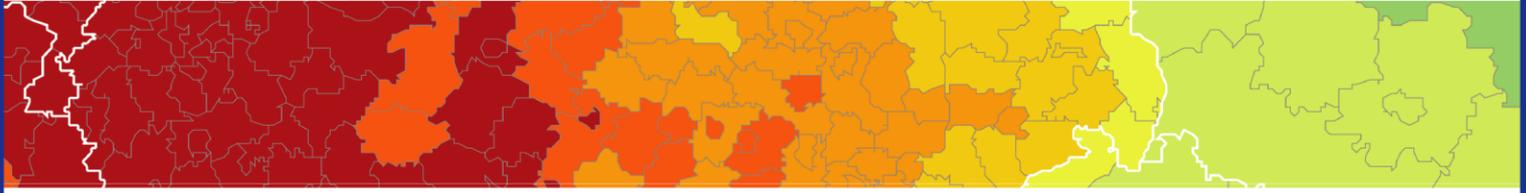


Inspire policy making by territorial evidence



# Urban-Rural Connectivity in Non-Metropolitan Regions (URRUC)

Case study report

**Marina Alta, Spain**

10/06/2019

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## Abbreviations

ATS	Adapted Transport Service
ADIMA	Association of People with Disabilities in the Marina Alta
AJEMA	Association of Young Entrepreneurs in Marina Alta
BOD	Bus On-demand
AEHTMA	Business Association of Hospitality and Tourism Marina Alta
CEDMA	Business Circle of the Marina Alta
CEV	Business Confederation of the Valencian Community
CP	Central-Place
CF	Cohesion Fund
CREAMA	Consortium for Economic Recovery and Activity of Marina Alta
DRT	Demand-Responsive Transport
EC	European Commission
ERDF	European Regional Development Fund
ESPON	European Territorial Observatory Network
EU	European Union
FEVET	Federation of transport and logistics entrepreneurs
GPS	Global Positioning System
GDP	Gross Domestic Product
AP	Highway
ID	Identification
ICT	Information and communications technology
LiMIT4WeDA	Light Mobility and Information Technology for Weak Demand Areas
LAU	Local Administrative Units
IIDL	Inter-university Institute of Local Development
MA	Marina Alta
ITV	MOT (Ministry of Transport Test)
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Co-operation and Development
PT	Public Transport
SERVEF	Regional Employment Service
RD	Research & Development
SGI	Services of General Interest
SMEs	Small and Medium Enterprises
CE	Spanish Constitution
EDUSI	Sustainable and integrated urban development strategy
TDC	Transport Dispatch Centre
TMC	Transport Management Centre
UN	United Nations
VC/CV	Valencian Community

## Blue Box: Marina Alta County

Marina Alta county has been the focus of a targeted analysis project (URRUC - Urban Rural Connectivity in Non-Metropolitan Regions) funded by the EC ESPON Programme. The primarily research objective was to analyse transport and accessibility issues in non-metropolitan regions. Marina Alta was selected as a case study area together with three other European territories.

These are the main challenges and recommendations identified within the study for Marina Alta county:

- Marina Alta faces a strong connectivity problem between the rural and urban areas of the region.
- The County inland includes rural areas facing an ageing population in contrast to coastal urban regions with higher population densities.
- This results in a historic demand to address the connectivity problem within the county and the connectivity to the main cities of Valencia and Alicante.
- In terms of governance, the main problem is related to the division of transport competences between different governance levels (from regional to national scale)
- Thus far transport connectivity has not been a political priority for years, resulting in an unsolved problem in the area.
- In terms of public transport provision a huge dichotomy has been identified where demand for on-time, regular and easily accessible public transport coexists with a 'strong car culture' of inhabitants.
- .
- This makes an awareness raising and dissemination campaign of any initiative in terms of transport a major priority.

Within recommendations suggested for this specific context, are to be highlighted:

- Implementation of a digital platform to plan and book travelers' journeys within one single accessible portal
- Develop a territorial mobility manager coordinating all existing bodies related to transport so as to harmonize transport planning and make transport provision within and without the county for efficient and friendly use.
- Dematerialisation of services by reducing needs for traveling and make public services accessible anywhere.

## **Introduction**

This document shows a targeted analysis of Marina Alta territory. More specifically, it describes territories classified as Non Metropolitan Regions (NMR) with the focus of the analysis on connectivity issues emerging from the rural and urban areas of the county (LAU 1).

The first section covers the territory contextualization, with a more detailed description of its geographical situation, territorial, social and economic main characteristics, institutional framework and transport provision. In the next section, commuting patterns between Urban-Rural areas within county are addressed. The following one, discusses the accessibility challenges in this area, based on desk-research and field analysis.

The two final sections propose potential solutions to solve the problems of connectivity, including a list of some potential impacts that might arise if these potential solutions are implemented. It includes a best practice section where solutions in similar territories have been implemented, followed by a categorization of the potential solutions proposed as operational or immaterial and transversal, and applying to the general or specific context, followed by some general conclusions.

A bottom-up approach, desk research and field-study underlies the discussion of the challenges faced by the territory and the potential solutions and recommendations proposed. CREAMA, the key stakeholder in the territory, has had a central role throughout the research process.

# 1. Contextualisation

## 1.1. Territorial characteristics

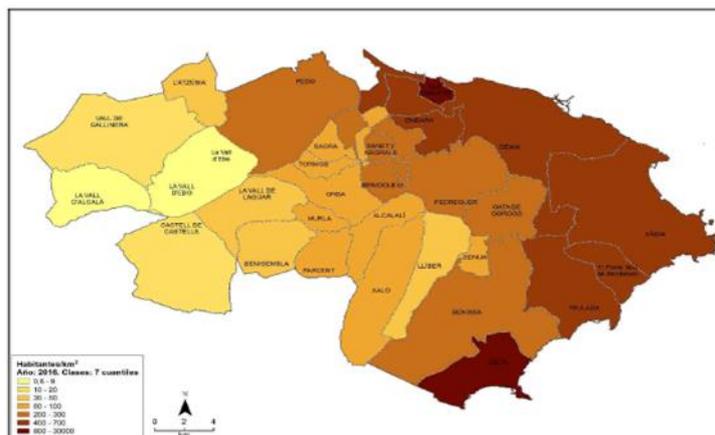
The territory of Marina Alta (LAU 1) is located on the Mediterranean coast of Spain, inside the Province of Alicante (NUTS 3) and the Valencian Community (region or autonomous community, NUTS 2, image 1). Image 2 shows all the counties (LAU 1) in the Valencian Community and the territory of Marina Alta. The county seat, Dénia, is located 90 km from Alicante and 105 from Valencia. The county has 33 municipalities. In the "Study for the Territorial Diagnosis of Marina Alta" (2017) made by CREAMA, the territory is composed of three demographic regions: the coast, the middle area and the interior. The "Coastal area" hosts 63% of the total population of the county, while the "Intermediate area" 29% and the "Inland" 8%.

Marina Alta has 33 km of beaches, 66 protected natural spaces and more than 60 km of coast. Calpe, Dénia and Xàbia have a longer coastline. Valleys and mountains cover most of the territory, 51.77% of the surface of the region is classified as forest; this aspect explains a model of small and scattered areas of urban development. The region is divided abruptly into three flat areas separated by rugged mountains. The largest forest area is located around the Girona river in Dénia, El Verger and Ondara. Southward a plain extends around the river Gorgos, from Xàbia to Gata de Gorgos. Finally there is a marshy plain in the North, between Pego and the coast, the Natural Park of the Marjal (Marsh) of Pego and Oliva. Marina Alta is dominated by four coastal mountains with an average altitude of 750 m and a whole set of interior mountain ranges. There is a series of inland valleys that are difficult to access called "Valls" (Valleys), which are oriented mainly from the West to East, running in a vertical from Pego to Xaló. The inland territory consists of enclosed rivers between rugged mountain ranges, with only small flat areas.

## 1.2. Social characteristics

Marina Alta has a total population of 169,327. As depicted in the map below, population density is largest in the East-coast urban area. . The County density shows similar values to the Valencian Community average, and is almost twice the national density at county level (93 inhabitants per territory).

Map 1: Population density of municipalities (LAU2) in Marina Alta (LAU1)



Source: CREAMA, 2016; INE, 2016

Though the population density is similar to overall region levels, childbirth is lower compared to any other value in the country and mortality is above that of any other territory in the area. Some 23.5% of the population is over 64 years old (compared to the average of the Alicante region of 19.07%). This phenomenon is even more apparent in inner areas, where we find 5 municipalities within the classification of the 100 Spanish towns with the highest average age (ranging from 44.6 to 47.7 years, while the Spanish average is 42.7 years). Elderly-people (more than 64 years old) are more present in Marina Alta than in Spain on average. Given the life-expectancy of women is higher than men (the '70 years old or more' line in the chart), Marina Alta has more women (85,422 or 51,5%) than men (83,905 or 48,5%).

In terms of health infrastructure the county has 5 hospitals. 2 public hospitals and 1 private are located in Dénia with a further private hospital in Calpe town and a private hospital devoted to dermatology care in Vall de Laguar. For education, the county is well educated on average, at or over other territorial standards. It shows the lowest level of people without qualifications and third grade percentage are over the national average. In general terms, the average level of education is slightly higher in Marina Alta compared with the other territorial levels (Province of Alicante, Valencian Community and Spain).

Table 1: Education level (Marina Alta, Province of Alicante, Valencian Community and Spain)

Zones	Analphabetic and Without study	First Grade	Second Grade	Third Grade
Marina Alta county	6,71%	15,36%	59,74%	18,98%
Province of Alicante	11.35%	15.23%	57.74%	15.67%
Valencian Community	10.46%	15.05%	56.68%	17.80%
Spain	10.14%	12.33%	60.18%	17.35%

Source: INE, 2011

### 1.3. Economic characteristics

Concerning employment opportunities in the area, the labour market is highly segmented due to the prevalence of seasonal tourism, the lack of R&D investment, and the maturity of the economic base. The Marina Alta economy has a strong dependence on the service sector (75% of the existing companies), especially tourism. It has a golf leisure facility (in Dénia, Xàbia and Benissa), together with marine infrastructure (9 harbours) and 33 km of beaches, for which it has obtained 15 blue flags. There is also a strong construction sector (18% of companies), which employs a total of 87% of the active population. By contrast, the industrial sector represents a small proportion of economic activities (3% of companies, compared to the average of the Alicante region of 7%). Agricultural activities have a small presence in the economic specialization of the area. However, they are relevant in the inner areas and in the middle range.

In terms of employment per economic sector, numbers at the county level are similar to those at regional and national levels except for the construction sector in Marina Alta. 2017 figures for the services sector show it is the most prevalent for employment opportunities, followed by construction and industry, whereas compared to national level, the industrial sector offers more employment opportunities than construction.

Table 2: Employment per economic sector

District	2017			
	Agriculture	Industry	Construction	Services
Spain	819,5	2647,4	1.128,30	14.229,60
Valencian Community – NUTS 2	22,558	17,799	6,668	101,517
Alicante (Province) – NUTS 3	2,256	5,169	2,821	31,771
Castellón (Province) – NUTS 3	4,503	2,069	794	10,795
Valencia (Province) – NUTS 3	15,799	10,561	3,053	58,951
Marina Alta – LAU 1	16	124	290	2,396

Source: SERVEF, 2017

In 2017, the average household income per capita of Marina Alta was €11,458 (€11,388 in the rural-area and €11,112 in urban), while the average in Spain was €17,813, showing a lower economic capacity of inhabitants in this county. It is however noteworthy that after the last economic crisis, recovery has followed a similar path to that of regional and/or national levels.

When comparing the economic activity index at a municipal level (LAU 2), an index that expresses participation rates in economic activity (1/100,000) in each municipality within a national-base of 100,000 units (equivalent of the economic activity tax collection), we can see that in Marina Alta economic activity is concentrated in urban areas. Municipalities with values equal or lower to one have been removed from Table 3. As Table 3 illustrates, the top-five towns with the highest economic activity are urban and are located in the coastal area of the

county. It's also worth mentioning the notable divergence of economic activity between rural and urban areas. Only two rural towns show an index score over 10 points, and there is a high concentration of economic activity in the Capital, Dénia, which shows an index score almost 50 points over Calpe.

*Table 3: Economic Activity Index of Marina Alta and each municipality of the county*

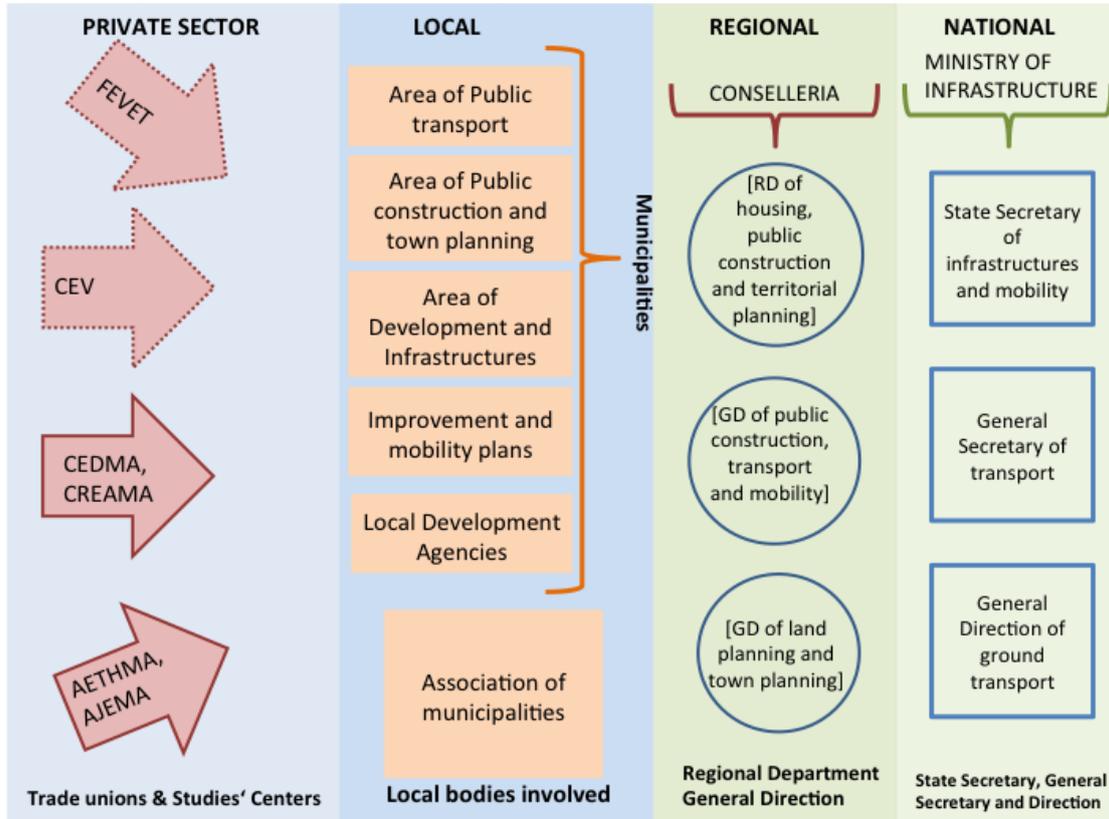
Municipality	Zone	Economic Activity Index
Alcanalí	Rural	2
Beniarbeig	Rural	2
Benidoleig	Rural	2
Benissa	URBAN	18
Calp	URBAN	35
Dénia	URBAN	86
Gata de Gorgos	Rural	7
Ondara	Rural	10
Orba	Rural	2
Parcent	Rural	1
Pedreguer	Rural	11
Pego	Rural	14
Benitatxell	URBAN	5
Els Poblets	URBAN	3
Teulada	URBAN	21
El Verger	Rural	7
Xaló	Rural	4
Xàbia	URBAN	36
<b>Total Marina Alta</b>		<b>266</b>

**Source:** CREAMA and La Caixa, 2019

#### **1.4. Institutional framework**

The institutional framework in Spain is divided into four main territorial levels of policy competences, ruling and governing competences are distributed at each territorial level as follows: national (National Government), regional (Autonomous Community), intermediate institutions (provinces) and local administrations (local councils).

Figure 1: Key Institutions in accessibility, transport and mobility



Source: University of Valencia, 2019

At national level the Spanish Government devolves to a maximum scale the legislative competences in transport (as shown by the Land Transport Ordinance Law 16/1987, of July 30). Also, the Spanish Constitution (CE/1978) states that the State has an exclusive competence in ground transportation only if rail or a road networks pass through more than one Autonomous Community (Article 149. 21<sup>o</sup> point). If that is not the case, it is the competence of the Autonomous Community in which the transportation infrastructure is exclusively used (regions, in our case: the Valencian Community, from now on VC, NUTS 2). According to the Statute of Autonomy of the VC, Title IV, which deals with "Competencies", article 49, the Generalitat (regional government of the VC) has an exclusive competence in terms of "Railways, land, sea, river and cable transportation: ports, airports, heliports, [...]" (14<sup>o</sup> point). The majority of the Spanish regional governments currently have an Urban and Metropolitan Transport Law in force (in our case, for the VC, it is the LAW 6/2011, of April 1, of Mobility of the VC).

Intermediate institutions, such as the provinces (Province of Alicante, provincial government, NUTS 3) and the counties (such as Marina Alta, LAU 1) do not have the obligation or the financial resources to plan transport and mobility policies. Municipalities (LAU 2) are allowed to create mechanisms for the provision of services (like public companies). Town councils of

more than 50,000 inhabitants are obliged to establish urban transport services (therefore, any municipality in Marina Alta, LAU 1). Even so, some municipalities at Marina Alta have mobility inter-municipal plans (for two or more municipalities) and intra-municipal ones (a plan or project to improve the mobility inside the municipality) such as:

- Municipality of Benissa: Public Participation Plan of Benissa
- Municipality of Pedreguer: General Plan of Pedreguer municipality
- Municipality of Dénia: ¡Move along Dénia!
- Municipality of Xàbia: Doing Xàbia
- Municipality of Calp: Calp, a friendly city with elderly people
- Municipality of Gata de Gorgos: Move along Gata

Table 4 below summarizes the main public institutions with competences in transport planning and provision, relating them to each territorial level.

*Table 4: Public Sector Institutions breakdown with transport competences*

TERRITORIAL LEVEL	INSTITUTION
Spain – Country	Ministry of Infrastructures
	Secretary of State (infrastructures and mobility)
	General Secretary of Transport
	General direction of ground transport
Valencian Community - NUTS 2	Regional department of Housing, Public Construction and Territorial Planning
	General direction of public construction, transport and mobility
	General direction of housing, rehabilitation and urban regeneration
	General direction of land planning and town planning
Province of Alicante - NUTS 3	Provincial government (Diputació)
	Provincial government (Diputació)
	Municipalities improvement plans
	Areas of Development and Infrastructures
Marina Alta - LAU 1	CREAMA
	Institute of Comarcal Studies

**Source:** University of Valencia, 2019

Transport provision is closely related to economic development.. For an economy to grow and develop in the long-run, it needs to ensure the well-being of inhabitants. To support and foster economic dynamism, high quality transport infrastructure, which ensures the flow of workers goods and services and citizens in general, needs to be provided. In this sense, development structures, either well-being, economic development and transport service institutions appear to be interrelated. Transport services are fundamental to ensure commuting of citizens for service and work provision as well as for companies to get inputs and provide outputs of

either services or goods. In Spain, at national, regional and local level public institutions with responsibilities in these three areas are present and Table 5 summarises their relationship.

Table 5: Public Institutions dealing with development structures

	Well-Being	Economic Development	Transport services and transport policy
Local	<p>1. Grouping of Municipalities of Social Services of Marina Alta (MASSMA-Mancomunitat de Serveis Socials de la Marina Alta) in: Alcalalí, Beniarbeig, Benidoleig, Benigembla, Benimeli, Castell de Castells, El Verger, Els Poblets, Líber, Murla, Ondara, Orba, Parcent, Pedreguer, Rafol d'Almunia, Sagra, Sanet I Negrals, Senija, Tormos, Vall de Laguar, Xaló).</p> <p>2. Grouping of municipalities "EL Xarpolar" of Castell de Castells i Vall d'Ebo and other municipalities outside Marina Alta.</p> <p>3. Social well-being and Social Services department (other municipalities).</p>	<p>1. Local Development Agency (CREAMA) (Dénia, Xàbia, Calp, Benissa, Teulada-Moraira, Pego, Pedreguer, Gata de Gorgos).</p> <p>2. Grouping of municipalities of Orba and Vall de Laguar.</p> <p>3. Grouping of municipalities "El Xarpolar" of Castell de Castells i Vall d'Ebo and other municipalities outside Marina Alta.</p> <p>4. Tourism grouping of municipalities of Adsubia, Pego, Vall d'Alcalà, Vall d'Ebo.</p> <p>5. Grouping of municipalities "La Rectoría" of Benimeli, Ràfol d'Almúnia, Sagra, Sanet y Negrals and Tormos.</p> <p>6. Grouping of municipalities of Vall del Pop of Benigembla, Murla, Parcent, Alcalalí, Xaló, Líber, Senija and Benissa.</p> <p>7. Local government (other municipalities).</p>	<p>Local government: Municipal public transport in Dénia, Xàbia, Benissa and Calp; Management of urban public roads (all municipalities)</p>
Regional	<p>1. Social Welfare Department (Provincial government of Alicante).</p> <p>2. Equality and Inclusive Policies department. (Valencian Community)</p>	<p>1. Local Development area. (Provincial government of Alicante)</p> <p>2. EU Project Area (Provincial government of Alicante) Department of Finance and Economic Model (Valencian Community)</p> <p>3. Department of Sustainable Economy, Productive Sectors, Commerce and Labour (Valencian Community)</p>	<p>1 Commission of Infrastructure, Modernization and Governance. (Provincial government of Alicante)</p> <p>2. Project Office and the Department of Roads. (Provincial government of Alicante)</p> <p>3. Department of Housing, Public Works and Territorial Planning (Valencian Community)</p>
National	<p>Ministry of Health, Consumption and Social Well-being (Spanish Government)</p>	<p>1. Ministry of Industry, Commerce and Tourism (Spanish Government)</p> <p>2. Ministry of Economy</p>	<p>Ministry of Infrastructure (Spanish Government)</p>

		and Business (Spanish Government)	
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**Source:** University of Valencia, 2019

When planning transport provision, not only public institutions are involved. Private companies, who are the main actors involved in transport provision also play a major role. Table 6 briefly describes these agencies and the main roles they play.

*Table 6: Private organisations influencing transport, communication and accessibility (private sector) at regional and county level.*

COMPANY	ACRONYM	DESCRIPTION
Federación del Transporte y Logística de Valencia	FEVET	It is a federation of transport and logistics entrepreneurs, whose main objectives are prevail the private initiative in the sector, to promote the industrial development and training courses.
Confederación Empresarial de la Comunidad Valenciana	CEV	The Business Confederation of the Valencian Community represents and defends the business interests of its members before the public authorities and society in general.
Cercle Empresarial de la Marina Alta	CEDMA	The Business Circle of the Marina Alta is a federation of regional scope that represents the interests of 1.150 businesses in the Marina Alta region (LAU 1).
Consortio de Recuperación Económica y de la Actividad de la Marina Alta	CREAMA	CREAMA (our Stakeholder) is a public institution which promotes the economic and social activity of the Marina Alta. It offers services such as advice to new businesses, occupational integration, funding and training courses.
Asociación de Empresarios de Hostelería y Turismo Marina Alta	AEHTMA	Business Association of Hospitality and Tourism (Marina Alta). It is a regional association that combine efforts to represent and defend the socio-economic, training and innovation interests of entrepreneurs in the sector.
Asociación de Jóvenes Empresarios de la Marina Alta	AJEMA	It is an Association of Young Entrepreneurs in Marina Alta. The objective of this young association is to contribute to the economic development of companies in the region (LAU 1).

**Source:** University of Valencia, 2019

## 1.5. Transport provision

The main transport infrastructure connecting Marina Alta with the neighbouring counties and regions of Spain is a highway (AP-7) and a road (N-332). The former is a toll highway with two lanes each way, whose maintenance is the responsibility of a specific company, whereas the second only has one lane each way and does not have a usage charge. Maintenance and improvements for this road are funded by the National Government. Within the county, minor roads connect towns and villages, providing the main transport infrastructure for these areas. Maintenance is the responsibility of the Ministry of Infrastructures. When investigating the inner area of the county, there is less maintenance of rural roads than in coastal/urban areas. Roads are the main infrastructure for Marina Alta inhabitants to commute from inner areas to

the coast for labour and services, which are the main commuting flows. During the peak summer period, an important flow emerges, only occurring for a short but highly demanding time: tourist activity. This huge inflow of visitors, most of whom locate in coastal areas, creates significant challenges in terms of congestion, mostly due to the volume of private passenger cars.

The county doesn't have an airport, the closest being Alicante Airport (El Altet) and Valencia. In terms of tourism inflows to the county and traffic passengers, Alicante is the main airport for tourists coming from abroad, but also for some national tourists coming from the capital or northern regions. Transport connections from Alicante airport to Marina Alta are provided by private services. Two private companies offer a shuttle service on demand, but given the geographical structure of the county, and the lack of efficient public transport service provision within the county, car rental is the most preferred option. Public transport service connections from Alicante airport to Dénia exist, but it involves using more than two different transport methods (local bus, regional bus and/or tram) with poor connection times. This results in journey lengths being more than double the time taken by shuttle or car.

Existing railway infrastructure is poor and its improvement is one of the main demands for the areas inhabitants'. A narrow railway for a tram starting in Dénia and ending up in Alicante exists, which is the only railway connection running south. In terms of efficiency, the width of the rail limits the speed of the train. Moreover, due to the age of the network, maintenance works are constant, translating into service interruptions. Northern railway connections, don't exist and Gandia is the nearest rail connection node at 30 km distance. The absence of a rail connection between Gandia and Alicante impedes not only the flow of citizens and tourists along the Mediterranean coast, but also the flow of goods. This constitutes an obstacle for the economic development of this Mediterranean area.

Marine infrastructure is concentrated in the three main coastal towns: Dénia, Xàbia and Calpe (from North to South). Each has a harbour dedicated to leisure and sports purposes. All three operate year around, but it is during June to September when the peak of marine traffic occurs. Besides leisure purposes, Dénia harbour has more than 90% of fishery activity in the county and is a main departure point for passengers and goods transported between the peninsula and the Balearic Islands. Since Dénia is the shortest distance from the Balearic Island Ibiza, most of the goods provision of the island come via ferry on a regular basis. Transport passengers to Ibiza and Formentera are of great importance during the summer season with daily transport provision operational. This is lower frequency during the rest of the year. Marine transport for passengers and goods becomes an important economic driver for the town, not only in terms of dynamism, but also in terms of job creation and the need for land infrastructure to connect with the harbour.

## **2. Urban Rural Linkages**

### **2.1. Employment, Education and Healthcare in Marina Alta**

In order to identify the linkages, the definition of both 'urban' and 'rural' concepts should be addressed. The criteria used to differentiate those terms are very heterogeneous. The United Nations 'World Urbanization Prospects' report (UN, 2014) states that it is difficult to use uniform criteria in different countries. Thus, instead of using a common definition, they rely on the definition and criteria that each country-state uses for its own territory. Given the variety of situations in the world, it is not currently possible (or indeed even desirable) to adopt uniform criteria to distinguish urban areas from rural areas. For example, stipulating that any areal unit with at least 5,000 inhabitants should be considered urban is not appropriate in populous countries such as China [...]. Overall, national statistical offices are in the best position to establish the most appropriate criteria to characterize urban areas in their respective countries (UN, 2014: 3).

In the case of Marina Alta, the Spanish Government uses a triple classification of the municipalities: big-urban areas, small-urban areas and rural areas (Ministerio de Fomento, 2016). As we only differentiate between urban and rural, the criteria used to differentiate big-urban areas and small-ones will not be taken into account. The general rule to determine an area as 'urban' is that it must have more than 5,000 inhabitants; but there are four exceptions to this general rule:

1. If it has more than 5,000 inhabitants but the main nucleus of population inside the municipality is less than 10,000 inhabitants, it is considered rural area.
2. If it has more than 5,000 inhabitants but it has less population in 2015 than in 1962, it is considered rural area.
3. If it has not more than 5,000 inhabitants but it has more than 15,000 potential seasonal population, it is considered urban area.

Then, urban municipalities in Marina Alta are: Dénia, Els poblets, Xabia, El Poblenu de Benitatxell, Teulada, Benissa and Calp (they correspond with coast municipalities).

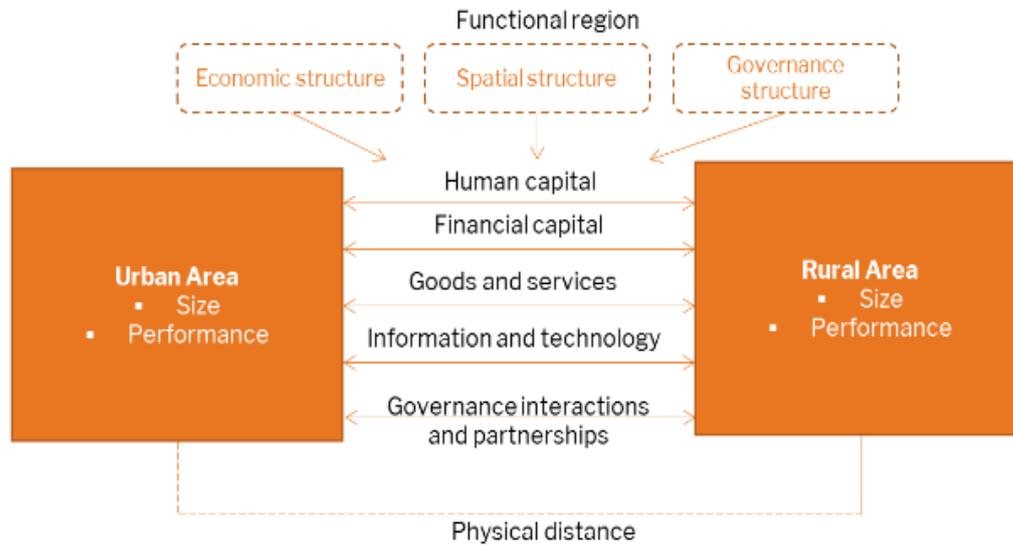
The rest (rural municipalities): Pego, Pedreguer, Ondara, Gata de Gorgos, Vergel, Xaló, Orba, Beniarbeig, Alcalalí, Benidoleig, Llíber, Parcent, Vall de Laguart, Adsubia, Sanet i Negrals, Ràfol de Almunia, Vall de Gallinera, Senija, Murla, Castell de Castells, Benitxembla, Sagra, Benimeli, Tormos, Valle de Ebo and Vall de Alcalà (they correspond with inland municipalities).

### **2.2. Travel to Work Patterns**

Commuting covers travel patterns of any type occurring between urban and rural areas. They compose a series of different variables of flows like human capital (mainly commuting, for work or education purposes), the flow of financial capital, goods and services (leisure being the most obvious one in the region, but also daily needs for goods like food or water),

information and technology (also imbalanced between the two zones) and governance interactions and partnerships. The next image from the OECD summarizes the linkages and the context of it (distance, both regions and interaction factors).

Figure 2: Causes for commuting



Source: UN, 2017, adapted from OECD, 2013

In the table below, the type of interaction and sub-type of linkages are distributed according to the relevance they have in the region and a description of the type in general and why it has (or has not) importance in the region of Marina Alta:

*Table 7: Identification of the typologies of Urban-Rural linkages*

Type of interaction	Sub-type	Relevance	Description
1. Demographic linkages	a. Urbanization (rural-urban migration)	Highly relevant	<p>Urbanization is the process of rural-urban migration. It is still a trend and live issue in Mediterranean areas. Its negative rural-area main impacts are: depopulation, demographic ageing and gender imbalance. Data corroborate this impacts:</p> <p>In terms of depopulation, Marina Alta has lost population in the last years since 2012 (201.840 inhabitants) up to at least the year 2016 (169.831 inhabitants). According to CREAMA (2017: 30), our stakeholder, the depopulation is stronger in the rural-areas (where the population who is less than 16 years old, represent less than 6% of the population of the area).</p> <p>Also, demographic ageing is still an issue in the area; in Marina Alta, 23.5% of the population is over 64 years old (compared to the average of the Alicante region of 19.07%). This problem is marked significantly in the inner areas, as 5 municipalities are within the classification of the 100 Spanish towns with a higher average age. The average age of the inner-rural zone is 51y/o while the average of Spain, Valencian Community or Province of Alicante is around 42y/o (CREAMA, 2017: 31).</p> <p>Finally, there is a gender imbalance in the region as the following data shows: as the life-span of women is higher than men, in Marina Alta live more women (85422 - 51,5%) than men (83905 - 48,5%).</p>
	b. Commuting and counter-urbanization	Scarcely relevant	<p>This process represents the trend of people to live in non-urban nor metropolitan areas. The causes might be to avoid high house prices or urban problems in general. It generates a longer distance commuting (from rural to urban and vice-versa) or, otherwise, home-working.</p> <p>A good aspect of this trend is that commuters tend to revitalize rural area and contain the high levels of depopulation. This is why depopulation is not that big in Marina Alta in comparison with other similar areas in the country, but it is still an issue.</p> <p>The counterpart is the rising house prices and decline of rural retailing. For example, data shows how in the province of Alicante (NUTS3) house prices decreased from 2008 to 2016 due to the crisis but now they are raising again (2016-2018). Nowadays, Alicante m2 house price is still lower (1.178€) than the average of Spain (1.317€) (TINSA: <a href="https://www.tinsa.es/precio-vivienda/">https://www.tinsa.es/precio-vivienda/</a> ).</p>

2. Economic transactions and innovation activity	a. "Central place" consumer relationships	Highly relevant	<p>Commuters disrupt Central Place (CP) hierarchy as increased mobility extends the range of acquisition of products. Also, car and the internet provide new purchasing opportunities. The problem is the decline of traditional local retailing due to the CP new relationships.</p> <p>We can see how a new shopping location arose in the centre of Marina Alta: Ondara Shopping Mall, the only one in the region. It creates a flow of commuters both from urban and rural areas.</p> <p>Also, supermarkets are in the intermediate and coastal-urban zone (Calp, Benissa, Teulada, El Poble Nou de Benitatxell, Orba, Pego, Xaló, Ondara, Pedreguer, Gata de Gorgos, Dénia and Xabia), but none of them is located in the inner-rural area. This creates a new linkage from rural to urban in terms of consumption.</p>
	b. Exchanges of goods and (private) services between rural SMEs and nearby cities	Scarcely relevant	Scarce exchange of agricultural goods from rural to urban areas.
	c. Diffusion of knowledge and innovation between countryside and nearby cities	Not relevant	
3. Delivery of public services	a. Delivery of urban-based SGI to rural households and businesses. Also access of rural areas to urban SGI	Moderately relevant	<p>The infrastructure and digital services in the interior of the region are deficient, which causes greater social and cultural distancing with the coastal zone.</p> <p>The population and settlements are scattered on the territory. For this reason the delivery of SGI is high-priced and more difficult to manage. Almost 9% of the population resides in disseminated areas, Els Poblets (76.52%), Líber (61.53%), Murla (41.77%), Benigembla (41.29%) or Parcent (35.23%), with the consequent possible problems of supplying public services in these remote areas. Most of the public services are located in the capital town (Dénia) or in the coastal-urban area, hence the linkages towards rural and urban area are relevant.</p>
	b. Public transport availability in rural areas	Highly relevant	<p>The MA has a potential public transport market of around 300.000 users.</p> <p>High deficiency in the internal connectivity of the region. The offer of public transport that connect inland, intermediate and coastal area is practically absent, which entails difficulty for residents when traveling for training, health, work reasons and, at the same time, it causes a distancing or functional separation between areas of the region.</p> <p>High cost to get to the MA from the outside, marked mainly by the incomplete development of the Mediterranean Corridor</p>

			leaving the territory without rail access and with only one (tall) highway, the AP7 (E15). Getting to the MA is expensive, both in terms of money and time; the lack of access by railway and the fact that the only highway of arrival by road is paid, makes it difficult for visitors to flow and the expansion of economic activity in the region.
4. Exchanges in amenities and environmental goods	a. access to countryside for leisure and recreational use by urban residents	Scarcely relevant	Getting to the MA, above all to the inland, is very difficult because of the absence of railway, almost absent bus lines (absent in the inland) and high cost roads. The clear deficit in infrastructure and public transport that the region has been dragging on for several decades has impeded a development that could be more suited to its potential, especially in the inland area tourism.
	b. rural areas as sources of water supplies, carbon capture, waste treatment	Scarcely relevant	
	c. rural areas as sources of renewable energy	Not relevant	

**Source:** University of Valencia, 2019

### **3. Present Accessibility Challenges**

This section presents accessibility challenges facing Marina Alta and its main causes categorized under five topics: weak public transport system, geographical features, weak supply of services, key demographics and Institutional and administrative barriers associated with cross-agency services.

#### **3.1. Weak public transport system**

The connections between the urban area located in the coastal and intermediate areas with the rural inland areas are often financially unsustainable. This causes the risk of isolation of the inner rural areas. Public transport is very weak in the region and in some parts (inner rural areas) practically non-existent. The local population is strongly dependent on private vehicles. The demographics of the rural areas in Marina Alta (depopulation, low density and high average age) is the most important accessibility challenge in the rural inland of the county. This demographic situation has been making inefficient each of public transport initiative for the regional government (Valencian Community) and hard to afford by the exiguous coffers of rural municipalities. In To-date the Generalitat (autonomous community government, institutional body with the competence on this field) hasn't taken sufficient account of those municipalities in the transport plans or the new projects.

However, a new 10 bus lines plan of the Generalitat Valenciana (Regional Government), the CV-201 La Marina Alta was presented at the end of July 2018. The plan should connect 31 of 33 municipalities of the county, but local stakeholders are rather sceptical on the implementation efficiency and effectiveness of the bus routes:

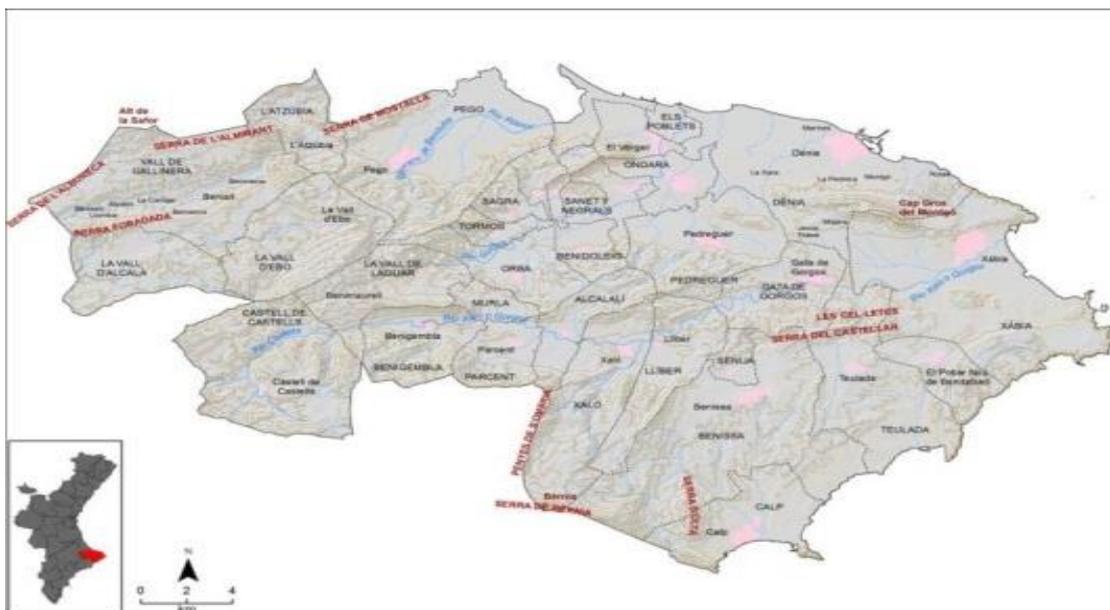
"It is not a solution to the problem. It only uses and take advantage of the school-bus to offer to the public the same schedule and route, but it is not convenient for regular use (one bus each 6 hours)." Pego political representative said. "It is literally a mad thing for the transport companies because they ask for a company to cover all the routes proposed, and it is not profitable, it is impossible to do it that way in terms of costs."

The lack of services leaves in hands of the local governments the task to give citizens a better transport system, but the complication is that each municipality is allowed to provide public transport only inside its territory; thus, they cannot improve the transport system between municipalities. The latter is managed by the regional government that entrusts specific routes through calls for tender. Municipalities mustn't plan routes that overlap with the regional routes planning. Therefore, both because of insufficient financial backing and for improper policy competence, municipalities are not able to offer public transport solutions.

The municipality of Pego tried to solve the lack of connection between the small town and the hospital of Marina Alta through entrusting to private operators the medical service transport (ambulance), but with unsustainable results. Moreover, Pego's town hall seeks to create new inter-municipal transport services because the existing provision is insufficient. The main aim

is to promote a new route for going from the town of Pego to Oliva and Dénia; but other proposals are: Pego-Valencia or Pego-Oliva-Gandia in the weekends for people studying at the University, Pego-Sagra-Tormos-Orba-Alcalalí-Xaló-Llíber-Senija-Benissa at least once a day (round trip) and Vall de Gallinera-Pego on Thursdays (market day). As this services affects more than one municipality, the decision not only depends on Pego's government but on authorities in other areas.

Map 2: Marina Alta geographical features



Source: CREAMA, 2017

These proposals from local authorities demonstrate how necessary transport connections between local rural municipalities and coastal-urban areas for the benefit of SGI are. They also connect with other extra-county transport hubs, such as Oliva or Benidorm (Northwards to Valencia, and Southwards to Alicante). Therefore local stakeholders reveal the shortage of connections between rural and urban areas inside the county, but also with other urban centres just outside the county (such as Benidorm, Alicante, Gandia, Oliva and Valencia) that offer some kind of service to Marina Alta's citizens and generate significant linkages with some municipalities of Marina Alta: the Tax Agency in Benidorm for the southernmost villages of the county, provincial based services in Alicante, the nearest train station running to Valencia in Gandia, university in Valencia and relevant labour and commercial centres in Oliva. The lack of routes connecting to these neighbouring centres and urban areas of Marina Alta affects students' decisions in matters of choosing universities and job offers, also because timetables are not adequate to the real necessities of the population.

Related to the previous transport challenges, the absence of a railway service makes connections inside and with the neighbouring areas of the county more complex and generally slower. This transport feature isolates Marina Alta. As a result, commercial,

industrial, educational, and other activities suffer a slower development and growth path compared to the bordering areas. The transport business representative stated:

“The whole system has to be improved; the first thing to do should be the train. If it arrives here, a whole transportation network will be created around the train stations.”

In relation to tourism, the inner valleys near the municipality of Pego, suffer from a complete absence of public transport services that makes provision of new routes to tourists inconsistent. Tourism in Marina Alta is focused on the coast, from 50 to 100 km away from the rural villages, because of the shortage of public transport connections that completely isolate the innermost rural areas and create dependence on private vehicles.

Timetables of public transport are in the whole county quite unsuitable for commuters and connections between innermost rural areas and intermediate rural areas must rely on private cars, even for travel to education services. Because of the scarce demand for public transport and the high management costs of the service, almost all connections are financially unsustainable in the county; therefore transport business is not commercially attractive for transport companies and barely sustainable for local governments. The summer bus connection service from urban areas to the clubs of Marina Alta works well, but the taxi service is unsustainable in winter and insufficient in summer when the flow of tourists in urban areas is massive. Another issue impacting public transport is the existence of bus lines dedicated exclusively to the transportation of students, where access to other types of users is prohibited. This is because the lines are funded by the Education Department of the regional government, so the buses are for the exclusive use of students.

There is a lack of exact data and regular statistical analysis about commuters between each municipality of Marina Alta which hinders local transport planning and makes it appear complex and not well founded. The informal networks of ride-sharing only work for the part of the population that is informed. However, the foreign population and tourists cannot access these informal local networks because of information asymmetry and the lack of integration between these networks on a single advertised platform.

### **3.2. Geographical features**

One of the main challenges in terms of accessibility of Marina Alta is its geographical features and the complex orography. Marina Alta, even though it is a coastal region, also contains important rivers and mountains which create steep valleys (see previous section 1) that make it difficult to improve linkages. Such examples include Montgó massif, which separates Dénia from Xàbia, hindering connection between the two urban areas. The Montgó is emblematic, one of the hills and promontories hindering communication and accessibility between the municipalities of Marina Alta.

This highly abrupt terrain constitutes an added challenge to the region in terms of rural-urban connections, because both connections systems (i.e. internet, radio, and phone) and

transport infrastructure(roads and paths) present issues in terms of costs, lengths and time. The road network is rather sinuous and presents some orographic barriers, above all in the inner area, most affected by poor transport connections.

### **3.3. Lack of service provision**

Another accessibility challenge in Marina Alta is that most of the services are concentrated along the coast, more concretely in the city of Dénia. Considering all kind of services, rural and inner villages are very poorly supplied. In some villages most services are non-existent. Some basic services such as Public Hospitals, Tax Agency, Provincial Government, National Police Stations, Social Security Administration, MOT (ITV), County Court, Centre of Tourism and Harbour Master's Office are only found at the city of Dénia. Other examples, like the Social Institute or the Public Employment Service are not only in Dénia, but each of them is in the coast-urban-zone. Some public services are located outside the county. Municipalities of the southernmost area of Marina Alta have to reach other urban centres outside the county, in Benidorm, in the county of Marina Baixa (i.e. the Tax Agency of Calp is located in Benidorm).

The most important services generating everyday commuting are: education (high schools) and care (hospitals and senior citizen residences). However, almost half of the municipalities of Marina Alta do not have at least one of these. Also, work commuting is a daily event, as according to CREAMA, the vast majority of the jobs are concentrated at: Dénia, Xàbia, Calp, Benissa, Teulada, Pedreguer, Ondara and Pego (urban-zone). Thus, 37% of the population of Marina Alta works outside its municipality of residence. A problem related to the accessibility of public services is the question of digitisation: some bureaucratic practices can be solved via the Internet but the problem is that the operation is still complex. Therefore, the digitisation of public services has not yet been achieved, with a concomitant impact on the potential for improving accessibility of services or reducing travel needs and saving time.

### **3.4. Demographic situation**

The scattered settlements, not only in rural areas, make transport provision high-priced and difficult to manage, above all for those municipalities with extensive residential areas (such as Dénia, Pego, Xàbia, Calp, Benitatxell, etc.) The demographic situation is a challenge in terms of potential services since population is very concentrated in the urban zones. Rural locations are bigger in extension but depopulation is the main issue. An ageing population is another issue in the inner-areas of Marina Alta, becoming a problem in terms of making education services efficient in those municipalities, considering the low numbers of young people. In terms of mobility special adapted services to support the needs of elderly people emerges as another challenge.

Cultural aspects and inherited habits is also an issue. Marina Alta inhabitants make extensive use of private cars for individual needs. When new mobility initiatives are intended to be implemented in some municipalities such as more paths for pedestrians and fewer cars,

citizens seem to be reluctant to change their mobility routines. This is the case of Calp, where they implemented an EDUSI (Sustainable and integrated urban development strategy). Despite the circulation restriction in some streets of the city centre, people continue to drive through them (even though it was not allowed) and didn't really accept the change. In Pego, the local government offered free parking at the main square of the town in order to reduce the amount of cars in pedestrian areas and congested streets, but people refused to change their habits. Also, some free bus lines were implemented in urban areas connecting city centres and beaches. Other free public bus lines connecting some residential areas to their respective city centres were implemented. All these initiatives failed when local governments proposed to charge for each passage. Nevertheless, we must take into account that the poor transport provision and the long-lasting deficient connections that concern public transport in Marina Alta may have provoked this general distrust over many years.

### **3.5. Institutional and administrative barriers associated with cross-agency services**

1. Coordination between different administrative level agencies (Railway and public bus service: regional and municipal; roads: municipal, national (N-332 and AP-7, E-15), regional (CV..) for the transport network planning
2. Lack of county or grouping of municipalities' government that could coordinate a local transport network system (for example for on demand connection service to nearer bus/train/car sharing stations).
3. New project of bus connections among almost all municipalities of Marina Alta. There duplication with the tram line between Dénia-Calp-Alicante
4. Lack of common definitions and easily accessible data for policy makers
5. There are often strong lobby groups who influence decision-making related to fossil fuels and new technical solutions
6. Heavy vehicle fees promoting rail and waterborne logistics and transport could be blocked by national lobbies
7. Lack of trust between the different transport operators and providers.
8. Other aspects and barriers
  - a. European level:
    - i. Lack of an integrated approach: diversity of transport infrastructure, equipment and regulation across Member States which prevent full interoperability of the rail network.
    - ii. most of the existing transport infrastructure has been designed to serve the national rather than the European economy

- iii. The lack of a common EU standard supports the integration of different information and management systems
  - iv. Data privacy and security between states; the availability of open data is still very limited
- b. National level:
- i. funding/finance to support the necessary infrastructure
  - ii. At the national level, different ministries (transport, environmental, planning, industry, finance etc.) might have different goals and perspectives of what priorities to make
- c. Local level:
- i. funding/finance to support the necessary infrastructures
  - ii. about the goal of sustainable mobility: reluctance to replace the car-based paradigm with a more sustainable one.

### **3.6. Stakeholder concerns**

On the basis of previous collaborations with the IIDL-UVEG, the Consortium for Economic Recovery and Activity of Marina Alta (CREAMA) considers this project a strategic tool for its goals. The analysis of mobility issues and urban-rural connectivity in Marina Alta is strategic in order to understand and visualize most of the socio-economic problems and challenges that arise in this county; consequently the aims of this project are crucial for CREAMA. It is necessary to look for efficient, effective solutions that meet the needs of citizens and businesses in the county, always taking into consideration the environmental and economic-financial sustainability aspects of the provision of public services. In this case urban-rural transport. CREAMA considers the collaboration with the IIDL in an EU project fundamental to provide academic, scientific and professional support to the design of programs impacting on the territory, in which the improvement of the accessibility to services and urban-rural efficient connections is definitely important.

The improvement of the public transport system and connections between several towns and villages in the county would impact positively on the territory, acting as a basis for the enhancement of the services that CREAMA offers to local users. Through collaboration in this project, together with the EU and the IIDL, CREAMA hopes to increase awareness of the issues of transport and connections between the different areas of Marina Alta, as well as learning best practices in regions with similar characteristics across Europe. This partnership will produce recommendations and guidelines, thanks also to the inclusion of the main local stakeholders (politicians, public administration, civil society and entrepreneurs) that will reinforce the political and social cohesion of the region and help solve persistent problems with focussed solutions.

As a representative of CREAMA stated on a meeting: “The project may be useful as a draft for a set of recommendations. It will be useful to unify Marina Alta: to common problems, common solutions.” This institution will use this document not only as a political negotiation tool to support from supranational perspective their transport demands, but also as a strategic document to claim for funding to overcome problems described.

CREAMA is a driving actor in the Marina Alta to connect all local demands with politicians at regional level who are responsible to make them possible. It connects mayors and local entrepreneur representatives demands with regional government representatives who have the chance to make them real. The Case Study document then is understood as a diagnosis of existing problems and barriers in terms of connectivity and transport of Marina Alta, already identified but now endorsed by a group of experts and states the ground for a second stage project where to develop the Action Plan to implement solutions and recommendations foreseen. It will serve as:

- A. Awareness raising instrument to draw the attention towards a joint territorial problem
- B. Political negotiation instrument with which claim for funding
- C. Strategic document upon which develop new projects to improve and overcome identified problems.

Within funding schemes to apply for projects, regional and national calls for proposals have become the funding sources of this institutions in the last 6 years. Despite their expertise in European projects participation, changes in the scope and the core of project proposals now funded by the EU have prevented CREAMA from participating in more projects of this nature in the last few years. Under this institutional perspective, the main drawbacks of current European projects structure are:

- Few calls are open to address local/regional problems which might be shared by different territories. Current big project partnerships are an impediment to the participation of smaller institutions.
- Few or any calls envisage the implementation of solutions to the problems identified. Most are rather theoretical than being related to problem-solving and real regional needs.
- The diagnosis stage is sufficiently covered by existing calls but not the implementation stage.
- Partner search platforms is a missing resource formerly existing in the different programs but not available anymore. This also makes more difficult to small organisations with few resources to find partners effectively.

Although there are drawbacks as flagged, the opportunity to work with foreign partners sharing common problems and work out shared solutions to similar problems based on existing good practices are unique benefits only possible to through the participation in European calls and so, make them worth valuable regardless of any barriers one may find.

## 4. Potential solutions and Recommendations

In this section, potential solutions are provided based on further research and desk-work, as well as projects handled by our stakeholder. The final section provides a set of transport solutions to be applied in the short-run summarized in the form of an ID- Card.

One of the basic concepts upon which our solutions are generated is presented here. It constitutes the background to our research activity as a source of inspiration. According to Obregon (2017) one of the best solutions to improve rural-urban connectivity is to implement **EcoMobility**, a broad concept that configures rural-urban connectivity through integrated, socially inclusive, and environmentally friendly transport options. These integrated options could include both “slow” and “flexible” mobility like walking, cycling (also between different municipalities), public transport and other climate and people friendly innovative modes of transport. In this framework, intermodal transport alternatives represent an effective solution to rural-urban mobility, combining road, rail, waterborne or cycling mobility options. Also freight management and the use of cleaner vehicles and fuels for the transport of goods are considered. With such a mobility system rural areas could become more ecomobile implementing a series of strategies such as car share stations and electric charging points in strategic central points. Moreover this concept includes other flexible transport solutions such as ride sharing, community buses and cycle and walking school paths (Obregon, 2017).

Furthermore, a conference of the UN (Sin Yi, Obregon and Kodukula, 2017) advocated for EcoMobility too, but in a more extensive analysis in order to deduce which are the best transport solutions for each area. They classify areas depending on distances between the points of origin and destination. It's necessary to make clear that these suggestions are generic theorizations that should include further analysis at the moment of the implementation in each territory. In our case, the zone that best suits our case (Marina Alta) is the “Tertiary (5km - 30km, specific region)”. For this tertiary zone, the best types of EcoMobility transport that the UN advise are: Electric bicycle, Feeder buses, taxis or informal transport, Ride sharing services and Park and ride system (Sin Yi, Obregon and Kodukula, 2017: 7). This recommendation represents a helpful starting point that could support our analysis. More precisely, these first solutions should consider not just the distance between two different points but also the orography of the territory that, in our case study is strongly relevant and could impede the implementation of the solutions now presented.

Moreover, in *Transferability of Best Practice in Transport Policy Delivery* (Bauchanan et. al., 2003) four interrelated territorial and organisational factors that good practice seems to have in common are pointed out. These are:

- Regional organisation. The existence of some kind of regional structure is the element that many authors have argued as essential.
- Funding. A willingness to commit funds to both operations and infrastructure by relevant stakeholders is a prerequisite and by itself would appear to be able to generate public transport patronage, but not modal shift from car.

- Supporting policy. Complementary policies that reinforce the underlying transport policies in their achievement of modal shift.
- Land use and transport co-ordination. Successful co-ordination between land-use policies and transport policies, in recognition of their conjoint spatial attributes.

Following the accessibility challenges and needs assessment for Marina Alta, transport policies should take into account **multi-modal transport systems** to build a more socially, economically and environmentally efficient transport network. In order to obtain such an efficient and effective multimodal transport system that could foster connectivity among rural and urban areas in non-metropolitan regions, it's extremely important build a strong administrative and cross-agency co-operation among rural and urban areas. **The delineation of a multimodal public transport network**, in which the various types of public transport would be integrated, would allow the Marina Alta to have a widespread, efficient and economically sustainable public transport network. In a multimodal transport network the conventional services are increasingly preferable at high demand densities and low values of the access time elasticity parameter. Flexible services are preferable at low demand densities and high access time elasticity. Furthermore, it is necessary to point out that In order to develop a multi-modal public transport system collaboration between municipalities, the most relevant public services and the private sector is needed (PPPP).

#### 4.1. Best Practice Recommendations

When considering the short-term solutions related to transport services that local administrations already offer, the **opening to all types of passengers** of bus lines dedicated exclusively to students would provide an effective transport service to a greater number of citizens. According to research conducted in 2016 by the technological integrated systems company GMV – Innovating solutions and the Regional Department of Public Works and Environment of Castilla y León (Spain), the **demand-response transport management system** is the ideal solution for rural and low-population areas. The scattered settlements and the low demand for public transport make the traditional public transport service, with fixed timetables and set routes, inadequate for rural areas. In a context like this, flexible, demand-response system comes into GMV's solutions with the configuration of a Transport Management Centre where all transport requests are received by phone or website, in planned mode or real time, and the service then automatically is planned. Transport operators are informed of the requests, after which the transport arrangement is then monitored online. The system also includes a real-time technological platform, including on-board equipment with GPS receivers and GPRS modems on the vehicles so that a permanent track can be kept on their whereabouts.

Another worthy transport solution that could be considered for Marina Alta is the **Bummelbus**, an initiative from Luxembourg (Interreg Europe, 2001). This project is more than a rural areas mobility solution; it is a social project that occupies the long-term

unemployed . Initially the aim was to offer a mobility service, especially for elderly people and for those disadvantaged people excluded from the public transport, but today the offer is available for everybody. Ticket fare varies with the distance but in line with market prices and reach up to 35 km of distance. Today the service has expanded to the whole north of the Gran Duchy and services 82,000 inhabitants in 255 villages, while at the beginning it serviced few municipalities. In this system people have to book their trip the day before. 70% of funding is from the state as it provides training and occupation, as drivers, for unemployed people. The rest of the funding is provided by municipalities and ticket sales. Children are an important user group, in fact the minimum age for passengers are 4 years; the vehicle park of the project at present consists of 47 mini-buses and vans. In 2016 the system had 370 reintegrated employees and 140,000 clients. The benefit of Bummelbus is that it represents an interesting transport solution that integrates other local objectives like social inclusion through the employment of unemployed people at risk of exclusion.

In terms of freight transport solutions between rural and urban areas, we outline the **GoRural project** (Interreg Europe, 2015) aimed at developing ICT solutions to support the transport, collection and distribution services in rural areas, through trips optimisation and also generating new business models between rural SMEs, as farmers, craftsmen, etc. The project develops technology platforms to provide support to logistical services in rural areas, with origin and destination in urban areas or other rural areas. Beneficiaries are rural SMEs as final users, and also, logistic services providers. The project helped to reduce truck shipments to rural areas through the optimisation of resources, vehicles, trucks and carriers' investments in real time, to minimise time problems, shipments, etc. It also developed new business models thanks to the involvement of different stakeholders like technological companies, for the development of ICT supporting the transport system, and local transport companies offering the service. Indeed, the most interesting and innovative point of the project is the effective coordination of already existing resources and activities through ICT solutions.

The **Tele-Bus**: it is Demand-Responsive Transport solution, an on-demand “many to many” public transport (PT) service with fixed stop points but flexible routes and timetables which operates every day. Customers book the service through a transport management centre: **TDC** (transport dispatch centre), using a special free phone number of a Public Transport Operator in Krakow. The online booking must be made at least 30 minutes before the planned start of the trip. The service is visible to users because all vehicles show their own brand and colour, to be distinguished from the traditional public service. The main objectives of this service were: to better adapt PT to the needs of the citizens; to provide the link to those bus lines running to the city centre (functioning as a multimodal system connecting rural settlements, rural and intermediate transport hubs and urban centres); to manage the PT fleet in a more effective manner; to extend the existing PT system within the framework of current pricing and service regulations; to increase the number of PT users. This project also envisages recommendations: 1) learning from experiences of other PT systems is crucial but each DRT service should be customized to local needs; 2) it is important to define the

objectives (why a flexible service will be implemented, what kind of customers will be served); 3) a good and reliable DRT technology. As the project draft affirms, the service can be used in districts with low-density residential and industrial areas where a conventional PT service is inappropriate. This successful project was implemented by other Polish cities, and in some of them the Tele-Bus flexible lines represented a real alternative to the conventional service in rural areas not serviced by PT (Interreg Europe, 2008).

Therefore we consider **DRT** as an appropriate transport service to strengthen rural-urban connections. As stated in the **FAMS** project, DRT represents a flexible approach to issues emerging in the provision of public transport services. They provide various forms of intermediate service which lie on a continuum between taxis and the conventional bus services. They usually operate small size buses on flexible routes and timetables, basing their route choice on the users' requests.

**LiMIT4WeDA** (Light Mobility and Information Technology for Weak Demand Areas) promotes multiform transport and innovative tariff systems with no fixed timetable or route . Users book the service through a call centre by freely choosing the place and time of departure/arrival, thanks to software managed by the operator of the call centre sending messages to a terminal on-board the bus. Two kinds of booking are possible: 1) an “early” booking to book the bus in advance and a 2) “real time” booking to secure the next bus. Beneficiaries are disadvantaged people living in rural and urban areas with low population density, economically needy people and those with disabilities, public administrations at local/regional level, and politicians/ decision makers at the national/EU level (Interreg Europe, 2010).

Among local solutions that propose to cope effectively rural poor connectedness there's the **Adapted Transport Service (ATS)** proposed by the municipality of Pedreguer, in collaboration with ADIMA (ADIMA-Associació de Persones amb Discapacitat) de la Marina Alta (Association of People with Disabilities in the Marina Alta). The municipality proposed a free transport service **ATS** so that the residents of Pedreguer could obtain, free of charge, a vehicle adapted for people with reduced mobility on their trips within Pedreguer. People can request the service personally at the town hall or by email, specifying the reason for the request, the time they want to use it and the details of the applicant. In case the demand is approved, a member of the ADIMA association travels to the place and time agreed with the van, without any cost for users. This could be a fair, practical and useful solution to solve accessibility problems for people with reduced mobility (Ajuntament de Pedreguer, 2018).

There is also a potential solution for cities and villages that are not far away from each other. The **European Regional Development Fund (ERDF)** provides support in the Valencian Community (NUTS 2) for seventeen cycle path projects (for the moment none of them at Marina Alta) (Generalitat Valenciana, 2015). As long as some villages and urban centres are very close to each other in the territory, creating cycle paths between areas with a low grade of declivity could represent a suitable complementary solution for the area.

Another solution is to **implement or upgrade the public bus system** as Cerdanya (LAU 1), a territory similar to Marina Alta (LAU 1) but in Catalonia (NUTS 2), did. The project “Millora transport Cerdanya (Better transport in Cerdanya” of the Generalitat de Catalunya , Catalan Government (2011) is in this way described:

“A plan which bets on strengthening ordinary bus-routes and coordinating them with tailor-made services and scholarly transport, guarantee the connection with present-and-future medical health-centre and also with commerce activity, improve the coordination between bus and train; increases bus frequencies of some routes and takes advantage of the free-seats on school buses in order to strengthen the demand-response transport. Some actions that have been made are:

- New bus service with new routes
- Integration of the school bus with the ordinary transport solutions
- Timetable coordination
- Frequency improvement

The **MaaS project** in Finland aimed at creating a national vision for MaaS in rural and sparsely populated areas. MaaS is the integration of various forms of transport services into a single mobility service accessible on demand. The project focused mainly on recognizing emerging and potential business models for both commercial and publicly supported transport services. A multimodal public transport network is strictly linked to the concept of travel chains and other basic services and measures that construct the network of multimodal mobility. These services could be: Combining publicly subsidised transport (e.g. social and health services/care and municipality transport); Developing flexible travel chains, connections between municipal, regional and national networks; Accessibility of mobility is important for parity (taking special groups and people without a driving license into account); Developing the attractiveness of public transport (bus, train etc.); on-demand (and autonomous) transport; Interoperability and integration of stakeholders and transport modes (one-stop-shop principle enabling the purchase of multiple services via one user interface). The general aim is to increase the use of ride-sharing, public transport (also as an on-demand service), travel chains, and autonomous driving in the future. Also these initiatives are useful to improve the accessibility of all user groups. More extensive rural mobility pilots are needed to find good solutions and to share best practices (Eckhardt, J., Nykänen, L., Aapaoja, A., Niemi, 2018). This approach would deal with the problems in Marina Alta related with the connections between rural and inner and coastal-urban areas, but also the connection with the northern and southern regions outside Marina Alta (towards Valencia and Alicante), that constitutes another relevant challenge for the county.

Another potential solution to limit the problem is the **digitalisation of the public services**. According to Dilmegani, Korkmaz & Lundqvist (2014) the public sector should be digitised by government because it obtains very good outcomes (not only would it limit the problem of

transport, but it will save up to \$1 trillion annually in economic value worldwide) caused by the system-wide new efficiencies. Almost every country has digitised online services (the most notable example is Estonia, which has identification cards of its citizens to vote, pay taxes and access to almost all services online), but that is not enough now. Generally, digital solutions for sharing economy are one way of increasing occupancy and utilisation rates of vehicles, and creating an interesting option to public transport where accessibility is poor (Eckhardt, 2018). Digitalisation of services implies that they could be brought to users, either physically with e.g. library buses or virtually through technology.

Parallel to digitising the public sector, the private sector should be prompted to do likewise. **Telecommuting** (or telework) has been a trend concept in recent decades. This concept consists of the development of work tasks without commuting or travel to the workplace, reducing the need for the displacement of local labour. It is based on the idea that work is something you do, not a place (“what you do, not where you go”). It will be a potential solution to reduce commuting in some jobs that can be done some days (or even everyday) from home or at another place in the home-municipality of the worker.

One step further is “**smart-working**” that includes the telecommuting, but also the possibility of having work done during commuting (e.g. checking email, using a laptop on the train, bus, or plane, etc.) or make the timetables more flexible (working double one day and a day off next day). Obviously, both telecommuting and smart-working have problems and a lot of limitations (it can be applied only to a few types of jobs), but as long as they minimise mobility, they solve and deal with some identified accessibility challenges.

In terms of **freight transport, ships and trains** constitute a good alternative for transporting goods and should be improved. Marina Alta hosts a big commercial and tourist harbour (in Dénia, LAU 2) connected to some main Mediterranean harbours. Also, the proximity of the railway to the nearest and adjacent coastal territories (La Safor and Marina Baixa, LAU 1) will be a potential solution for the freight transportation. Moreover, as it can be appreciated in the next chart, freight steamer (ship) and freight train (railway) are the most efficient way of transportation (in terms of J/m - Kg), therefore these solutions represent valid transport options for Marina Alta tourist and freight transport. In this context the construction of railway infrastructure that connects, from north to south the county, would boost the multimodal transport network of Marina Alta that we are proposing here.

The construction of the railway running from north to south of the county would create a railway connection for Marina Alta to the neighbouring regions (Valencia and Alicante). This connection is of fundamental importance for all local stakeholders. This new connection would create greater flows of capital, tourists, greater accessibility and mobility not only between the rural and urban areas of the county, but also with external areas and neighbouring urban areas.

One more potential solution might be the regional government project for implementing 10 bus routes in Marina Alta Region (LAU 1). The project is called “**CV/201 Transport Marina**

**Alta**” and would connect 31 to 33 municipalities in the county. The interviews and the workshop conducted with local stakeholders pointed out that the plan has difficulties in terms of costs for the bus companies (costs are higher than benefits, plus the grant of the regional government wouldn't cover all costs). Furthermore, they argued that the study did not consider the needs of citizens and entrepreneurs. No collaboration of citizens was solicited because this kind of survey and process generates further costs in terms of planning.

A potential innovative solution at the **administrative** and **institutional** level is the establishment of a **consortium** in which all the **municipalities** involved in public **transport planning** participate. The collaboration and the participation of all local communities of the targeted territory would facilitate the multimodal transport planning at the county level and the coordination of transport solutions implemented in each area. These organisational solutions would come across the needs of each of the participating municipalities and guarantee economic and financial sustainability to the plan. Therefore collaboration between territorial agencies (between municipalities, county transport consortium and regional government) is necessary and strategic, above all in territories characterised by dispersed settlements and insufficient urban-rural connections, in order to achieve an effective planning of a transport system and better urban-rural connection in NMRs. Collaboration between different stakeholders (businesses, the public sector and civil society) is also needed and essential. Local stakeholders agree, in fact they propose that regional government should allow local governments to manage their public transport network ceding the competence in interurban transport planning to local stakeholders. They affirm that public administration, in order to solve the main mobility problems, needs to address three different issues: the liberalisation of interurban public transport lines, the promotion of economic incentives for public transport companies and the promotion of the service encouraging the demand by subsidising the user.

Taking in consideration local stakeholders' ideas, we consider strategic the creation of a local consortium that plans local transport network but in collaboration with regional government, in order to harmonize county transport with the regional transport network and benefit from knowledge and financial resources exchange between the two institutions. Probably, a regional led transport strategy that includes and joins local county plans created by local consortium would represent an administrative effective solution for transport planning.

A fundamental idea is represented by the collection of exact **data and statistics** related to the frequency of commuters' and other passengers' trips between the municipalities of the Marina Alta. For better transport planning at local level, the institutions need to create a solid system of data collection taking advantage of the collaboration between all local institutions that work in the territory. This system will be crucial for the planning of an efficient and effective transport network.

Local stakeholders also propose to foster local **ride-sharing platforms** through the creation of official websites and apps in order to channel all the needs of displacement of the local

population in single database and to facilitate and effective match between demand and supply of travels in rural and urban areas of the county.

The **concertation** between the different **local authorities** through the creation of mayors and transport and mobility council members networks, including the collaboration of the provincial and regional government, represents an important challenge but at the same time an indispensable condition for the effective planning of a system of really effective local transport and able to respond to the needs of local populations.

Dealing with the current **transport habits** and the “private car culture” in Marina Alta, local stakeholders argue that it is necessary to raise awareness about the importance of public transport through the planning of campaigns that advertise and promote public transport. Disincentives for the use of private means of transport, such as dissuasive car parks, would also be necessary, so that people move to prefer and use public transport (when public transport alternative are evidently effective and deal with the broad local transport demand). It is necessary to change the point of view and consider the public transport as a benefit for all citizens.

We can affirm that **cultural aspects** appear to be extremely strategic in local transport planning. New transport solutions must offer a solid alternative that could grant the main concerns of the population in order to win back users' trust: punctuality, accessibility and wide supply of the transport service.

#### **4.2. Suitable Alternatives to Private Car: Operational Level**

This set of recommendations identifies a number of alternatives to private vehicles and traditional modes of public transport. A full definition of each mode is presented in Annex VIII.

Village minibus (mixed use): it represents an efficient solution to connect rural centres to intermediate transport hubs (functioning like a feeder bus) and then to urban areas. Nevertheless, this service should be subsidised, and the Transport Management Centre (TMC) should use cars as a ‘substitute’ for the minibus in underpopulated areas with a small number of users, i.e. less than 10. The village minibus meets and satisfies the needs of different users. This service is more efficient compared to a traditional bus service with fixed times and routes, since it employs smaller and less expensive minivans, it is booked in advance, and times and route flexibility permits a reduction of journey time and cost.

Social transport: It represents a solution for mobility impaired and disabled people in the county. It should be at least partly subsidised, and the use of car-sized vehicles in rural areas would make this mode more efficient. Its implementation would generate a notable social impact, especially for those with disabilities. It could be implemented through the existing governing body at county level (MASMA).

Bus on-demand (BOD): it represents the Marina Alta's intermediate and coastal urban areas variation of village minibus (mixed use), since this service would cover the transport of an average of 15 users. BOD is a localised method of transport, connecting urban centres to intermediate transport hubs and also extra-county urban areas (Oliva, Gandia, Altea and Benidorm). Time and route flexibility satisfies Marina Alta's urban users' mobility needs with a lower time and cost, it includes fixed stops but flexible routes and timetables which operate every day. Customers book the service through a transport dispatch centre (TDC). The financial sustainability of this solution (even if partly subsidised) would permit standard prices of the fares and a reduced cost for public administration.

Ride-sharing: constitutes a complementary solution to the ones proposed above, since it depends on a private driver's travel behaviour and cannot be guaranteed anytime. Some informal networks of ride-sharing already exist in the area; hence the aim would be to create a formal ride-sharing platform (website and app) at regional level (NUTS 3) in which passengers could find and book suitable travel solutions, both inside and outside the county. It will be essential to reduce pollution (as less cars will travel due to a higher occupation of the existing ones) and the general cost of driving for motorists (as the price is shared among them).

Service delivery: This system reduces citizens' mobility needs and it could be combined with freight transport, in which private companies pick up and deliver businesses' services, goods and cargos. The service delivery management would be developed at the district level, in which a centre ("headquarters") arranges shipping inside the district and between the district centre and the hub of reference, which in turn is connected to urban areas. This system would be based on technology platforms to provide support to logistic services in rural areas.

Railway: The construction of the railway running from north to south of the county would connect main urban centres of Marina Alta among them and with nearest city capitals (Valencia and Alicante). This connection would create greater flows of capital, tourists, greater accessibility and mobility among rural and urban areas of the county. The railway would permit a more direct and faster connection inside and outside the county reducing travel time and offering more accessibility to SGI, thanks to its strategic role in the local intermodal system.

### **Non-Material and Digital Solutions**

Digital platforms and smart ticketing: These actions must be integrated in all the solutions proposed above. It is crucial to promote and spread information about these actions through campaigns and digital alphabetisation for the use of apps and digital platforms for route planning. Smart ticketing would support the implementation and the functioning of local and regional multimodal transport systems. Digital platforms supporting local transport solutions

should be managed by each local district, whilst regional transport solutions and smart ticketing digital tools are controlled at the regional level.

Territorial mobility management: Supporting the multimodal management system both at local and regional level, two levels of territorial mobility management centres would be applicable. Firstly, there will be a centre at the regional level, arranging and managing cross-county travel connections between urban transport hubs. Secondly, another centre at the district level would need to be established.

Dematerialisation of services: The public sector should continue the process of digitisation and make procedures already digitised more efficient and user friendly. The digitalisation of public administration and all SGI will reduce the need of displacement in the county and a wider access among local citizens, eliminating territorial-tied discrimination. Other important challenges are to boost telecommuting and smart working, which would further reduce the need to travel, improve the quality of life of workers, and to make rural areas more liveable.

### **Structural Interventions and Intermodality**

The transport innovations previously proposed can represent a measure of social inclusion, deriving from the positive impacts of greater mobility but also from the employment of people in risk of social exclusion in local public transport initiatives, providing them training and occupation. Also local assets and companies could be engaged in the implementation of the public service, recognising emerging and potential business models for both commercial and publicly supported transport services.

The change of PT perception among local population is necessary, since the use of private means is widespread and rooted. First of all, it's important to improve the effectiveness of the public transport service and then to generate a public transport friendly culture among Marina Alta's citizens with advertising and awareness raising campaigns.

Facilities for electric vehicles such as charge stations should be encouraged.

The implementation of a multimodal public transport network is strategic objective for Marina Alta. It consists in the integration, combination and harmonisation of solutions at all territorial levels: municipal (bus transport, cycle and walking paths) county (taxicabs, village minibus, social transport, bus on-demand, ride-sharing, etc.) and regional (railway, roads and bus connections). The intermodal system is characterised by the coordination between all levels of territorial mobility management depending on travel patterns and users demand.

### **4.3. Solutions for the Specific Context**

Digitalisation and awareness raising are two key elements for a successful implementation of transport solutions. Digitisation of many public services, such as the Tax Agency, would reduce the need to move from rural areas to the urban centres of Marina Alta. This would

produce, in addition to lower transport requirements, a benefit in terms of time and a reduction in the stress margin due to the transfer. Digitalisation of bureaucratic procedures and access to public services would generate a positive return to local companies in Marina Alta, both in terms of time optimisation and net financial savings. At the same time, an improvement in the technological infrastructure and greater use of ICT would broaden the scope and commercial outlets to other markets for Marina Alta companies.

Considering that private cars are the main transport mode used by county inhabitants for any commuting purpose, awareness raising towards the benefits of the use of public transport and sharing transports alternatives proposed may have, not only in cost-saving but also in environmental and sustainability terms, given that the local population has a strong dependence on the private vehicle and shows a low propensity to use public transport.

Thanks to the application of EcoMobility solutions, such as the car sharing system, access to public services would be improved, due to the greater accessibility and the possibility of using a vehicle that meets the need for travel from home to the point where a public service is provided. A flexible car sharing system makes it possible to optimise each journey and, in the case of EcoMobility, thanks to the use of electric cars there is also an additional positive benefit for the environment, quality of life and health of citizens. In general, car sharing represents a transfer possibility and therefore of use of a service when a user does not have access to their own vehicle. However, such a service could be difficult to implement in more rural and geographically dispersed or isolated areas. Moreover, it represents an ecological and economical way to use a public service.

Multimodal transport and the construction of a road transport network around the main railway, highway, airports and harbour hubs that allows greater use of the railway for the transport of freight is a fundamental and strategic point for accessibility to intermediate services and wider markets of Marina Alta companies and, as a last resort, it would give a decisive impetus to the commercial development of the local industrial sector.

The reduction or elimination of commuting time from home to the workplace and the extension of the smart-working model would have positive effects on the reduction of the general cost of production of goods and the provision of services, as well as an increase in average productivity due to the improvement of working conditions and quality of life.

An integrated organic intermodal public transport system of Marina Alta would encourage the influx of tourists from urban areas to rural areas, allowing the structuring of diversified tourist pursuits that would complement the artistic, gastronomic and cultural offer of the inland areas of the county.

Considering the comments above, at operational level Marina Alta's challenge is to win the trust of the commuters. In order to achieve this, public transport must prove to be suitable for users' working hours, on-time, regular and easily accessible. Some actions (public

campaigns, courses or workshops) in parallel with effective operational initiatives should be undertaken in order to strengthen a public transport friendly culture.

In order to reach a more incisive planning, vertical and horizontal cooperation between regional and municipal governments, local stakeholders and civil society needs to be strategic.

#### 4.4. Solutions for the General Context

For the general context, recommendations are to reduce urban-rural flows and commuting. This could be achieved through a different urban development model, which is more concentrated than the current Marina Alta approach, contributing to compact urban fabrics. The enhancement of urban spaces with models of compact urban areas is strategic, since these would improve urban quality, economic efficiency and service provision.

Legislation in transport provision should become more flexible in order to permit local private and mixed initiatives to emerge without interfering with regional territorial and transport planning legislations and strategies, as well as encouraging horizontal and vertical cooperation.

More funding dedicated to the transport sector is an essential condition for the development of innovative and effective models that address the problems of connectivity between rural and urban areas.

A better access to public transport should include not only a transport provision by itself, but a better inclusion of all kind of potential users; tailored solutions for specific needs are fundamental.

#### 4.5 Delivery Plan

Table 9 captures a plan of action to show the priorities, complexities, time frame, provider and possible actions and outcomes of the proposed recommendations in case of putting in practice these measures. These have been worked out in consultation with the stakeholders in an attempt to facilitate the reading and understanding of the suggested measures. Each of the individual recommendations is scored in terms of its priority to the area and the complexity of its implementation. The table then identifies a period for implementation, providers (in terms of private, public or third sector), actions needed to be undertaken by relevant bodies, and potential outcomes (who is impacted). Each of the recommendations is colour coded by its priority, complexity and period to reflect its deliverability. The coding scheme is shown below:

<b>Deliverability</b>	High	Medium-high	Medium-low	Low
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Table 9: Delivery Plan for Marina Alta

<b>Recommendations</b>	<b>Priority</b> (1-4. 1=Highest Priority, 4 = Lowest Priority)	<b>Complexity</b> (1-4, 1=Least Complexity, 4 = Most Complexity)	<b>Time Frame</b> (Short, Medium, Long-term)	<b>Provider</b> (Public, Private or Third Sector)	<b>Actions</b> (Steps which need to be followed to put solution into place)	<b>Outcomes</b> (Who Benefits and impacts)
<b>OPERATIONAL RECOMMENDATIONS</b>						
Village Minibus (mixed use)	1 It will improve the quality of life of the all citizens, more drastically of those who cannot drive or don't own private car.	4 Local transport competence should be ceded to and planned by local governments.	M	Public	An assessment of viability of it and where to implement it (routes, intermediate transport hubs, frequency ) in needed. Quantify the cost and relate a budget. Apply for funds  Implement it as agreed	Transport network that reach all the settlements of the territories. Relative easy access to inner and mountainous areas  Students and elderly but also commuters and tourists will be main users.  Better connectivity and accessibility, and all benefits related to them.
Social Transport	2 Social transport is necessary	2 It could be implemented through	M	Third/Public	Agreement between the different levels of	Physically and mobility-challenged

	because supply mobility to a disadvantaged mobility-challenged group, avoiding social exclusion.	the existing governing body at county level with competences on social services (such as MASMA).			administration Financial and viability analysis Implementation with the competences derived from a higher level administration	people and the elderly. Positive impact in terms of social inclusion.
Bus on-demand (BOD)	1 It would offer an effective and efficient public service, since routes are fix but trips and stops are daily planned and based on users' needs.	4 It will need an active role of the citizens to demand it and get used to it.	M	Public/Private	Study travel patterns Plan transport routes Quantify the cost and relate a budget. Apply for funds and implement it gradually	Students, the elderly and all persons without car are the most benefited groups. Remote areas and small villages
Ride-sharing	2 The aim would be to create a formal ride-sharing platform (website and app) at regional level in which passengers could find and book suitable travel solutions.	2 Awareness rising campaign to promote the platform created for this purpose, as well as special campaign on "how to use it" for elder citizens should be fostered.	S	Public/Private	See the existing ones and check the effectiveness of them Public sector should promote existing initiatives Evaluation and follow-up from public sector	Students, but also fixed-schedule-every-day-commuters. Less cost for riders and less pollution More travel options.
Service delivery	4 The characteristics of Marina Alta make the service delivery not a priority.	2 The cost of this service would result in a rise of the product cost for the final users since the demand for this service won't be	S	Public/Private sector	Public sector should encourage the private provision of the service with initiatives such as tax exemptions.	Population of rural and inner areas with difficult access. The delivery of services would

		such to provide it at competitive prices.			Private sector should provide the service	increase the quality of life of the people in those zones.
Railway	1 Historic demand. It will connect the region of Marina Alta with the other coastal regions and with both the capital of the province (Alicante) and the capital of the Autonomous Community (Valencia).	4 The infrastructure has to be built and implies high related costs (construction and service, as well as maintenance) makes it very difficult and complex.	L	Public	Agreement between national and regional bodies about the planning of railway Allocate a budget Planning of the best route for the railway.	The entire county. Rural (indirectly) and urban zones, coastal and inner ones. It will connect the region with the main big cities in the region and the province.
Digital platforms and smart ticketing	1 Digital platforms are essential, above all for rural areas, because they void distance and time barriers for trip planning and booking, gather all the transport information, above all in a fragmented and scarcely-supplied territory like Marina Alta. Simplify the dispersed planning and booking process in a unique solution.	2 Digital platforms are not expensive and difficult to develop. Nevertheless, mainly in rural areas, where the population is ageing, digital alphabetisation represent an important concern. Also coordination between public and private transport and trips providers could slightly hinder the process.	M	Public/Private	Analysis of existent formal and informal digital platforms. If already existing, adoption of a digital platform and diffusion of it among public and private transport providers and dwellers, using informational campaigns If not existing, creation, at regional level, of a digital platform for multimodal trip planning and ticketing.	All local and regional stakeholders, mainly territorially assigned people, occasional travellers, rural dwellers (which need to shift from one means to another). Citizens would find much easier to plan and book in a unique platform and ticket payment, above all aged people,

					Advertising and digital alphabetisation campaign to foster the use of platforms.	occasional users or tourists.
Territorial Mobility Management	1 It is extremely necessary to coordinate and make transport service more efficient but also effective, both at local and regional level. TMM is essential in a territory where transport solutions are scarce, fragmented in the territory and disconnected.	3 Arranging transport management centres is a quite complex process since, despite political willingness, concertation, coordination and funding transfer and management between administrations of different scales are necessary.	L	Public	Creation of the multimodal transport network at local and (integrated in) regional level. Concertation between regional and local administrations about timetables and routes (based on users' needs). Creation of mobility management centres (one at regional level, which coordinates and includes county-local centres mobility information).	All the citizens would be better off. TMM increases multimodal mobility options for all citizens (which would even summon private car owners), optimises public spending and streamlines transport planning and management, both at local and regional level.
Dematerialisation of services	1 Dematerialisation of public and private services is necessary to reduce displacements, to better the access to SGI to the whole population, to facilitate business development and	2 The implementation of digitisation could be easily carried out. The cost of digitisation of procedures is relatively low and the only barrier is the adaptation of legislation to digital procedures.	M	Public/Private	Creation of applications and webpages for the digital supply and use of a public service. Simplification of the regulation about legal requirements for bureaucratic procedures (in	Displacement needs and time would reduce, giving to rural and remote areas further access to SGI, a faster and more practical access to SGI for all citizens

	to give to rural and remote areas immediate access to services.				order to ease digitisation of procedures). Dissemination campaigns about the new digital service.	and business.
<b>Specific</b>						
Careful analysis of the real users' needs	1 Show what solutions best fit to the wide variety of users and the most efficient implementation procedure.	3 Lack of budget to fund this study is the main issue. the complexity of the users and the territorial context make it more complex.	L	Public	Quantification and data analysis of the fluxes, disaggregated as much as possible. Questionnaires, interviews and focus groups Desk research and analysis.	All the inhabitants and the entire county will be benefited as it will improve the transport planning and policies related (main outcome)
Win the trust of the commuters	1 It is necessary an awareness rising campaign to the habits' change	3 The car-dependence culture plays a crucial role here. Winning the trust of commuters requires a lot of time and budget and the effectiveness of the service.	L	Public/private	Carry out visibility campaigns of new transport solutions. It depends highly on the business that carries out the service	Especially commuters Reduction of traffic congestion
Public transport on-time, regular and easily accessible	3 Regularity and on-time service are crucial variables conditioning the success of the service for more users to switch to this option.	4 There are many factors conditioning the success. The service has to work as planned and careful management and implementation are needed too.	L	Public/Private	Public sector should encourage the planning but private companies should implement it. Plan schedules and routes	All public transport users. It will facilitate to create a good image about the service and gain more users

Strengthen a public transport friendly culture.	1 Key priority, related to the trust of commuters, to improve the offer of the services and make them plausible. The better the service the more likely users prefer public transport.	3 Main complexity is related to the different public administrations involved in its provision.	L	Public	Design marketing campaign Advertisement and propaganda distributed through different channels and media	County inhabitants and tourists will benefit from it.  It will increase the use and reduce the cost of the service
Flexible transport and service delivery solutions	1 It is very important that the solution should focus on flexibility and efficiency but effectiveness to; if not it might have a higher cost and also a lower quality of the service itself.	3 Flexibility supposes an added extra difficulty in terms of planning, implementation and use of the service. On the one hand, users should change their mobility habits and open up to digital transport service.	L	Public/private	Plan a policy that covers those two needs.  Provision solutions might be addressed through a concentration with the private companies	Inner areas and rural zones.  It will improve the connectivity in a broader sense.
Implement Eco-Mobility solutions	1 The Eco-mobility approach is the background for the development of a flexible, multimodal, social and environmental friendly mobility system, since it includes "slow" solutions like walking and cycling paths, clean fuels, electric vehicles,	1 Eco-mobility actions are relatively low-cost and benefit from a widespread consensus and appreciation, so quite easy to implement.	S	Public	To assess walking and cycle paths feasibility and advantages, both inside and between urban areas.  To assess the feasibility of electric charge stations.  If sustainable, funding and implementing projects of Eco-Mobility.  Planning and implementing	The whole county would benefit from more "soft" mobility options and multimodality facilitations. Urban areas dwellers would benefit from less contaminant and healthier means of

	car-sharing or digitisation.				campaigns to promote eco-friendly and healthy mobility.	transport. Tourists, rural and remote neighbours would have more mobility options, respectful with the environment.
<b>General</b>						
Different urban development model	2 More compact urban development model would definitely change and ameliorate the problem of connectivity in the county.	4 Changing development path established in urban areas requires specific actions. All of them requiring time and political willingness and cooperation at different levels.	L	Public	Agreement between all municipalities involved Agree the goals and methods Promote or/and legislate and/or regulate policies that will derive compact urban areas	Overall county Less need for transport policies and cohesion ones. Less need of transport fluxes area.
More incisive and concertized planning	1 Regional and local policy-makers cooperation and involvement in transport planning is essential to reach an effective and efficient mobility network.	4 Centralization at regional level, top-down perspective and the lack of horizontal and vertical cooperation between governing agencies is the main problem.	M	Public	There has to be an elaborated strategic consensual plan agreed between the different public and private agents with local knowledge and transport planning experience,	It will facilitate the implementation and the efficiency of the other measures.
More flexible transport provision legislation	1 Different administrations involved in transport planning suppose a threat	4 It will be complex and difficult, since the legislation should be changed at regional level and/or	M		Make an agreement between all the municipalities of Marina Alta about what should be	It will benefit the implementation and the scope of action. The connectivity

	and a deterrent to implement transport public policies.	at national level.			changed Present the proposal to the general government	could be improved as this is one of the problems that impedes to do so
Governance: encourage horizontal and vertical cooperation	1 In general, as the potential solutions depend on different levels of governance, a vertical cooperation between administrations of different levels is needed.	4 The main problem with vertical cooperation, in general, is the passivity of Generalitat (autonomous community government) regarding transport in the Marina Alta County.	L	Public	Exist the willingness from all levels Agree on basic goals Create a transport management and planning body Demand for that agreement	Political parties in general, politicians, but society as well Cooperation policy and politics
More funding	1 Marina Alta has no own budget and the entities which conformed it (municipalities) have a very restrict and low budget.	3 Sources of founding may come directly from regional or national budget, which should be transferred directly to Marina Alta to fund these projects.	M	Public	Meeting between the municipalities Agree on basic goals Create some institutions or empower the existing ones (like CREAMA) Transfer those proposals to a higher level of administration Ask or/and apply for funding	It will benefit the entire county (all people) As the financing gets better, the connectivity could be improved (as this is one of the problems that impedes to do so).
Better access to public transport	3 To achieve this, a public transport policy that involves all territorial levels is needed. It should include not	4 It is highly difficult to address due to the different levels of administration involved. There is also a lack of cooperation	L	Public	Define the most difficult access locations and the social groups facing more barriers to access services Make transport services	Inhabitants of inner rural zones and elderly, but also students and commuters, even

	only a transport provision by itself, but a better inclusion of all kind of potential users;	between the agents that could be involved in the issue.			accessible to all places and to all people the service Assessment of number and typology of potential users to implement efficient tailored solutions.	tourists.
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## **5. Potential Impacts of Flexible Transport Connections**

The potential solutions proposed for the MA represent a concrete opportunity for further improving connectivity to urban coastal and intermediate areas, and to provide first-time access to rural inner areas. The proposed territorial coverage of public transport would offer mobility solutions to the whole county, especially the village minibuses, which would provide a first-time public transport service in rural areas, to both occasional (tourists, people traveling for duties, etc.) and habitual travellers (commuters, students, etc.). Social transport would supply mobility to physically-challenged people. The BOD would represent an effective alternative to private cars for intermediate and urban areas commuters, students, tourists or occasional passengers. Ride-sharing would reduce costs and environmental footprint of private car users. Service delivery would reduce displacements for freight and service use, while public services would reach all rural areas and villages of the county. The new railway connection would enhance the transport and connectivity network inside the territory, offering a regional and national projection. All of these solutions would generate a greater territorial cohesion through the increase of mobility of people, goods and services in the territory and beyond. All rural inhabitants could enjoy professional opportunities in intermediate and urban areas but live in rural ones, and vice versa. Rural entrepreneurship could be empowered by a more direct access to all support and complementary services. Economic activities, above all in rural areas, would be benefited by more integrated production and commercialisation in county, regional and national markets. All students would have access to training opportunities offered in the county and surrounding towns, without having to rely on private car or resettle. Physically-challenged people would have the same access to job and public life as the rest of the populations. The further digitization of public and private services, together with the broad-band diffusion in rural areas, would reduce displacement needs and would break geographical barriers to economic, entrepreneurial, training and quality life development. Horizontal and vertical governmental cooperation would ease a more suitable-for-users transport planning and implementation. An improved network of transport would make the county more accessible and attractive for tourists and long-term investments, positively impacting in local employment rate and fighting depopulation of inner areas. A more flexible, even if effective, public transport network would substantially reduce maintenance and operational cost through increased efficiency. An effective territorial mobility management, digitisation, telecommuting diffusion, the overall decrease of trips and the advent of multimodal solutions would reduce the impact of local mobility systems on the environment, producing a generally better quality of life. Finally, all solutions represent a considerable improvement in costs, energy, time and resource efficiency for public administration and private local actors (companies, businesses, associations, NGOs, civil society, etc.).

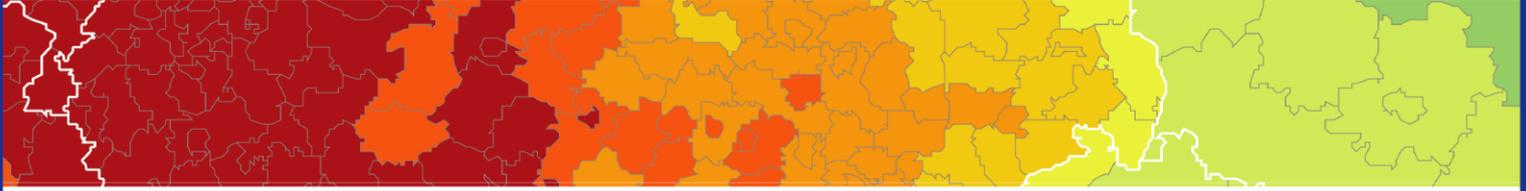
## References

- Ajuntament de Pego, Servicio Municipal de Transporte Adaptado. Available at: <https://pedreguer.es/es/servei-municipal-de-transporte-adaptat> (accessed 5 November 2018).
- Buchanan, C. et. al. (2003) *Transferability of Best Practice in Transport Policy Delivery*. Edinburgh: Scottish Executive, Transport Research Planning Group.
- CREAMA. (2017). Diagnóstico territorial de la Marina Alta.
- Corydon, B., Ganesan, V., and Lundqvist, M. (2016) Transforming government through digitization. McKinsey. Available at: <https://www.mckinsey.com/industries/public-sector/our-insights/transforming-government-through-digitization> (accessed 5 November 2018).
- Daub, M., Domeyer, A., Klier, J., and Lundqvist, M. (2017) Digitizing the state: Five tasks for national governments. McKinsey. Available at: <https://www.mckinsey.com/industries/public-sector/our-insights/digitizing-the-state-five-tasks-for-national-governments> (accessed 5 November 2018).
- Dilmegani, C., Korkmaz, B., and Lundqvist, M. (2014) Public-sector digitization: The trillion-dollar challenge. McKinsey. Available at: <https://www.mckinsey.com/business-functions/digital-mckinsey/our-insights/public-sector-digitization-the-trillion-dollar-challenge> (accessed 5 November 2018).
- Eckhardt, J., Nykänen, L., Aapaoja, A., Niemi, P., MaaS in rural areas - case Finland. Available at: <https://doi.org/10.1016/j.rtbm.2018.09.005> (accessed 5 November 2018).
- Generalitat de Catalunya (2011) Plan de mejora de transporte público en la comarca de la Cerdanya M2011. Available at: [http://territori.gencat.cat/es/detalls/Article/DGTT\\_Millora\\_transport\\_Cerdanya](http://territori.gencat.cat/es/detalls/Article/DGTT_Millora_transport_Cerdanya) (accessed 5 November 2018).
- Generalitat Valenciana (2015) Vies Ciclopeatonals. Available at: <http://www.habitatge.gva.es/ca/web/vias-ciclopeatonales/proyectos-europeos-feder> (accessed 5 November 2018).
- GMV - Innovative Solutions (2016) Castilla y León extends gmV's transport-on-demand contract up to 2018. Available at: <https://www.gmv.com/en/Company/Communication/News/2016/01/transporteDemandaCyL.html> (accessed 5 November 2018).
- Interreg Europe (2001) Bummelbus is a dial-a-bus service occupying long-time unemployed people. Available at: <https://www.interregeurope.eu/policylearning/good-practices/item/128/bummelbus-dial-a-bus-service-occupying-long-time-unemployed-people/> (accessed 5 November 2018).
- Interreg Europe (2008) Tele-bus. Available at: <https://www.interregeurope.eu/policylearning/good-practices/item/132/tele-bus/> (accessed 5 November 2018).
- Interreg Europe (2010) Limit4WeDA - Light Mobility for Weak Demand Areas . Available at: <https://www.interregeurope.eu/policylearning/good-practices/item/107/limit4weda-light-mobility-for-weak-demand-areas/> (accessed 5 November 2018).
- Interreg Europe (2011) Ecodriving techniques. Available at: <https://www.interregeurope.eu/policylearning/good-practices/item/277/ecodriving-techniques/> (accessed 5 November 2018).
- Interreg Europe (2015) GO RURAL: Logistic services for rural areas. Available at: <https://www.interregeurope.eu/policylearning/good-practices/item/119/go-rural-logistic-services-for-rural-areas/> (accessed 5 November 2018).
- Interreg Europe (2017) Optimisation of Public Transport Policies for Green Mobility. Available at: <https://www.interregeurope.eu/optitrans/> (accessed 5 November 2018).
- Obregon, I. (2017) Rural-urban connectivity through EcoMobility. EcoMobility.org. Available at: <https://ecomobility.org/ecomobility-rural-urban-connectivity/> (accessed 5 November 2018).

- OECD (2013) Rural-Urban Partnerships: An Integrated Approach to Economic Development, OECD Publishing. Available at: <http://dx.doi.org/10.1787/9789264204812-en> (accessed 5 November 2018).
- Sin Yi, C., Obregon, I. and Kodukula, S. (2017) Eco-Mobility in the Context of Rural-Urban Connectivity. In: Intergovernmental tenth regional environmentally sustainable transport (est) forum in asia. Vientiane: United Nations (UN). Available at: <http://www.uncrd.or.jp/content/documents/5128Eco-Mobility%20in%20the%20Context%20of%20Rural-Urban%20Connectivity.pdf> (accessed 5 November 2018)

## Interviewees list

- Political representative, Municipality of Pego
- Transport business representative, Transport Business Owner
- Technician representative, Municipality of Calp
- Business representative from the Association of Businesses of Marina Alta (CEDMA)
- Stakeholder representative (CREAMA)
- Political representative, Municipality of Xàbia
- Business and Tourism association representative (AETHMA)
- Political representative, Municipality of Benissa



### **ESPON 2020 – More information**

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