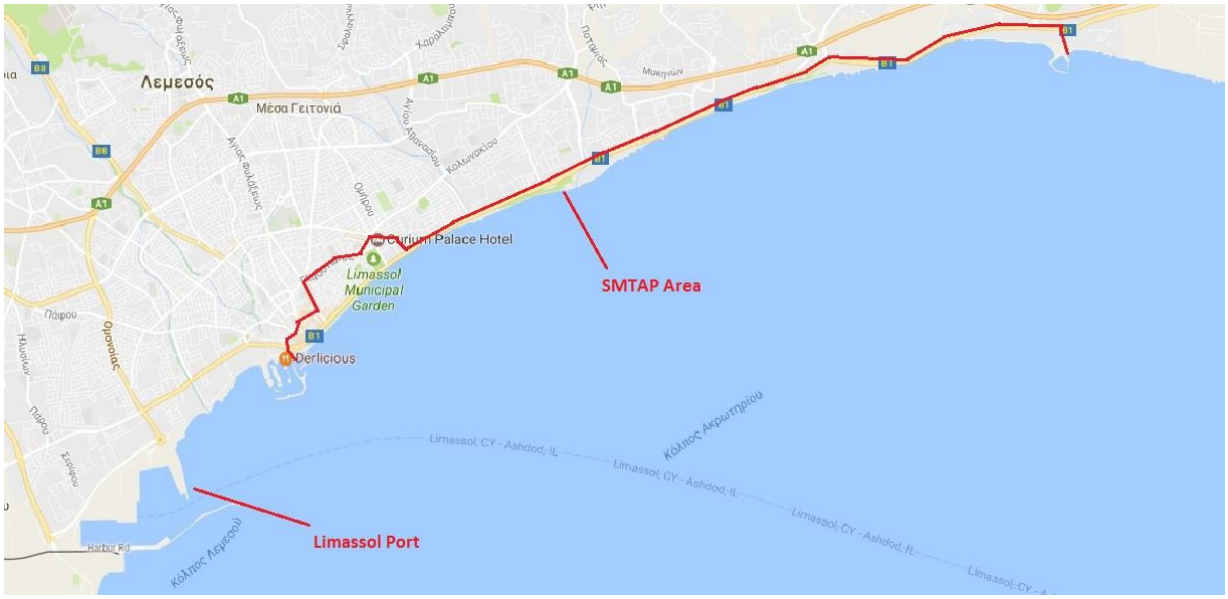


Figure 11 Map of Limassol Port and SMTAP area highlighted in red

Main tourist destinations:

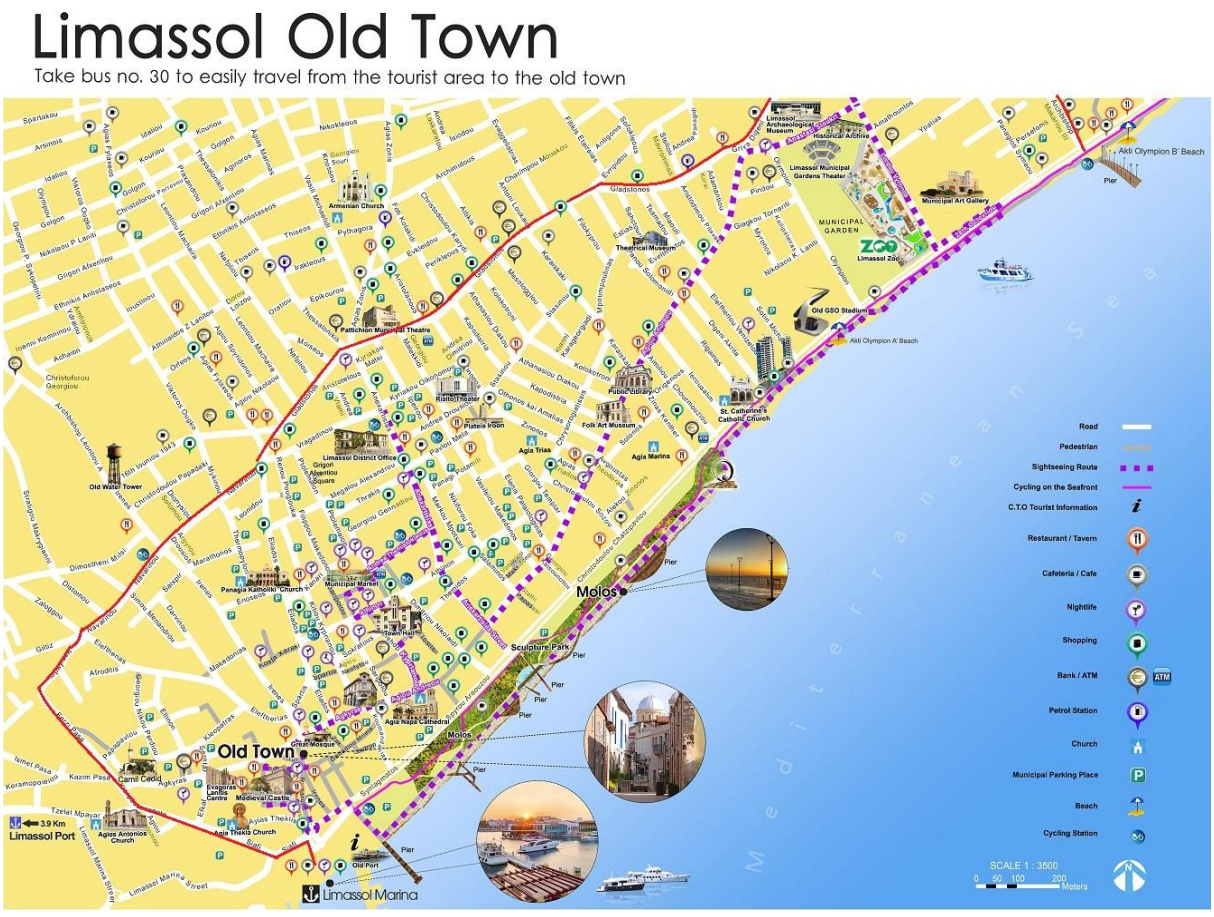


Figure 12 All the attractions are within the SMTAP area highlighted in red. The purple dotted line indicates the sightseeing routes.

Main working locations: There are no industrial zones within the SMTAP area. Only offices and retail stores in the shopping districts of Anexartisias and Agiou Andreou, and restaurants and hotels along the coast line.

Trip distances:

Destination	Distance
Larnaca airport	62 km
Paphos airport	61 km
Limassol port	4.5 km

Table 5 Distances from SMTAP area to the airports and port

3.1.1 Demography / census

Population: Since 1992-2001 the population of Limassol has increased by 17,5%, and from 2001-2011 it has increased by 12% from the previous count. For the urban area of Limassol, as of 2011 census, the number of residents is 183,658. Currently the population in Limassol is 207,000. It is estimated that 6.94% of the whole Limassol population lives in the SMTAP (Sustainable Mobility Tourist Action Plan) area.

Tourists in SMTAP area: There is no census yet describing how many tourists are in the SMTAP area. Upon conduct with the Cyprus Tourism Organization (CTO) and the Statistical Service there are not any specific data about the SMTAP area. Also there won't be any future studies only for the specific area of the SMTAP.

Jobs / work places in SMTAP area: There is no census yet with such information.

3.2 Analysis of current mobility situation

3.2.1 Models and data

Modal Split: There are no accurate measurements yet for the modal split. At time of submission of this document, just estimations existed. Also these estimations are for all of Limassol, not just the City Center. No measurements for the City Center are available. The same applies to the separate modal split between tourists and residents.

Transport Mode	Modal Split Estimation
Public Transport	3%
Cycling	1%
Cars	85%

Table 6 Estimation of modal splits per transport mode

Number of trips in the SMTAP area (per mode): For the area of Limassol there are 270,000 everyday movements, which corresponds to 1.7% per resident. There has not been a census which focuses only on the SMTAP area, therefore this information is not available.

Registered vehicles: At the time of submission of this report, the information was not available for the SMTAP area.

Buslines: There are six bus routes that operate in the SMTAP area.

Arrivals to the SUMP/SRMP area per plane and ship/boat/ferry: There is no information available for Limassol. Upon conduct with the Cyprus Tourism Organization (CTO) and the Statistical Service there are no specific data about this for the SMTAP area.

Traffic models: There is no transport model currently in place which includes all modes. There are only small individual models within other studies.

3.2.2 Existing policy plans and regulations

There are no transport policy plans for Limassol yet. There is a mobility master plan for Limassol but it is old (published in 2006) and it does not include new infrastructures in the SMTAP area, such as the new marina.

Also there is not a large scale study that includes all the transport/mobility plans that have been done in the city. Only small scale studies have been carried out, all from different individual departments.

3.2.3 Stakeholders and responsibilities

Main stakeholders to be involved with SMTAP development:

Stakeholder name / organisation	Activities / relation to SMTAP
Limassol Tourism Company	Fulfilment of all measures and provision of results and outputs
Limassol Municipality	Fulfilment of all measures and provision of results and outputs
Public Works Department	Provision and access on Limassol's data

Table 7 Main stakeholders to be involved with SMTAP development

3.2.4 Tourism

Main tourist destinations in SMTAP area (the ones that generate most traffic):

- The medieval castle
- The Molos promenade
- The marina
- Anexartisias and Agiou Andreou shopping district
- Limassol zoo

Recurring tourist patterns: No such census was conducted for the SMTAP area and therefore, this information is unavailable. After contacting the Cyprus Tourism Organization (CTO) and the Statistical Services, it was confirmed that no relevant specific data is available.

Airports: There are only two airports, one in Paphos and one in Larnaca. There are no airports in Limassol.

Seasonality: The peak tourist season is May to October.

Number of hotels, campings, other (B&B), number of beds: This data is from 2016 census and for the whole of Limassol, not just for the SMTAP area. No data is available for the SMTAP area, as confirmed by the COT and the Statistical Services upon contact. The following is the only information available:

Hotels: 320,055 (beds)
Hotel Apartments: 23,442 (beds)
Traditional Buildings: 2,238 (beds)

Marinas: There is only one marina in the SMTAP area.

Implications of tourist mobility for mobility patterns: There are not many implications of tourist mobility for mobility patterns in the SMTAP area since most of the tourists are mostly using public transport to visit the area.

The only problem is the local residents that use their private vehicles and that causes congestion and increased air and noise pollution especially in the central part of Limassol which is the busiest area in the SMTAP area.

3.2.5 Main mobility challenges / problems in the SUMP/SRMP region

Logistics: The urban freight logistics make up a big part of the traffic in Limassol central area. They also contribute to the air and noise pollution in that area. The main problem for the tourists is that sometimes pedestrian streets and sidewalks are occupied by the goods vehicles while unloading their cargo to the nearby shops. This forces the pedestrians to go on to the road to bypass the vehicles.

Cycling: Some of the cycling routes are on the road, making it dangerous for cyclists.

Parking: Lack of parking spaces sometimes causes drivers to drive around for some time until they find an available parking space.

Congestion: There is a lot of traffic congestion in the city centre especially during the morning, noon and evening hours, as most businesses are within the central part of Limassol.

Public transport: There are complaints from tourists that some buses do not have access for mobility impaired passengers and there was no way to identify which buses do offer access for the mobility impaired.

Emissions and pollution: The amount of traffic from private and freight vehicles in central Limassol largely contribute to air and noise pollution in the area.

3.3 Measure introduction

Stratagem will cooperate with the Limassol Municipality and other relevant stakeholders in the related sector in order to develop a Sustainable Mobility Tourist Action Plan (SMTAP) according to the needs. The plan will be focused on tourists needs for a better quality of life using sustainable mobility modes. The plan will foster a balanced development of sustainable mobility modes and will minimize the traffic flow within the SMTAP area that has a high tourist influx.

3.4 Aims of the SUMP

The aim of the SMTAP is to satisfy the mobility needs of tourism and citizens for a better quality of life. A new planning concept will be able to address transport related challenges and problems of urban areas in a more sustainable and integrated way. The SMTAP will focus on tourists needs for a better quality and sustainable life at the SMTAP area. This action will evolve the SMTAP area to a more attractive destination for tourists. Tourists will enjoy their vacations with less noise, less CO2 emissions, free space, less traffic, healthier and safer environment and enjoy the SMTAP area by using sustainable modes for their transportation.

3.5 Relevant other CIVITAS DESTINATIONS measures in SUMP/SRMP area

LIM 3.2 "Accessibility for disabled and visually hearing impaired": This measure will offer the opportunity to people with disabilities to enjoy their vacations in the island with leisure. The people can enjoy the city centre of Limassol as they will be able to have access to the beaches and explore the city easier with safety. The Limassol city centre will be evolved and become a more attractive destination for people with disabilities due to the leisure services that will be supplied. The measure includes extension and integration of the existing beach ramp access points network for mobility impaired citizens. The access points will integrate the PT services and introduce traffic light crossings accessible to hearing and sight impaired pedestrians. Also the blind and deaf people systems at traffic light crossings will be improved and an integrated mobility solution will be included with signage and information services for people with disabilities who access public beaches.

LIM 4.1 "Electric car rental connecting Limassol town with airport and port". In cooperation with car rental companies and their association, an organized effort will be made to increase the number of e-vehicles available for rent. This will be supported by Limassol Municipality free parking offer for e-vehicles, the increase of EV-chargers by at least 7 points in the region and its main gateways (Larnaca and Pafos airports, Limassol port) in cooperation with the Cyprus Electricity Authority, and the promotional campaigns to tourists of the Limassol region. Knowledge of this measure will be transferred to other Cyprus regions in order to also upgrade available infrastructure by adding EV-chargers. The promotion of shared mobility is part of this measure as well as of the SMTAP.

LIM 5.1 "Limassol city centre Urban Freight Logistic Action Plan" will develop an Urban Freight Logistic Plan for Limassol city centre; will introduce innovative solutions regarding the traffic flow from urban freight logistics, the efficient distribution of the goods, the environmental pollution and noise, hazards for the pedestrians due to freight logistic services and road disturbances; will change the behaviour of the relevant stakeholders and key actors; will introduce local policy strategy for the development of the Urban Freight Logistic Plan and will develop tools according to the needs of the plan to organize efficiently the relevant stakeholders and key actors.

LIM 6.2 "Combined tourist and mobility products: Green Label Award and Tourist Mobility Card". This measure will establish cooperation between the tourism and mobility sectors and integrate services for tourism and mobility. Hotels will be encouraged to support sustainable mobility and they will be awarded for their support. Visitors will be enabled to buy one ticket for the duration of their stay for all PT transfers to earn discounts at tourist attractions

LIM 7.1: "Improvement of PT routes, time tables, ticket procedure and bike transportation on buses to make the service more attractive": Based on the information collected by the tourist information offices that try to consult visitors on how to travel around using PT and the barriers and issues identified, we will make suggestions to the Limassol Bus Company and the Ministry of Communications and Works to improve routes, time tables, ticket procedures and bike

transportation on buses. Information will also be collected from the hotel guest relation offices that consult their guests in a similar manner. Bike racks will be installed on buses

3.6 SUMP development: Drivers, barriers, resources and planning

One of the main barriers is the fact that there is almost no specific data available for the SMTAP area.

Planning: Meeting with stakeholders and partners (January 17): Limassol Tourism Board (LTC) and Limassol Municipality.

Data collection for baseline from (Spring 17): Ministry of Transport, Communications and Works; Limassol Municipality; Limassol Tourism Board; Department of Antiquities; EMEL (Limassol Bus Company); Cyprus Tourism Organization.

Feasibility study, based on the collected data (August - October 17): Strengths; Weaknesses; Positive and negative outcomes; Meeting with involved stakeholders; Questionnaires/Interviews.

In Deliverable 2.2, expected in October 2017, a planning for the subsequent years will be provided.

A budget of 15 person months is planned for this measure. Apart from this, there currently is no other (external) budget earmarked for the SMTAP development.

3.7 SUMP Self-assessment questionnaire analysis

Limassol has scored very high in the SUMP self-assessment. Because Limassol didn't score the maximum on the foundation questions Limassol does not have a SUMP yet.

SUMP self-assessment: overall score (max = 100)	
Limassol	79
Average	57
Foundation questions (13)	
Limassol	9
Average	9
Excellence questions (15)	
Limassol	11
Average	**7,5**

Table 8 Limassol SUMP Self-Assessment Overall Score

In figure 13, Limassol scores the maximum in two parts. Long-term vision, Participatory approach and Sectoral, vertical and spatial integration are lacking behind.

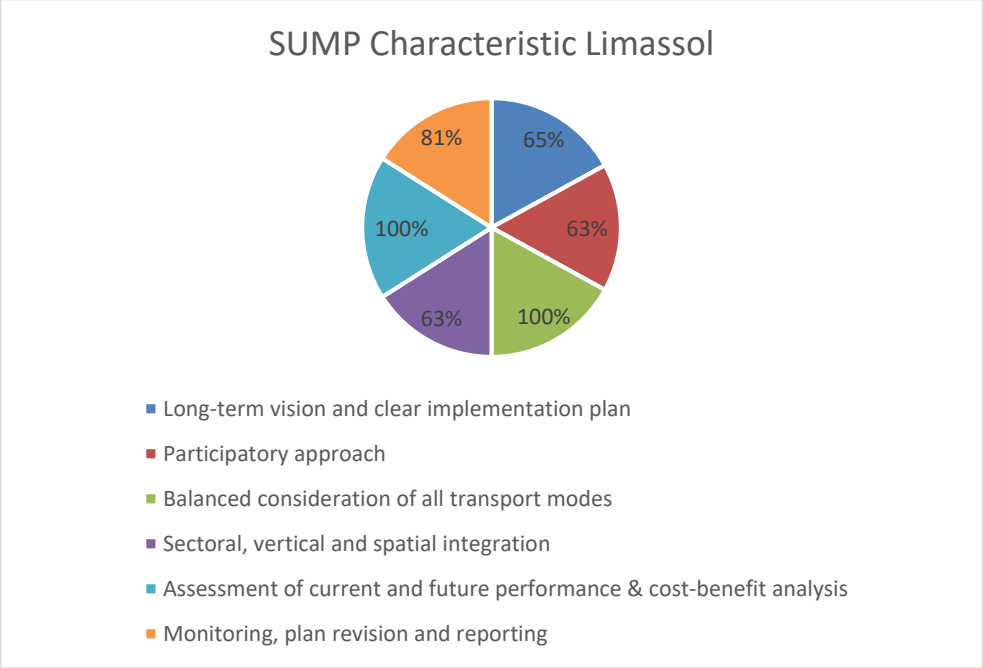


Figure 13 Limassol SUMP Characteristic

In figure 14, the score of Limassol on the SUMP self-assessment is revealed. Next to the score of Limassol, the maximum score and the benchmark are shown.

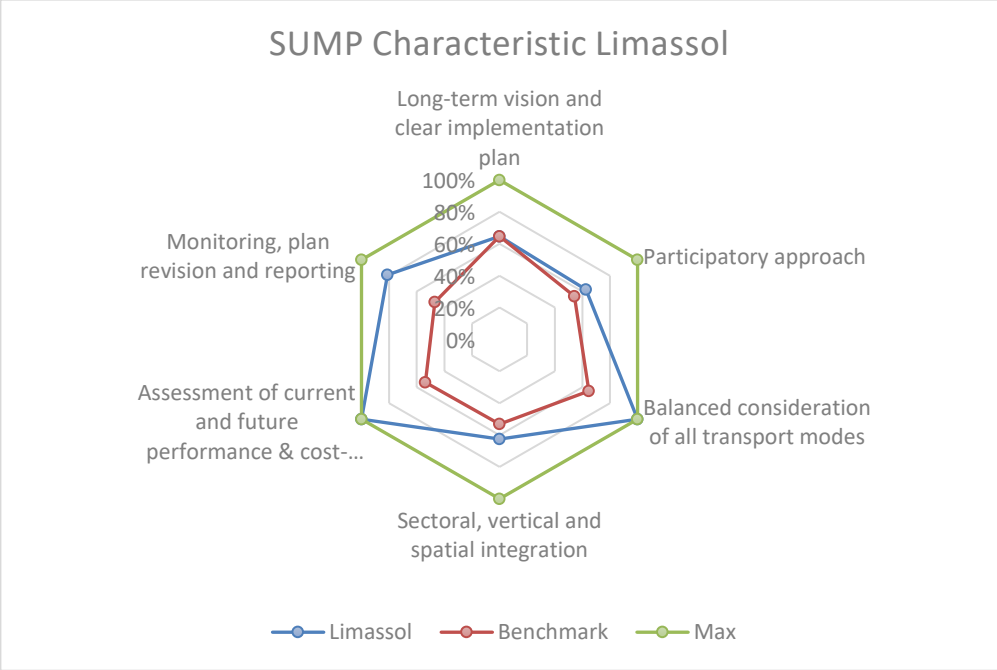


Figure 14 Limassol SUMP Characteristic including maximum score and benchmark

4 Las Palmas (Gran Canaria) baseline

4.1 Geographical area

Las Palmas de Gran Canaria is the capital City of Gran Canaria Island and it is the most populated city of the Canary Islands and the ninth of Spain with 378.998 inhabitants in 2016.

Las Palmas de Gran Canaria has already developed a SUMP (2009-2012) where a detailed diagnostic of the mobility was set up and the result was a set of strategic measures for urban mobility. Some of these measures have already been implemented, while others are still being developed. The Geographical area of the SUMP in force corresponds to the whole Municipality that has an area of 100 km^2.

Figure 15 Map Showing the location of Las Palmas

The municipal road network on which the transport system is based has a length of about 1,000 kilometers. From a territorial point of view, motorways allow relating the Municipality of Las Palmas de Gran Canaria with the other Municipalities and they have a regional impact, the arterial routes allow the structuring at global level of the Municipality and the collecting or distribution of streets have an impact at neighborhood level within the Municipality.

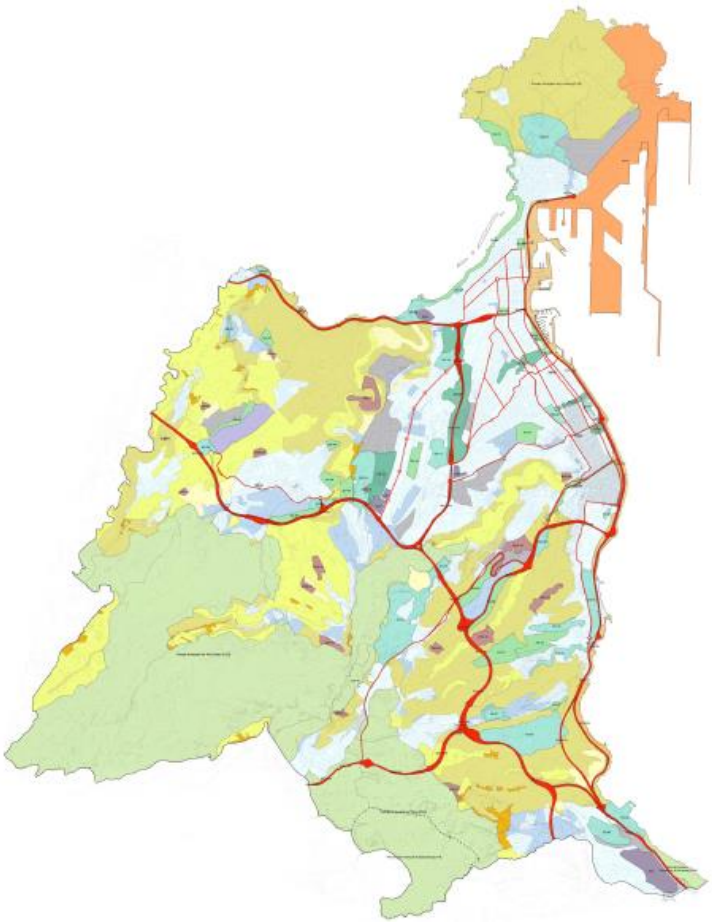


Figure 16 Las Palmas de Gran Canaria road network – Motorways and arterial routes

Cycling: Regarding bike lanes, the orography and the urban structure define a difficult environment for the development of cycling networks. The most propitious area for its development is the coastal platform, by its orography, continuity and concentration of points of interest. The current bike network has a length over 20 km, but it is going to be enlarged and improved to 52 km according to the Bike Master Plan that has been updated recently.

Figure 17 Las Palmas de Gran Canaria current bike network

Walking: Two main urban areas have been identified in which a significant pedestrian street network has been generated: Triana - Vegueta and Las Canteras. In these areas pedestrian paths or traffic calming zones are included.

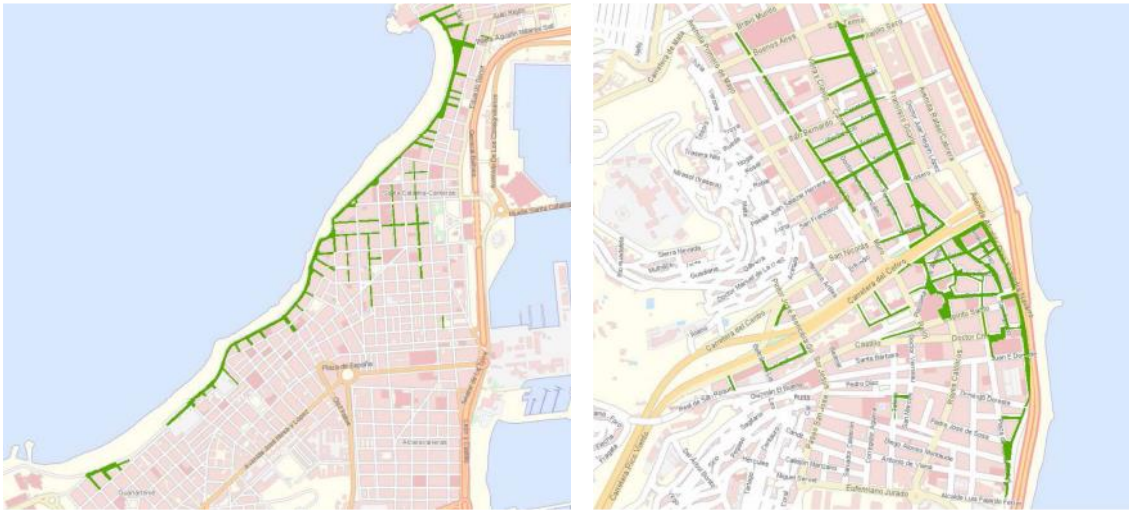


Figure 18 Las Palmas de Gran Canaria walking paths

Main attractions: The main attraction places in Las Palmas de Gran Canaria can be divided into several categories, but the most relevant ones are industrial and commercial areas.

Industrial areas:

From	To	km
Las Palmas de Gran Canaria City Center (Triana – Vegueta)	La Isleta (El Sebadal)	7 km
	Lomo Blanco - Las Torres	7 km
	Urb. Díaz - Casanova	8 km
	Miller Bajo	3 km
	Espacio industrial Escaleritas	6 km
	El Puerto	7 km
	Mercalaspalmas	10 km

Table 9Distances between the City Centre and Industrial Areas

Figure 19 Las Palmas de Gran Canaria industrial areas

Commercial areas (shopping centers and open commercial areas):

From	To	km
Las Palmas de Gran Canaria City Center (Triana – Vegueta)	Las Arenas Shopping center	7 km
	La Ballena Shopping center	3,5 km
	7 Palmas Shopping center	10 km
	El Mirador y Las Terrazas Shopping center	13 km
	Las Ramblas Shopping center	6 km
	Tamaraceite Shopping center	13 km
	Mesa y López	5 km
	Triana	0 km
	Pedro Infinito	3,5 km
	7 Palmas	10 km
	Puerto - Canteras	5 km

Table 10 Distances between the City Centre and major commercial areas

Airport: Regarding the connectivity with the rest of the island, Gran Canaria airport (LPA) is located on the East coast of Gran Canaria, 18 km from Las Palmas de Gran Canaria and 25 km from the main tourist places of the Island (The South of the Island). Gran Canaria airport is the largest in terms of passenger and cargo traffic among Canary Islands airports, and it is the fifth in the Spanish state receiving more than 12 million passengers per year.

Port: The Port of Las Palmas is placed on the route of the European, African and American continents and stands as the first port of the Middle Atlantic. It is connected to 180 ports on five continents through some thirty maritime lines, and it is a traditional port in the route of the tourist cruises, with a volume of more than one million passengers, between tourists and domestic traffic. It has the largest Canarian Sports Port, with 850 docks of capacity.

Public Transport: In Las Palmas de Gran Canaria, there are also three major bus stations, where travelers can transfer between urban and interurban operators.

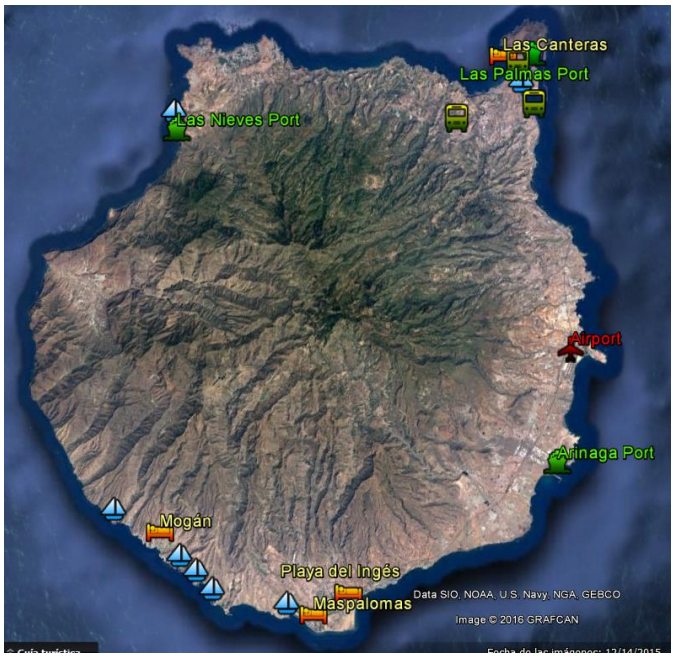


Figure 20 Gran Canaria (ports, airport and main tourists destinations)

From	To	km
Las Palmas de Gran Canaria	Airport	18 km
	Las Palmas Port	0 km
	Las Nieves Port (Agaete)	35 km
	Arinaga Port	35 km
	Las Canteras (Main tourist destinations)	0 km
	Maspalomas (Main tourist destinations)	60 km
	Playa del Inglés (Main tourist destinations)	55 km
	Mogán (Main tourist destinations)	80 km

Table 11 Distances from Las Palmas to major tourist destinations

4.1.1 Demography / census

Residents (Data from ISTAC and PMUS): Las Palmas de Gran Canaria has a population of 378.998 inhabitants. The population is distributed unevenly in the municipality, with a higher density of population in Arenales, Schamann, Avenida Marítima and Alcaravaneras. The growth of the population in recent years has been concentrated in the urban areas of Las Torres, Tamaraceite and San Lorenzo, while San Cristóbal and Los Riscos have experienced the most significant population declines.

2016		
Age	**Hombres**	**Mujeres**
0-4	6.644	6.411
5-9	8.730	8.487
10-14	9.649	9.336
15-19	9.735	9.196
20-24	10.533	10.130
25-29	11.891	11.953
30-34	13.109	13.427
35-39	15.128	15.245
40-44	16.532	16.385
45-49	16.017	16.227
50-54	15.612	16.125
55-59	12.486	13.151
60-64	10.279	11.579
65-69	8.798	10.348
70-74	7.238	8.757
75-79	5.047	6.860
80-81	3.852	6.112
85-89	1.801	3.508
>90	735	1.945
Total	**183.816**	**195.182**

Table 12 Population by Age & Gender 2016

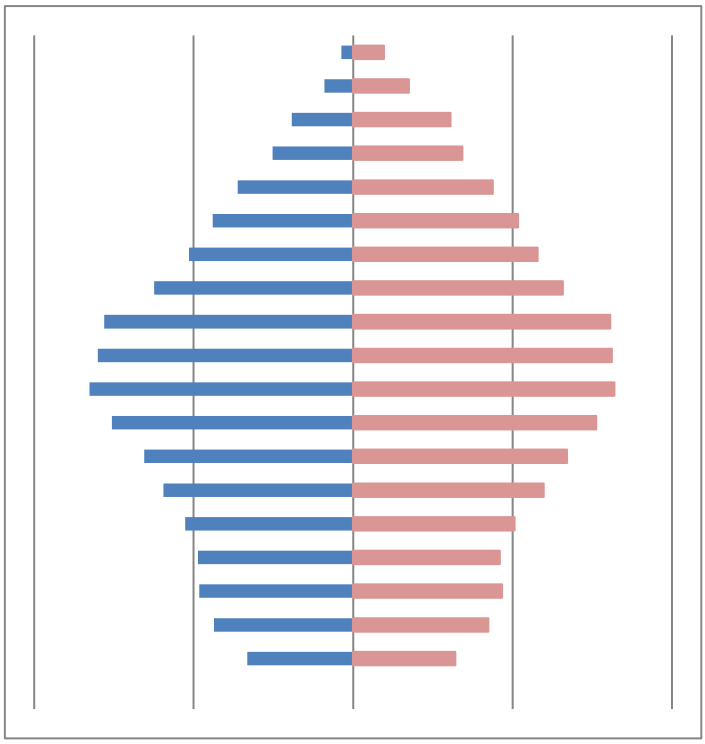


Figure 21 Las Palmas de Gran Canaria population pyramid

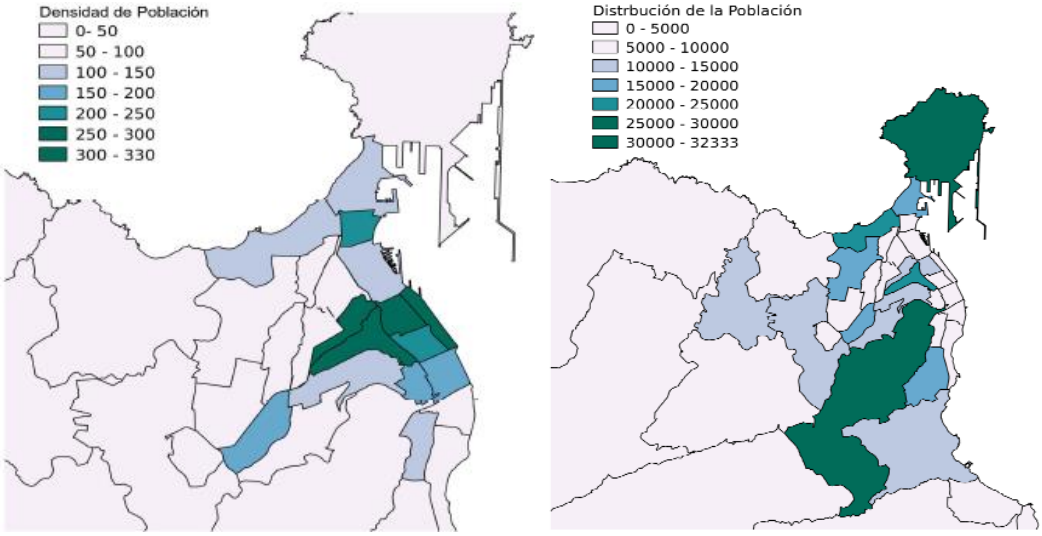


Figure 22 Las Palmas de Gran Canaria - Density and distribution of population

Tourists (Data from Observatorio Turístico Ipavisit): In 2015, Gran Canaria hosted 3,634,857 tourists (3,167,056 foreigners and 467,801 nationals). The number of tourists that stayed in Las Palmas de Gran Canaria was 362,899, and the tourists that decided to stay in other places of the Island, but made a one day trip to the city, were 706,130. Furthermore, 682,735 tourists arrived by cruise liners to Las Palmas de Gran Canaria in 2015.

The largest group of tourists that visited Gran Canaria belonged to over-44 age group, followed by the group of 24-44 years old. 51.48% of them were male and 48.52% female. The main reason to visit Gran Canaria was to enjoy holidays followed by professional and personal reasons.

4.2 Analysis of current mobility situation

4.2.1 Models and data

Modal Split: Las Palmas de Gran Canaria has already developed a SUMP in 2012 where data regarding modal split was collected. However, this data needs to be updated when the Mobility Office is set up (for example, as a result of a SUMP proposed action, the urban public transport network was reorganized and optimized in 2013. Due to that, the urban public transport company has increased the number of travellers every year, from 28,737,615 in 2012 to 33,403,379 in 2016).

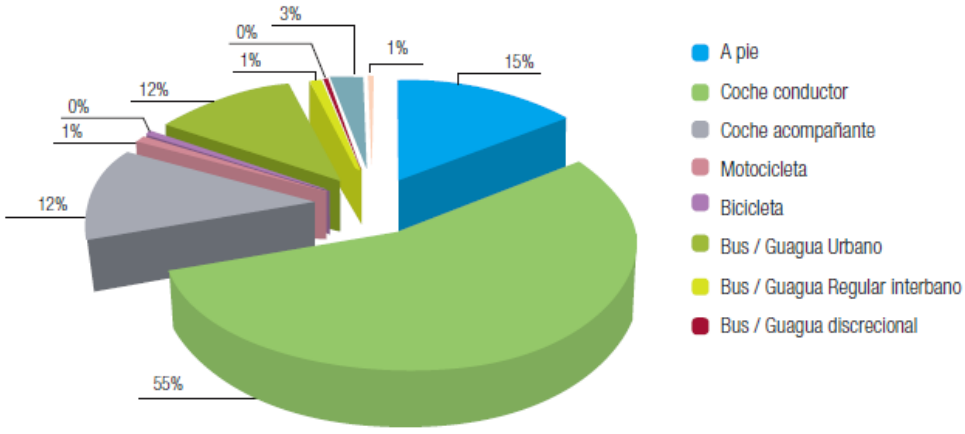


Figure 23 Las Palmas de Gran Canaria – Modal Split

Mode of transport	% share
Car driver	55 %
Car passenger	12 %
Bus	13 %
Bicycle	0.5 %
On foot	15 %
Others (Taxi, motorbike, etc)	4,5 %

Table 13 Local Modal Split, SUMP 2012

Regarding this modal split, the average of daily trips in each mode was:

Mode of transport	Number of trips
Private Vehicle	476,603
Bus	89,1041
Bicycle	2,910
On foot	104,706
Others (Taxi, motorbike, etc)	22,672
TOTAL	695,995

Table 14 Number of Trips, SUMP 2012

Kind of vehicles	Number of vehicles	Average age
Cars	167,318 (67%)	10.1
Motorbikes	33,679 (14%)	10.0
Vans	17,684 (7%)	11.8
Industrial vehicles	27,381 (11%)	11.3
Total	246,062	10.4

Table 15 Number of Registered Vehicles, 2015

Bus Routes: Guaguas Municipales, the urban Public transport company of Las Palmas de Gran Canaria provides 24-hour urban public transport services to the city throughout the year thanks to 42 bus routes (4 of them of which are night routes).

The bus network has about 730 km and it has 818 bus stops. Its vehicles drive every year about 11 million kilometres transporting well over 33 million passengers.

[1] Daily Public transport trips in 2012 (in 2016 111.722 daily trips, or 98.316 daily trips if we don´t take into account the free transfer between buses)

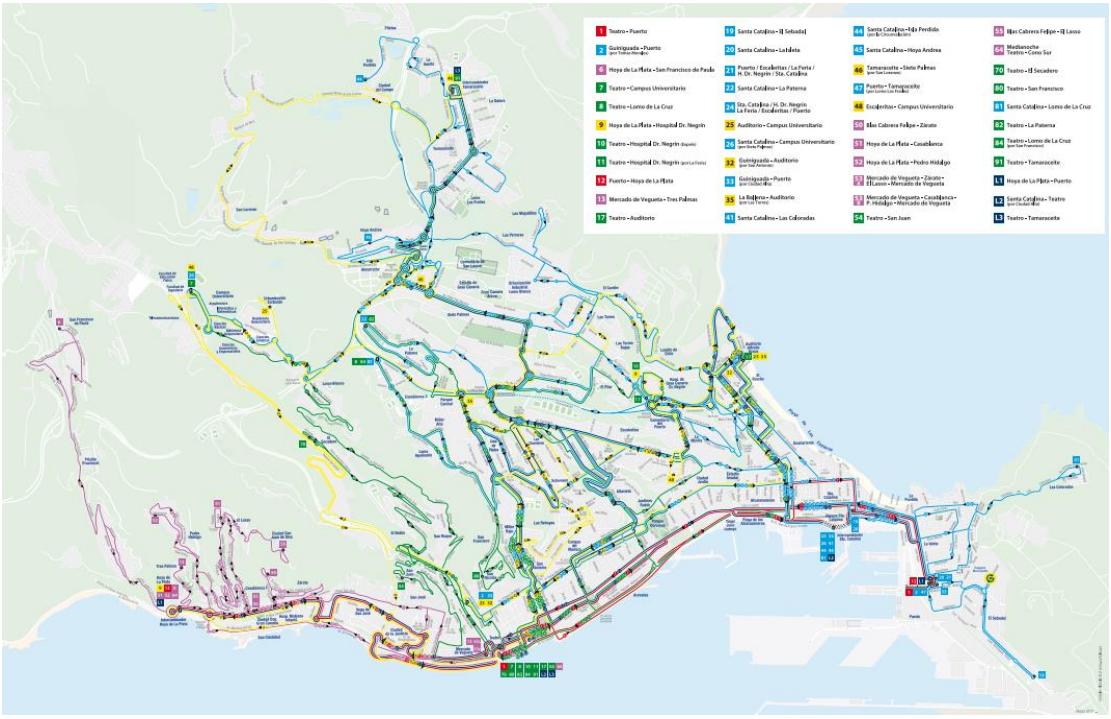


Figure 24 Las Palmas de Gran Canaria – Urban Public Transport Network

4.2.2 Existing policy plans and regulations

Las Palmas de Gran Canaria SUMP: Las Palmas de Gran Canaria has already developed a SUMP (2009-2012) where a detailed mobility diagnostic was set up and the result was a set of strategic measures for urban mobility. Some of these measures have already been implemented, but others are still in the process of being implemented.

The measures that were proposed in the current SUMP in force are:

1) Enhancement of the Public transport network (This measure was carried out in 2013, however, for the implementation of the BRT system, another modification and improvement of the current urban public transport network will be carried out to better adapt to the new system).

2) Development of a BRT (This measure is being developed in parallel with Civitas Destinations and is planned to be launched in 2021. The project has already been designed, in fact, and works are expected to start within the next few months).

3) Bike network (A part of this measure was implemented, but another part is being carried out in parallel with Civitas Destinations with the update of a document called “Plan Director de la Bicicleta” (Bike Master Plan) that will give guidelines regarding enlarging the city bike network. (Within Civitas Destinations, the public bike system will be improved and enlarged)

4) Public parking management at low city (This measure has been carried out by adding blue and green (residents) parking area, but it is continuously improved and enlarged).

5) Pedestrianisation of Luis Morote Street (This measure has been carried out partially)(It is located in the Laboratory area where several mobility measures will be implemented within Civitas Destinations

Bike Master Plan (Plan Director de La Bicicleta): The first version of the Bike Master Plan was drafted in 2013, but it has been updated in 2017, so guidelines regarding enlarging and improving the city bike network have been collected.

Gran Canaria SRMP: The Regional Government of Gran Canaria "Cabildo de Gran Canaria" is working to design and define a SRMP in order to optimize the efficiency of the network, improve space coverage and accessibility, and enhance the use of public transport and intermodality in the whole Island. (It does not take part in the CiViTAS Destinations project).

4.2.3 Stakeholders and responsibilities

Stakeholder name / organisation	Activities / relation to SUMP
Autoridad Portuaria de Las Palmas (Port Authority)	Cooperation and collaboration in the implementation of SUMP and Civitas Destinations measures. Providing mobility data
Cabildo de Gran Canaria (Gran Canaria Regional Government)	Cooperation and collaboration in the implementation of SUMP and Civitas Destinations measures. Providing mobility data
Autoridad Única del Transporte de Gran Canaria (Gran Canaria Transport Authority)	Cooperation and collaboration in the implementation of SUMP and Civitas Destinations measures. Providing mobility data
Patronato de Turismo de Gran Canaria (Gran Canaria Tourism Board)	Providing tourism data
Sociedad de Promoción de Las Palmas de Gran Canaria	Providing tourism data
CCELPA (Business association)	Foster the uptake of business commitment
AUVA – Asociación de usuarios de vehículoseléctricos	Foster the uptake of e-mobility initiatives.
Plataforma para el Desarrollo del Vehículo Eléctrico en Canarias (Platform for the Development of the Electric Vehicle in the Canary Islands)	Foster the uptake of e-mobility initiatives.
FET - Federación de empresarios de transportes	Definition of the urban freight strategy.
Cluster Canario de Transporte y Logística	Definition of the urban freight strategy.
Asociaciones de usuarios de bicicletas	Improvement of the bike lanes network. Assessment of the current situation for cycling mobility.
Global (Interurban operator)	Cooperation and collaboration in public transport measures. Providing mobility data
GUAGUAS MUNICIPALES (Urban Public Transport Company)	Cooperation and collaboration in public transport measures. Providing mobility data
SAGULPA (Public Parking Company and in charge of public bike service)	Cooperation and collaboration in transport measures. Providing mobility data
GEURSA	Cooperation and collaboration in the implementation of SUMP measures.
Neighbourhood associations	Cooperation and collaboration to collect mobility data and needs
ATAT (Association of self employer car taxi)	Cooperation and collaboration in transport measures. Providing mobility data and needs.

Table 16 The Involved Stakeholders and their Respective Responsibilities

4.2.4 Tourism

The main tourist destinations: Vegueta – Triana: Nowadays, the old town offers a unique sight on this side of the ocean: an area of Columbus-style architecture where Plaza Santa Ana square highlights along with the Cathedral and the Town Hall. Together with Triana, they offer to tourists and citizens a wonderful pedestrian and open commercial area.

Main Attraction places:
- Restaurants
- Hotels
- Pedestrian and open commercial area
- Museums
- Theatre
- Bus Station
- Historical buildings

Puerto – Canteras: Another important and attractive place related to tourism in Las Palmas de Gran Canaria is located around Santa Catalina Park, where plenty of touristic and leisure attractions are located and a lot of events are held all over the year.

Main Attraction places:
- Restaurants
- Hotels
- Las Canteras Beach (One of the best urban beaches)
- Elder Museum of Science and Technology
- Shopping Center
- Cruise terminal (About 700.000 cruise passengers)
- Bus Station
- New Aquarium (opening in 2017 – it is expected to have about 500.000 visitors a year)

Main Events:
- Carnival
- Noche de San Juan (The night of San Juan)
- Trade fairs (CINE+FOOD, FIMAR, MOTOWN…)
- Concerts

Main Tourist Destinations in Las Palmas de Gran Canaria (Jan-Jun 2016)		
Place	**Tourists**	**Close to**
Casa de Colón	58.022	Vegueta - Triana
Jardín Canario	53.175	Guiniguada
Guagua Turística	41.147	Puerto - Canteras
Catedral y Museo Diocesano	34.381	Vegueta - Triana
Museo Canario	12.471	Vegueta - Triana
Castillo de la Luz	6.933	Puerto - Canteras
Museo Néstor	3.379	Pueblo Canario
Museo Elder	2.016	Puerto - Canteras
Teatro Pérez Galdóz	2.011	Vegueta - Triana
Auditorio Alfredo Kraus	1.573	Puerto - Canteras

Table 17 The Main Tourist Destinations and the Number of Tourists Visiting Them

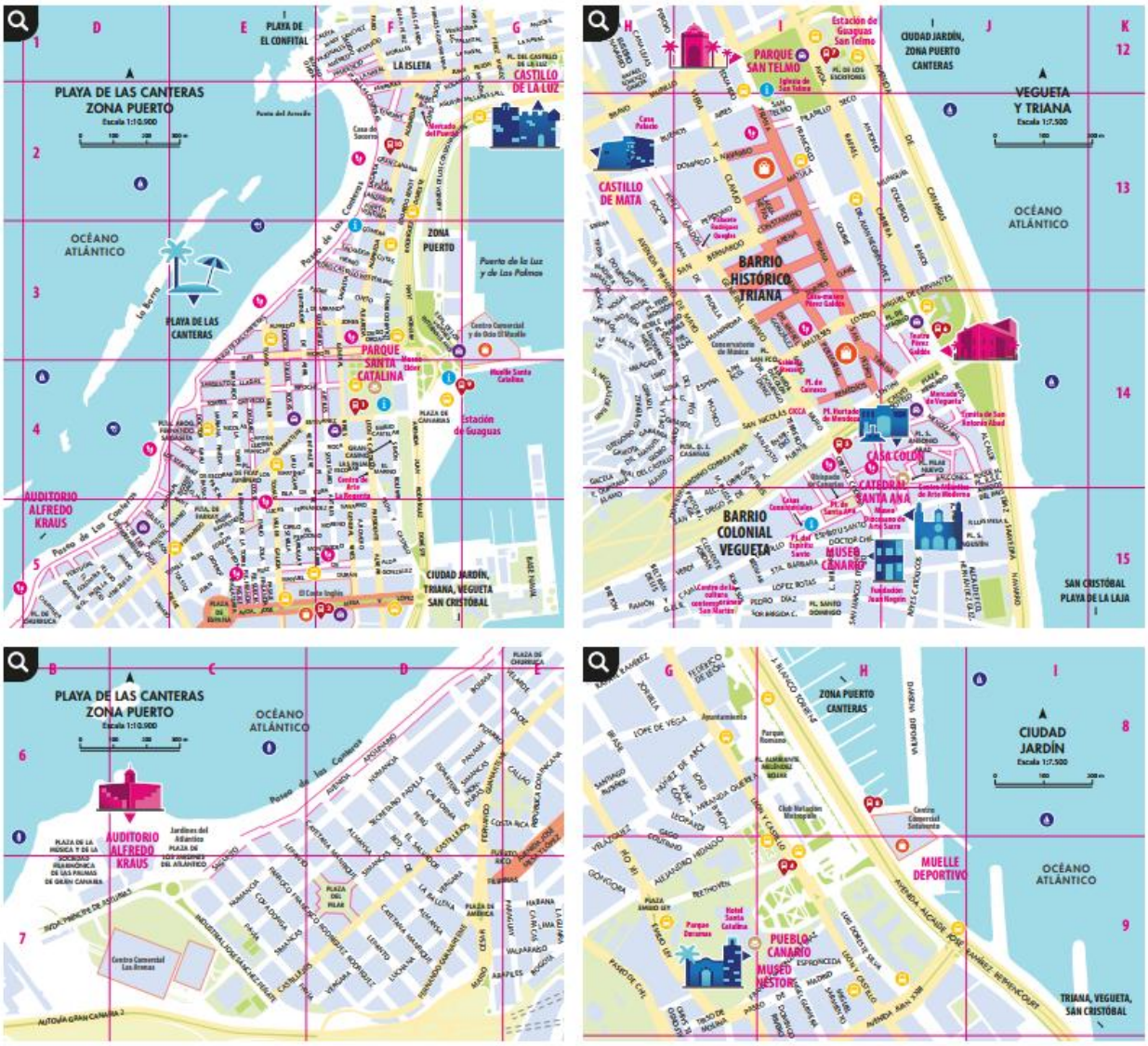


Figure 25 Las Palmas de Gran Canaria Tourist Destinations Map

Port and Cruises lines: Port of La Luz (also known as the Port of Las Palmas) is the most important port of the Atlantic coast of Europe. It is connected with 180 ports worldwide through 30 shipping lines. The Santa Catalina serves only cruise liners. It is a port with heavy traffic of goods and passengers, with a massive volume of more than a million passengers between domestic traffic and cruise tourists all year round. On the other hand, this capital port is complemented with the port of Agaete (on the northwest of Gran Canaria) with connections to the island of Tenerife.

The city of Las Palmas de Gran Canaria welcomes cruise liners all year round, with the off season being summer and the peak season in winter. This is due to the fact that Las Palmas de Gran Canaria is one of the cities with the best weather in the world thanks to its exceptional location, next to the Tropic of Cancer, and to the trade winds that come from North Atlantic. The result is an average temperature of 17ºC (62.6ºF) in winter and a 25ºC (77ºF) in summer.

Airport: Gran Canaria International Airport is located 18 km from the heart of the city and offers daily flights to the main cities of Europe, Africa and America. International air companies and tour-operators hold direct flights which travel from Gran Canaria to Madrid in 2 and a half hours; Barcelona in 3 hours or Great Britain and France in only 4 hours.

The Airport of Gran Canaria has an intercity bus service ("guaguas") from the interurban public transport company “Global” which connect the passenger terminal with the city in just 20 minutes. The service from the airport starts at 06:15am and stops at 02:30am daily.

The two main bus stations of the city, departure and arrival stops of the airport service are located at Parque de San Telmo and Parque de Santa Catalina. The ticket can be bought directly on the bus.

Hotels and Apartments: Las Palmas de Gran Canaria has a considerable amount of hotels, apartments and places to host tourists and visitors during their holidays or stay.

- Hotels 46 (13*, 12**, 11***, 8****, 2*****)
- Apartments 14
- Rural houses 5
- Emblematic houses 7
- Youth hostels 5
- Holiday rental apartments (vacation houses) 194

4.2.5 Main mobility challenges / problems in the SUMP/SRMP region

Currently, a strategy that combines tourism and mobility doesn’t exist at local level in Las Palmas de Gran Canaria, where a SUMP has been developed without taking into account differences between citizens and visitors. Las Palmas de Gran Canaria has been the European destination in which most cars have been rented last summer. It is necessary to encourage the urban public transport among tourists and foster the introduction of hybrid or electric vehicle in rental car companies.

On the other hand, a lack of solutions in logistics and freight in the current SUMP has been detected, so there is a need to integrate in the current SUMP a set of proposals and measures that aim to minimize the negative impacts that freight distribution produces in the environment and urban mobility.

Furthermore, one of the main challenges regarding mobility in the city is the development of one of the proposed measures in the current SUMP. The Municipality and the urban public transport company "Guaguas Municipales" are working to carry out a high capacity public transport system named "MetroGuagua" (BRT) that will connect two opposite points of the low city, where 75% of the urban public transport trips take place and where the main tourist and citizens’ hot-spots are located.

Another challenge that is going to be faced in the SUMP region is to carry out the bike network enhancement and enlargement following the guidelines of the recently updated Bike Master Plan in order to change the mobility modal split to increase bike mobility.

4.3 Measure introduction

Las Palmas de Gran Canaria has already developed a SUMP (2009-2012) where a detailed diagnostic of the mobility was set up and the result was a set of strategic measures for urban mobility. Some of these measures have already been implemented, but others are still being implemented.

The SUMP observatory and Mobility Office will coordinate all projects addressed to improve the urban quality by promoting walking, cycling and public transport. The main actions will be to improve

the public transport network efficiency, to enhance the bike lane network and to improve parking management scheme.

4.4 Aims of the Mobility Office

The SUMP observatory and Mobility Office aims to create a Mobility Office to monitor and evaluate the implementation of the current SUMP, to update mobility patterns information and to carry out different mobility studies or actions such as:

- Monitoring of SUMP; Data collection
- Better integration of leisure trips into policy making
- Collection of mobility data from tourists
- Set up cooperation with the tourism sector
- Organisation of participation events

4.5 Relevant other CIVITAS DESTINATIONS measures in SUMP/SRMP area

This measure is related to:

Measure (LPA 3.1) – "Attractive, safe and accessible public space at major attraction sites". The goal of this measure is to create a laboratory area and a sustainable urban mobility travel plan for visitors and employees around Santa Catalina Park (close to the new Aquarium and the Cruise Terminal.). The measure will draft a Mobility Plan for tourist attraction that will be based on the expected impact that both the Aquarium as well as major events will have on the urban mobility system. The Mobility plan will take into account the special mobility needs of some key target groups such as tourists and disabled people. This Mobility Plan will have the following steps. In this laboratory area, the public space and universal accessibility solutions will be designed, as well as two new bus stops and a communication and information campaign of the new area.

Measure (LPA 5.2) - Urban Freight Solutions into SUMP. The Sustainable Urban Logistics Plan (SULP) of Las Palmas de Gran Canaria will develop a set of efficient measures for facing different and conflicting interests of the various stakeholders involved (Municipality, citizens, shopkeepers, transport operators, etc.). It will integrate logistics operations within the overall urban mobility system; improve the efficiency and cost-effectiveness of the transportation of goods (e.g. increase load factor, decrease the number of trips, less mileage, less delays, empty runs reductions, etc.); enhance local economic development by promoting new business opportunities; create better urban environment and better living conditions (city attractiveness, etc.) and improve city access regulations.

Furthermore, the rest of Las Palmas de Gran Canaria Civitas Destinations measures are directly related to the Mobility Office and the current SUMP due to the fact that most of them foster and improve a sustainable mobility in the city or help towards the development of the measures proposed as strategic in the SUMP in force.

4.6 Mobility Office development: Drivers, barriers, resources and planning

Las Palmas de Gran Canaria has already developed a SUMP (2009-2012) where a detailed diagnostic of the mobility was set up and the result was a set of strategic measures for urban mobility.

Due to the increase in the amount and scope of mobility projects that are taking place nowadays in Las Palmas de Gran Canaria (Bus Rapid Transit system "MetroGuagua" or Public Bike Service), and the stage the current SUMP is, it is needed to set up a Mobility Office to be in charge of the monitoring and evaluation of the mobility projects implementation, to update mobility patterns information, to carry out different mobility studies or actions and to raise awareness of the citizens about the sustainable modes of transport.

As a barrier, it has been identified that there aren´t enough technicians with experience and knowledge in the City Council to be able to carry out the different works of the mobility office, so these service will be subcontracted to a specialized company with experience in mobility studies.

Resources: the entire budget for the Mobility Office (SUMP Observatory) comes from the DESTINATIONS project. Guaguas Municipales will meet the costs regarding the 30 % of subcontracts, due to Guaguas Municipales is granted with just 70 % of DESTINATIONS costs.

Planning: technicians from Las Palmas de Gran Canaria City Council are currently drafting the tender documentation (Technical specifications) for the Mobility Office with support from CINESI. After that stage, both Guaguas Municipales and Sagulpa will review the tender documents to check the need of adding some additional requirements regarding public transport and parking management. So, Guaguas Municipales will subcontract the services to implement a mobility office, including services as technical assistance, traffic studies or mobility simulations. The tender for the subcontracting of the services of the Mobility Office to a private company will be published before the end of 2017.

4.7 SUMP Self-assessment questionnaire analysis

Las Palmas scores 88 out of 100 and is at the moment the only site with a SUMP. They have made their SUMP in 2012 and will update the SUMP during Destinations.

SUMP self-assessment: overall score (max = 100)	
Las Palmas	88
Average	57
Foundation questions (13)	
Las Palmas	13
Average	9
Excellence questions (15)	
Las Palmas	11
Average	**7,5**

Table 18 Las Palmas SUMP Self Assessment Overall Score

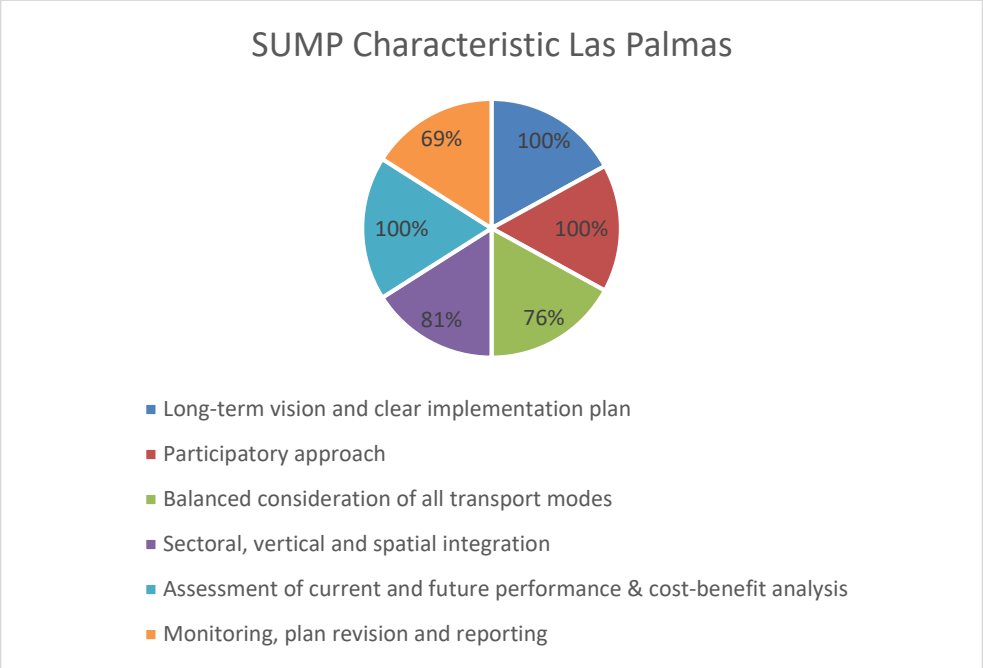


Figure 26 Las Palmas SUMP Characteristics

Things to pay attention to according to the SUMP self-assessment are especially monitoring and a balanced consideration of all transport modes.

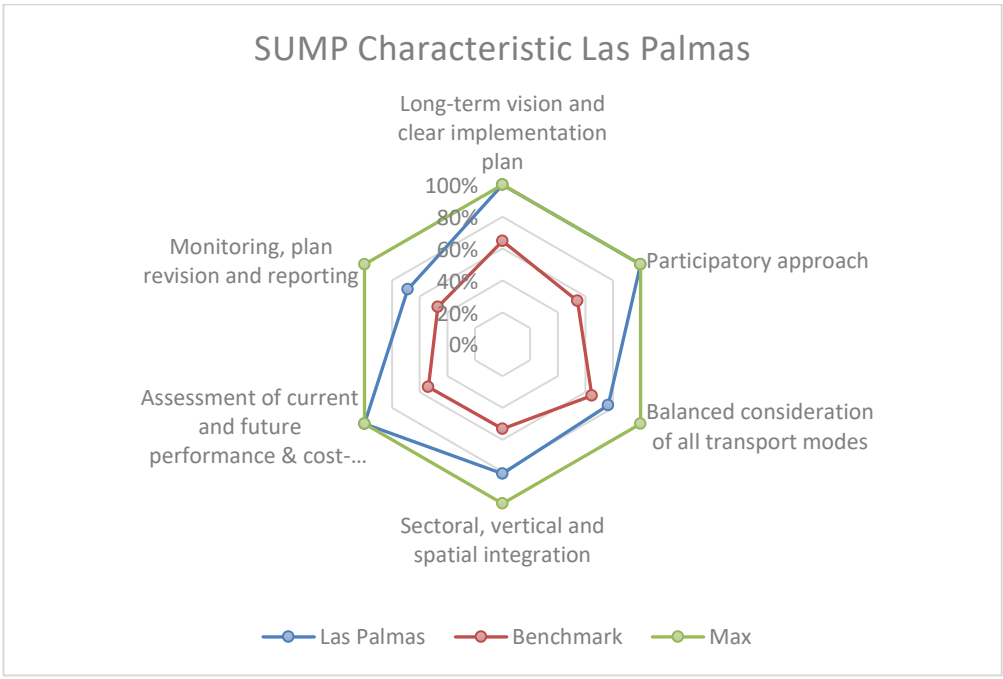


Figure 27 Las Palmas SUMP Characteristic including maximum score and benchmark

In the figure above, the score of Las Palmas the SUMP self-assessment is revealed. Next to the score of Las Palmas, the maximum score and the benchmark are shown.

5 Valletta (Malta) baseline

5.1 Geographical area

Malta is the main island in the Maltese Archipelago which is made up of 5 islands, covering an area of approximately 316km2. The Island is often considered a city-state with one principal urban agglomeration being the Northern and Southern Harbour Region. This area currently houses around 60% of the population and more than 66% of the country's total national employment provision2.

The road network is classified as per below list:

- TEN-T Roads: 112 km;
- Distributor Roads: 104 km;
- Local Access Roads: 520 km;
- Other urban Roads: 1,164 km and
- Other Rural Roads: 510 km

In the last decade, a number of dedicated cycle lanes and bus lanes permitting cycle usage have been incorporated into road infrastructure design with the aim of providing a safer, more segregated environment for cyclists in road traffic. In the main part, cycle lane provision has taken place on the wider main roads, outside of built up areas and, as such, are largely used by sports and leisure cyclists, but less so by commuters. Currently, there are approximately 25km of cycle lanes.

As already mentioned in this report, Malta can be considered as an island with one main urban area. This developed from a number of towns and villages each with their own centre and which have now grown into a continuous main urban area. Mapping a 10 minutes' walk radius from every centre illustrates that the majority of developed areas are within walking distance of a town centre. This suggests that, from a mobility point of view, the spatial distribution of town centres in Malta and the comparison between urban fabric extent and pedestrian catchment area can trigger a significant potential for walking as a viable and convenient option for daily access to facilities such as health centres, childcare centres, groceries, and other services.

2 Transport Malta 2014; Development of a National Transport Model Supporting Strategy Development in Malta – Existing Conditions and Data Diagnostic Report, p.13

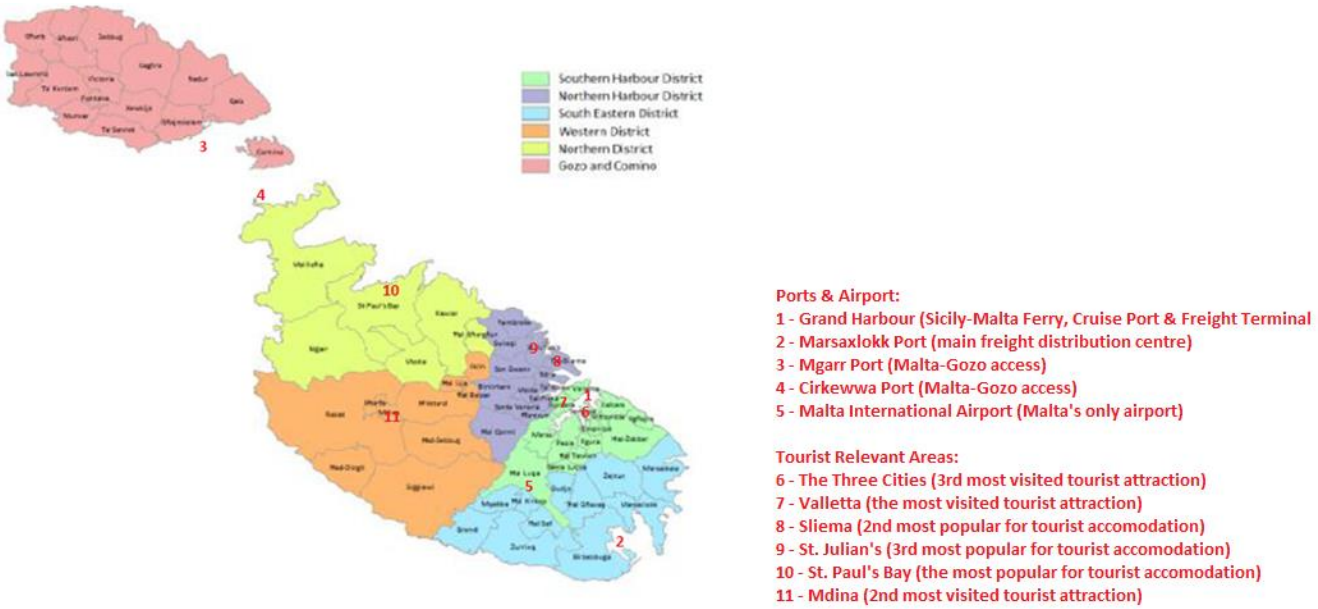


Figure 28 The Maltese Islands' division in Districts (NSO, Elaboration)

Main working locations: The SUMP area corresponds to the Island's main working locations. These are the main office, retail or tourism centres of the island, as can be seen in the map below.

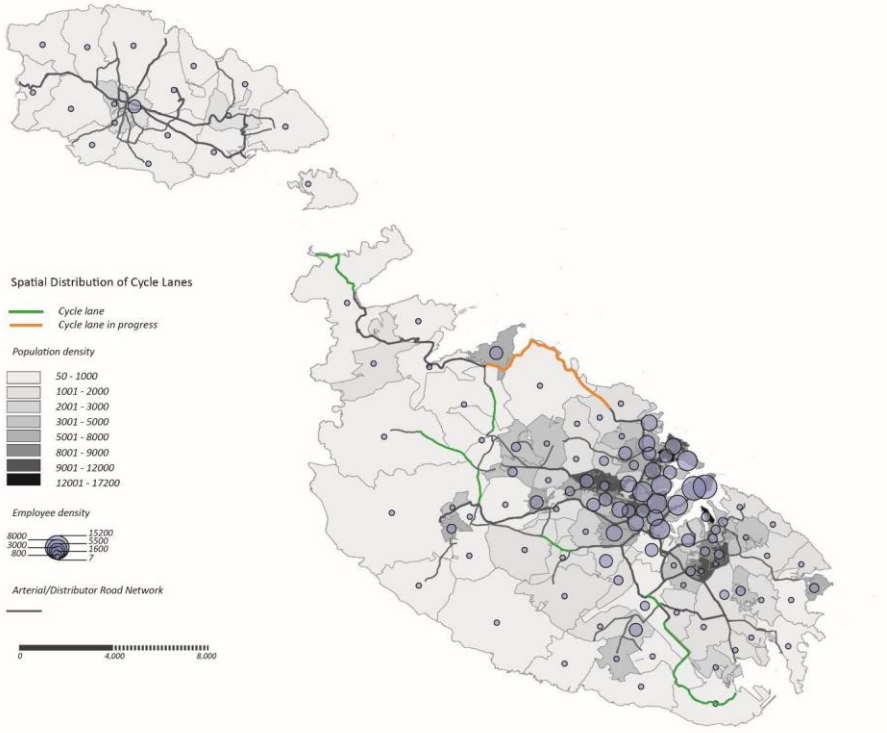


Figure 29 The spatial distribution of cycle lanes and employment density[3]

3 Transport Malta 2016; National Transport Strategy 2050, p. 78

Trip distances:

	St. Julian's	Sliema	St. Paul's Bay	Airport	Valletta Cruise Port	Cottonera
Valletta	7.6km	6.6km	15.9km	8.7km	2km	8.5km

Table 19 Distance from Valletta to the major tourist attractions

5.1.1 Demography / census

Residents in SUMP area: The region being studied is the most densely inhabited and has the greatest population density per kilometre. The 2011 Census found a density of 5,014 persons/km2 in the Northern Harbour District and 3,035 persons/km2 in the Southern Harbour District[4].

The below excerpt from the Census report shows the population change in each of the towns and villages within the Northern and Southern Harbour Regions.

Tourists in SUMP area: In the recent years, there has been an upward trend in the number of independent visitors and a decrease in tour operator based tourism. In 2015, 783,782 tourists arrived on packaged holidays while 1,007,690 arrived on non-package holidays[5].

Gender	
Males	924,042
Females	867,380
Age Group	
0-24	345,037
25-44	603,636
45-64	590,380
65+	252,369

Table 20 Profile of incoming tourists for the Maltese Islands for 2015[5]

The number of low-cost airlines operating to Malta has proliferated over the last few years and as part of the 2011 Public Bus Transport Reform, a new bus interchange and network of bus services has been implemented at the Malta international airport, specifically with independent tourists in mind. More information on bus routes and services can be found in Section 6.2.1 below.

On the other hand, cruise tourism in the Grand Harbour has increased. In 2014, 471,554 passengers passed through the Valletta Cruise Port which increased to 600,156 in 2015 and increased again to 626,082 in 2016[6].

4 National Statistics Office (NSO) 2014; Census of Population and Housing 2011 Final Report p.93

[5] *Malta Tourism Authority 2016; Tourism in Malta 2015, p.10*

6 Malta Tourism Authority 2016; Tourism in Malta 2015, p.10

Jobs / work places in SUMP area: The National Transport Master Plan 2025 identifies 3 major employment nodes which are Valletta, Qormi and Msida. Each of these nodes houses more than 7% of the total national employees. Marsa and Luqa are considered to be secondary nodes with between 5 - 7 % of employees and St. Julian's, Sliema, Birzebbugia, Birkirkara, Floriana, Qawra, Zejtun (Bulebel) and Mosta, are classified as tertiary nodes, each having between 3 – 5% of employees7. Apart from this, four industrial estates are found in the Northern and Southern Harbour Regions. These are:

- Kordin Industrial Estate, Paola
- Luqa Industrial Estate, Luqa
- Marsa Industrial Estate, Marsa and
- Mriehel Industrial Estate, B'kara.

5.2 Analysis of current mobility situation

5.2.1 Models and data

Modal Split: Modal split per locality included in the SUMP area is not available, however the modal split from the National Household Travel Survey 2010 shows the mode of transport used for different trips in relation to the surveyed sample.

In 2010, around 74% of the trips were made by car while only 11% of trips were made by public transport. Besides, bicycle use is extremely low. Considering trips by car, only few trips were made as passengers (15%) and this result is well linked to the average car occupancy which is very low (1.25 passengers per car including driver)8.

According to the 2010 study, there has been a 13% decrease in modal share of public transport in all parts of the country, with the exception of Valletta which had actually experienced a 9% growth in public transport usage as a result of the sustainable urban mobility measures introduced in this locality between 2006 and 20109. These include the introduction of Controlled Vehicular Access which charges drivers for the duration of their stay in Valletta and the introduction of the Park and Ride located in Floriana (neighbouring town to the capital city of Valletta) with dedicated shuttle services from the P+R site to central Valletta.

In this regard, the following national modal split was recorded as follows:

7 Transport Malta 2016; National Transport Master Plan 2025, p.170

8 Transport Malta; National Household Travel Survey 2010, p.3

9 Ibid., p.16

Mode of transport	% share
Car driver	59.36%
Car passenger	15.16%
Motorbike	1.07%
Bus	11.35%
Ferry	1.01%
Bicycle	0.27%
On foot	7.6%

Table 21 National Modal Split, 2014[10]

Modal split for tourists: The Malta Tourism Authority (MTA) Market Profile has conducted surveys in 2013 on 6,739 respondents. It was noted that 22% of tourists visiting Malta rented a car whereas the other 76% of tourists rely on public transportation for their travel needs. The increase in the number of independent visitors and the decrease of tour operator based tourism evidently affects the public transport system of Malta, resulting in a propensity toward individual and public transport usage, with an increase of self-drive cars, taxis and a decreased use of coaches.

An important factor when it comes to tourist travel is the fact that many hotels offer direct shuttle service from the hotel to the airport.

Moreover, a study conducted in 2013 assessed the transport modes selected by incoming tourists at Malta International Airport. In that year, tourists visiting Malta by air exceeded 1,500,000. The number of trips by incoming tourists in 2013 were subdivided as follows11:

	Number of Trips	Avg. Occupancy
Large Coaches	71,508	33
Mini-Van	54,670	5.1
Taxi/car hire	171,941	2

Table 22 Transport modes chosen by tourists from Malta International Airport

Number of trips in the SUMP area: Table 22 shows the frequency of trips conducted in the study area taking 2014 as the baseline year. Unfortunately, only data on trip frequency is available and not the mode chosen to conduct the trip.

10 TM 2015, Existing Conditions Data Diagnostic Report, p.90

11 Transport Malta 2015; 'D-Air Project, Decarbonisation of Airport Regions, Regional Implementation Plan Malta', p.28

	Inbound number of trips/hour	Outbound number of trips/hour	Intrazonal number of trips/hour
Northern Inner Harbour Region	12,709	10,989	3,662
Northern Other Harbour Region	16,801	16,810	6,210
Southern Inner Harbour Region	6,728	4,035	867
Southern Outer Harbour Region	7,952	7,496	3,512
Valletta	2,768	1,374	803

Table 23 Trips generated in the Northern and Southern Harbour Regions during the AM Peak

Number of registered vehicles:

Year	Agricultural	Coach and private bus	Minibus	Route bus	Motorcycle	Passenger car	Goods carrying vehicle	Special purpose vehicle	Road tractor	Total
2016 Q1	1,922	359	1,203	408	20,821	276,976	43,137	3,448	1,112	349,386
Q2	1,954	361	1,209	441	21,823	279,032	43,280	3,461	1,110	352,671
Q3	1,965	362	1,226	410	22,713	281,295	43,553	3,496	1,126	356,146
Q4	1,989	366	2,049	405	23,227	283,138	43,940	3,510	1,144	358,947

Table 24 Number of registered vehicles in Malta*12*

12 National Statistics Office 2017; Transport Statistics 2016, p.126

Year	District	Agricultural	Coach and private bus	Minibus	Route bus	Motorcycle	Passenger car	Goods carrying vehicle	Special purpose vehicle	Road tractor	Total
2012	Southern Harbour	7	4	11	0	155	2,048	195	17	7	2,444
	Northern Harbour	2	6	18	17	365	4,065	392	22	9	4,896
2013	Southern Harbour	3	1	4	0	206	1,924	194	17	10	2,359
	Northern Harbour	3	2	15	8	492	4,148	376	29	17	5,090
2014	Southern Harbour	2	8	3	0	224	2,415	213	19	8	2,892
	Northern Harbour	6	4	11	0	573	4,704	395	19	21	5,733
2015	Southern Harbour	3	0	18	32	292	2,521	198	13	10	3,087
	Northern Harbour	2	4	20	143	687	5,082	521	17	13	6,489

Table 25 Newly registered vehicles, by district, between 2012 and 2015

Public Transport: In 2011, a national reform of the Public Transport System was put in place. This transformed the previous Centralised hub-and-spoke network into a decentralised network made up of various main termini and interchanges. The fleet was also updated with the purchase of Euro V and VI, low floor buses. An online journey planner dedicated to public bus transport was introduced in 2016 while remote RFID ticketing was introduced in the same year.

Scheduled public transport services consist of an extensive network of bus routes which include route services operating to / from Valletta and between other interchange hubs, express routes and night services. Currently, Malta is served with 96 bus routes, 4 of which are express routes offering direct connections to the airport. Most of the routes which originate from Valletta pass through the Inner and Outer Harbour Region.

The bus network approximates 2,600 km – this figure includes the extension of each bus line in both directions. The average distance between stops is 445m, fully in line with most typical European urban and peri-urban contexts. The analysis of accessibility on foot to bus corridors with a good frequency - and to bus stops in general - shows that areas with higher densities of population and employment are provided with a higher frequency of bus services.

The Harbour region – where a number of services heading to the Valletta hub converge – stands out in relation to bus service provision, with more than 20 bus passages per hour along the corridors Triq Marina, Triq L-Indipendenza and Triq Dicembru 13. The following figure confirms an adequate spatial distribution, as bus routes connect dense urban areas, and converge along strategic corridors and within Inner and Outer Harbour region.

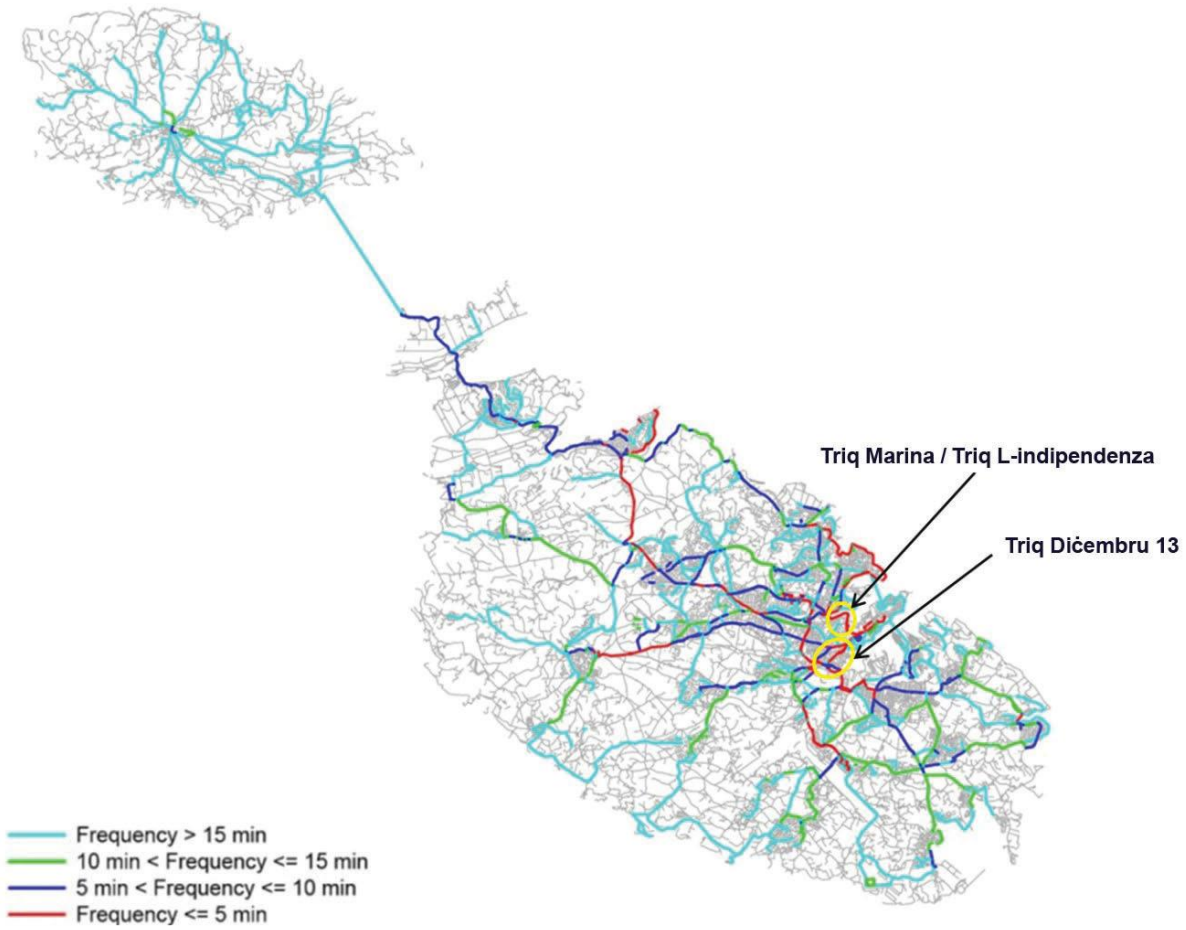


Figure 30 Bus frequency on the major bus route[13]

[13] *Transport Malta 2016; National Transport Strategy 2050, p.81*

Figure 31 Major tourist areas and the bus routes, in the Harbour region

Airport: Malta's International Airport and cruise port are both located in the SUMP area. This means that during the high season the area experiences an increase in temporary population and puts further stress on the infrastructure. In 2015, almost 1.8million tourists arrived by air while more than 600,000 tourists arrived in Valletta by cruise liners.

	2015
Air Transport	4,654,371 total passenger traffic
Cruise Liners	670,244 total passenger traffic
Private Yachts	1,741 total yacht arrivals

Table 26 Tourists arriving in Malta in 2015 by air and sea

Traffic models currently in use in the SUMP area: Cube Voyager

5.2.2 Existing policy plans and regulations

- National Transport Strategy 2050
- National Transport Master Plan 2025
- Tourism Policy of the Maltese Islands 2012-2016
- Strategic Plan for Environment and Development 2015
- Aviation Policy for Malta 2014-2020
- A Structure Plan for the Maltese Islands, 1990
- Sustainable Land Transport: White Paper, 2003

5.2.3 Stakeholders and responsibilities

Stakeholder	Activities / relation to SUMP
Ministry for Sustainable Development, Environment and Climate Change	To be consulted regarding sustainable mobility measures and relevant environmental impact
Ministry for Tourism	To be consulted regarding mobility measures aimed at the tourist sector
Ministry for Transport and Infrastructure	To be consulted on all matters regarding the SUMP from a transport policy perspective
Transport Malta, Integrated Transport Management Directorate	To be consulted on all matters regarding the SUMP from a transport policy perspective in relation to the National Transport Strategy and Master plan documents
Malta Tourism Authority – MTA	To be consulted regarding mobility measures aimed at the tourist sector from an operational point of view
Valletta Local Council	To be consulted on all measures proposed as part of the SUMP as one of the main local councils to be impacted by the Action Plan
Malta Hotels and Restuarants Association – MHRA	To be consulted on all measures proposed as part of the SUMP as one of the main sector's representatives to be impacted by the Action Plan
Department for Local Government	Assist in the communications and mediation with all the Local Councils within the SUMP region
Environment and Resource Authority	To be consulted regarding sustainable mobility measures and relevant environmental impact
General Ratilers and Traders Union – GRTU	To be consulted on all measures proposed as part of the SUMP as one of the main sector's representatives to be impacted by the Action Plan

Malta Chamber of Commerce	To be consulted on all measures proposed as part of the SUMP as one of the main sector's representatives to be impacted by the Action Plan, particularly in terms of logistics related measures
Malta Public Transport	To be consulted on all measures proposed as part of the SUMP as one of the main operators to be impacted by the Action Plan
Marsamxetto Ferry Service	To be consulted on all measures proposed as part of the SUMP as one of the main operators to be impacted by the Action Plan
Rent-A-Car Association – RACA	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan
White Taxis Association	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan
Koptaco Coaches Coperative	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan
Unscheduled Bus Services – UBS	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan
Coop Services	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan
CVA Operator	To be consulted on all measures proposed as part of the SUMP as one of the main operators' Representatives to be impacted by the Action Plan

Table 27 The Involved Stakeholders and their Respective Responsibilities

5.2.4 Tourism

Main tourist destinations: The Malta Tourism Authority (MTA) Market Profile has conducted surveys in 2013 on 6,739 respondents. The survey highlights the most visited localities, which were Valletta (more than 90% of tourists visited the Capital City in 2013), Mdina, Three Cities, Sliema, St Paul's Bay and St Julian's, as can be seen in table 27. Besides, the survey gives an idea of the tourist's transport usage and its evaluation on Malta's transport system. It was noted that 22% of tourists visiting Malta rented a car whereas the other 76% of tourists rely on public transportation.

Localities Visited in Malta

(Multiple Response)	Year 2014 (%)	Year 2013 (%)
Valletta	91.3	90.4
Mdina/Rabat	72.0	69.7
Three Cities	31.7	31.0
Marsascala	13.5	12.2
Mellieha	38.1	37.3
Sliema	61.0	62.9
St Julians	45.3	46.4
Paceville	19.7	21.7
St Paul's Bay/Bugibba/Qawra	52.6	51.9
Dingli	25.2	23.2
Marsaxlokk	44.9	44.1
Mosta	39.0	39.3
Hagar Qim/Mnajdra	18.7	18.7
Wied iz-Zurrieq/Blue Grotto	23.9	24.7

Table 28 Most visited cities, by tourists, in Malta[14]

Relevance of second homes: not applicable to SUMP area

Airports: All tourists arriving by air go through Malta's main airport in Luqa; Malta International Airport.

Seasonality:

Year 2014 Statistics	Inbound Tourists	Guest nights
January	69,525	571,745
February	65,299	496,350
March	97,801	686,558
April	148,188	1,023,035
May	166,496	1,148,469
June	177,446	1,354,060
July	197,389	1,737,304
August	235,093	2,246,282
September	185,438	1,546,749
October	177,961	1,347,352
November	102,940	778,944
December	66,232	585,264
Total	**1,689,809**	**13,522,112**

Table 29Tourists and number of nights spent, by month[15]

14 Malta Tourism Authority; Market Profile Analysis Year 2014, p.41

15 Malta Tourism Authority 2016; Tourism in Malta 2015, p.5

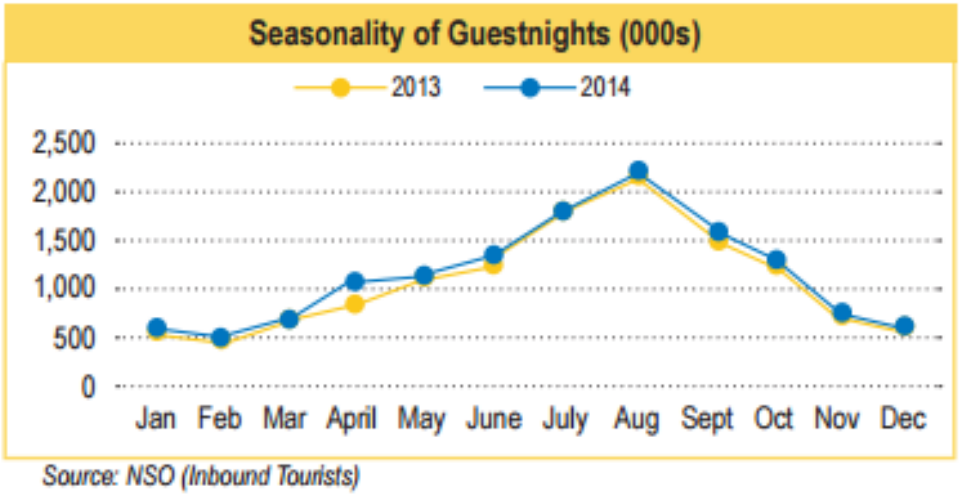


Figure 32 Change in the number of guest nights between 2013 and 2014[16]

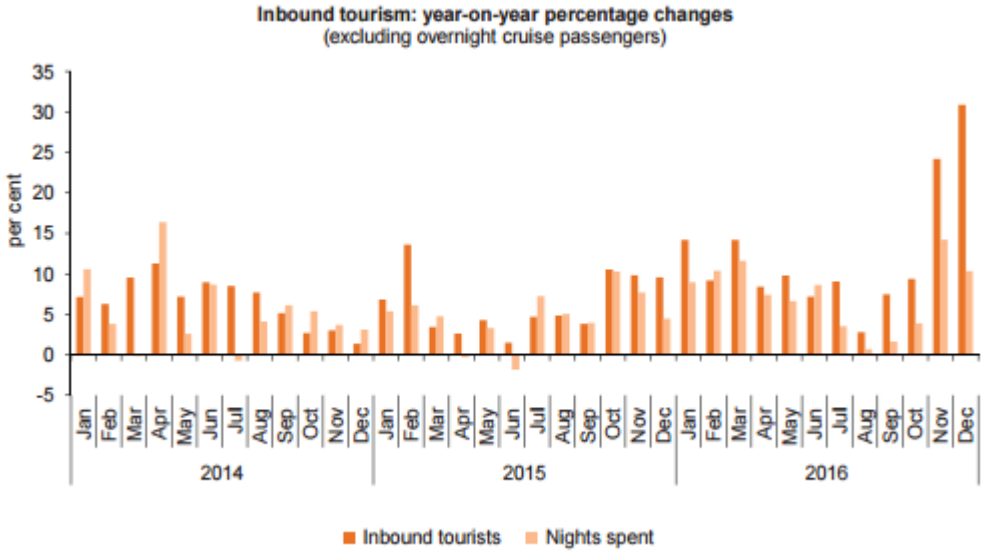


Figure 33 Percentage change in cruise passengers 2014-2016

16 Malta Tourism Authority 2016; Tourism in Malta 2015, p.5

Hotels, campings, other (B&B), number of beds:

Tourist Accommodation Capacity, 2014						
	Malta & Gozo		Malta		Gozo	
	Units	Beds	Units	Beds	Units	Beds
Hotels	132	35,167	120	33,645	12	1,522
5 Star	15	7,210	13	6,830	2	380
4 Star	41	14,832	37	14,286	4	546
3 Star	56	11,687	51	11,207	5	480
2 Star	20	1,438	19	1,322	1	116
Tourist village	1	612	1	612	0	0
Guest houses/hostels	64	3,000	55	2,758	9	242
Total Serviced Accommodation	**197**	**38,779**	**176**	**37,015**	**21**	**1,764**
Self-Catering Accommodation	**2,110**	**9,814**	**1,182**	**4,847**	**928**	**4,967**
Total Tourist Accommodation	**2,307**	**48,593**	**1,358**	**41,862**	**949**	**6,731**

Source: MTA Licensing Administration Office (as at 1 January 2015)

Figure 34 Total accommodation capacity as at 2014

Nautical marinas and number of boats:

Permanent Marinas in Malta, which fall in the SUMP area:

- Grand Harbour Marina p.l.c.
- Kalkara Marina Co. Ltd.
- Laguna Marina
- Manoel Island Marina Ltd.
- Msida & Ta' Xbiex Marina
- Portomaso Marina &
- Sandy Marina

Implications of tourist mobility for mobility patterns: All the main international access points for passengers lie within the SUMP area. In recent years, tourism has been increasing year on year which in turn continues to congest roads which are already operating at capacity.

Malta's road network has been catering for an increasing motor vehicle population which has been contributing to a considerable increase in traffic congestion. The high reliability on personal transport results in negative externalities on the environment with the transport sector being the second largest contributor of GHGs as it produces around 19% of Malta's total emissions. While private car ownership and usage is on the increase, public transport patronage has never assumed rising trends in consumption. In the past three years car registration trends have exceeded 3.4 per cent each year, representing an increase of 12,000 vehicles on local roads every year.

The trend in tackling ever-rising personal vehicle numbers has been to increase road network capacity, but "Rather than solving the problem, this sort of auto-centric infrastructure development exacerbates it, prompting more people to switch to private vehicles, increasing traffic congestion, reducing bus service reliability and punctuality leading to declining modal shares for public and non-motorized transport"17. Moreover, the Maltese road capacity and geographical limitations do not allow for any further expansion: "The high level of urbanisation and significant percentage of open space subject to environmental protection presents a practical barrier to increasing the size of the road network"18.

17 National Transport Strategy (NTS) 2050, p.135

18 TM 2015, Existing Conditions Data Diagnostic Report, p.54

5.2.5 Main mobility challenges / problems in the SUMP/SRMP region

Tourist (in)flow: The number of low-cost airlines operating to Malta has proliferated over the last few years and a new bus interchange and network of bus services at the Malta international airport was introduced in 2011 specifically with independent tourists in mind. On the other hand, cruise tourism development in the Grand Harbour has increased. The increase in large cruise liners has resulted in significant local pressure on the transport system in the immediate hinterland.

Additionally, during peak cruise liner season, a number of localities which are popular tourist attractions are also heavily affected such as: Rabat, Mdina, Marsaxlokk and the Three Cities. An issue exists where tour operators tend to focus the tours to these localities on the same day of the week. So for example on Mondays most tours go to Valletta while on Tuesdays Rabat and Mdina are visited. This results in a peak overload of unscheduled public transport and tourists putting pressure on the localities.

Concerning car rental-users tourists evaluated their experience, in the MTA survey, on the following criteria; roads, road signage, traffic and parking. 74%, 59%, 76% and 71% of respondents had respectively given negative feedback for each parameter. The supplementary comments by visitors to the Maltese Islands focussed on the lack of and a bad location of road signage and inconsistency between GPS information (like road names, locations of attractions, facilities etc.), which are registered in Maltese, and the received information for tourists' attractions (which is in English). This trend evidently affects the public transport system of Malta, resulting in a propensity toward individual and non-scheduled public transport usage, which is shown in an increase of self-drive cars and taxis and a decreased use of coaches.

Logistics: One of the main challenges in this area is that not much data is available on freight. Moreover, apart from the City of Valletta, the timings for deliveries are not regulated resulting in a contribution towards congestion and journey delays, particularly during peak hours.

Accessibility: One main existing challenge is that streets are seen as an extension of the road network and car parking is everywhere. The lack of attractiveness of the urban environment, together with the lack of integration between transport planning and land use development has led to urban sprawl, which makes it even more complicated to provide efficient and effective public transport services. The ad hoc application of parking principles particularly in harbour localities and other congested areas and the lack of effective parking control and restraint, over the years, only served to encourage increased car use. This in turn led to an overspill of parking onto roads and the conversion of many urban roads to one-way streets to provide more parking availability which effectively resulted in the narrowing of urban roads, limiting space for buses, pedestrians and cyclists19.

Cycling: Cycle lanes have been introduced to improve the provision of cycling infrastructure during the renovation and upgrading of the road network over the past years. Transport Malta mapped the current cycling infrastructure and reported that the infrastructure is fragmented, not properly integrated, and not adequately provided within urban areas where population and workplaces densities (and resulting mobility production level) is higher. Besides, the network does not properly penetrate into main urban areas.

19 Transport Malta, 2016; National Transport Strategy 2050, p.50

As a general observation, it can be stated that cycling is not considered as an alternative means of transportation for daily mobility, one of the reasons can be the lack of an overall strategy involving the whole country capable of attracting not only the visitors but also the local population. Indeed, at European level, Malta ranks last with the least cycle users.

Pedestrians: Despite the fact that services are generally within walking distance, an important consideration should be given to the quality of pedestrian infrastructure. This is essential in promoting walking as a means of mobility. While a number of newer streets and urban developments may provide quality infrastructure for pedestrians, an analysis of streets in existing older urban areas has identified poor provision of pedestrian infrastructure with the potential for improvement.

Typically the existing traditional urban fabric is often made up of narrow roads with limited space. The tendency is that this limited space is allocated for parking rather than appropriate footpaths. Additionally, the quality of the pedestrian infrastructure is often not properly geared up for the mobility impaired due to the presence of discontinuous and uneven paths (vertical gaps, narrow sidewalks, unprotected pedestrian crossings, changes in property levels resulting in ramps / steps in the footpaths, etc.).The allocation of space in streets and the potential to create a balance between vehicles and pedestrians therefore needs further study and attention.

Parking: Currently parking is maximized and at capacity in urban areas and there is the need to organize and manage this more effectively. A parking strategy is being developed which reviews and develops policy for the following: Residential Parking Schemes, Controlled Parking Schemes, Reserved Parking, Loading / Unloading Bays, Cycling Parking, and Parking for Car Pooling Incentives etc.

Congestion: the high value that society places on time and high levels of access to private vehicles have resulted in increased car dependency for short trips giving rise to problems of traffic congestion, public transport unreliability and a decreased use of alternative modes. Traditionally bottlenecks and congestion are addressed by new infrastructure and increasing capacity. However, this is a short-term approach when compared to demand management. Informal on-street parking at no cost and lack of parking management results in an increase in congestion.

The comparison between traffic flows and road capacity indicates that congestion problems during the most critical morning peak hour arise primarily in the central section of the TEN-T network, particularly around Marsa, Santa Venera, Qormi and Kappara (all located within SUMP area), as well as the distributor linkage between the airport and the urban centre of Qormi. There are also congestion problems on certain sections of the roads in the coastal area of Sliema, on the radial axis towards the Valletta / Floriana Peninsula as well as on different urban sections in the Inner Harbour.

*Public transport: r*egarding public transport infrastructure, buses usually have to share the road infrastructure with private vehicles as there is limited provision of bus lanes due to space limitations. There are a number of major bus interchanges in the SUMP area including in Valletta, but other secondary interchanges have also been established across Malta to allow bus users to switch between different bus routes. All bus stops display the route numbers stopping at each bus stop and their schedule, but only 22% have shelters and 5% provide real-time information.

In the 2013 MTA Market Profile Surveys, tourists using public transport were asked to assess the quality of the public transport in terms of physical and service aspects being offered. 30% and 35% of the respondents respectively gave a negative evaluation and the main reproaches concerned a poor service (e.g. Long routes, inappropriate bus schedules, long waiting times, lack of bus shelters/seats, lack of buses, lack of information and maps etc.

Emissions and pollution: Monitoring results show that Malta's national air quality meets EU standards. However the results also indicate that air quality is of concern in certain territorial portions, particularly those dominated by traffic. For Malta's air quality to improve, emissions from energy, transport, construction and industry sectors need to be reduced. In common with most EU countries, Malta's most significant air pollutants in urban areas are nitrogen oxides and benzene, mainly resulting from heavy traffic flows usually found in those areas. Figure 36 shows the spatial trend of NOx between 2008 and 2011. There is a clear correspondence between the diffusion of NOx in the air and the most populated and economically active region of Malta – the SUMP area.

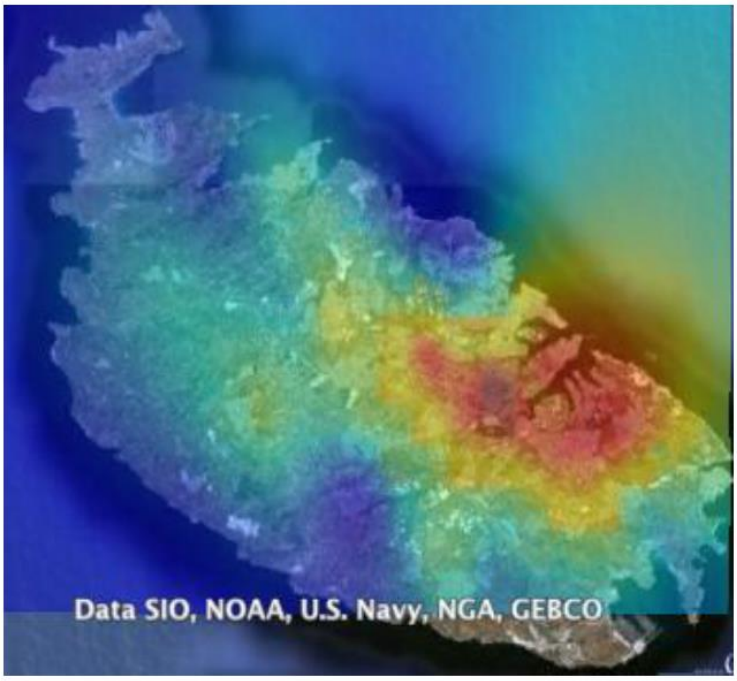


Figure 35 The spatial trends of Nox between 2008 and 2011 (Air Quality Trends, MEPA)

5.3 Measure introduction

A sustainable urban mobility plan (SUMP) shall be compiled for Valletta and its surrounding region which hosts the main commercial districts, the most popular tourist destinations as well as the two main international gateways; the Malta International Airport and the Cruise Port Terminal.

The SUMP shall explore innovative solutions, as yet untested on the island, in order to improve mobility patterns, meet demands in the transport sector and overall contribute towards making transport sustainable. Some of the Measures to be included in the final SUMP shall be tried and tested during the DESTINATIONS project in order to assess their feasibility in practice; thus allowing for the necessary improvements to be made to the measures prior to them being included in the long term plan.

5.4 Aims of the SUMP

The SUMP for the Valletta Region will test and propose a number of initiatives which are not only innovative for the region, but also as yet untested at national level. The aim is to create a shift in the modal share towards cleaner, more sustainable modes of transport and hence improving the air quality in this highly congested area.

5.5 Relevant other CIVITAS DESTINATIONS measures in SUMP/SRMP area

Other measures under the CIVITAS DESTINATIONS project which directly affect the SUMP area are:

MAL 2.2 - Sustainable Urban Mobility Plan Award: this measure will Disseminate the SUMP methodology. Transport Malta, with the assistance of the external expert, will compile easy-to-follow guidelines to be disseminated with other Local Councils. A Competition and Award scheme for Permanent Sustainable Mobility Measures will be set up for Local Councils. Urban Planners from Maltese Local Councils and Authorities particularly affected by tourism will be gathered in workshops whereby the Contractor will explain and disseminate information regarding the basic principles that govern the creation of a SUMP. As part of the workshops, the terms and conditions of the Grant Competition will be explained. The winning measure will be implemented during the lifetime of Destinations. Transport Malta will be assisting the winning Local Council/s in the implementation of their measure including tender drafting, monitoring of progress, data collection, etc.

MAL 4.3 - Promoting e-bike sharing and car sharing. This measure will launch an Information and Awareness campaign on the use of e-bike and car sharing in Malta as well as educate the public on cycling safety. One of the main reasons that cycling is so unpopular in Malta is that it is deemed extremely unsafe. The campaign will therefore also focus on the safety regulations and educate road users how to share the road safely. It aims to encourage cycling as a viable mode of commuting as well as bring about a modal shift from private cars to alternative modes of transport. This would reduce traffic congestion and journey delays especially during peak hours.

MAL 5.1 - Last Mile delivery of goods. Objectives are to test the feasibility of last mile delivery of goods within the local context and compile a SULP for the Valletta Region. Last mile delivery using energy-efficient vehicles has never as yet been tested in Malta; nor has the transport of goods been given much attention. In fact, little data exists in the sector of freight transport. The SULP will therefore be a very important tool in understanding the current state of affairs and to propose ways how to make freight transport more sustainable.

MAL 6.2 - Introducing Low Emission Zone: this measure will test the feasibility of Low Emission Zones within the context of the Valletta region and gage public perception of the system; It will involve the public in curbing high-emission vehicles by launching an automated app which reports high-polluting vehicles; and it will reduce high-polluting vehicles from the Valletta region and encourage a modal shift towards public transport.

MAL 6.3 - Promoting sustainable mobility among tourists: an app will be created which informs tourists of the location of the main tourist attraction and how to get there using sustainable mobility options. At the same time, much-needed data on tourist mobility will be collected.

MAL 6.4 - Smart parking management system for Valletta. As part of the Demand Management Strategies work package, smart parking management in the city of Valletta will be introduced and tested in Valletta. This will reduce journey times within the city and improve air quality. It includes the procurement of sensors and software to be used in pilot and their installation and testing.

5.6 SUMP development: Drivers, barriers, resources and planning

One main barrier is the fact that much of the data available covers the national territory and is not specific to the region under study. In this regard, much data needs to be collected as part of the SUMP process.

On the other hand, a very detailed National Transport strategy and Masterplan have been published in 2016. These two documents shall serve as guidelines on which measures to be proposed as part of the SUMP can be based and extended upon.

Resources: besides the DESTINATIONS budget, there is no other budget earmarked for the SUMP development or its implementation; it is important to note that as part of the project we have only committed to escalate the final SUMP for political endorsement. The amount and source of budget per measure to be proposed in the SUMP Action Plan is to be studied and compiled as part of the SUMP formulation. Transport Malta has a subcontract budget available to be used for SUMP development.

The SUMP planning more or less follows the measure timeline in the Measure Description Form, with the first official stakeholder meetings taking place in Autumn 2017, in order to e.g. come to an agreed-upon set of SUMP objectives and several scenarios. In Deliverable 2.2, expected in October 2017, a more detailed planning will be provided.

5.7 SUMP Self-assessment questionnaire analysis

SUMP self-assessment: overall score (max = 100)	
Valletta	69
Average	57
Foundation questions (13)	
Valletta	12
Average	9
Excellence questions (15)	
Valletta	9
Average	**7,5**

Table 30 SUMP Self-Assessment Overall Score

The score of Valletta is already quite good. Both the questions on Foundation and Excellence score above the average of all sites.

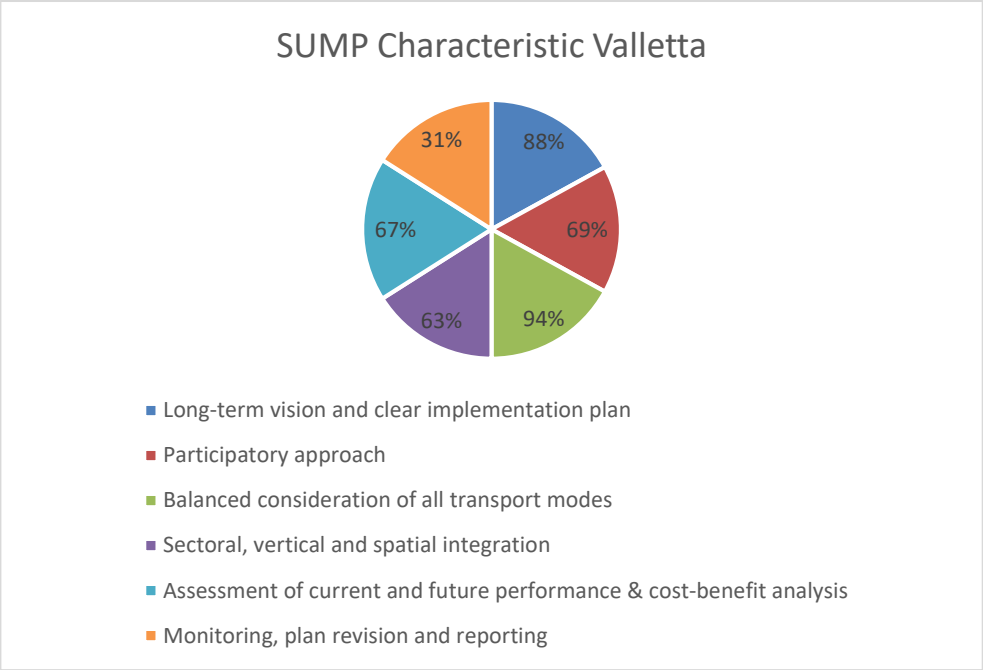


Figure 36 Valletta SUMP Characteristic

Topics to put more attention to are especially Monitoring, plan revision and reporting.

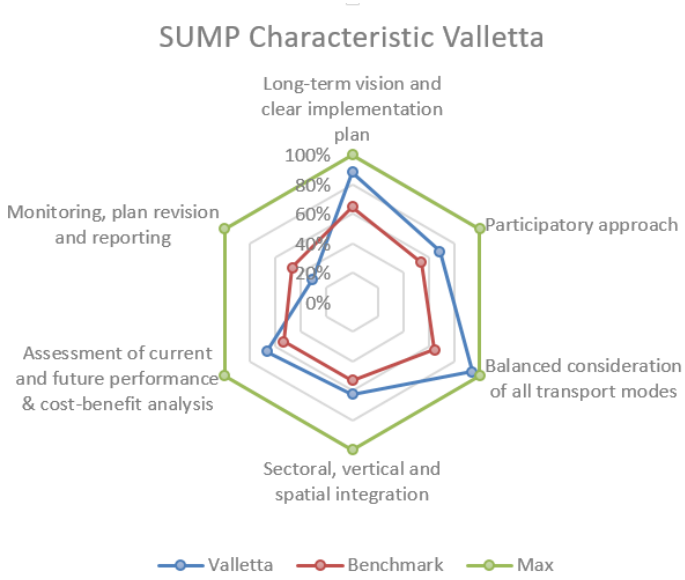


Figure 37 Valletta SUMP Characteristic including maximum score and benchmark

In figure 38, the score of Valletta the SUMP self-assessment is revealed. Next to the score of Valletta, the maximum score and the benchmark are shown.

6 Rethymno (Crete) baseline

6.1 Geographical area

Rethymno is the third largest city in Crete. It lies on the northern coast of the island, between the cities of Heraklion and Chania (Figure 39). It is a medium-sized city and a major tourist destination. In its previous Urban Mobility Strategic Plan (2014), Rethymno's study area was identified to form an overall metropolitan area including the city and its surrounding settlements, of about 48.500 inhabitants within the municipality of Rethymno. In the current SUMP, the study area is extended in order to cover around 63.000 inhabitants (defacto population of Rethymno Municipality according to 2011 census) within the Regional Unit of Rethymno (mainly within the Municipality of Rethymno). During peak season, it is estimated that the SUMP area hosts approximately 90.000 people.

The area of influence of the city is presented in figure 39. It extends in the west, in the south and in the east along the main roads of the region beyond the municipality's borders. Lake Kourna and

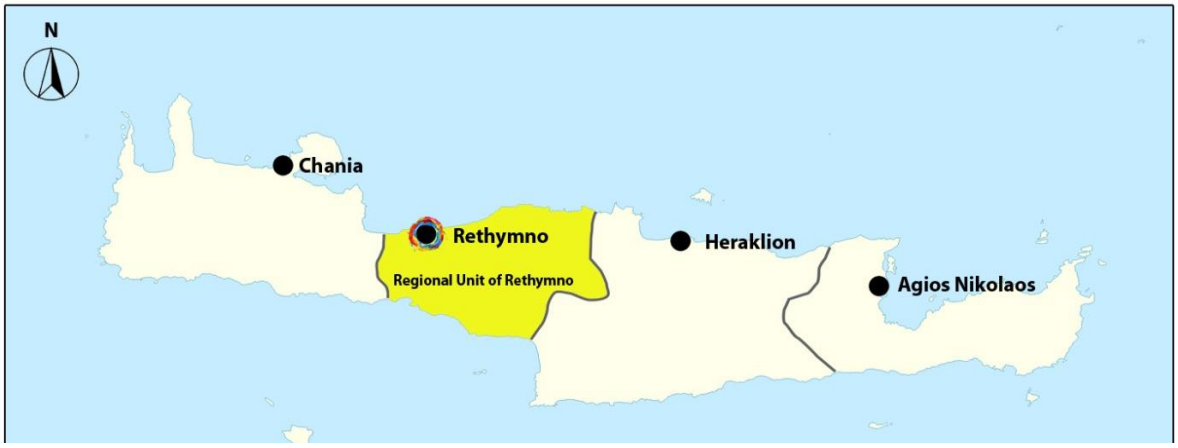


Figure 38 The location of Rethymno on a map. Source: Own Elaboration

Georgioupoli beach in the west borders belong to the municipality of Apokoronas, Preveli Beach in the south border belong to the municipalities of Agios Vasileios and Panormos and Bali in the east border belongs to the municipality of Milopotamos. These areas are influencing traffic conditions because they are highly developing settlements and touristic destinations, located about 20 – 40 minutes away (by car) from the nearest urban core, namely Rethymno. On the other hand, many settlements within the municipality of Rethymno in the mountainous areas in the south that have preserved their traditional economy have not been influenced by tourism and their population is declining. These settlements do not have strong functional relationships with the city.

Rethymno lies in the forefront of Greek cities in terms of the implementation of sustainable mobility. During the last 10 years, a huge project has been implemented, allocating space in favour of pedestrians and cyclists in the city centre and along the main road network. Rethymno has about 12 km of dedicated cycle tracks and a 2 km green route along Rethymno beach. The old city - an area of 37.8 hectares - is a car free area during the summer period; certain sections remain car-free even during the winter. The medieval network of the old city hinders car movement hence it is friendly towards cyclists and pedestrians. Also, the existing road network is approximately 650 km.

Cycling network: The existing cycling network sums 20 km in the city of Rethymno, while 22 inter-regional cycling routes are located in the Regional Unit of Rethymno, 12 of them connecting Rethymno with key sites nearby.

Touristic attractions: The old city, the Rethymno beach (a 7 km long sandy beach from Rethymno city

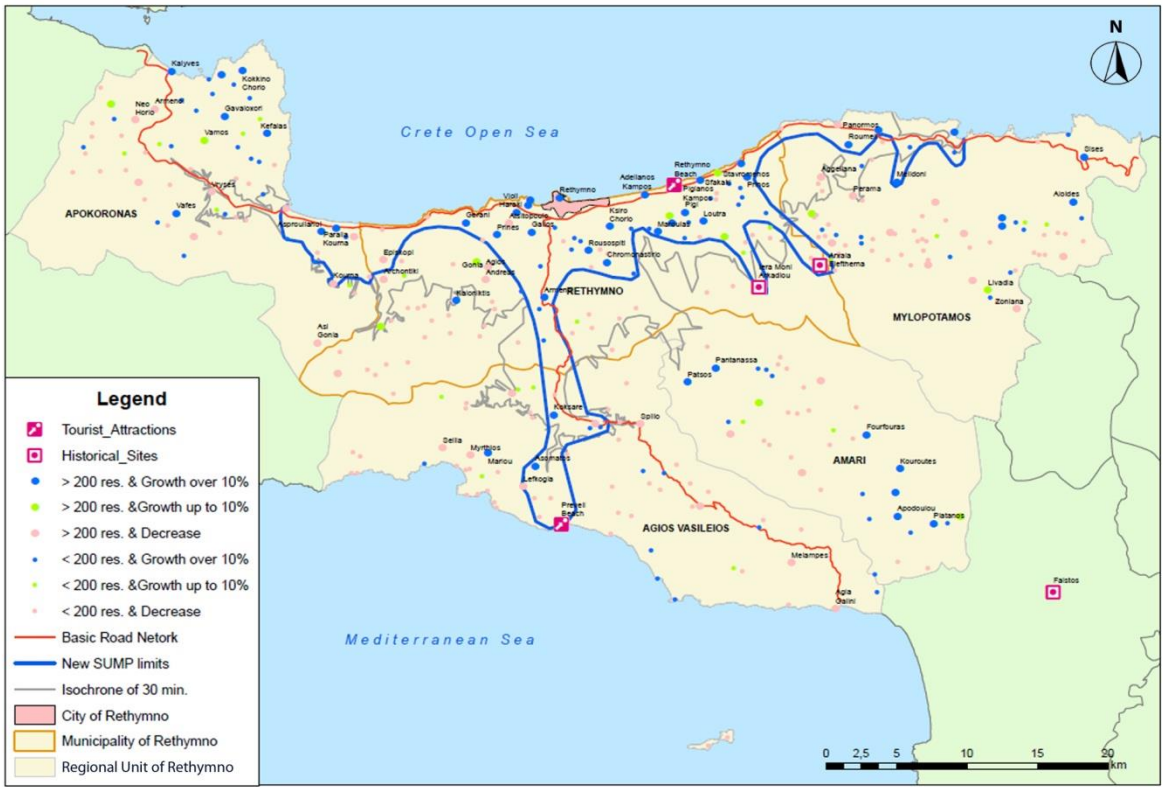


Figure 39 Area of influence of Rethymno. Source: Own Elaboration

centre to the east, Episkopi Beach and Preveli beach), monasteries of Arkadi, Ancient Eleftherna at the south and southeast of the city and Kourtaliotis Gorge at the south part of the Regional Unit of Rethymno, are the main touristic attractions.

Ports and airports: Inside the SUMP area, there are no important ports and airports. The airports serving the municipality of Rethymno are the airport of Chania and the airport of Heraklion. The first is located 68 km, or approximately 1 hour by car northwest of Rethymno city centre, and the second is located 85 km, or approximately 1 hour by car (as it has better road connection) east of Rethymno city centre.

Ports serving the area of Rethymno are the ports of Rethymno, Souda in Chania and Heraklion. Rethymno port is located near the old Venetian port and the historical centre of the city. It serves only one fast jet route from Rethymno to Santorini which is mainly used by tourists staying in Rethymno who wish to make one-day excursions to Santorini. It is also used by cargo ships (132 arrivals/ year). Recently, the port of Rethymno has also become part of a cruise line service. In the period January – August 2015, 620 tourists have visited Rethymno (7 cruise ships). The number of visitors was smaller in the same period in 2016 (275 passengers with 2 cruise ships) .

Rethymno is connected by ferry routes departing from Souda and Heraklion to mainland Greece. Souda and Heraklion are located outside the SUMP area. Souda port is located near Chania city, 52 km or 50 minutes northwest of Rethymno city. Heraklion port is located near Heraklion city, 86 km or 1 hour and 15 minutes east of Rethymno city.

Public transport: Bus Terminal Rethymno is the major bus station bringing passengers from nearby cities and settlements to Rethymno. It is located west of the old city.

Figure 40 Airports, Ports and Main Bus Stations in Crete. Source: Own Elaboration

Industrial locations: The main industrial locations are the Area of Tria Monastiria at the southern outskirts of the city and the Area of Atsipopoulo at the west outskirts of the city. The city centre remains the most important location with work places, offering many services and hosting most offices. A smaller urban centre is Episkopi, located 19 km southwest of Rethymno. Finally, other workplaces concentrations are all areas which have grown thanks to tourism (blue growth), namely the area along Rethymno Beach, extending up to 12 km from the city centre and around other touristic attractions like Episkopi Beach, Bali Beach, Preveli Beach, Ancient Eleftherna and Argiroupoli. It should also be noted that areas like Adele and Platanias, at the east side, and Kavros and Georgioupoli, at the west side, are also important areas for tourist accommodation.

6.1.1 7.1.1. Demography / census

Residents distribution: The SUMP area consists of parts of the municipalities of Rethymno and Agios Vasilios. These municipalities are located in the Regional Unit of Rethymno, in the Region of Crete, which has a total population of 623,065 inhabitants (residents population of 621,340 inhabitants), based on the 2011 Census. Regarding the male and female ratio in Crete, women slightly outweigh compared to men (49.5 to 50.5%). A similar situation occurs in the Regional Unit of Rethymno and in its greater municipality, the Municipality of Rethymno, as presented in Table 34. An average of 13.7% of the Region's population resides in the Regional Unit of Rethymno (85,160 residents). As illustrated in Table 35, the increase in population in the Regional Unit of Rethymno has become more intense over the years between 1981 and 2001. Increasing trends were recorded in the following decade.

Administrative Division	Total	Men	Women	Permanent Population density per square kilometre
Region of Crete	621.340	308.760	312.580	7,454
R.U.ofRethymno	85.160	41.900	43.260	5,692
M. Rethymno	54.900	26.470	28.430	13,855
M. Agios Vasilios	7.440	3.790	3.650	2,071
M. Amari	5.950	3.070	2.880	2,146
M. Anogion	2.400	1.200	1.200	2,123
M. Mylopotamou	14.470	7.370	7.100	4,131

Table 31 Permanent Population and sex distribution. Source: Greek Census 2011 (http://www.crete.gov.gr/attachments/article/1705/1705_Apografi2011.pdf)

Similar trends are observed in the current Municipality of Rethymno, which before the administrative reform of 2010 consisted of four smaller municipalities: Rethymno, Arkadi, Nikiforos Fokas and Lappeon. Today the former municipalities are named Municipal Units (Figure 4). Differentiation occurs in the division of the population of the municipality of Agios Vasileios which before the administrative reform of 2010 consisted of the Municipality of Lambi and the Municipality of Phoinikas.

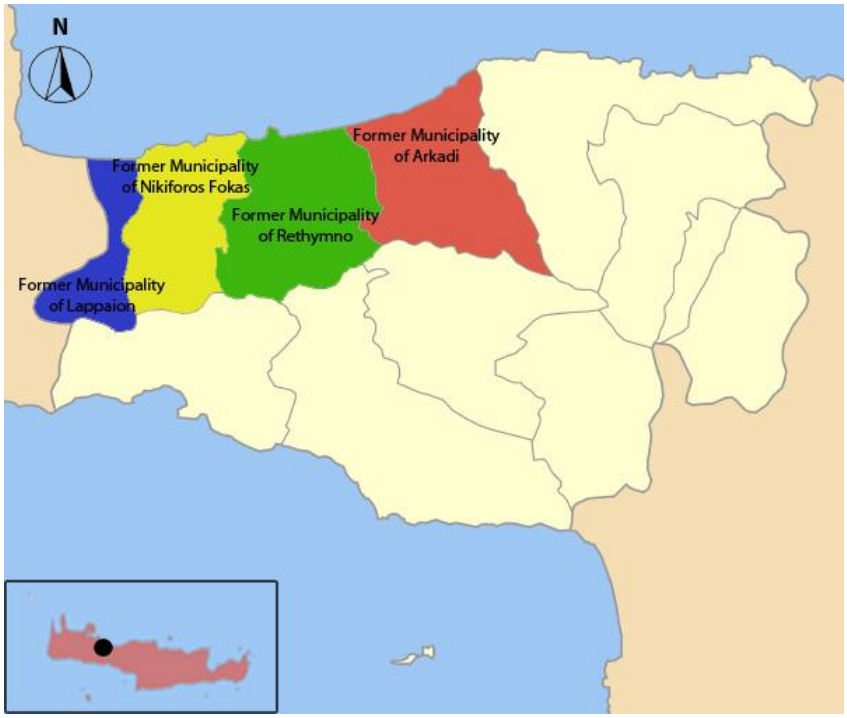


Figure 41 The four former municipalities that now compose the Municipality of Rethymno.

Source: : NTUA and Municipality of Rethymno

	Population			Population Change (%)	
	1991	2001	2011	% 1991-2001	% 2001-2011
M.U. Rethymno	26.560	31.687	37.462	19,30	18,23
M.U. Arkadi	4.745	5.644	6.936	18,95	22,89
M.U. Nikiforos Fokas	4.219	6.599	8.911	56,41	35,04
M.U. Lappeon	3.741	2.628	2.216	-29,71	-15,67
M. Rethymno	39.265	46.558	55.525	18,57	19,26

Table 32 Real Population and Population Growth.

Source: Greek Census 1981, 1991, 2001 and 2011.

Age distribution in the Regional Unit of Rethymno is predominantly middle aged. In the censuses of 1991 and 2001, the average age was approximately 41 years with no relevant increase in the population aging. This was also reflected in the reduction of replacement rate. Over the next decade, the situation seems different since in the period 1999 – 2007 there were 6,908 deaths and a total of 8,640 births. The higher aging index is shown in the northern part of the Regional Unit and specifically in the Municipality of Rethymno, in contrast to the southern part wherein Municipality of Agios Vasileios presents higher youthfulness index.

According to the 2011 Census, the SUMP area represents 61.17% of the Regional Unit of the Rethymno population, standing at 52,371 inhabitants. The biggest part of the Municipality of Rethymno forms part of the SUMP area and therefore the overall population structure of the municipality affects the characteristics of the SUMP area. For this reason, it may be the case that both the sex and the age-related distribution of Rethymno municipality coincides significantly with the distribution in the SUMP area

Tourists distribution: Greece is a popular tourist destination with large numbers of tourist flows. In 2014, Greece was ranked in the 15th place in the global ranking of countries according to the number of tourists' arrivals (22 million arrivals). Of these, 14% visit Crete. International tourist arrivals in Heraklion and Chania are presented in Table 36.

It should be mentioned that Chania and Heraklion, due to their important ports and airports are the main gateways to inland Crete.

	Heraklion	Chania	Total
2011	2.160.065	656.791	2.816.856
2012	2.106.255	716.347	2.822.602
2013	2.472.082	849.667	3.321.749
2014	2.606.472	950.316	3.556.788
2015	2.542.914	930.794	3.473.708
2016	2.885.154	1.048.872	3.934.026

Table 33 International Tourist Arrivals (only airports) in Crete.
Source: Greek Tourism Confederation(SETE) and
http://www.tovima.gr/files/1/2012/12/11/%CE%91%CE%A6%CE%99%CE%9E%CE%95%CE%99%CE%A3.pdf
[Retrieved in April 2017].

There is no available data regarding the international arrivals in Crete via boat / ferry.

Regarding the arrivals via cruise ships, the number of tourists (2013-2015) that visit Rethymno is quite small, as Table 4 illustrates. The number of visitors was smaller in the same period in 2016 (275 passengers with 2 cruise ships)20.Heraklion is the main coastal entrance in Crete and as a result many tourists that visit Heraklion via a cruise ship prefer to visit other cities located in close proximity to the port, including Rethymno. Tourists that visit Chania usually visit other cities as well. However, it is not possible to estimate the number of international tourists that visit Rethymno via cruise ships. Thus, this number needs to be reconsidered soon.

20 Municipality of Rethymno, 2016. Action Plan for Sustainable Energy in the Municipality of Rethymno. WP A: Updating the basic information about the pollutants in the Municipality of Rethymno.

Destinations	2015		2014		2013	
Heraklion	170	219.805	160	242.951	177	270.020
Chania (Souda)	59	96.612	38	33.304	47	124.205
Rethymno	11	1.076	18	4.220	5	1.336
Total	240	317.493	216	280.475	229	395.561

Table 34 Tourists' arrivals via cruise ships. Source: http://flashnews.gr/post/297478/oi-kroyazieres-sthn-krhth-gia-to-2016-me-arithmoys-prwtia-gia-to-hrakleio [Retrieved on April 2017].

According to estimations by the Municipality of Rethymno, the number of visitors to Rethymno amounted to approximately 500.000 throughout the tourist season.

Age distribution visitors: According to a recent survey by the Chamber of Rethymno, the wider area of Rethymno is preferred by young people as a holiday destination. About 44% of the foreign visitors range from the ages of 18 to 34 years. However, alternative accommodation types, such as hostels or campings, are not preferred by tourists, not only in Rethymno but also in Crete in general, as illustrated in Figure 43. Most visitors choose hotels and all-inclusive vacation packages. In Rethymno, these types of hotels attract almost 52.70% of tourists. That might be related to the relatively high number of tourists in the 44 to 54 age group, who mainly choose hotels with high quality services.

The Municipality of Rethymno presents a significant number of hotels to meet the increased tourist needs. In particular, there are 18,500 hotels with 25,000 beds.

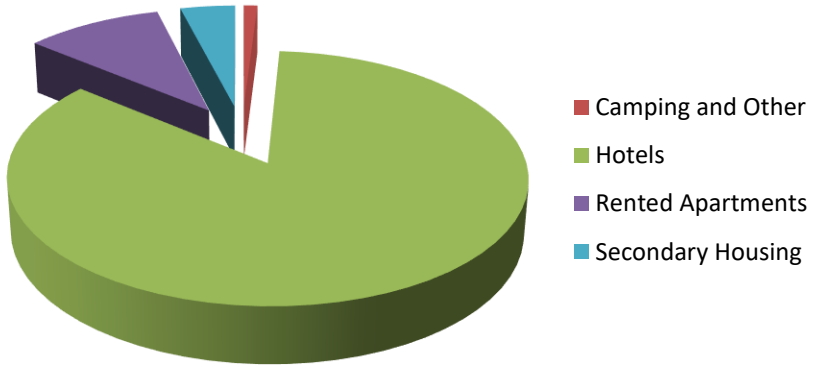


Figure 42 Distribution of tourists in the different types of accomodation. Source: Municipality of Rethymno - Estimation, 2015.

Regarding nationality, the majority of tourists (23%) are Germans21, while there are many Russians, British and French. Fewer tourists come from countries of the Central Europe and Scandinavia. The majority is visiting Rethymno for the first time. About the 73.3% of them report that they would like to visit Rethymno again for their holidays22.

Regarding the budget of their trip (accommodation and travel expenses are not included), the majority of visitors (35.7%) chose to spend about 201-300 euros, while a significant percentage of them (47.3%) choose to spend an amount greater than 401 euros. This was expected given the fact

21Kadianaki, M. and Tzanis, K., 2013. Profile of Foreign Visitors in Rethymno.

22Kadianaki, M. and Tzanis, K., 2013. Profile of Foreign Visitors in Rethymno.

that the period of stay ranges usually between 8 and 15 days (60.7% of respondents). Expenditures are focused mainly on entertainment, as well as on buying gifts and souvenirs23.

As for the issues that displeased them during their stay, the main problems are related to traffic congestion in the town of Rethymno, the bus timetables towards neighbouring destinations, the hotel service and the lack of cleanliness in the streets.

The above-mentioned features for tourism in the Municipality of Rethymno are extensively applicable for the study area and for this reason it is assumed that the visitor profile described above converge to a great extent with the SUMP area visitor profile.

Jobs description: As far as it concerns the developments in the field of employment in Crete, although the economically active population has been decreased, through the period 1981 – 2001 a rise was observed in unemployment rates. In contrast to the other three Regional Units where there was a constant upward trend, in the Regional Unit of Rethymno a decreasing trend was observed between 1981 – 1991 and a significant increase in the period 1991 – 2001.

Regarding the unemployment rates, in the Regional Unit of Rethymno, a significant increase has been observed between 2005 – 2011, where rates have doubled. Graph 2 presents the evolution of the unemployment in each Regional Unit in Crete.

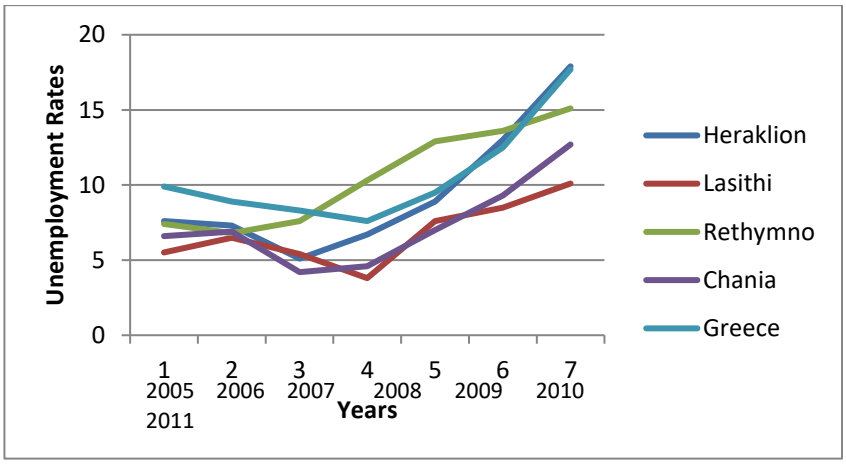


Figure 43 The evolution (2005-2011) of unemployment in the Regional Units of Heraklion, Lasithi, Chania and Rethymno. Source: Municipality of Rethymno, 2012. Business Plan for the Municipality of Rethymno 2012-2014. Phase A: Strategic Plan.

As Table 34 shows, the unemployment rate in Rethymnon in 2005 was 7,4%. In 2011 the rate was doubled at 15,1%. However, in general, the situation in the Regional Unit of Rethymno is better than in the rest of the country (the only exception is the period 2008 – 2010).

23Kadianaki, M. and Tzanis, K., 2013. Profile of Foreign Visitors in Rethymno.

Area	2005	2006	2007	2008	2009	2010	2011
Regional Unit of Rethymno	7,4	6,8	7,6	10,3	12,9	13,6	15,1
Greece	9,9	8,9	8,3	7,6	9,5	12,5	17,7

Table 35 Unemployment rates through 2005 – 2011. Source: Municipality of Rethymno, 2012. Business Plan for the Municipality of Rethymno 2012-2014. Phase A: Strategic Plan.

The situation is even worse in the period 2011 – 2015. According to Eurostat (2016), unemployment rates in Crete, as well as in Greece, were increased. In 2015, the unemployment rate in Crete was at 24.2% while in Greece it stood at 24.9% in the same year. According to the Hellenic Statistical Authority, the situation as far as it concerns the unemployment rates in Crete tends to become better. According to this research, a decrease of 12.84% of the unemployed people who are searching for a job was observed between March 2016 and March 2017 in Crete. However, this rate does not include the unemployed who are subsidized in order to work for a small period, in professions that are related with tourism (seasonal tourism). It is remarkable that 8,948 people fall into this category.

In the Municipality of Rethymno, in 2011, the number of unemployed people stood at 7,642 people. This percentage consists of the 11.6% of the unemployed people of the whole Region of Crete. Unemployment concerns more women than men. The same situation is observed in the Regional Unit of Rethymno.

Area	Unemployed (Total)	Men	%	Women	%
Regional Unit of Rethymno	7.642	2.866	37,76	4.756	62,24
Greece	9.385	3.566	38,00	5.819	62,00

Table 36 Unemployment rates and Sex in 2011. Source: Municipality of Rethymno, 2012. Business Plan for the Municipality of Rethymno 2012-2014. Phase A: Strategic Plan.

In 2011, the 42.75% of the unemployed people had graduated from high school (secondary education) while most of them (44.31%) held primary education only (junior high school). Only 12.75% (2011) of the unemployed people have studied in a University.

As was noticed in previous sections, we can assume that the situation in the SUMP area is similar to the situation in the Municipality of Rethymno area, given the correlation that exists between the municipality and this area.

6.2 Analysis of current mobility situation

6.2.1 Models and data

The existing models and data presented in this deliverable are collected through the various studies conducted in the municipality of Rethymno. Available data are displayed accordingly and deficiencies are reported. Moreover, in cases where the specific requested data were not available, relevant data and material are reported to support the current needs of the SUMP. Data will be updated in the following steps. The SUMP data plan for the Rethymno SUMP area is attached to this deliverable as an Annex.

6.2.2 Modal Split

Modal share of trips in the SUMP area: The Modal share of trips in the municipal area (Municipality of Rethymno / administrative borders) is depicted below (Graph 4):

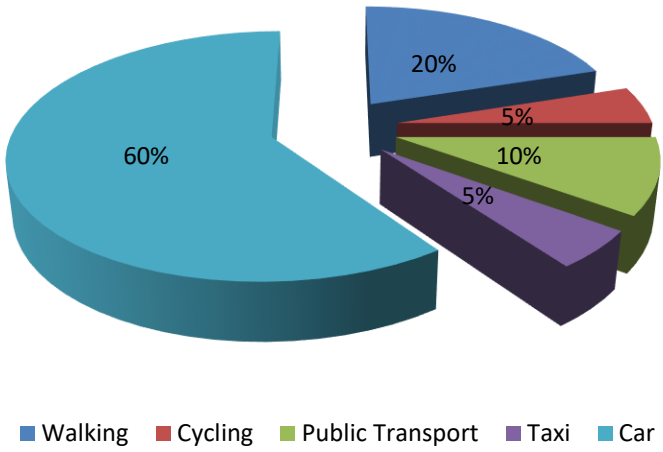


Figure 44 Modal share in the Municipality of Rethymno.

Source: Municipality of Rethymno - Estimation, 2015.

- No data is available regarding the modal split for the entire island
- No data is available regarding the modal split of tourists and residents

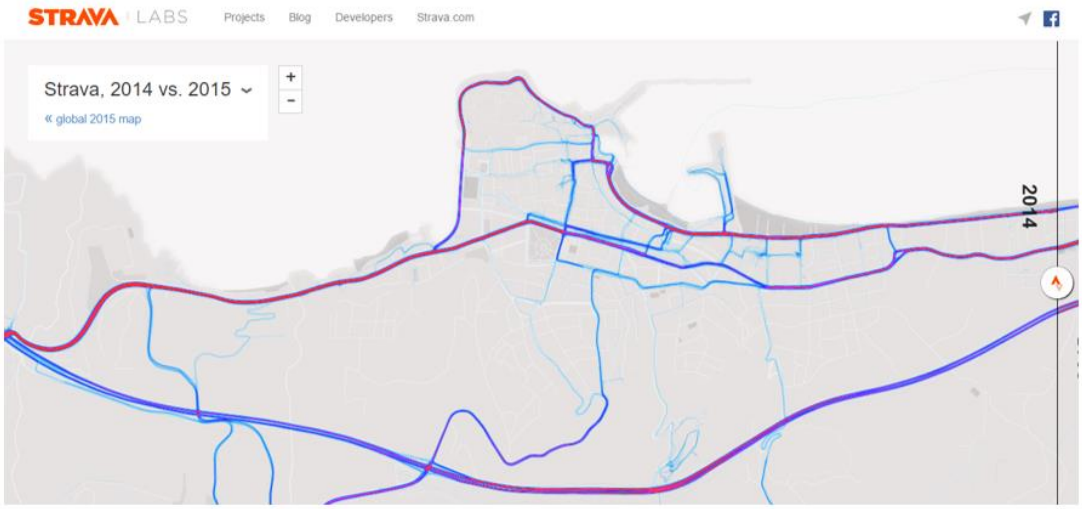
The research team is planning to implement a survey with the help of Rethymno municipality to obtain the missing data in the SUMP area. The information will be collected through questionnaires answered by both residents and visitors in the peak period (July, 2017). The data will be analysed and the outcome of the survey will be available in September 2017. Three average modal split indicators will be calculated: passenger km, trips and passenger.

Since there is no available data regarding modal split, the preferred cycle and running routes for 2015 have been provided below as derived from Strava application (Figure 46).

Information on the number of trips in the SUMP area: There is no current information on the number of trips in the SUMP area. However, in the 2010 Traffic Study (Petrakis, 2010) for the city, there is

some relevant information. In the sections below (mainly in the Unit: "Traffic/transport models currently in use in the SUMP/SRMP area") a brief summary of this information is presented.

Registered vehicles in the SUMP area: There is no available data. Thus, it needs to be reconsidered soon. However, an estimation could be made. Taking into consideration the number of driving licenses in the Municipality of Rethymno, it could be considered that approximately the 69.6% of the citizens of the Municipality of Rethymno own a car. Figure 47 presents this estimation.



Source: http://labs.strava.com/heatmap/2014-2015.html#15/24.47355/35.36461/gray/bike [Retrieved on April 2017].

Figure 45 Preferred cycle and running routes for the year 2015.

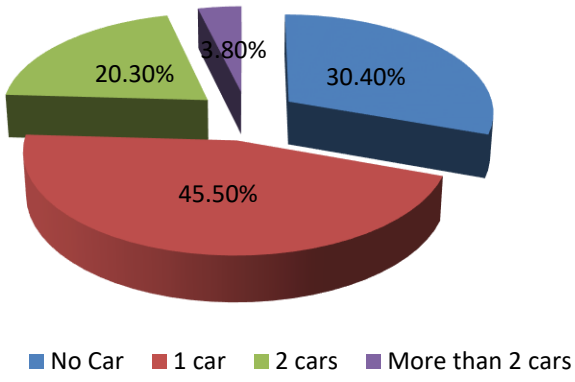


Figure 46 Number of cars in the Municipality of Rethymno.

Source: Municipality of Rethymno - Estimation, 2015.

Bus lines in the SUMP/SRMP area: Figure 48 presents the main bus routes in the city of Rethymno. The urban-suburban bus routes generally connect suburban areas to the central core of Rethymno. Thus, the existing network aims to connect small settlements with the city of Rethymno. Figure 49 include all the routes in the SUMP area. Table 40 presents the bus lines and the timetable per day.

Figure 47 Bus lines and Bus Stops Locations in the city of Rethymno. Source: Own Elaboration.

	On Weekdays	On Weekends
Rethymno-Kavros-Georgioupoli-Chania	18 each direction	17 each direction
Rethymno-Bali-Heraklion	17 each direction (6 only through Rethymno)	17 each direction
Rethymno-Chania Airport	6 each direction	6 each direction
Rethymno-Agia Galini	5 each direction	4 each direction
Rethymno-Plakias	2 each direction	2 each direction
Rethymno-Kerame	2 each direction	-
Rethymno-Rodakino	2 each direction	-
Rethymno-Margarites	2 each direction	-
Rethymno-Arkadi-Museum of Ancient Eleftherna-Margarites-Perama-Panormo	2 each direction/ 3 more Rethymno-Arkadi	2 each direction/ 2 more Rethymno-Arkadi
Rethymno-Charkia	2 each direction (only Tuesday and Thursday)	-
Rethymno-Perama	5 per direction	2 per direction
Rethymno-Perama-Heraklion Old Road	1 per direction	-
Rethymno-Aloides	1 per direction	-
Rethymno-Myriokefala	2 per direction	-
Rethymno-Mountros-Saitoures	2per direction	-
Rethymno-Argiroupolis	2 per direction	-
Rethymno-Malaki	2 per direction	-
Rethymno-Apodoulou	1 per direction	1 per direction
Rethymno-Amari	1 per direction	-
Rethymno-Patso	2 perdirection	-
Rethymno-AnoMeros	2 per direction	-
Rethymno-Lochria	1 per direction	-
Rethymno-Koumous	2 per direction	-
Rethymno-MirthioRethymno	1 perdirection	-
Rethymno-Hotels-Panormo	25 per direction (and Saturdays)	17 per direction (only Sundays)

Rethymno-Valsamonero	13 per direction	13 per direction
Rethymno-Kyriana	13 per direction	13 per direction
Rethymno-Gerani	9 per direction	9 per direction
Rethymno-AgiaEirini-Rousospiti-Miloi-Chromonastiri	7 per direction	7 per direction
Rethymno-Maroulas	2 per direction	-
Rethymno-Pagalohori	2 per direction	-
Rethymno-Kastellakia	1 per direction	-
Perivolia-Gallou Village	6 per direction	6 per direction
Perivolia – University Gallou	64 per direction	31 per direction (on Saturdays) – 17 per direction (on Sundays)

Table 37 Bus lines (after 1-4-2017) in the wider area of Rethymno. Source: http://www.e-ktel.com/images/pdfs/RETHIMNON_FROM_01-04-2017.pdf [Retrieved on April 2017].

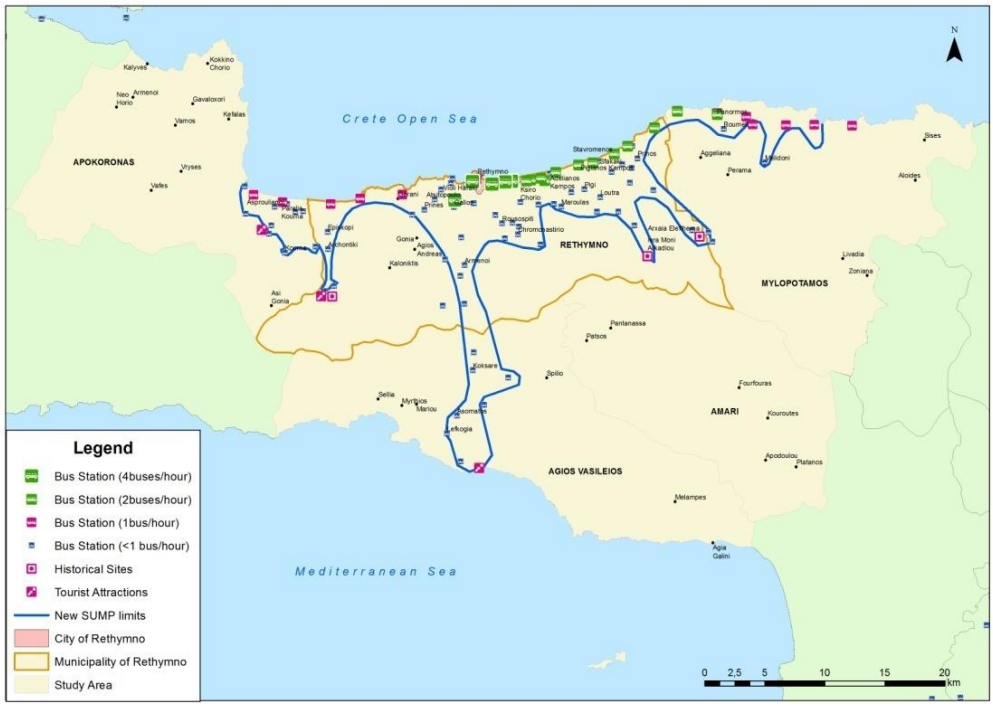


Figure 48 Bus lines in the SUMP area. Source: Own Elaboration

Flight arrivals: The main airports are located in Chania and Heraklion (52 and 86 Km away from Rethymno correspondingly). There are no available data of arrivals that are specifically oriented to the Municipality of Rethymno or for the SUMP area. The research team is planning to implement a survey with the help of the Municipality of Rethymno in order to gain insight regarding visitors' first arrival in Crete in the peak period and if they used a boat or airplane for their trip. This survey will also provide information about the modal split of tourists during their stay in Rethymno and the modal split of residents.

Crete attracts annually a high number of tourists. According to Hellenic Statistical Authority, in 2015, about 22.8% of international airport tourist arrivals referred to Crete. Figure 50 presents the international tourists' arrivals in the airports of Heraklion and Chania (main cities-entrances in the Region of Crete) for the year 2016. Table 41 presents the number of arrivals in these airports for 2015-2016.

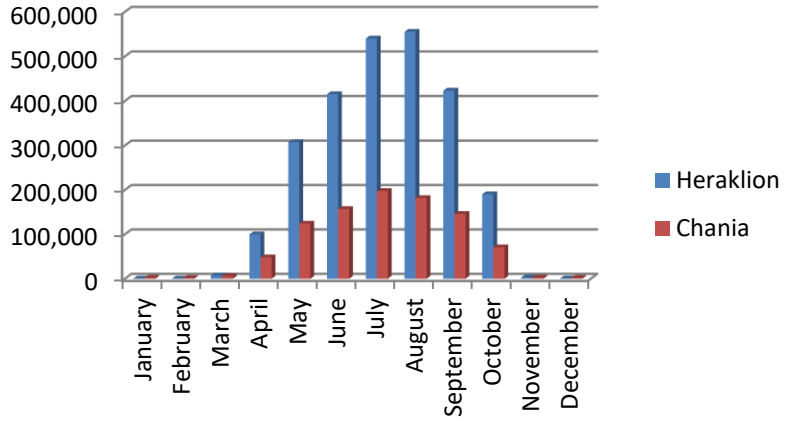


Figure 49 International Tourists' Arrivals in the airports of Heraklion and Chania. Source: https://sete.gr/media/4638/10_2016-arrivals-insete.xlsx[Retrieved on April 2017].

Available data for the Region of Crete are presented below. As far as concerning the Sitia airport, it has not been included in this study due to the reasons below: a. there are no direct international flight connections, b. the number of international tourists is quite small in relation to the airports of Heraklion and Chania and c. the traveling distance between Sitia and Rethymno is big enough and as a result it is not easy for tourists to make this travel. It should be mentioned that Chania and Heraklion, due to their important ports and airports are the main cities-entrances of the island.

	Heraklion		Chania	
	2016	2015	2016	2015
January	0	186	2.258	2.158
February	185	195	2.213	1.575
March	10.225	7.168	9.548	5.855
April	120.125	100.158	53.909	48.176
May	343.439	307.844	132.349	124.066
June	456.060	415.260	169.017	157.011
July	608.722	540.115	223.817	197.631
August	604.849	555.089	190.922	181.796
September	479.450	423.288	168.259	146.078
October	258.064	190.258	91.012	70.778
November	0	2.902	0	2.780
December	0	451	0	1.890
Total	2.881.119	2.542.914	1.043.304	939.794

Table 38 International Tourists' Arrivals in the airports of Heraklion and Chania. Source: https://sete.gr/media/4638/10_2016-arrivals-insete.xlsx[Retrieved on April 2017].

Boat / ferry arrivals: Tourists can also travel to Crete by boat. There are two main ports in Crete: Chania and Heraklion. Afterwards, it is easy for tourists to visit Rethymno using their own car or travelling by bus. As far as concerning the arrivals in the port of Heraklion, approximately 1.500.000 passengers arrive and departure, through the year, from domestic ports.

As far as concerning the port of Chania, the number of the passengers is approximately 50% less than in Heraklion. Table 28 presents only the arrivals in Heraklion and Chania in 2011 and 2012.

		2011	2012	Change rate
Souda (Chania)	From domestic ports	460.032	414.217	-9,96%
	Cruise Ships from abroad	164.543	134.115	-18,49%
	Greek Yachts	343	174	-49,27%
	International Yachts	654	836	27,83%
	Total	625.572	549.342	-12,19%
Heraklion	From domestic ports	892.572	731.840	-18,01%
	Cruise Ships from abroad	223.472	185.467	-17,01%
	Greek Yachts	57	33	-42,11%
	International Yachts	414	495	19,57%
	Total	1.116.515	917.835	-17,79%

Table 39 Arrivals in Ports of Heraklion and Chania (Souda) in 2011 and 2012

Source: Regional Department for Tourism of Crete, 2012.

It could be observed that the total number of passengers have been decreased between 2011 and 2012 in both Heraklion and Chania (Souda). Only the number of passengers through international yachts has increased through these years. Although there are available data as far as concerning the number of passengers that arrive in these two main ports, however, there are no available data for the actual number of vehicles transporting via ferries (tourists that visit Crete with their own car and travel by ferry) to Rethymno and to the island, an estimation can be considered based on the ferries vehicles capacity.

Regarding the arrivals via cruise ships, the number of tourists (2013-2015) that visit Rethymno is quite small, as table 39 illustrates. The number of visitors was smaller in the same period in 2016 (275 passengers with 2 cruise ships). Heraklion is the main coastal entrance in Crete and as a result, many tourists that visit Heraklion via a cruise ship prefer to visit other cities located in a close proximity. Only some of them visit Rethymno. It is important that through 2017, 87 cruise-ships are going to visit Chania (approximately the double of cruise ships visited Heraklion through last year), as well. Tourists that visit Chania usually visit other cities as well. However, it is not possible to estimate the number of international tourists that visit Rethymno via cruise ships. Thus, this number is needed to be reconsidered soon.

Destinations	2015		2014		2013	
	Ships	Passengers	Ships	Passengers	Ships	Passengers
Heraklion	170	219.805	160	242.951	177	270.020
Chania (Souda)	59	96.612	38	33.304	47	124.205
Rethymno	11	1.076	18	4.220	5	1.336
Total	240	317.493	216	280.475	229	395.561

Table 40: Tourists' arrivals via cruise ships

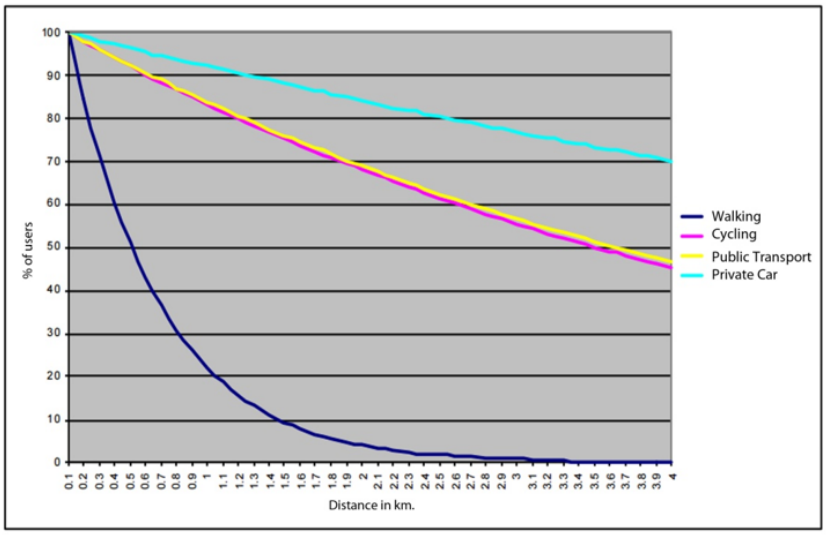
Source: Hellenic Port Association

6.2.3 Traffic models

Traffic / transport models currently in use in the SUMP/SRMP area: Traffic Data has not been retrieved by the city since 2010. The following traffic flow measurements will be organized by the research team to update data of traffic flow:

Measurements will be conducted with traffic counts in 10 characteristic road sections for two days. Traffic flow will be measured per hour and traffic direction, and vehicle type will be recorded. The measurement points include the main road network of the city and the main gates of the study area. These measurements will be conducted within the peak period (in July 2017). Another measurement will be repeated in the off-peak period (January 2018). The data will be analysed and presented in September 2017 and February 2018 respectively.

According to the 2010 Traffic Study for the city of Rethymno (Petrakis, 2010) entitled: "Traffic Analysis and Operational Assessment of Accessibility in the Road Network of the Municipality of Rethymno", a standard range (distance) for the various transportation means, the destinations and the services of the current transportation system are drafted from surveys of the concerning Origin.



Source Petrakis, K., 2010. *Traffic Study for the City of Rethymno.*

Figure 50 Standard range (distance of the various transportation means. Source: Petrakis, K., 2010. Traffic Study for the City of Rethymno

The studied zones coincide with the previous zones studied in 1996 in the inner and outer areas of the city centre. The 45 zones are depicted below (see figure 52).

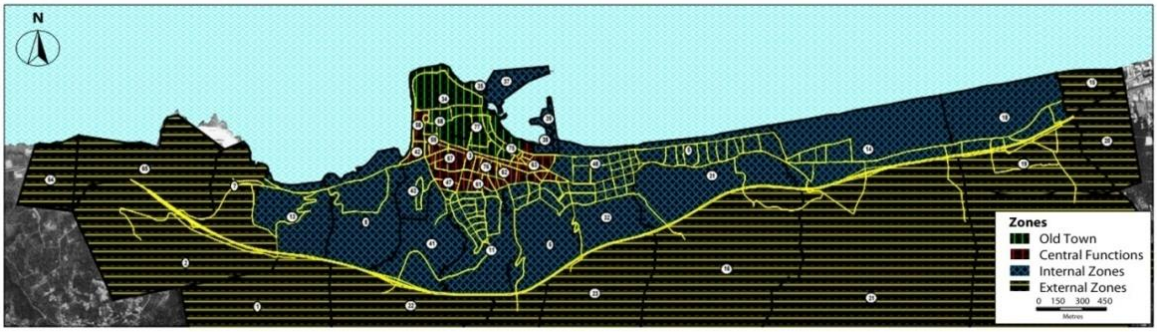


Figure 51 Origin Destination Zones. Source: Petrakis, K., 2010. Traffic Study for the City of Rethymno.

Classification of the Road Network in highways (red), regional streets (blue), and urban arteries (yellow).

Figure 10: Street hierarchy in Rethymno.

Source: Petrakis, K., 2010. *Traffic Study for the City of Rethymno.*

Figure 52 Street Hierarchy in Rethymno.

The assessment of the Origin Destination Register comprises the distribution of vehicles (Cars, motorcycles, others) with the model using User Equilibrium method. The eligibility of the assessment is based on Percent Root Mean Square Error (%RMSE). The traffic volumes are calculated in Passenger Car Equivalent (PCE) with 1 motorcycle equals to 0,5 PCE. The service level of the traffic for all modes and walking is measured through ARTPLAN software.

The study has assessed a micro simulation model using the TSIS 5.0 software in order to analyse traffic conditions, incidents (delays) arising from abrupt stops, parking manoeuvres etc. The standard delays (duration of the incidents) are depicted below, showing 10 and 20 incidents for 1 min/hour, 10 incidents for 1 min/hour and 1 incident for 5 minutes analysed in vehicle – minutes.

Delay	Minutes	Difference
10 incidents (duration of 1 minute/hour)	3,65	
20 incidents (duration of 1 minute/hour)	4,57	+25,20%
10 incidents (duration of 1 minute/hour) + 1 incident (duration of 5 minutes/hour)	6,55	+79,45%

Table 41 Standard delays depending on the duration of the incidents. Source: Source: Petrakis, K., 2010. Traffic Study for the City of Rethymno.

Measurements were conducted in the early July 2010 in 14 road segments and intersections, for 24 hours. The assessment of the origin destination register was based on measured data and network features (free flow speed, traffic capacity etc.). The existing turning restrictions were also measured.

The synthesis of the traffic load in the key intersections is analysed for private cars, motorcycles and other means as follows:

Site	Cars	Scooters	Other
Kormouli (7-8 am)	85	10,5	4,5
Pachla (4-5 pm)	77,9	18,4	3,7
MachisKritis A (5-6 pm)	75,4	20,8	3,8
MachisKritis (6-7 pm)	73,1	22,3	4,7
Node 1 (8-9 am)	66,8	3,9	2,3
Node 2 (morning 9-10 am)	70,2	26,2	3,7
Node 2 (afternoon) 2-3 pm)	67,7	28,3	4,0
Node 3 (morning 8-9 am)	72,8	20,1	7,1
Node 3 (afternoon 2-3 pm)	69,5	28,0	2,5

Table 42 Synthesis of the traffic load in the key intersections of Rethymno municipality (2010). Source: Petrakis, K.,2010. Traffic Study for the City of Rethymno.

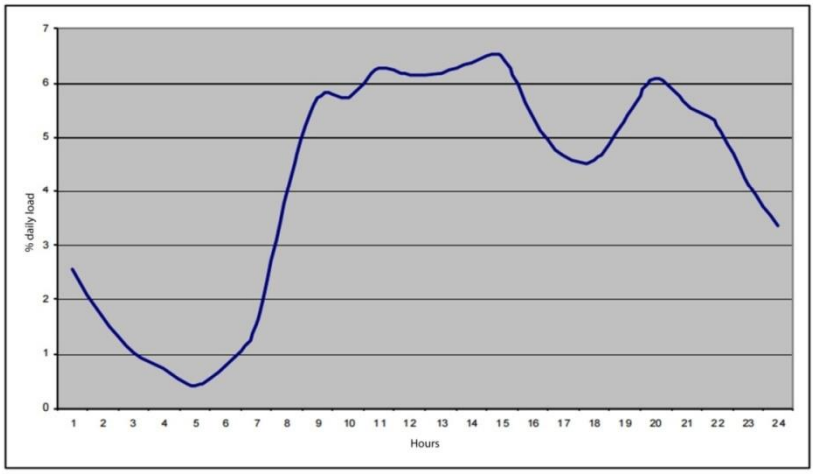


Figure 53Traffic load distribution as a percentage of the daily traffic load. Source: Petrakis, K.,2010. Traffic Study for the City of Rethymno

A critical result arising from the study is that compared to 1996, the traffic volume in the main road artery, Stamathioudaki Avenue, has been doubled from 14.769 (1996) to 31.800 (2010).

According to the indicators for assessing the current situation in terms of variation of the traffic, congestion characteristics are apparent during peak hours in specific road segments, while delays occur due to illegal parking and catering services.

The traffic load distribution during the day is depicted below as a percentage of the daily traffic load.

The same study has analysed the suitability of the network for pedestrians and cyclists. This network has been further analysed by the SMU ("Research on the methodology for promoting sustainable mobility conditions in Greece: The case of Rethymno" (2008) and presented on the website of the Municipality of Rethymno.

The following map shows the key housing areas and the main destination area that attracts visitors and residents in the city of Rethymno due to the high concentration of activities and the overall environmental qualities.

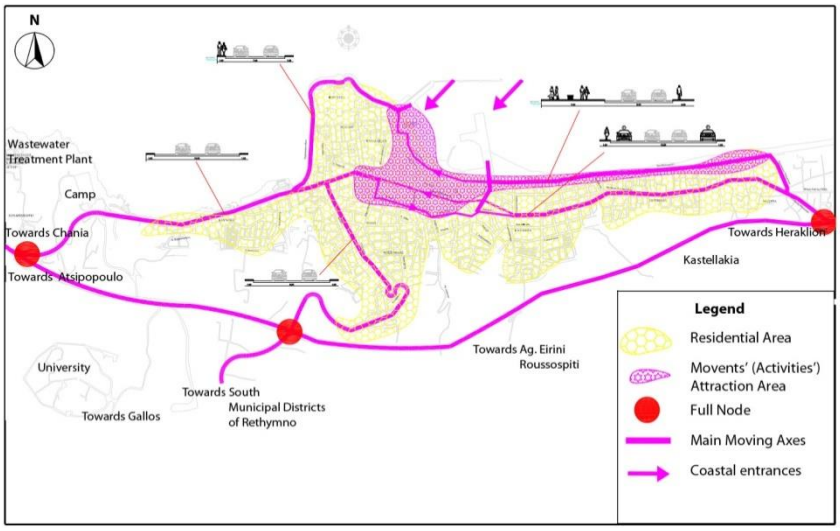


Figure 54 The main centrality – destination area. Source: Vlastos, Th., Milakis, D. and Athanasopoulos, K., 2008. Research program of the Municipality of Rethymno: "Development of Combined Urban and Transport Strategy for promoting Sustainable Development in Reth

6.2.4 Existing policy plans, regulations and models

Regional and local plans represent the binding spatial rules in the SUMP area. Business plans in this area have also been conducted in order to face the development challenges. Table 14 presents the policy documents that are related to urban planning, land use and transport.

In the Municipality of Rethymno, many urban planning studies have been conducted. However, they have not totally been instituted and implemented. This is an important problem. Another significant problem is related to the administrative reform. More specifically, before 2010, the Municipality of Rethymno comprised four smaller municipalities and, as a result, a different urban and transport planning was addressed for each municipality. Unfortunately, after 2010 a General Urban Plan for the whole area has not been conducted.

However, a large number of smaller studies have been conducted by the Municipality of Rethymno in order to improve conditions for pedestrians and cyclists. All these studies are promoting an ambitious vision for the future of the city, regarding its image and its urban transport.

Scale	Name	Year	Type of document
National	General *Framework for Spatial Planning and Sustainable Development*	2008	National planning
	Special *Frameworks for Spatial Planning and Sustainable Development*	2001, 2008, 2011, 2013	National planning
Regional	Regional Frameworks for Spatial Planning and Sustainable Development for Crete	2003, 2013 (Reconsideration)	Regional planning
Local	General Urban Plan for the Municipal Unit of Rethymno	2013 (Reconsideration)	Urban planning
	General Urban Plan for the Municipal Unit of Lappeon	2009	Urban planning
	Informal (has not been implemented yet) General Urban Plan for the Municipal Unit of Arkadi	-	Urban planning
	Informal (has not been implemented yet) General Urban Plan for the Municipal Unit of NikiforosFokas	-	Urban planning
	Study for the Regeneration the Urban Seafront in Rethymno	n/a (implementation on 2008)	Urban planning
	Study for the Regeneration of the Agnostou Stratioti Square	n/a (implementation on 2008)	Urban planning
	Study for the Regeneration of the Mikrasiaton Square (Turkish School) in Agios Fraghiskos	n/a	Urban planning
	Bioclimatic upgrading of open public spaces in the Municipality of Rethymno (west part of the Seafront)	2013 (has started)	Urban planning
	Study for the improvement of the conditions of pedestrians and cyclists in Dimitrakopoulou Street and Gerakari Street	n/a (implementation on 2012)	Traffic and Urban planning
	Transport Analysis and Operational Assessment of the Road Accessibility- Municipality of Rethymo	2010	Traffic planning
	Study for the improvement of the conditions of pedestrians and cyclists in the Old National Highway	n/a (implementation on 2014)	Traffic planning
	Study for upgrading the Central Municipal Road Highway Adele – Adelianos Kampos	n/a (implementation on 2013)	Traffic planning
	Transport and Functional Assessment of Accessibility in the Road Network of the Municipality Rethymno	n/a	Traffic planning
	Research program of the Ministry of Transport and Communications: "Research on Application methods to promote Sustainable Mobility in Greece"	2008	Strategy for Traffic
	Research program of the Municipality of Rethymno: “Development of Combined Urban and Transport Strategy for promoting Sustainable Development in Rethymno”	2008, 2014 (Reconsideration)	Strategy for Traffic
	Plan for Integrated Spatial Interventions for Rethymno (pending)	2016 (has started)	Business and Urban Planning/Mobility Strategy

Table 43 Plans that are related to Rethymno and the SUMP area. Source: : NTUA and Municipality of Rethymno

It should be noted that a large number of plans and studies have to do with small scale interventions (urban regeneration). Some of these interventions are presented in Figure 56 below.

Figure 55 Main Studies for Urban Regeneration in the Urban Fabric of Rethymno. Source: Patsoumas, G., 2010. Urban regeneration in the city of Rethymno – M.Sc. Project, NTUA, Greece.

6.2.5 Stakeholders and responsibilities

Stakeholder name / organisation	Activities / relation to SUMP
Regional Unit of Rethymno	Contribution to the development of strategic approach, linking to regional mobility planning. Contribution to the development and implementation of policies.
Chamber of Commerce and Industry of Rethymno	Facilitation of stakeholders' engagement and participation. Participation to the Local action group. Contribution to the general sustainable development of the Municipality. Support training and capacity building events.
Retailers and Traders Association of Rethymno	Support the SUMP development contributing also for the tourist's needs and requirements. Promotion of sustainable mobility modes amongst tourists.
Rethymno Hoteliers Association	
Rethymno's association of disabled people	Contribute to the inclusion of measures for mobility needs and the accessibility of disabled people
Regional Governor	Support SUMP development and facilitate citizens' engagement. Participation in consultation events. Support replication to other prefectures in the island and other regions.
Vice governor-Rethymno	
SYNPOLIS Association of Active Citizens	Taking part to the consultation events, contribute to the local action group. Contribute to the development of a strategic action plan for road safety and accidents prevention.
Voluntary Groups Network of Rethymno	
Union of Rethymno Old Town residents	

Table 44 Stakeholders involved and their Respective Responsibilities

6.2.6 Tourism

A few years ago, a report of the municipality of Rethymno estimated that Rethymno has been visited during 2014 by 514.286 visitors, 85 % staying in hotels, 10 % in rented apartments, 4 % in secondary housing, 0,5 % in camping and 0,5 % in other facilities. 67 % of tourists stay more than two nights, 30 % more than one week and only 3 % stay just one weekend. It is also estimated that 90 % of tourist trips in the inland are using shuttle services, only 3 % public bus services, 5% taxis and 2 % rented vehicles.

A research conducted by the Technical University of Crete and the University of Crete (Mediterranean Agronomic Institute of Chania) in the city centre of Chania (collecting 1.000 answers) revealed that only 50 % of tourists visiting Chania feel safe when using the road network. 68 % of tourists prefer shuttle services for their trips, but 56 % rent a motorbike or a car to explore the island. 43 % of tourists have used a taxi.

In the municipality of Rethymno, there are 168 hotels with 21.275 beds (74 %), 273 rooms to let with 4.416 beds (15 %), 214 secondary housing with 1627 beds (6 %), one camping with 65 beds (0 %), 40 traditional houses with 819 beds (3 %) and all other types of accommodation represent 2 % of the whole available accommodation.

59 % of the hotels of the municipality of Rethymno (12,572 beds) are located in the city and 40 % (8594 beds) in the eastern “metropolitan area”, mainly along the coastal zone of Rethymno beach. Only 1 % is located in the western “metropolitan area”.

Average hotel occupancy in Rethymno is 61 %. According to Hellenic Statistical Authority in July and August hotel occupancy raises to more than 83 %, which means that about 25.000 visitors are added during July and August to the 48.500 residents of the metropolitan area of Rethymno (50 % population rise due to touristic flow). It is estimated that in the SUMP area, the number of residents and tourists amounted to approximately 80.000-100.000 people.

Main touristic attractions: Among the interesting features of the area are Rethymno city and the coastal area on the east side of the city, which is a major touristic attraction. Although the mountainous inner- municipal area is also very attractive, it remains less developed in terms of tourism. The main touristic attractions in the area include:

a) The old city of Rethymno - Venetian port - Fortezza Castle. The medieval historic core of Rethymno city that has been highly preserved. The old city is the main touristic attraction of Rethymno.
b) Rethymno beach, an 8 km long sandy beach, between the city centre of Rethymno and Pigianos Kampos, at the eastern outskirts of the city. It is an area used by Caretta – Caretta turtles to leave their eggs.
c) Sfakaki - Stavromenos - Skaleta beaches, smaller sandy beaches 9 – 12 km east of Rethymno city where Caretta Caretta turtles leave their eggs.
d) Panormos beach, 23 km east of Rethymno city, is under the municipal authority of Mylopotamos.
e) Bali beach, 33 km east of Rethymno city, is under municipal authority of Mylopotamos.
f) Episkopi beach, a 4 km long sandy beach, 13 km west of Rethymno.
g) Georgioupoli beach, a 4 km long sandy beach next to Episkopi beach, in the west. Georgioupoli beach is under municipal authority of Apokoronos. Together with Episkopi beach, they include an 8 km long sandy beach.
h) Kourna Lake is 4 km south of Georgioupoli and 24 km from Rethymno. It belongs to the

municipality of Apokoronos.

i) Ancient Lappa - Five Virgins Christian Temple - Argiroupoli Springs. It is an area 21 km in the southwest of Rethymno city, around Argiroupoli which is a settlement with natural beauty and cultural importance.
j) Preveli Monasteries and Beach: an area 31 km south of Rethymno city with unique natural beauty and cultural importance. It is under the municipal authority of Agios Vasileios.
k) Monastery of Arkadi. It is 21 km southeast of Rethymno city. A place of high historical and cultural significance, a great symbol of the liberation war.
l) Ancient Eleftherna, 27 km southeast of Rethymno city. It is the most important archaeological site of the region.

For a complete picture, it should be noted that tourists staying at Rethymno visit Chania and Heraklion during their stay, adding to the traffic load on the main roads and transport infrastructure.

Airports: Most tourists arrive in Rethymno by plane. Airports serving the Municipality of Rethymno are the two main airports of Crete Island, namely airport of Chania and airport of Heraklion.

More specific, the airport of Chania serves Rethymno regional area and the regional area of Chania itself which has approximately twice the number of residents.

The airport of Heraklion serves the; a) Rethymno regional area; b) the regional area of Heraklion; which has approximately three times more residents than Rethymno regional area; and c) part of the regional area of Lasithi. According to statistical data of January 2017, the airport of Heraklion, between May and September 2016, served approximately 2,500,000 international arrivals, as Table 46 and Figure 57 illustrate. In July 608,722 tourists landed in Heraklion through international flights and 223,817 in Chania. That means 26,856 daily tourist arrivals during peak season last year at the 2 main airports of Crete Island. 473,700 passengers arrived through domestic flights at Heraklion airport and 411,793 passengers at Chania airport. As a result, Crete Island is mainly a summer destination. The high season is between July and August.

According to estimations, about 14.5 % of all tourists arriving at the two main airports have Rethymno as their final destination. That means that, during peak periods, the Municipality of Rethymno has a daily flow of approximately 4,500 tourists arriving and 4,500 leaving the municipality region.

According to statistical data of January 2017, the number of international arrivals in the two airports of Crete stands as follows:

	2016		2015		2014	
	Heraklion	Chania	Heraklion	Chania	Heraklion	Chania
January	0	2.258	186	2.158	81	1.612
February	185	2.213	195	1.575	59	1.313
March	10.225	9.548	7.168	5.855	994	2.024
April	120.125	53.909	100.158	48.176	108.996	49.548
May	343.439	132.349	307.844	124.066	325.142	124.555
June	456.060	169.017	415.260	157.011	440.258	158.291
July	608.722	223.817	540.115	197.631	537.090	198.153
August	604.849	190.922	555.089	181.796	562.137	180.245
September	479.450	168.259	423.288	146.078	423.374	159.232
October	258.064	91.012	190.258	70.778	203.789	69.812
November	3.028	3.310	2.902	2.780	4.061	3.767
December	1.007	2.258	451	1.890	491	1.764
Total	2.885.154	1.048.872	2.542.914	930.794	2.606.472	950.316

Table 45 International tourists' arrivals in the airports of Heraklion and Chania (2014-2016). Source: Greek Tourism Confederation (SETE).

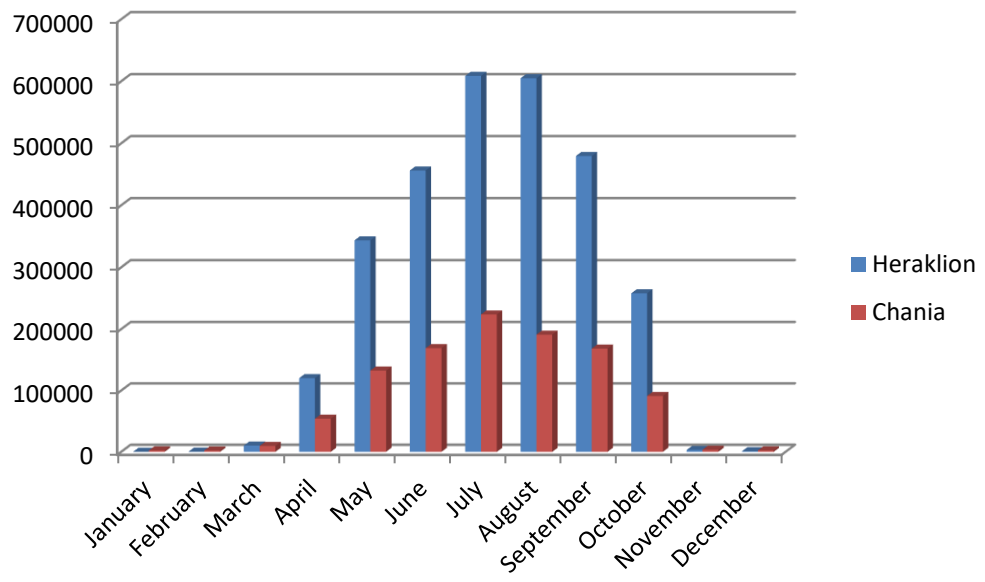


Figure 56 International tourists' arrivals in the airports of Heraklion and Chania (2016). Source: Greek Tourism Confederation (SETE).

Tourists also use the two ports Chania and Heraklion to visit Rethymno but their share cannot be estimated because there is no differentiation in the data between residents and tourists. If we take into account that the port of Heraklion had about 1,500,000 passengers all the year both arrivals and departures from domestic origins and Heraklion airport had 2,500,000 international arrivals, we can suggest that the share of visitors visiting Rethymno through ferry lines is less than 20%. As far as the port of Chania is concerned, there is no available data and as a result it is not possible to make an assumption about the tourists visiting Rethymno.

The share of cruise tourism is low. 11 cruise ships arrived in 2015 at Rethymno port transporting a total of 1,076 visitors. During summer, cruise ships arrive in Rethymno twice a week. The best year for cruise tourism in Rethymno was 2014:18 cruise ships arrived with 4,220 visitors. Rethymno is visited also by many cruise ships arriving at Souda port which is close to Chania. 59 cruise ships arrived there in 2015 with 96,612 people on board. In the nearby city of Heraklion, 170 cruise ships arrived with 219,805 people on board in 2015. Some of those ships organize excursions to Rethymno but numbers are not available.

The nautical marina of Rethymno is used during the summer period by 265 recreational boats or ships, as well as 38 yachts owned by residents and 82 fishing vessels.

The tourism sector is one of the main pillars of Rethymno's economy resulting in a relevant population growth in settlements near the key touristic destinations. Although tourists do not influence the spatial distribution of common traffic routes, they definitely influence the traffic volumes. Between July and August, the population within the metropolitan area of Rethymno rises by 50% as mentioned above, which is assumed to have a clear traffic impact, although it is not yet measured.

6.2.7 Main mobility challenges / problems in the SUMP/SRMP region

The main mobility challenges in the SUMP region include:

Cycling: Rethymno is a linear city with a beautiful landscape and warm weather which encourages cycling. The hot weather between 9 o'clock in the morning and 7 o'clock in the evening during summer is a deterrent. Almost all tourists visit Rethymno without their car and cycle use could offer them high levels of mobility and independence from timetables and strict programs. Cycling share is relative low, although higher than in other cities in Greece. Protected cycle routes exist only in the city centre and between Adele and the seashore. Cycling levels could rise and that is an ambitious mobility challenge.

Figure 57 Cycling Routes in Rethymno. Source: Own Elaboration.

Public Transport: Public Transport service is available for most busy destinations but there is still ground for improvement. The public transport internet site offers relevant information for passengers and the ability to purchase on-line tickets. Other cities in Greece, like Athens and Thessaloniki, have developed on-line information through telematics about the position of all buses and the exact time they will arrive at each bus stop.

Most routes must have denser bus service, especially for near key attractions. A bus service, which passes from a stop, every half/ hour or more, is not attractive. If it is not economically feasible to improve the bus operating service, on-demand public transport systems could be used.

Bus operators could offer one-day excursion services for tourists to give them the opportunity to explore the attractive landscape of the island, in order to reduce car use.

In order to improve bus service delays, it is necessary to create bus lanes at critical segments of the network. The challenge is to make public transport more convenient and attractive.

Pedestrians: Rethymno is a dense city with mixed land uses and a preserved historic centre. Walking in the city is delightful. The challenge is to increase the share of walking in the modal split by

constructing more pedestrian friendly routes in the city, in other words treating walking as an equivalent to the other means of transport.

Parking: Rethymno, like any other city in Greece, is densely populated with limited parking and thus suffers from urban degradation caused by illegal on street parking. The municipality allocated urban space in the city centre and on main urban roads to improve conditions for pedestrians and cyclists. 400 on-street parking places were removed from the city center thanks to these policies. Today 400 off-road parking places are located on the west of the old city and 200 off-road parking places near the harbour on the north of the old city serving the old city area where car parking is restricted on most streets. 300 off-road parking places are located in the Rethymno marine area, 700 meters from the city center and 150 off-road parking places in Kallithea neighbourhood, 700 meters from the city center. In the city center, on the south of the old city (4 Martyrs Square) 200 off-street parking places are offered. In spite of car parking pressure, often these parking facilities have empty places, because drivers prefer to park on-street, often illegally, close to their destinations and free of charge. As a result of the above trend the problem of urban degradation due to car parking has been transferred from the city center to the densely built residential areas near the city centre, where many commuters search for parking space.

The challenge is to reduce substantially car use for commuting into the city centre and find areas for creating park and ride facilities in the perimeter of the city.

Car use: Car rental remains the favourite way to explore the island. It offers independence from poor public transport timetables and freedom to choose destinations. The problem is that car rental on peak summer periods makes traffic conditions worse, not only in the city centre but also on destinations. Moreover, car rental provokes a too high parking demand on destinations exceeding their capacity and degrading their environmental conditions. Tourist's destinations should be treated as the main surplus for the municipality and should be protected from the car. The challenge is to offer visitors freedom of movement but using other means rather than the car.

6.3 Measure introduction

Rethymno's measure "SUMP integrating Tourist Mobility – SUMP Watch" will refine and implement a pioneering but feasible Sustainable Urban Mobility Plan for the city and the greater Rethymno area combining needs of visitors and residents alike, taking into account inter-regional mobility and public transport services. SUMP will put the strategic approach for key demonstration projects within Destinations and involve citizen groups and key local actors through a 360 degree stakeholder engagement process.

The main tasks of the measure are summarised below:

- Study which maps the seasonal fluctuations in transport patterns of both tourists and residents in the center and main touristic attractions,
- Revised/approved SUMP, including studies for mobility patterns, traffic loads, concrete action plans, public transportation services restructuring.
- Defining monitoring mobility indicators, data collection and analysis for corrective actions and future SUMP improvements to support the development of an IT platform to collect mobility data (RETH2.2).
- Operation of Local Working Group to contribute to decision making, monitor/support the SUMP actions (stakeholders, policy makers and universities)

- Public consultation events with citizens' participation.
- Capacity building workshops for local/regional actors, public authorities, transport planners, hoteliers, and other actors in the tourist industry will be offered to compliment the work in the field and to raise understanding of the rationale of SUMPs and hence acceptance.

6.4 Aims of the SUMP in the frame of Destinations

SUMP is a key tool to define the site's mobility strategy for the coming years and set the baseline and future targets with citizens and stakeholders consensus. Rethymno's priority is to upgrade the existing SUMP to integrate tourist need and serve better the citizens through participative decision making. The implementation of SUMP will have a positive long term impact on policy interventions.

SUMP's macro- objective is to improve the quality of life of residents, enhance tourists travel experience and the area's image as an attractive tourism destination while stimulating economic growth and social development. Within the main goals of SUMP is the increase of cycling, walking and use of PT, the improvement of city's accessibility, the behavioural change towards more sustainable, car -free transport modes and the increase of capacity at regional urban planners and PT operators. Moreover, SUMP implementation aims to reduce fuel consumption, GHG emissions, traffic congestion and noise, increase the cost-effectiveness and quality of transport service and define the baseline and monitoring system required to support decision making.

6.5 Relevant other CIVITAS DESTINATIONS measures in SUMP/SRMP area

The following measures will be strongly linked or incorporated to SUMP:

RET 2.2 - Smart systems for urban planners, PT operators and users. There are numerous data/indicators that should be monitored and analysed in order to monitor the SUMP actions and mobility trends in each city/area. To support decision making to monitor, assess and improve the SUMP action plan it is necessary to collect, monitor and analyse numerous data sets. The proposed measure involves IT systems/ smart applications to monitor, supervise and analyse the mobility patterns, traffic load, PT use, user's feedback, environmental indicators etc. as monitor and control tool of the mobility services in order to be able to improve transportation and mobility options. It also involves the launch of a new ticketing system.

RET 3.1: Active healthy and inclusive mobility for all - Enhancing and promoting systems and services for the physically impaired. This measure aims to increase accessibility and improve transport options for disabled people. Thus, this measure can transform the municipality of Rethymno to a contemporary city, friendly to the physically impaired. The main actions foreseen are a mobility and inclusion strategy in liaison with local social workers; a study recommending accessibility solutions at attractions for disabled; an action plan for the accessibility of beaches and main attraction points; infrastructure/ equipment for the accessibility to beaches; design of integrated touristic day routes especially for disabled people (including museums, attractions, hotels, restaurant, leisure points etc); tailor made maps including accessible points for disabled distributed to hotels and online; installation of blind and deaf people systems at traffic light crossings and workshops organised with relevant stakeholders and association of disabled people to better address the target group needs and expectations.

RET 5.1 - Sustainable Freight Logistics Plan. The measure aims to the development of a Freight Logistic Plan for Rethymno with an emphasis on logistics management for hotels, beach commercial

areas and the old city center with the involvement and consensus of stakeholders. The implementation of Pilot Logistics System aims to establish a unified freight system in the historic centre through a single operator for all goods transportations. The potential benefit on reduced freight movements, improved efficiency of goods supply, reduced noise and improved air quality is substantial.

RET 6.2 - Low emission zones study. This measure aims to introduce a Low Emission Zone (LEZ) to limit the access of vehicles. It is intended to study how a Low Emission Zone works and gather important data to shape future policies on the introduction of Low Emission Zones in areas which are negatively affected by heavy traffic congestion, particularly in areas where there is a considerable influx of tourism. This measure includes a strategic study for car free zone in the historic city centre and LEZ around; assessment of the social and economic impact of restricting access to the surrounding area, parking capacity, alternative transport modes, introduction of a new circle bus lane, location of taxi parks, new regulation and ensuring that provision will be taken to exclude negative impacts on vulnerable road user groups. It also includes a Public consultation process involving residents, business operating in the area, or affected by the restrictions.

RET 7.2 - Improved PT for tourists and citizens. Aims are to improve PT routes and time tables, improved comfort and satisfaction of the PT users; to increase use of PT by tourists and residents, to enable bike transportation on selective PT routes, to offer thematic routes to specific groups of visitors, behavioural change of visitors to change from rent car /taxi to PT; increased capacity of PT operators and improved skills and attitude of PT drivers.

6.6 SUMP development: Drivers, barriers, resources and planning

Beauty of the landscape as a driver: What fosters touristic development is the beauty of the landscape. Natural beaches with no human interference, a mountainous inland, gorges and water springs. The beauty of the landscape is an important driver for SUMP development, because it acts as a strong motivator for using more environmentally friendly means of transport. Sandy beaches and impressive gorges are visible even when commuting in the city centre, but those beautiful impressions are lost when using a car. Cyclists and pedestrians gain the most and this is an important driver for SUMP development.

Beauty of the landscape as a barrier: On the other hand, it is not easy to exclusively cycle or walk to explore the mainland of the area. Using car remains the most convenient means of transport to reach more places. This could act as a barrier for SUMP development.

Cultural Heritage: An important motivator for tourism is also cultural and historical heritage. Archaeological sites are scattered throughout the SUMP area, including monasteries with historical and cultural significance. Most settlements of the area have preserved their traditional character as well as their traditional economy based on agriculture. The old city of Rethymno has also preserved its medieval character and the new city differs from the old only by its functioning and not by its architecture or urbanism. All the above mentioned sites and settlements are touristic attractions build upon traditional ways of commuting, so using the car to move through them is difficult and sometimes impossible. Again, cyclists and walkers gain the most and this is an important driver for SUMP development.

On the other hand, some important sites, like the Ancient Eleftherna and the Monastery of Arkadi, along with many traditional villages are scattered throughout the area and cycling or walking there requires stamina and is therefore not preferred. This could be a barrier for SUMP development.

Tourism: Tourism is a motivator for SUMP development. Most of the visitors originate from countries having a tradition of sustainable mobility like Germany, Sweden, Denmark and the Netherlands. They would feel familiar if the city adopts a sustainable mobility strategy so stakeholders of tourism know that they could profit through SUMP adoption. Some hotels are offering services like bicycle rental or organized bicycle routes.

In cities with developed touristic sector – like Rethymno – sustainable mobility is not only an environmental obligation, but could be seen as a product enhancing the city's brand name sustaining attractiveness and fostering the economy.
On the other hand, high levels of mobility and accessibility are seen by many people as important for the economy and that could bring some fears when changes in transport organisation are proposed.

Seasonality of tourism: Seasonality of tourism is an important deterrent of SUMP development. Investments in public transport and service improvement is a desired sustainable mobility strategy, but for 8 months a year the area loses half of its population and public services could be underused. Residents feel that during the off-season period the city does not need similar mobility management and SUMP could lose public support. The city needs a radical policy aimed at reducing car use throughout the city to make public transport investments useful throughout the entire year, but radical changes are more difficult to gain support.

Linear development of the city along the coastline / hilly landscape: The hilly landscape in the south of Rethymno city and the importance of the coastline fostered the linear development of the city.
This is a motivator for SUMP development, because just one public transport route along the coastline could serve most mobility needs. This is also true for bicycle infrastructure: One protected route along the coastline could foster bicycle use of most visitors and residents.

Neighbourhoods of Rethymno are built in the hilly landscape south of the coastline and are divided by gorges. This acts as a physical protection from traffic and preserves good traffic conditions without the need for traffic management. Therefore traffic reduction measures in the city centre cannot affect largely the conditions in the neighbourhoods.

Notwithstanding this, the hilly landscape is a deterrent not only for car use but also for cycling and walking, so it acts also as a deterrent for SUMP development.

Urban density: High densities were allowed for the development of Rethymno's neighbourhoods. This fostered a mix of land uses, while small local markets throughout the city area were sustained.

A mix of land uses increases accessibility by foot or by bicycle. In the densely built neighbourhoods around the city centre, most activities are accessible without the need to use a car. The densely built city has a length of 6 km and a width of 1 km. In about half an hour, most of the residents can walk to the city centre.

Due to urban density, parking spaces and car circulation in Rethymno are limited, especially after the urban renewal schemes, which allocated space in favour of pedestrians and cyclists. The extensive use of cars as the main transportation means in the urban core is not functional in densely populated cities.

On the other hand, sustainable mobility is highly related to a sustainable urban environment.
Urban density acts as a motivator but as a deterrent too. Lack of space can increase parking related problems and hinder the efforts to expand the cycle or pedestrian network of the city.

Urban sprawl: Between 2001 and 2011 urban development expanded and included small settlements around the city. This is a big deterrent towards developing the SUMP of Rethymno.

These settlements are car-centric and there is no attractive and convenient alternative. Using the bike is too demanding, they are not accessible by foot and public transport cannot cover mobility needs in all of those scattered small settlements.

During the same period all-inclusive and B&B hotel development expanded along the coastline. These developments foster urban sprawl, causing population growth in areas outside the city limits. Car management policies in the city centre could affect those areas because there is a lack of alternatives to commute or to visit the city centre.

Figure 58 Urban Sprawl in Rousospiti, 6 km south of Rethymno city. Comparing satellite photos of 2003 and 2016. Source: Google Earth

Private Public Transport: Urban transport in Rethymno, as in various Greek cities, is managed by a private corporation of bus owners. The municipality of Rethymno cannot influence substantially their policies. SUMP development is an opportunity for the corporation as sustainable mobility policies enhance the role of public transport and increase their profit. On the other hand, convincing a private corporation to invest in public service improvement is more complicated, as the needed funds cannot usually be found by private funding alone.

Many improvements in favour of pedestrians and cyclists: Residents and stakeholders in Rethymno have already learned how urban mobility strategies improve the urban environment and foster sustainable urban growth. This is a very important motivator for the adoption of the new SUMP.

On the other hand, due to the fact that the municipality cannot control the public transport issues, the main emphasis has been given to allocating space in favour of pedestrians and cyclists in the city centre and little has been done towards providing efficient alternatives for residents and visitors. This has caused some pressures in the neighbourhoods around the city centre. Car parking is difficult inside the city centre but more convenient in the neighbourhoods around it. Some people have the impression that sustainable mobility policies transfer car parking problems from the city centre to the adjacent neighbourhoods and that is a negative picture which must be tackled by the new SUMP.
Sustainable Mobility Strategy already conducted: The municipality of Rethymno has already invested towards conducting a Sustainable Mobility Strategy covering both transport and land use issues, but

self-assessment showed that the former strategy was not a formal SUMP in terms of providing a clear timeframe for the implementation of the plan. The strategy already adopted is a strong motivator towards implementing the new SUMP. Decision makers, residents and stakeholders know what the city must be prepared to achieve more sustainable traffic conditions. The new SUMP needs less effort towards informing and educating stakeholders and the public about sustainable mobility.

Resources and planning:
The following section describes the planned actions within the measure in terms of data collection, stakeholders' involvement and foreseen studies.

Currently the information and data collected for the baseline have been gathered through desk research, exploiting previous studies of the Municipality of Rethymno and official statistical data. Through this research, major gaps have been identified in terms of traffic and mobility data required, regarding both residents and tourists specifically for the SUMP area.

Traffic and mobility data will be gathered through surveys and measurements that will be conducted by the subcontracted research team in order to update the existing information and identify the impact of seasonality, to serve as baseline data for Destinations measures.

- A survey will be conducted in the SUMP area in order to estimate modal split (passenger km, trips and no of passengers) and additional missing information, through questionnaires answered by both residents and visitors in three periods thought the year (peak, mid-season and off peak) (starting July 2017).
- A survey targeting tourists will be conducted in order to gain insight regarding visitors' first arrival in Crete in the peak period and the mean of transport (plane/ferry/cruise). This survey will also provide information about the modal split of tourists during their stay in Rethymno and the modal split of residents. (July-Aug 2017)
- Measurements will be conducted with traffic counts in 10 characteristic road sections for two days, in each of the periods (July 2017, October 2017, January 2018). Traffic flow will be measured per hour and traffic direction, and vehicle type will be recorded. The measurement points include the main road network of the city and the main gates of the study area.

Regarding stakeholders and citizens engagement the following targeted activities are foreseen within the measure.

- Interviews and meetings with key stakeholders are planned for the next months (July – November 2017)
- The organisation of a Public consultation event is foreseen for the end of the year (December 2017).

Within the measure additional studies are foreseen, following the completion of the SUMP baseline.

- Feasibility analysis and a strategic action plan for the identified measures of SUMP (October 2017)
- Strategic plan for road safety and accidents prevention (November 2017-January 2018)

Table 45 presents the resources foreseen for the measure. Currently no additional budget is foreseen. Funding opportunities are searched for future support form Regional funds or the National Strategic Reference Framework (NSRF).

Partner	MM	Equipment*	Travel	Other Services and Goods	Subcontracting
RETH	7.0			1,500	50,000
TUC	13.6	6,500	1,200	2,000	
VECTOS	1.5				
TOTAL	22.1	6,500	1,200	3,500	50,000

*some monitoring equipment sensors for monitoring transport indicators are foreseen with RET2.2

Table 46: Resources for measure RET 2.1

In addition to the DESTINATION budgets, there is currently no other budget (local, regional or national e.g.) earmarked for the SUMP development. The Municipality may apply for future support from regional or NSF funding if an appropriate call or occasion appears. The SUMP development is for a large part subcontracted to a third party. The equipment budget is meant to complete equipment for measuring environmental indicators.

RET D2.1, Work team – people involved in this measure:

Authors, Researchers	Thanos Vlastos, Efthimios Bakogiannis, Konstantinos Athanassopoulos, Maria Siti, Harrys Kyriakidis, Christos Karolemeas, Evi Papagerasimou, Georgia Christodoulopoulou (Sustainable Mobility Unit, National Technical University of Athens)
Contributors, Review	Thomas Papadogiannis, Vasilis Miriokefalitakis, Nikos Vovos (Municipality of Rethymno)
Review and authoring chapters 7.2.3, 7.3-7.5	Stavroula Tournaki, Eleni Farmaki, Theocharis Tsoutsos (Renewable and Sustainable Energy Systems Lab, Environmental Engineering School, Technical University of Crete)

6.7 SUMP Self-assessment questionnaire analysis

The score on the SUMP self-assessment for Rethymno is as follows:

SUMP self-assessment: overall score (max = 100)	
Rethymno	40
Average	57
Foundation questions (13)	
Rethymno	8
Average	9
Excellence questions (15)	
Rethymno	1
Average	7,5

Table 47 Rethymno SUMP Self-Assessment Overall Score

On foundation Rethymno scores quite well. The overall scores is a good start, especially taking in consideration the very good baseline information of Rethymno.

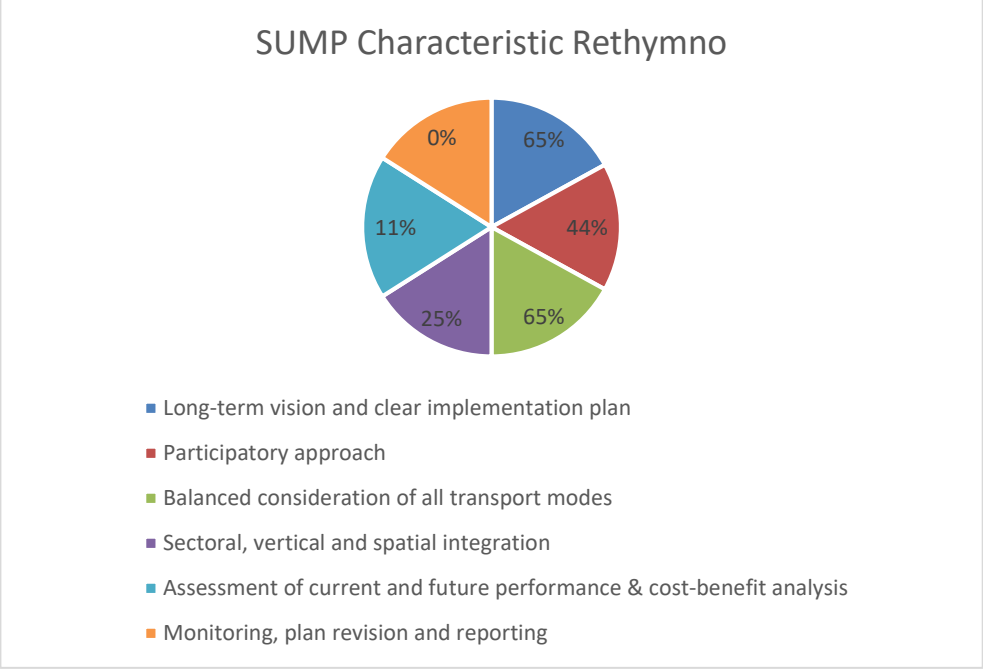


Figure 59 Rethymno SUMP Characteristic

Totally missing are scores on Monitoring and also weak are the sectoral, vertical and spatial integration. These aspects really should be involved in the making of the SUMP.

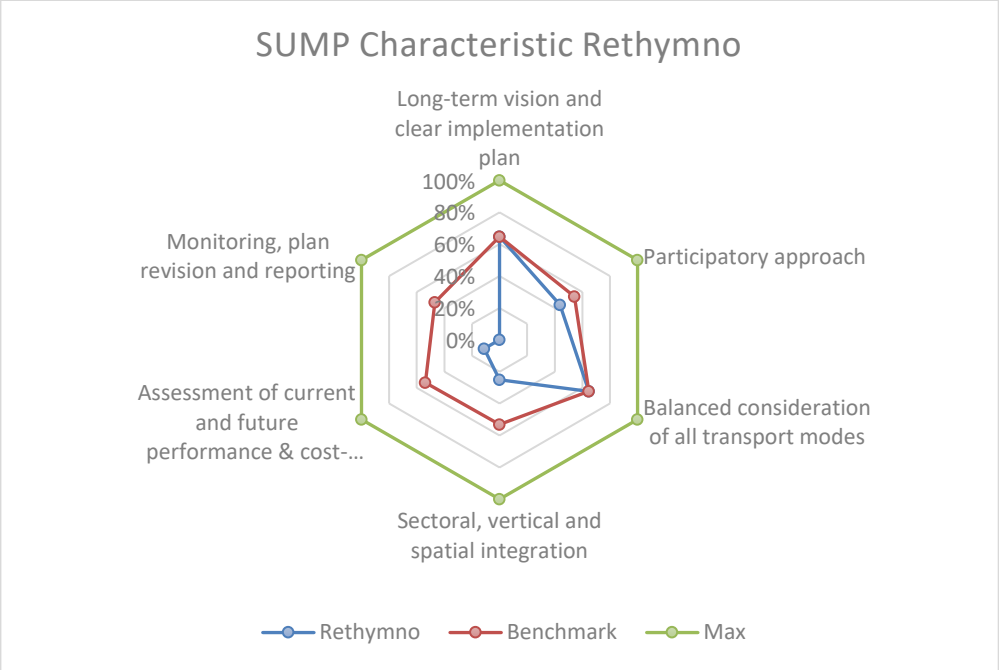


Figure 3 Rethymno SUMP Characteristic including maximum score and benchmark

In figure 61, the score of Rethymno the SUMP self-assessment is revealed. Next to the score of Rethymno, the maximum score and the benchmark are shown.

7 Elba baseline

7.1 Geographical area

Island description: Elba Island is located around 10 km away from the Tuscan coast and is the 3rd largest Italian Island, with an overall area of 224 square km. It is the main Island of the Tuscan Archipelago (that also includes Pianosa, Capraia, Gorgona, Montecristo, Giglio and Giannutri Islands) and it is part of the Tuscana Archipelago National Park.

Elba features a very heterogeneous territory:

- The western side of the Island consists mainly of a mountainous area overlooked by Mount Capanne (1,018 m);
- the central and narrowest part of the Island (4 km wide) is mainly flat and is the area where the major urban centres (Porto Ferraio and Campo Elba) are located;
- the eastern side is the most ancient part of the Island, dating back to over 400 million years ago, and has a hilly territory with Mount Calamita (413 m) on the South and Cima del Monte (516 m) on the North. In this area the well-known Elba iron fields are located.

Elba territory is divided into 8 Municipalities, which all belong to the Province of Livorno. These are: Portoferraio, Campo nell'Elba, Capoliveri, Marciana, Marciana Marina, Porto Azzurro, Rio Marina and Rio nell'Elba.

Figure 4 Administrative organization of Elba

Since 1996, Elba has been the capital of the Tuscan Archipelago National Park. Since 1991, it has been a part of the Cetacean Sanctuary – Pelagos. This is a very special protected marine area that includes the sea between Italy, France and Monaco.

The Tuscan Archipelago National Park covers over 600 square kilometres of sea that extends from Livorno to the Argentario promontory, and it includes seven islands in all: Capraia, Elba, Giannutri, Giglio, Gorgona, Montecristo, Pianosa as well as the Formiche of Grosseto and other small rocks. The biggest island is Elba (223,5 square km), and the smallest is Gorgona (2,23 square km). The island furthest from the mainland is Montecristo, at a distance of 68 km, while Capraia is only 34 km from Elba.

Elba accessibility: The Island of Elba is accessible by ferry from Piombino Marittima, which can be reached by car, train, or bus. Four companies (Toremar, Moby Lines, Blu Navy and Corsica-Sardinia

Ferries) provide several ferry services daily during the summer to and from Portoferraio, Rio Marina and Cavo.

Due to the proximity with the continent, the frequency of the service is very high and varies from winter to summer passing from an average of 2 hours to 1 hour. The service usually starts in the morning around 5 AM and the last route is around 9 PM.

Access is also possible by airplane to Elba Airport in Marina di Campo. It is a private civil airport open to commercial flights. The main connections are showed in the picture below:

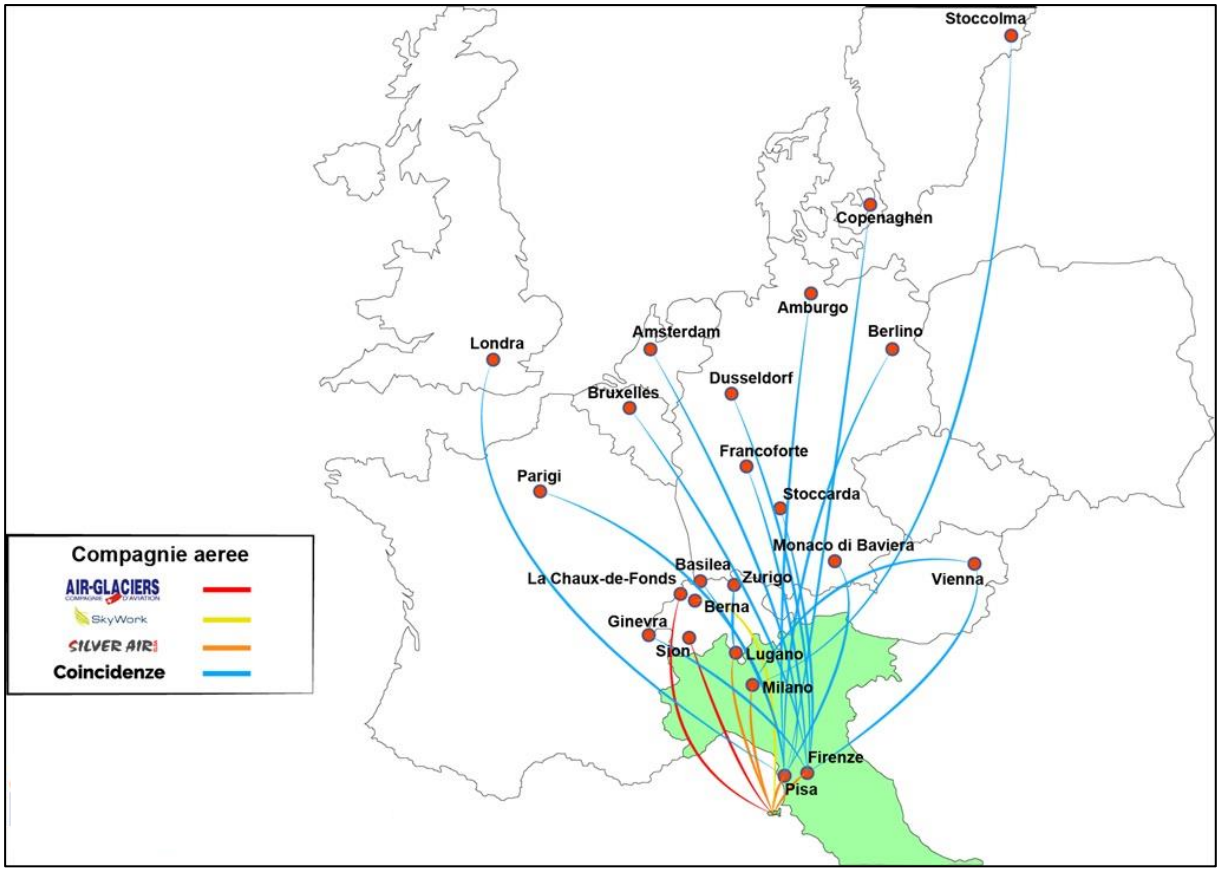


Figure 62 Airport connections

Main tourist destinations

The main tourist destinations in the northern side are sandy beaches, the Municipality of Portoferraio (with more than twelve thousand inhabitants, the undisputed "capital" of the island) and its fortifications and popular harbour. The summer residence of Napoleon and various iron mines can also be found on the northern side.

The main tourist destinations in the eastern side are (pebble) beaches, the Municipality of Rio Marina and various historic and cultural heritage sites.

The main tourist destinations in the South East side are sandy beaches, Mount Calamita, fortress Focardo. The main tourist destinations in the Southern side are beaches, villages, and the island of Pianosa. The airport of La Pila can also be found in the town of Campo and it connects the island of Elba with various Italian and European cities (during the winter months this is limited to only Italian cities).

The main tourist destinations in the Western side are rocky beaches, the Municipality of Marciana, Mount Capanne which offers the ue of a chair lift and small ancient villages.

Portoferraio															
12	Bagnaia														
9	13	Lacona													
16	15	13	Capoliveri												
14	13	11	6	Porto Azzurro											
16	7	18	15	10	Rio nell'Elba										
18	11	20	17	12	3	Rio Marina									
26	19	28	25	19	11	8	Cavo								
5	13	10	16	15	18	19	27	S. Martino							
7	15	13	19	18	20	21	29	6	La Biodola						
10	18	12	21	20	23	24	32	9	6	Procchio					
13	21	9	21	20	26	27	35	11	9	3	La Pila (Aeroporto)				
15	22	9	21	20	29	31	38	13	11	5	2	Marina di Campo			
18	26	15	27	26	31	33	40	17	15	9	6	6	S. Piero		
16	24	12	25	24	28	30	37	14	12	6	3	4	3	S. Ilario	
22	29	16	28	27	36	38	45	20	18	12	9	7	7	9	Seccheto
28	35	22	34	33	42	44	51	26	24	18	15	13	13	16	6	Pomonte

Figure 63 Distances between the main towns in the island

7.1.1 Demography / census

Elba counts a total of around 33,600 residents (2009), which almost doubles during the tourist season. The most significant tourist flows are during the period June-September, especially in July and August. In 2009, for instance, peaks of daily visitors amounted to 26,375(Jul.) and 28,750 (Aug.).

Tourist flows from June to September are around 85% of visitors registered during the year. These numbers only refer to tourists accommodated in "official" establishments (hotel, B&B, camping, etc.), but do not include day-trip tourists, people owning a summer house and staying at "non-official" facilities. Therefore, the total number of stays in summer months can be estimated to around 30,000 people a day.

7.2 Analysis of current mobility situation

Models and data

Road network: The road network of Elba is suitable for residents' needs, but it is not sufficient and it is overcrowded during peak season, where a total of around 43.000 cars circulating along island's roads has been registered. Road network is structured along two main axes, connecting Portoferraio with Procchio and Campo nell'Elba Municipalities, on one side, and with Porto Azzurro and Capoliveri Municiaplities, on the other side.

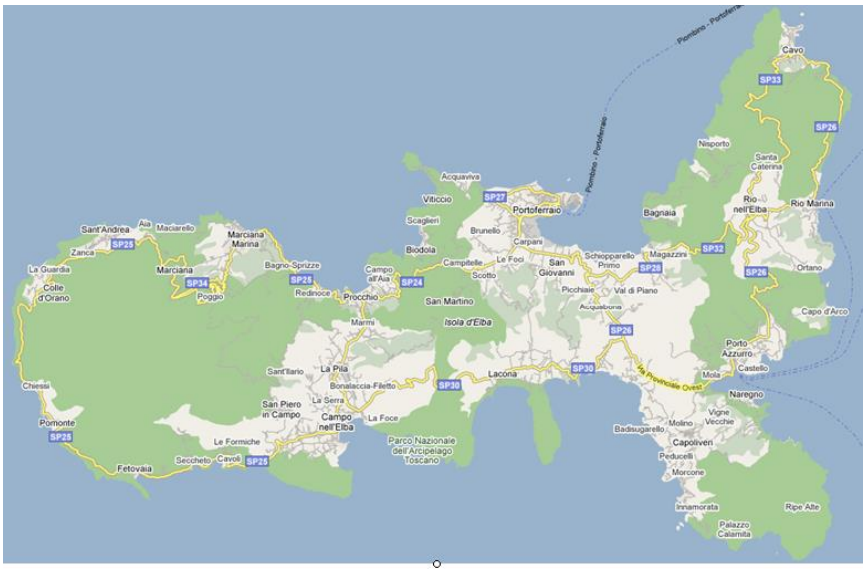


Figure 64 Elba road network

In the tourist season these road axes are crowded both by tourist cars and freight vehicles arriving at Portoferraio ferry terminal and going to the different parts of the island.

The island is served by an extra-urban network of the following roads connecting different parts of the island:

STRADA PROVINCIALE - Denominazione	KM
SP 024 - Portoferraio-Bivio Boni (deviazione per pontile)-Procchio	12,5
SP 025/a - Procchio-Marina di Campo	5,7
SP 025/b - Procchio Marciana Marina-Poggio-Marciana	16,4
SP 025/c - Marciana-Bivio S. Piero	23,4
SP 025/d - Bivio S. Piero-Marina di Campo	2,9
SP 026/a - Bivio Boni-Porto Azzurro	12,0
SP 026/b - Porto Azzurro-Quadrivio Padreterno	9,5
SP 026/c - Rio Elba-Rio Marina	2,9
SP 026/d - Rio Marina-Cavo	7,5
SP 026/e - Porto Azzurro-Casa di Pena	1,7
SP 027 - Ponte del Brogi-Enfola Viticcio	6,2
SP 028 - Schiopparello-Magazzini-Bagnaia	5,2
SP 029 - Bivio S. Piero-S. Ilario-La Pila	13,1
SP 030/a - Bivio Valdana-Lacona	5,0
SP 030/b - Lacona-Marina di Campo (La Serra)	7,9
SP 031 - Bivio Mola-Capoliveri	2,7
SP 032 - del Volterraio	6,3
SP 033 - della Parata	9,0
SP 034 - Ponte della Civillina-Ponte dei Noferi	2,8
SP 035 - di San Martino	1,8
SP 036 - Zanca-S. Andrea	2,0
SP 037 - del Monte Perone (Poggio-S. Ilario)	9,8
Totale Strade Provinciali	166,14

Table 48 Elba Extra-Urban Network

As regards the urban road network, the common characteristic of all the different Municipalities are narrow, crowded roads, hard to be accessed by commercial vehicles. Furthermore, only Portoferraio and Marina di Campo have a more modern road network, excepting that all the traffic flows pass through the city centres.

Public transport: Public Transport services are operated by CTT Nord, the transport operator of Livorno Province and Northern Tuscany Region. Urban PT services are operated only in the area of Portoferraio, where 6 lines exist. From Portoferraio also 3 extra-urban lines (namely 116, 117 and 118) operate, connecting the biggest island urban settlement with the other Municipalities.

Figure 65 Extra-urban bus lines

It is worth noting that, as shown in Table 49 below, while urban PT services are mainly used by residents and are not affected by season variations, significant variations in extra-urban PT services demand can be observed in the tourist season, as the 48,500 monthly average total passengers by over 30% during the summer months.

Month	Urban Portoferraio	Extraurban Elba
Jan.	12.500	41.851
Feb.	12.389	34.881
March	13.403	39.100
Apr.	12.723	41.632
May	12.125	44.653
June	10.460	41.857
July	10.815	58.282
Aug.	9.191	66.157
Sept.	13.445	88.362
Oct.	12.354	53.518
Nov.	13.464	36.609
Dec.	10.150	34.095

Table 49 Usage of Public Transport System

Access to the island: Ferry connection: Number of passengers dis(embarking) ferry at Piombino-Elba

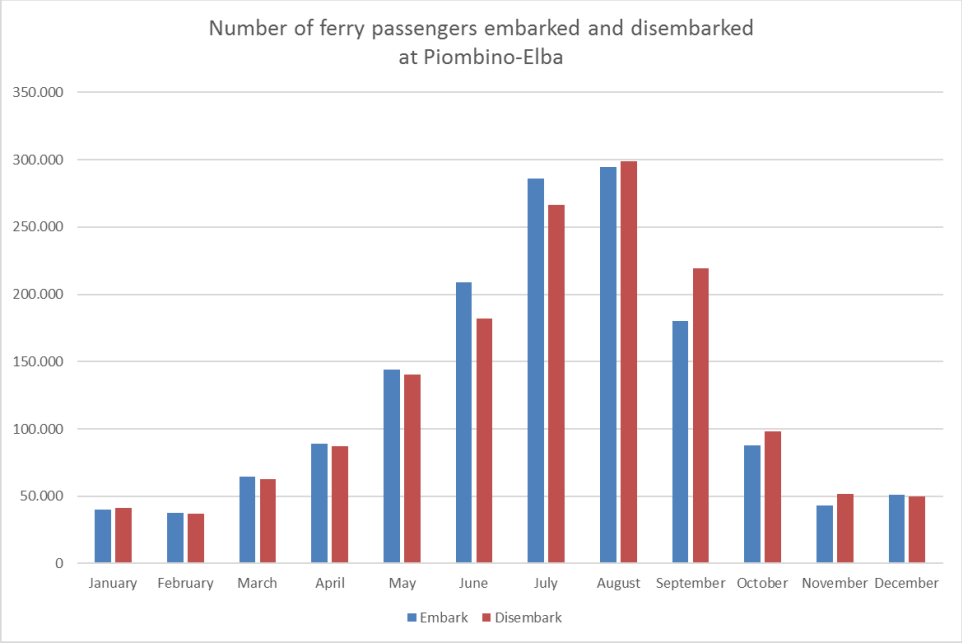


Figure 67 Ferry passengers embarked and disembarked - 2016

Concerning the usage of the airport the total number of passengers

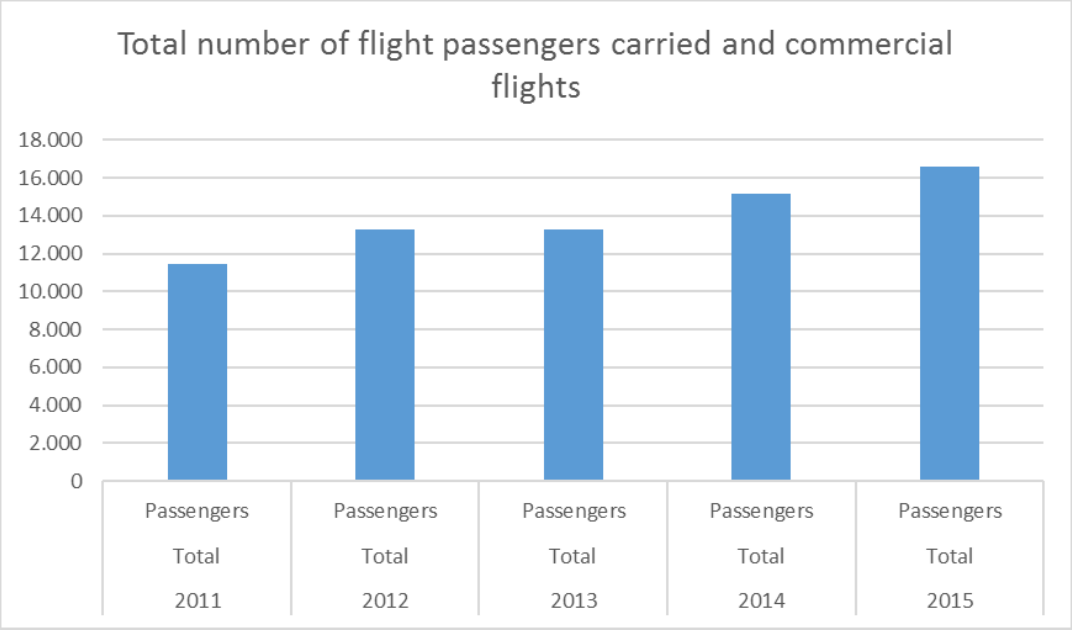


Figure 73 Flight passengers

Modal share: The modal share for workers and students for all the Livorno province is the following:

type of transport	worker's mobility	%approximate	student's mobility	%approximate
train, tram, underground	2045	2%	3600	7,60%
Urban and extra-urban public transport	3775	3,30%	6240	13,30%
Company and school buses	365	0,40%	2342	5,00%
private car (driver)	66391	59,50%	811	1,70%
private car (passenger)	4260	3,80%	17008	36,20%
moto, scooter	14972	13,42%	4306	3%
bicycles	6871	6,10%	1349	2,80%
Others	506	0,40%	73	0,10%
Walking	12363	11,08%	11175	23,82%
Total	111548	100%	46903	100%

Table 50 Modal share Livorno province – 2011

At municipality level, it is possible to observe the modal share of private car use and walking and cycling for commuters' trips.

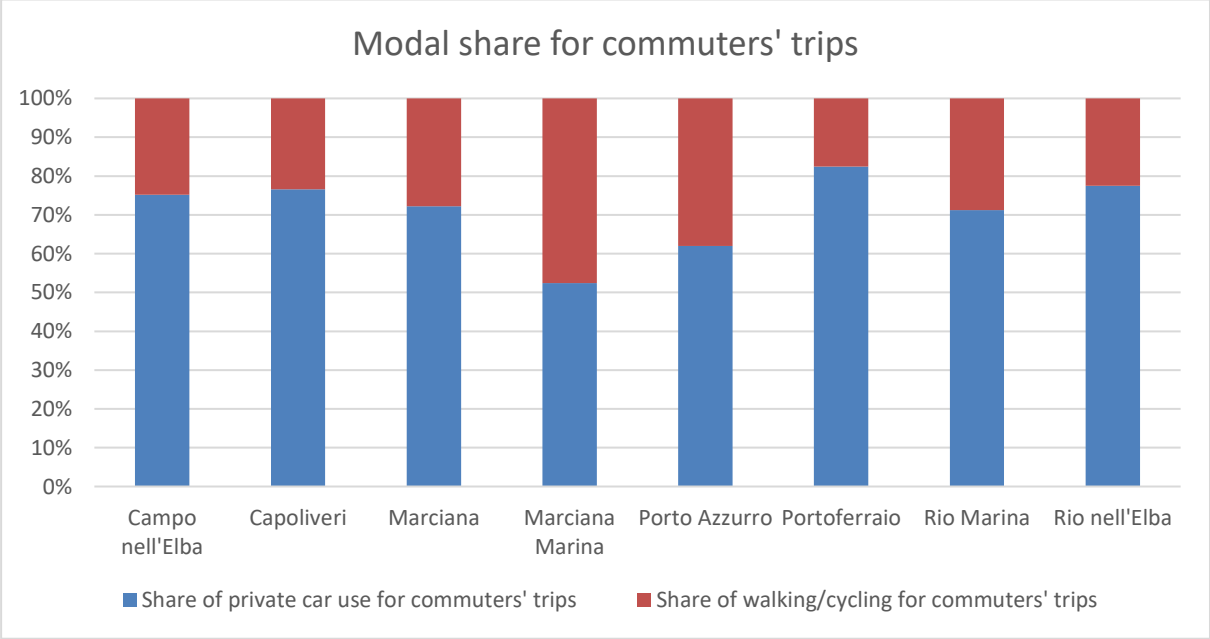


Figure 68 Modal share for commuters' trips. Source ISTAT, 2011

In the following table is also possible to see how the modal share changed in the past 20 years:

Indicator	Year	Campo nell'Elba	Capoliveri	Marciana	Marciana Marina	Porto Azzurro	Portoferraio	Rio Marina	Rio nell'Elba
Share of private car use	1991	44,9	43,5	42,7	41,2	40,1	64,6	36,7	41,9
	2001	55,3	54,7	45	44,9	48,5	74,6	50,4	52,3
	2011	62,9	67,8	57,5	47,2	56,4	78,4	59,7	64,6
Share of walking/ cycling	1991	33,1	31,8	26,5	42,7	44,1	21,4	36,2	33,5
	2001	22,9	24,3	21,4	35,2	36,2	13,3	25,1	25,1
	2011	20,8	20,7	22,1	42,9	34,6	16,7	24,1	18,8

Table 51 Modal share (1991 - 2011). Source ISTAT

Vehicles fleet: Concerning the fleet of residents' vehicles the data from 2015 show the following situation:

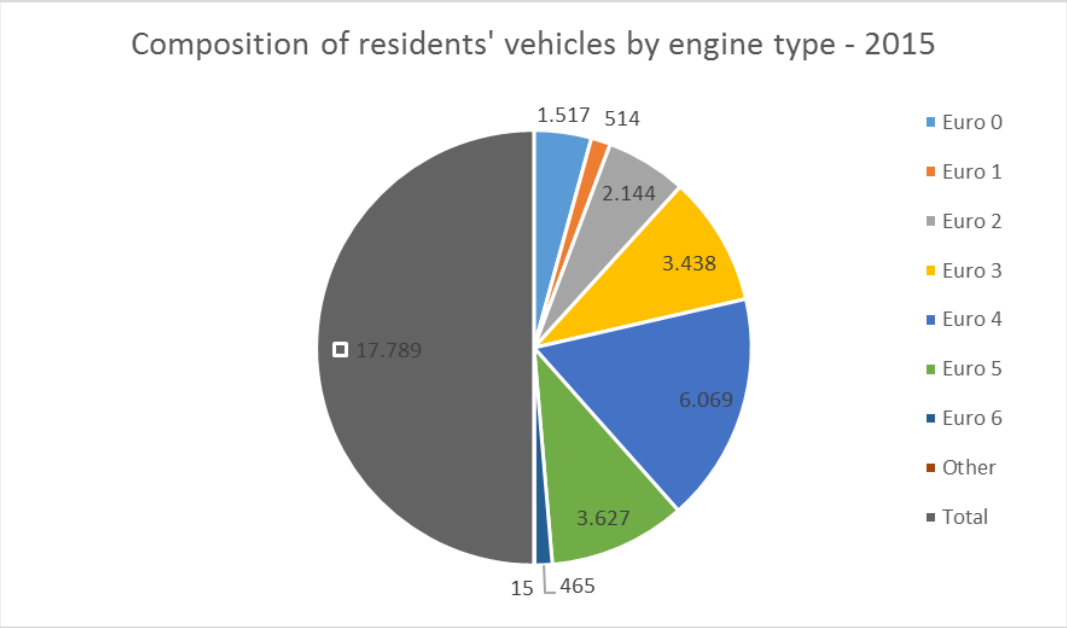


Figure 69 Fleet vehicles composition

Traffic models: There are no traffic models available at Municipality or Island level.

7.2.1 Existing policy plans and regulations

- **SEAP:** Besides specific regulations adopted by the different Municipalities and aimed at addressing particular problems (such as, for instance, Municipal decrees for creating LTZ in the city centre during the summer period), the SEAP (Action Plan for Sustainable Energy), adopted by the Mayors of the 8 Municipalities and by Livorno Province in 2013, is the key document addressing the issues involved in DESTINATIONS.
  The SEAP sets-out a shared strategy for achieving the objective of Elba as a 0 emissions island by 2020. The idea underlying SEAP is to activate a virtuous circle that, through the reduction of the unproductive energy costs, will generate the resources to qualify the island, reducing both the impact on the environment and CO2 emissions.
  Two of the main action lines of SEAP address the development of low or zero-emissions sustainable mobility (i.e. public transport by road and by sea by eco-friendly or hybrid-powered RES vehicles, development of cycling paths and bike sharing, optimization of the distribution of goods and of tourists movements) and sustainable tourism (energy efficiency of tourist facilities, reduction of private vehicles, sustainable behaviour, energy efficiency in the large-scale retail trade, sustainable tourism activities).

- **LIFE+ ELBA:** The recently concluded LIFE+ ELBA Project (2010 – 2014), where the Municipality of Rio Marina as Elba participated as a project partner, adopted an innovative and eco-friendly approach to island mobility and paved the way for future projects in the transport and tourist field.
  LIFE+ ELBA, whose measures and strategies where all adopted by SEAP, studied, designed and implemented eco-friendly mobility services for people and freight in the island, with a special focus on the peculiar needs of the summer season. Among the measures developed by LIFE+ ELBA project, the “ELBA Beach” and “ELBA Est” services are those that better suit the scope of CIVITUR: these were two pilot PT services, operated during the summer months using eco-friendly vehicles, transporting people to tourist spots (either beaches and historic centres) which were not previously covered by PT services.

7.2.2 Stakeholders and responsibilities

The main stakeholders involved are listed in the following table:

Stakeholder type	Stakeholder category	Addit
Communities / NGOs	Active citizens	People engaged in the living lab (change agents)
	Visitors	Frequent tourists (e.g. second house owners)
	Transport users	Users of transport services (e.g. of ferries, public transport, boat slots, rental services)
	Disabled people	Resident or tourist in need of special assistance
	Legambiente Arcipelago toscano	

	Elba d'Autore	
	elba 2020 Team	
	Fondazione Isola d'Elba	
	italia Nostra	
Local authorities	Portoferraio	Civil servants in charge of: Mayor or Transport councillor cabinet; traffic police; local port and marina; urban planning and development
	Rio marina	
	Rio nell'Elba	
	Porto Azzurro	
	Capoliveri	
	Campo nell'Elba	
	Marciana	
	Marciana Marina	
Regional authorities	Provincia di Livorno	Civil servants in charge of transport and related issues at regional level
	Regione Toscana	
National authorities	Ministero Trasporti e Infrastrutture	Civil servants in charge of transport and related issues at national level
	Ente Parco Nazionale Arcipelago Toscano	
	Parco Minerario Elba	
Local transport operators	Azienda trasporto urbano (Portoferraio)	Providers of transport and rental services within the island
	Azienda trasporto extra-urbano (CTT)	
	Servizi taxi	
	Noleggio auto/moto	
	Noleggio bici	
	Noleggio barche/gite turistiche	
Access transport operators	Compagnie marittime (Moby-Toremar-Elba Ferries- BlueNavy)	Providers of transport services to/from the island
	Autorità Porto Piombino	

	Trasporto locale Piombino	
	Ferrovie delle Stato - compartimento Toscana	
	Aeroporto Marina di Campo	
	Operatori crociere	
	Operatori logistica	
Business operators	Gestione Associata Turismo	Local business associations, tourist, retail and media services
	Gestione Associata Turismo	
	Associazione Albergatori	
	Camera di Commercio Maremma e Tirreno	
	Confcommercio Isola d'Elba	
	Confesercenti Isola d'Elba	
	CNA Portoferraio	
	Banca dell'Elba	
	COOP/CONAD	
	COLDIRETTI	
	Agenzie immobiliari e turistiche	
	Altro (ad esempio campeggi?)	
	Associazione Campeggiatori Isola d'Elba	
Utilities	Energia elettrica	These include services of general interest indirectly related to sustainable mobility
	Gestione acqua	
	Gestione rifiuti	
	Telecomunicazioni	
Education	Comprensorio Licei Portoferraio	Schools ot other educational institutions that may provide support to awareness raising campaigns, etc.
Experts	Università/centri di ricerca	University or private companies' staff that may provide expertise to the project

	Fornitori di technologie e servizi	
Media	Corriere Elbano	Local newpapers, TV channels, web portal and blogs
	Tirreno	
	Portale Elba (Portale Gestione Associata Visitelba?)	
	La Nazione	
	Tenews	
	Teleelba/Tenews	
	Quinewselba	
	Elbareport	
	Camminando	

Table 52 Main Stakeholders

The main role of the different stakeholders categories within the SUMP process are listed in the following table:

Stakeholder	Activities description
Active citizens	Support to the definition of the SUMP baseline and identification of possible actions
Transport Operators	Support the SUMP development for the Public Transport services issues both at island and inland level
Tourist Office and Hotel association	Support the SUMP development for the tourists needs and requirements
Regional and Province and Port Authority level	Interaction at different levels for the planning of the actions and a possible financial framework Support to the data collection and the definition of possible solutions
Local transport operators, business operators, Local NG0s/associations	Support to the discussion of the possible solutions to be undertaken
Media	Support in the communication strategy to inform the citizens and tourists about the Elba community involvement in a SUMP definition

Table 53 Stakeholders activities within the SUMP

7.2.3 Tourism

The main tourist destinations in SUMP area are the following:

Beaches: Marina di Campo, Cavoli and Fetovaia (Campo nell'Elba Municipality), Lacona (Capoliveri Municipality); Biodola (Portoferraio Municipality) e Procchio (Marciana Municipality)

Towns: Capoliveri, Porto Azzurro and Marina di Campo.

The following figures give some information on the increase of private vehicles during the summer, the availability of hotels and other accommodation, the number of days stayed at hotels and the number of non-resident houses.

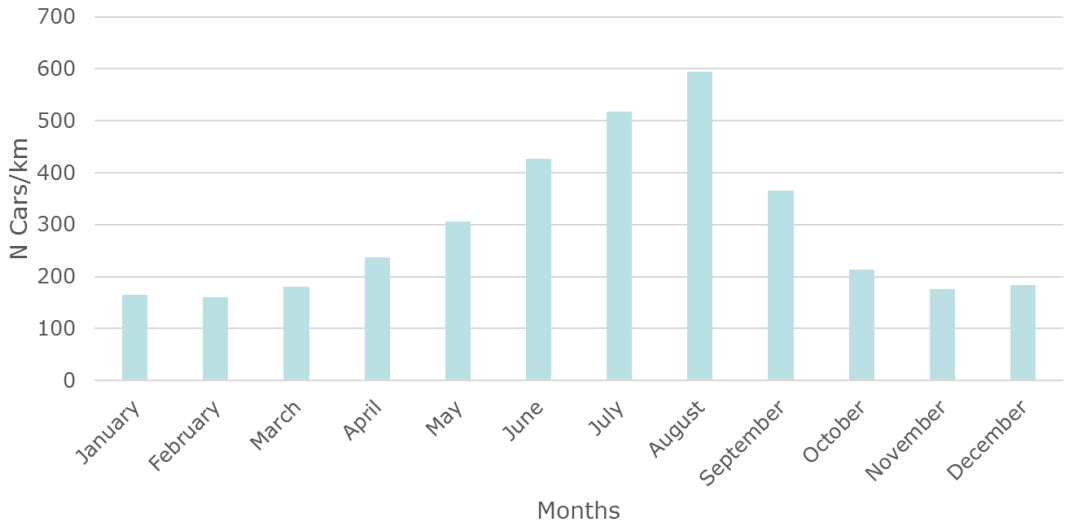


Figure 70 Total Number of cars per km of road Elba Island, 2015

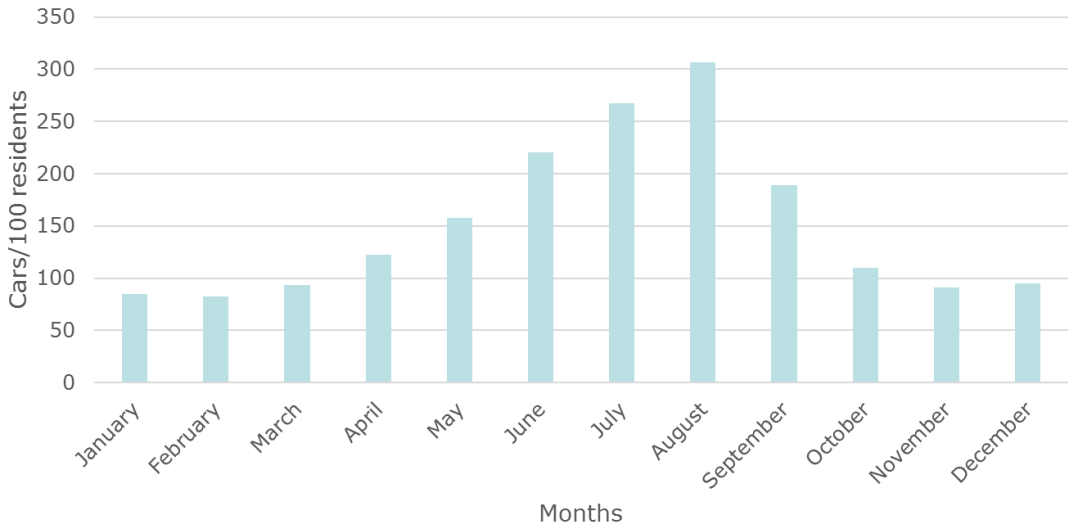


Figure 71 Total Number of cars per 100 residents

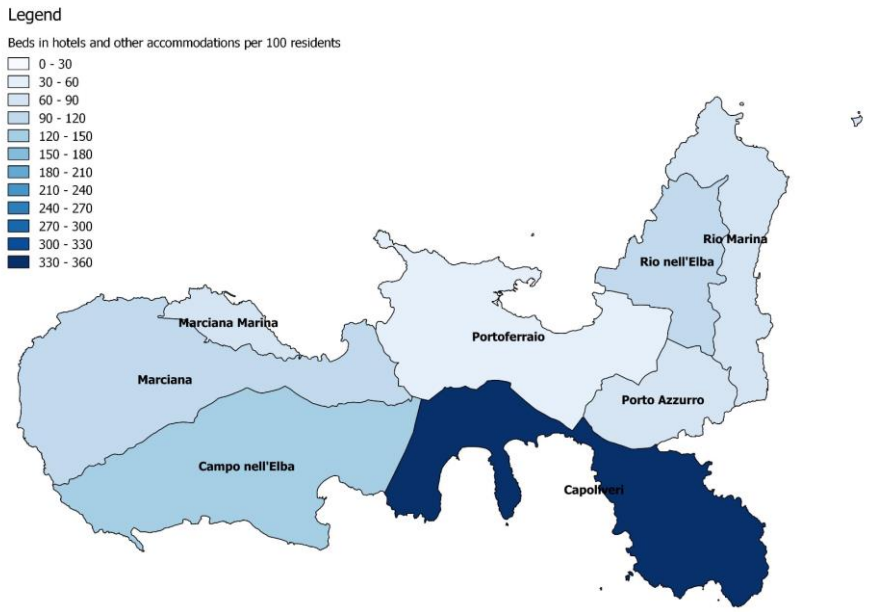


Figure 72 Number of beds in hotels and other accommodations per 100 residents, 2015

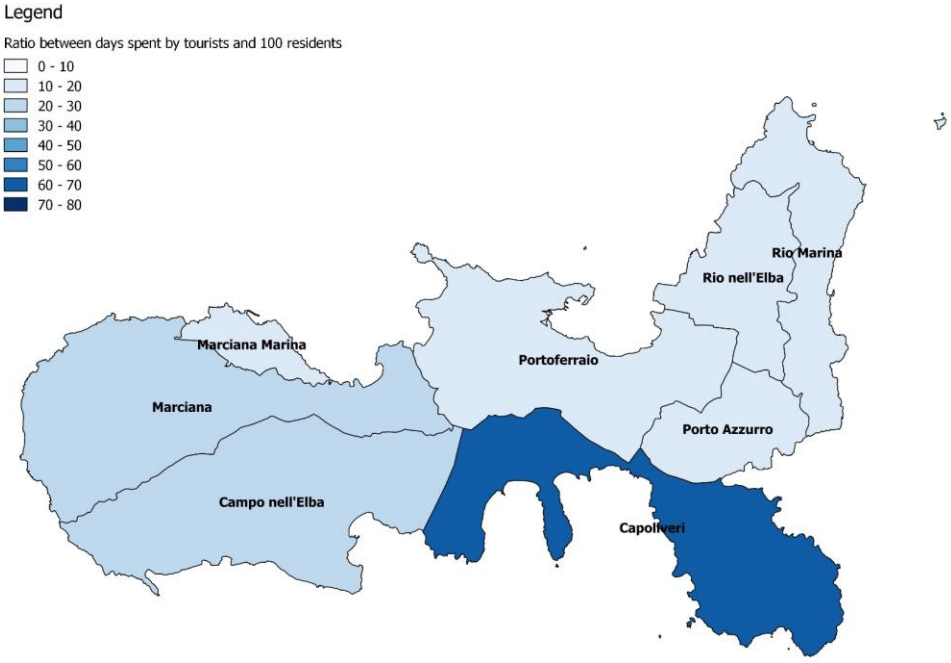


Figure 73 Number of days stayed at hotels and other accommodations per stays of 100 residents, 2014

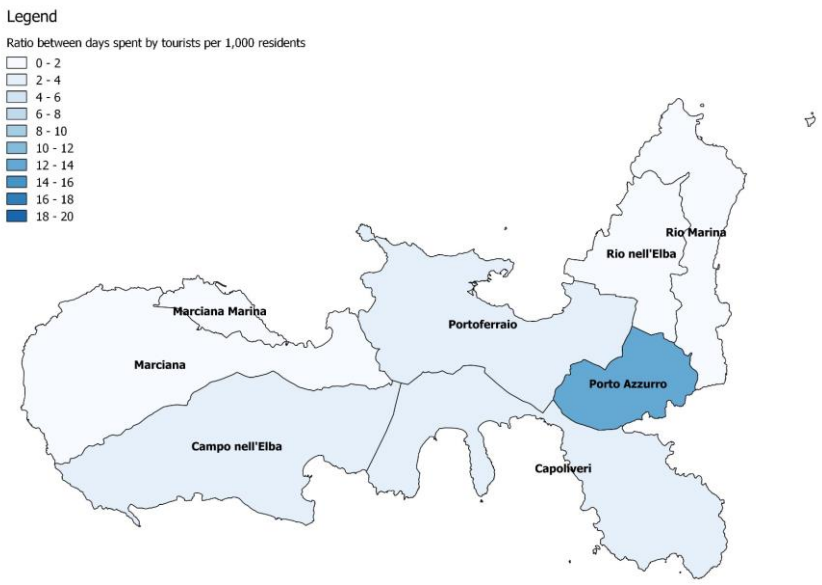


Figure 74 Number of days stayed at hotels and other accommodations per stays of 1,000 residents, February/March 2014

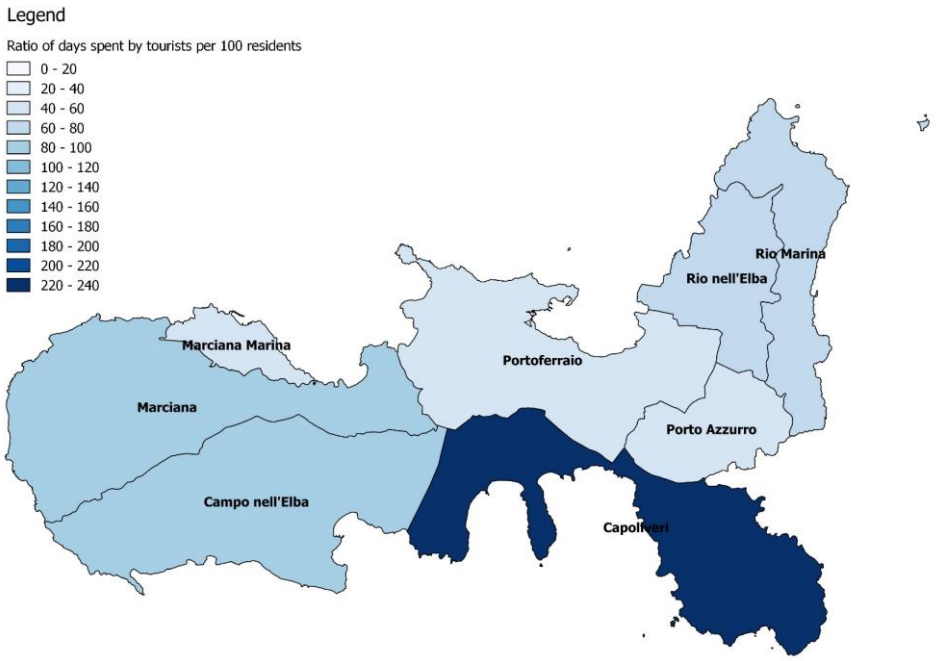


Figure 75 Number of days stayed at hotels and other accommodations per stays of 100 residents, August 2014

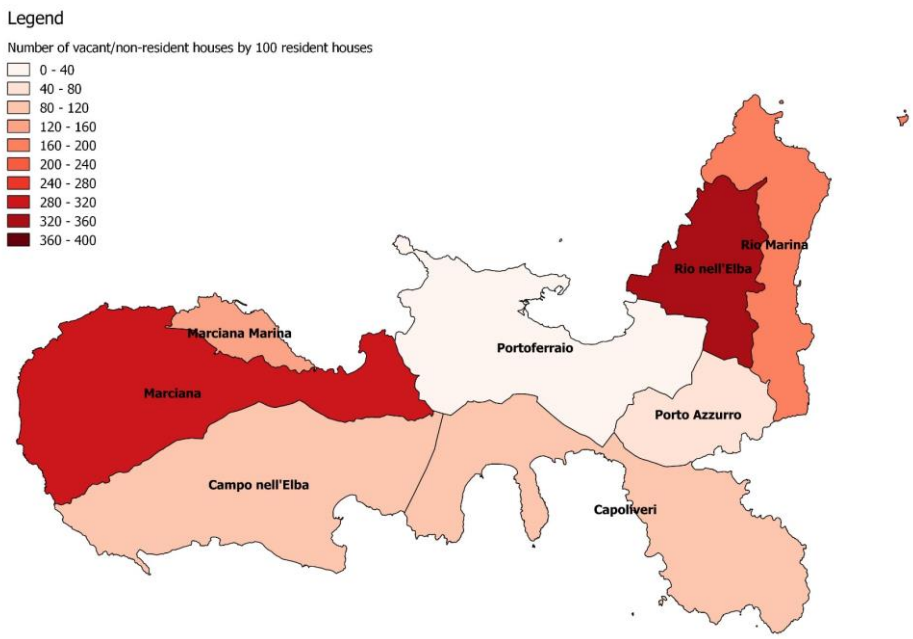


Figure 76 Number of vacant/non-resident houses per 100 houses occupied by residents, 2001

7.2.4 Main mobility challenges / problems in the SUMP/SRMP region

The main problems affecting island mobility and accessibility are:

- concentration of **arrival/departure traffic flows** in Portoferraio (where the main ferry terminal is located) resulting in congestion of the central part of the island and in a general de-qualification of tourist centres and reduction of island accessibility;
- very high percentage of people using **private vehicles** for island mobility (private car is used by 80% of tourists), resulting in significant congestion in the summer period, that cause difficulties in mobility, high level of pollution and several other related issues;
- very **high traffic flows concentrated in the inner city centres** of the different Municipalities due to the peculiar characteristics of the island road network;
- **low use of public transport services** (only 14% of the PT offer). The mobility offer is fragmented in terms of ticketing, info, marketing, accessibility and cooperation and ineffective in providing integrated solutions able to comply with the emerging needs and requirements.

It is clear that the problems mentioned above produce a wide range of related issues that negatively impact on the overall quality of the environment, citizens life and tourists stay, such as, among the others:

- **traffic congestion** in the city centres of the 8 Municipalities;
- **parking difficul**ties and consequent unauthorized parking in the areas of the most important beaches;
- **noise pollution;**
- **road safety issues**.

Furthermore, public transport services (mainly the extraurban ones) have often to deal with significant passenger increase in the summer period (over 30% increase during the peak season) and may be inadequate to duly respond to the increased demand, thus pushing passengers to make use to different (private) means of transportation.

7.3 Measure introduction

No general mobility plan at the whole ELBA level is present. There is a regulation framework inside each municipality that primarily concerns the access and parking within cities. Different municipality documents will be the base for the start of the SUMP activity, including also the Sustainable Energy Action Plan at Elba level that has certain sections focused on possible mobility solutions.

The SUMP will consider the main relevant modalities as PT transport services (including flexible and sharing schemes), mobility services (as parking system), active modalities (bike and pedestrian routes), ferry connections, logistics (in relation with the SULP to be developed in T5.3) and the role of the airport.

Moreover, the ITS and ICT framework form an essential part of the SUMP as the regulation framework (access town rules, parking policy, logistics windows, etc).

The peculiarity of these measures is the development of a “PoliSUMP" aggregating the different needs and requirements of the 8 Municipalities as a unique entity. The SUMP will include a timeplan for its adoption not only for the project measures but also for interventions in the future.

7.4 Aims of the SUMP

The specific objective of this measure is the development of the Sustainable Urban Mobility Plan (SUMP) for all of Elba island taking into account the needs of tourists and residents.

The aim is to have a mobility plan that favours the PT services and the sustainable and active modalities both for residents and for tourists guaranteeing the overall internal and external island accessibility.

7.5 Relevant other CIVITAS DESTINATIONS measures in SUMP/SRMP area

Measure	Description
ELB 2.2 - Elba open data layer	The different mobility and transport services operated in Elba Island provide a set of data that could be useful for IT service providers for implementing specific mobile or web applications related to ELBA mobility situation. The Elba Open Data Layer will make this a reality
ELB 4.1 - Shared ELBA Mobility Agency	Portoferraio and Rio Marina, supported by MemEx, will deploy new technologies and advanced ICT solutions to realise Shared Elba Mobility Agency which aims to coordinate a “flexible transport and mobility ride sharing” in relation with the conventional public transport services. Web Platform and Apps and the dedicated organization and structure for its operation
ELB 5.1 - Sustainable ELBA Logistics Plan	As Elba island can be seen as a unique "urban area", the SULP will be designed in a unitary approach, with the aims to harmonise the overall freight distribution process and to define the more suitable logistics solutions, services and infrastructure. Design is in charge of Municipality of Portoferraio supported by MemEx and Rio Marina

Table 54 Elba CIVITAS DESTINATIONS Measures and Descriptions

7.6 SUMP development: Drivers, barriers, resources and planning

Main barriers:

Political / strategic: Opposition of key actors based on political and/or strategic motives, lack of sustainable development agenda or vision, impacts of a local election, conflict between key (policy) stakeholders due to diverging believes in directions of solution.

Cultural: Impeding cultural circumstances and life style patterns.

Financial: Too much dependency on public funds (including CIVITAS funding) and subsidies, unwillingness of the business community to contribute financially.

Main drivers:

Involvement, communication: Constructive and open involvement of policy key stakeholders, constructive and open consultation and involvement or citizens or users.

Planning: Accurate technical planning and analysis to determine requirements of measure implementation, accurate economic planning and market analysis to determine requirements for measure implementation, thorough user needs analysis and good understanding of user requirements.

Organizational: Constructive partnership arrangements, strong and clear leadership, highly motivated key measure persons, key measure persons as 'local champions'.

Resources and planning

In Summer 2017 the main hub of data collection will take place, with several types of research through open sources, direct contacts, public and private companies. Two questionnaires are being designed. They will be submitted during the ferry trip from and to Elba to collect information on mobility experience in and to the island. One more questionnaire is planned for the travel agencies.

At the moment no other external funds other than the DESTINATIONS resources for SUMP development are envisaged. The subcontract budget will mainly be used to help with the data collection activities.

7.7 SUMP Self-assessment questionnaire analysis

The score on the SUMP self-assessment for Elba is as follows:

SUMP self-assessment: overall score (max = 100)	
Elba	24
Average	57
Foundation questions (13)	
Elba	3
Average	9
Excellence questions (15)	
Elba	7
Average	9

Table 55 SUMP Self-Assessment Overall Score

On foundation Elba does not score so high yet. The overall scores is a good start, especially taking in consideration the good baseline information of Elba.

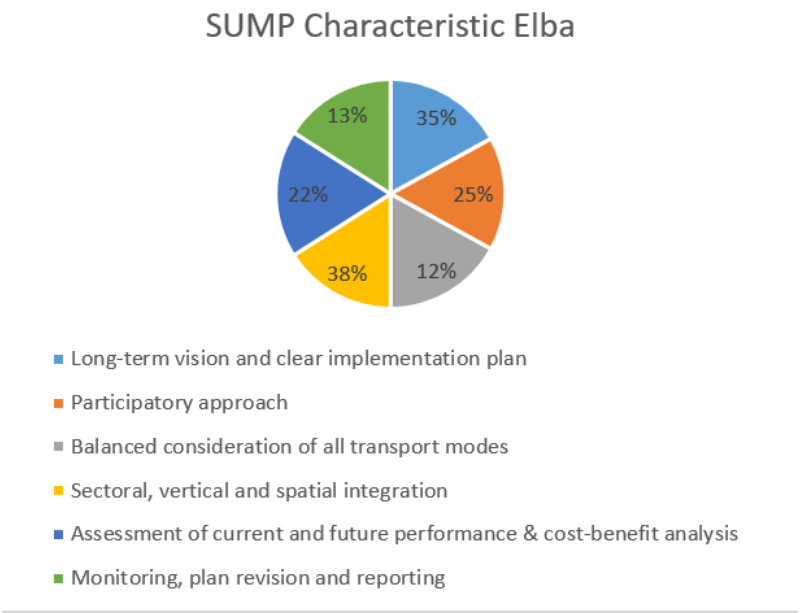


Figure 77 Elba SUMP Charasteristic

What stands out are the low scores on Monitoring as well as on the balanced consideration of all transport modes. These aspects are crucial when making the SUMP.

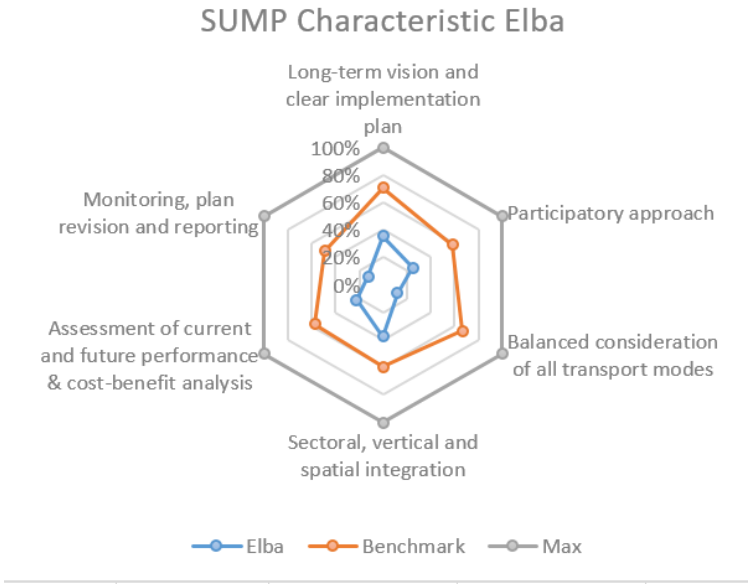


Figure 78 Elba SUMP Characteristic including maximum score and benchmark

In figure 84, the score of Elba the SUMP self-assessment is revealed. Next to the score of Elba, the maximum score and the benchmark are shown.