

A close-up photograph of several bicycle wheels with silver rims and spokes, arranged in a row. The wheels are slightly out of focus, creating a sense of depth.

CYCLING PLAN OF ANDALUSIA. CPA 2014–2020



**Cycling Plan of Andalusia: CPA 2014-2020**

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**CYCLING PLAN OF ANDALUSIA. CPA 2014–2020**

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## Promoting cycling for all

Investment in cycle paths is a perfect example of the efficient use of public money; we use less to do more. We make significant, long-lasting changes with affordable investments. The cities and metropolitan areas that join the cycling revolution soon see their mobility model changing for the better, forever.

The advantages are in terms of convenience, ecology, safety, speed... In cities, cycling is faster than driving and also frees up parking spaces, prevents traffic jams, attracts tourism, promotes trade, combats stress, is good for the heart and favours equality in mobility options among men and women of all ages...

There is also a purely economic benefit: the favourable impact of the popular use of bicycles in all areas such as energy independence, household savings and public health is such that one year alone is enough to more than compensate for the investment involved in the Cycling Plan of Andalusia.

Andalusia is an autonomous region that is correctly supported by a dense network of motorways, among some of the best in Europe, that the regional government's Ministry of Development and Housing is enlarging and maintaining based on efficient investment criteria. We also maintain strong public transport networks in all our metropolitan areas, including underground trains and trams intended to carry more than 50 million passengers per year. Regional support, the guarantee of all citizens' right to mobility, whether they live in towns or cities or elsewhere, is a clear priority. We defend the public nature of the railway. And now we add cycling as an emblematic and fundamental part of the entire model.

This strategy is even more pertinent considering that Andalusia is a region configured as a network of towns contained in its eight provinces. And if Andalusia is a network of towns, each of them should be an integrated whole.

The model of a sprawling city is expensive, deficiently provided with services and full of empty dwellings that rose during the property boom is a radical failure. The Regional Ministry of Development and Housing promotes a new integrating model that recovers and rehabilitates its old town and city centres, growing inwards. We favour large cities that connect with our Mediterranean tradition, optimally provided with services and large public spaces configured as collective courtyards; these cities are tailored to people, not to cars. These friendly cities are where popular use of bicycles makes the most sense, in alliance with pedestrians and public transport. That is our strategy. And it is being developed with the certainty that the future belongs to cycling, a means of transport that always persuades even the most sceptical of its detractors.

The Cycling Plan of Andalusia establishes an investment programme to create a large network of cycle paths on a local (our main cities), metropolitan (the areas around these cities) and regional scale, mainly for leisure and sport purposes. But what you see is not only a plan about infrastructures. It links cycling to culture, to tourism, to education. It involves civil society and all public administrations. It rationalises and establishes technical criteria for the construction and use of convenient, safe and continuous cycle paths with useful destinations, connected to public transport. It accurately describes the benefit of cycling in all areas of life.

All the above makes the Cycling Plan of Andalusia a unique document, a pioneer in Spain, perfectly describing the Regional Ministry of Development and Housing's commitment to a city model that is not based on the use of cars, supporting the sustainable use of public space.

*Elena Cortés Jiménez*  
*Regional Minister of Development and Housing*

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## Introduction

The drafting of the Cycling Plan of Andalusia was approved by agreement of the Governing Council of the Regional Government of Andalusia on 11th December, 2012.

According to that agreement, the plan aims to foster greater use of this means of transport and provide the strategic framework required to attain the regional and environmental objectives established by the Autonomous Region of Andalusia. As part of the Andalusian government's plans in favour of sustainable development, the plan not only has to contemplate road infrastructures but also auxiliary elements such as parking facilities, intermodality, citizen awareness and management measures.

Cycling is expected to play an important role in a new mobility model, which focuses on increasing the number of journeys made on foot, by bicycle and on public transport instead of in private cars.

Cycling has significant advantages over other means of transport derived from its positive effects on the environment and human health, together with its greater efficiency for journeys of up to 5 km. It also offers good conditions for sport, leisure and tourism. Cycling tourism could help to reduce the seasonality of tourism, while benefiting larger areas, consistent with environmental sustainability and regional development criteria.

Thanks to its weather and rich natural and cultural heritage, Andalusia has an extraordinary potential to optimise the various applications of cycling.

Different initiatives related to infrastructures on different scales and cycling-related services have been developed in the last few years: green routes, green gateways, cycling tracks, public bicycle services, and public transport-bike intermodal transport services.

This context of numerous activities and initiatives requires a common framework of action, establishing coordination and compatibilisation criteria together with a programme of action to increase the use of bicycles in Andalusia.

Once the Plan was drafted, the administrative process began according to the fifth section of the CPA formulation agreement. Having obtained the approval of the drafting committee (15/07/2013), the document was submitted to a public consultation process through an Order issued by the Regional Ministry of Development and Housing on 16th July 2013 and, simultaneously, to the administrations involved during a two-month period.

Finally, with the mandatory reports, it has been approved by Decree 9/2014, of 21 January.



# 01

## Background

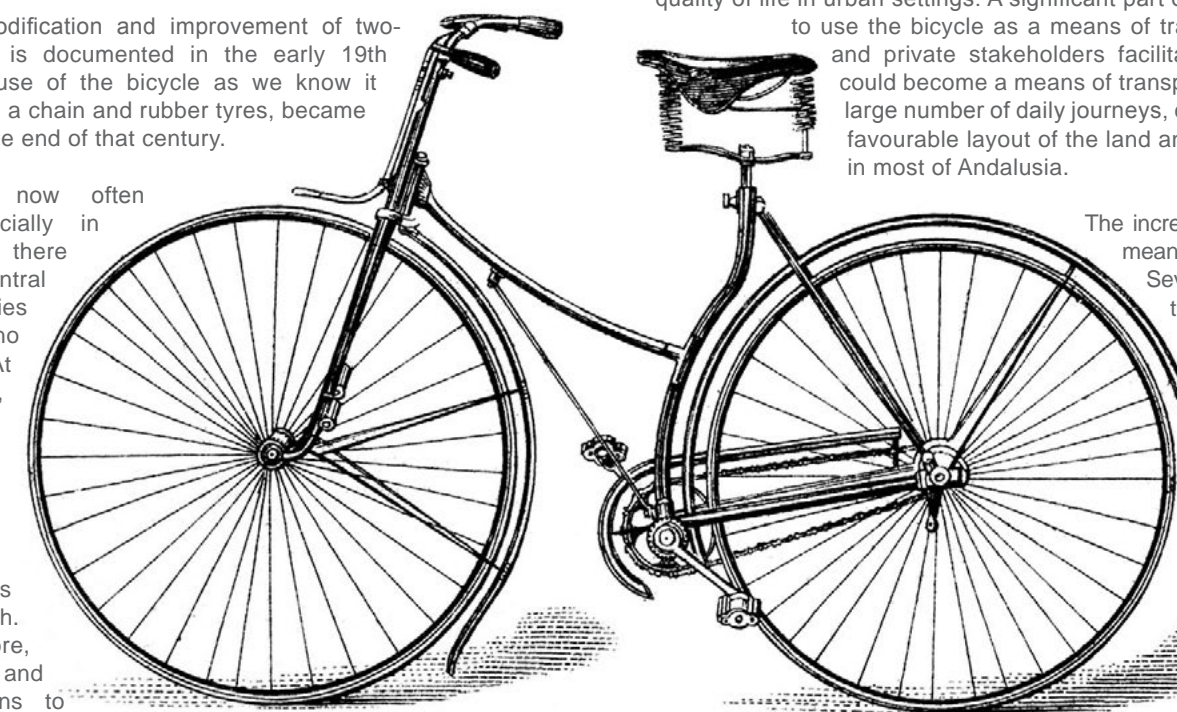
### 01 Background

#### 1.1 Cycling as means of transport

Means of transport have developed throughout the history of humankind as human lifestyle and travel needs have changed. Initially, these needs were basically satisfied on foot. Today's mobility model evidently largely depends on the use of private cars.

The invention, modification and improvement of two-wheeled vehicles is documented in the early 19th century and the use of the bicycle as we know it today, with pedals, a chain and rubber tyres, became popular towards the end of that century.

City traffic is now often congested, especially in rush hour, and there are needs for central parking facilities where there is no place for them. At the same time, the widespread use of private cars generates a sedentary lifestyle and causes air pollution, with serious effects on human health. Cycling is, therefore, the ideal, fast and inexpensive means to cover daily travel needs among large sectors of the population.



Nowadays fostering the use of the bicycle as a means of transport and recovering urban areas which were previously indiscriminately occupied by cars for both cyclists and pedestrians are the cornerstones of sustainable mobility policies and one of the most important ways in which to improve quality of life in urban settings. A significant part of the population is willing to use the bicycle as a means of transport. If the authorities and private stakeholders facilitate this process, cycling could become a means of transport capable of covering a large number of daily journeys, especially considering the favourable layout of the land and suitable weather found in most of Andalusia.

The increased use of bicycles as a means of transport in the city of Seville is a good example of the outcome of a sustained effort to favour cycling for this purpose. In just a few years, after the construction of a large network of cycling tracks and the implementation of activities aimed at fostering their use, thousands of people use them on a daily basis (the latest figures refer to 72,000 journeys per day), unquestionably placing this city among the most important in Spain regarding the use of bicycles.

## 1.2 An efficient means of transport

Cycling is an efficient means of transport. It does not need fuel, takes up less public space, reduces traffic congestion and is faster in most urban journeys.

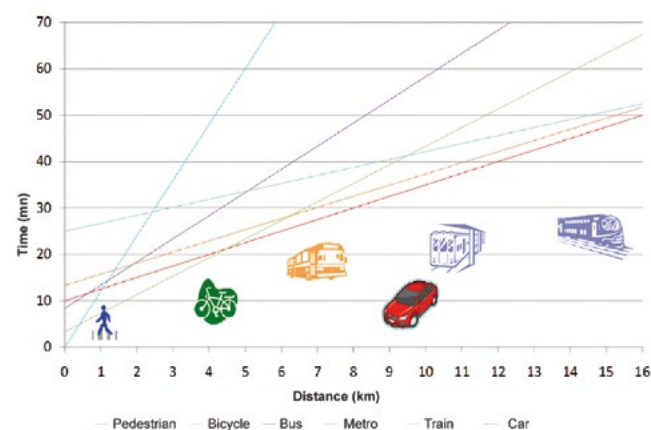
Although the percentage of the population that normally travels by car or motorcycle is comparable to the percentage that walks, cycles and uses public transport, the former occupy much more space. Streets have become places that are practically always occupied by motor vehicles, often hindering human communication and reducing the public spaces available for personal interaction.

In an urban setting, cycling should be fostered as a silent and efficient means of transport that helps to create a healthier urban landscape and more sustainable and safer mobility.

Around 2,000 people can travel by car along a 3.5 m wide street during one hour. Seven times more, around 14,000 people, could do so on bicycles. Bicycles also take up around one seventh of the space that a car needs to park.

Cycling is the fastest means of urban transport for distances ranging from 500 metres to 4-5 kilometres, if we consider all the factors involved: access to the vehicle, duration of the journey and parking time.

Graph 1: Speed of means of transport in cities



Source: The authors

A bicycle can travel approximately 4 km in 15 minutes. During rush hour, the mean speed of motor vehicles falls to around 10 km/h. Furthermore, using a bicycle also has the advantage that it almost travels from door to door.

Therefore, in our cities and at least in an initial phase, a good network of cycling tracks where users can travel rapidly and safely, with suitable parking facilities for bicycles, is the best means of urban transport in terms of both speed and efficacy, which can satisfy a very broad sector of the demand.

There are other important issues, such as the easy adaptation of cy-

cling infrastructures to the specific characteristics of culturally or environmentally protected zones, the possibility of combining cycling with other means of transport (bike, underground, bus) or their compatibility with pedestrian areas.

## 1.3 Cycling, leisure, sports and tourism

As well as being yet another means of transport, bicycles are used for tourism, sports and leisure in general. These other three dimensions represent a source of health and support for economic activity, compatible with environmental protection. They therefore comply with the guidelines of the sustainability policies promoted by different public and private stakeholders.

Thanks to its characteristics, cycling can be an ideal way to visit the region, as it provides more direct and less disturbing contact. Thousands of people, some of them tourists, cycle as a sport or leisure activity, both in urban parks and along tracks that are especially designed for that purpose.

However, particularly at weekends, there are often traffic accidents involving cyclists, who are especially vulnerable in this respect. The authorities are therefore responsible for satisfying such a demand, providing safe routes for cycling tourism, leisure and sport.

The future development of tourism and leisure activities demands procedures such as the generation of a network of connected routes; the establishment of standard technical criteria for the construction and maintenance of cycle tracks meeting the quality requirements and avoiding design fragmentation conflicts; and fostering intermodality between cycling and public transport throughout the region.

## 1.4 Health and quality of life

When practised regularly, cycling considerably improves our physical condition. It is therefore particularly important for improving quality of life and, by extension, public health.

Different studies show that it is one of the most complete and universal activities for preventing back ache, protecting joints, improving the circulatory and immune systems and maintaining mental health.

Its health benefits are greater in people who use it regularly. People who cycle to work every day benefit more than those who only use bicycles for more intensive sport at weekends.

A study conducted over a 14-year period in Denmark, which analysed 30,000 people from 20 to 93 years of age, showed that those who cycled to work every day reduced their mortality rate by 40%.

In countries like Spain, where obesity rates are on the increase, especially among children, cycling is an essential preventive tool, as it provides more accessible and relaxed physical exercise than other sports.

Regular cycling provides the following health benefits:

- It improves the circulatory system. It reduces risk of infarction by more than 50%. It reduces "bad" cholesterol, responsible for blood vessel calcification.
- Prevention of back ache. The back muscles are strengthened and the spine is protected from vibrations and blows. Regular leg movements especially strengthen the lumbar area and prevent slipped disks.
- It protects the joints. 70-80% of the body's weight is supported by the seat. It is therefore a good alternative to athletics, as the joints and cartilages do not have to support such a heavy burden.
- It improves the immune system. Regular cycling stimulates natural defences against disease. Some studies appear to show that it reduces the risk of cancer.
- Ayuda al control del peso y previene la aparición de diabetes.

Besides improving physical health, cycling has a positive effect on mental health, increasing wellbeing, confidence and tolerance to stress while reducing tiredness and sleep disorders.

TABLE 1: HEALTH BENEFITS ACCORDING TO DURATION OF EXERCISE

Duration of exercise	Effect
10 minutes	Improves the joints
20 minutes	Strengthens the immune system
30 minutes	Cardiovascular improvements
40 minutes	Increased respiratory capacity
50 minutes	Faster metabolism
60 minutes	Weight control, reduced stress and increased overall wellbeing.

Source: "Cycling and Health". Health Centre of the German University of Sport. Cologne (2004).

## 1.5 Environmental benefits

Motor-driven traffic in cities is the direct cause of considerably increased pollution in cities, particularly in the form of suspended particles, nitrogen dioxide, hydrocarbons, CO<sub>2</sub> and CO<sub>3</sub>, thus affecting the impact of air quality on human health.



The World Health Organisation (WHO) recently (January 2013) published a report in which it recommends stricter legislation on air quality in the European Union, reducing admissible gas and pollutant limits and promoting decisive measures.

Studies associate exposure to different pollutants in urban areas with health problems of growing incidence in the population, such as atherosclerosis, respiratory diseases, diabetes, cognitive difficulties, premature childbirth, etc. There is evidence of a direct correlation between proximity to traffic and the incidence of asthma in children.

Motor-driven traffic is also responsible for exceeding the maximum noise level, altering the peace and working conditions and causing health problems. In contrast, the bicycle is a non-polluting, silent means of transport that has no negative impact on human health.

It is also a very efficient mechanical means of transport in terms of energy consumption. In general, it consumes 2% of the energy used by a car to travel the same distance.

**TABLE 2: COMPARISON OF DIFFERENT MEANS OF TRANSPORT FROM AN ECOLOGICAL PERSPECTIVE, WITH REFERENCE TO CARS AND EXPRESSED IN PERSONS/KM**

	Car without catalytic converter	Car with catalytic converter	Bus	Train	Bicycle
Occupation of space	100	100	10	6	8
Consumption of primary energy	100	100	30	34	0
Carbon dioxide	100	100	29	30	0
Nitrogen oxides	100	15	9	4	0
Hydrocarbons	100	15	8	2	0
Carbon monoxide	100	15	2	1	0

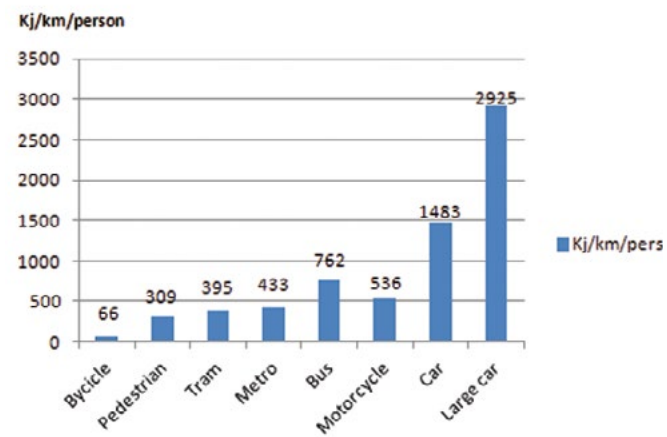
Source: "Cycling, the way ahead for towns and cities". European Commission. 2000.

The transport sector is the main energy consumer, representing 36% of all energy consumption in Andalusia in 2011. Nearly 85% of this amount is derived from oil (petrol and diesel), showing how heavily the sector depends on it.

An important part of this consumption is due to urban mobility, where cars are used for short journeys which, due to the characteristics of the routes and cars in question, involve high energy consumption and high emission rates. Part of these journeys could be made on bicycles, which is more efficient even in travelling time for distance of up to around 5 km.

If cars or motorcycles ceased to be used to travel distances of less than 3 km, the energy saving would be more than 60%.

Graph 2: Energy consumption of different means of transport



Source: Italian Federation of Friends of the Bicycle. 2007

## 1.6 Conditioning factors

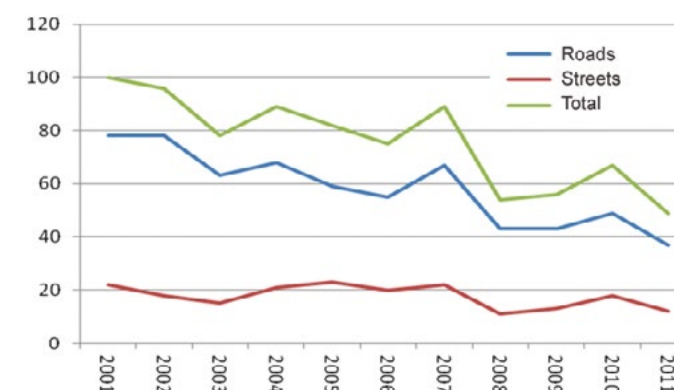
One of the arguments that are regularly used to discourage cycling is its apparently high accident rate. The dangers involved or the perceived risks are factors that determine its use as a means of transport in cities.

The main risk factors for cyclists are:

- High speed in motor vehicles.
- High volumes of motor-driven traffic on streets and roads used by cyclists.
- Restricted mobility and access for cyclists on some roads and in some lanes.
- Reduced visibility for cyclists and their infrastructure.
- High degree of exposure due to the lack of a protective casing.
- Other users are unfamiliar with the specific traffic rules applicable to cyclists.
- Hostile attitudes of drivers towards cyclists.



Graph 3: Evolution of fatalities in accidents involving bicycles on urban and interurban streets and roads



Source: Directorate General of Traffic

The main risk of cycling lies in its interaction with motor-driven traffic, and the risk increases as traffic speed grows. Therefore the actual transport system defines the danger involved in cycling. This risk falls considerably in areas designed specifically for cycling or for mixed use, such as cycling tracks or zones with speed limits.

One inevitable condition for promoting cycling is to improve the users' perception of its safety.

Other conditioning factors that are generally associated to the reduced use of cycling as a means of transport are:

- **Distance:** for daily use, bicycles are not normally used for distances of more than 8-9 km.
- **Gradients:** long stretches with steep gradients demand increased physical effort by cyclists, who would only be willing to do it if they are cycling as a sport.
- **Weather:** extreme weather conditions (rain, wind, heat or cold) reduce the use of bicycles. This is not, however, a problem in central and northern European countries, where cycling is more of a tradition.
- **Exposure to atmospheric pollution:** specific studies, however, have shown that the air inside a car is more polluted than the air breathed by cyclists.
- **Shortage of parking facilities for bicycles:** with no appropriate policies in place, the inconvenience of having to store bicycles in the home or at work discourages their use.

- **Risk of theft:** it is easier to steal a bicycle than another vehicle, if there are no appropriate preventive measures.
- **Cultural aspects:** although the overall perception of cyclists is changing, large sectors of the population have deep-rooted prejudices, considering that it is a means of transport for people who have reduced purchasing power or merely for sport and leisure use.

## 1.7 The use of bicycles in other areas

Although there are no reliable statistics about cycling in Europe, in 2009 some interesting figures were published after research was conducted by the Dutch Ministry of Transport, Public Works and Water Management: “Cycling in the Netherlands 2009”.

Country	Journeys by bicycle (%)	Comments
Netherlands	31,2	Amsterdam: 45%, Rotterdam: 25%
Denmark	19	Aalborg: 36.9%
Germany	13.1	Berlin: 17.2%, Hamburg: 13.5%, Munich: 16.7%
Austria	8	Graz 27%, Viena: 3,7%
Belgium	13,4	Ambers: 28.5%, Brussels: 3.9%.
Sweden	17,1	Malmö 37%, Stockholm: 18.7%.
Italy	4,7	Ferrara 30%, Verona: 9.1%, Rome: 1%
France	2,6	Strasbourg 28%, Paris: 5.3%
Ireland	3,2	Dublin: 5%
Czech Republic	7,7	Prague: 0.5%, Ostrava: 2%
Great Britain	2,2	London: 3.1%, Belfast: 1.6%
Portugal	1,6	Lisbon: 0.8%, Braga: 0.4%.
Spain	1,6	
UE27	7,4	

Source: the authors from: 1. Future of transport. Analytical report. Flash Eurobarometer 312. European Commission. March 2011. 2. Survey on perception of quality of life in European cities (2009). European Commission

The information shows that the Netherlands is where most distances are covered by bicycle relative to the total. Cycling-promotion policies in Holland have resulted in 26% of all journeys being travelled by bicycle, ranging from 35-40% in some cities to 15-20% in others. Denmark is in the next place, with 19%. As the table shows, there are many European cities with similar figures.

The figures available for Spanish cities regarding the number of journeys on bicycles are, for instance: 1.33% in Barcelona and 3.4% in Vitoria, with Seville in the lead with nearly 5.6% .

Although it does not refer to the same indicator, some the data are not comparable, there are interesting overall figures in Spain in the “Annual Cycling Barometer” published by the Directorate General of Traffic. The most recent study was published in July 2011, showing that 7.4% of the population from 12 to 79 years of age cycles practically every day. This percentage was 6.6% in the 2009 barometer.

As in the rest of Spain, in Andalusia the use of bicycles varies from one place to another, there is an upwards trend everywhere. Note that statistics are not always comparable, as they are not obtained and processed with the same criteria.

<sup>1</sup> Latest figure available in “Research on the Use of Bicycles in the City of Seville 2011”. University of Seville, with 9% of all journeys not made on foot

## 1.8 Initiatives for fostering cycling in Europe, Spain and Andalusia

Although there is no specific European framework for fostering cycling, there is a common element in the measures applied in different Community areas such as, for instance, the **Urban Mobility Action Plan** (under review), the **promotion of Sustainable Tourism** in sectoral development policies, and the **European Climate Change Strategy**.

With regard to Climate and Energy, the European Union objectives for 2020 (“20-20-20” Initiative) are as follows:

- Reduce primary energy consumption by 20%.
- Reduce greenhouse gas emissions by 20%.
- Increase the contribution of renewable energy sources to 20% of final consumption.

Fostering cycling plays a fundamental role in attaining the first two objectives. In this respect, the White Paper on Transport (2011) also recognised the important role of cycling in sustainable urban mobility trends.

Linked to the Urban Mobility Action Plan is the **CIVITAS** initiative for better and cleaner transport in cities. The basic objective of this initiative is to attain a significant change in modal distribution, towards sustainable transport. The CIVITAS project provides support to cities that are implementing ambitious transport policies in favour of sustainable urban mobility. Nearly 200 European cities committed to the integration of sustainable urban mobility policies form part of the CIVITAS Forum network, including Malaga and Seville in Andalusia.

In addition, the **Covenant of Mayors**, is a European movement involving regional and local authorities that are voluntarily committed to improving energy efficiency and the use of renewable energy sources within their

boundaries. The members have set themselves the target of reducing CO2 emissions by more than 20% by 2020, for which they will be editing and implementing a **Sustainable Energy Action Plan (SEAP)**. These municipal plans include measures for fostering cycling. More than 500 municipalities from Andalusia are members of the Covenant of Mayors.

At the same time, there are also State initiatives for fostering more sustainable mobility, such as the approval of the **Spanish Sustainable Mobility Strategy**, which proposes, among other measures, fostering the bicycle as a means of transport.

Along the same lines, the Institute for Energy Diversification and Saving (IDAE), which depends on the Ministry of Industry, Tourism and Trade, have published “Methodological guidelines for the Implementation of public bicycle systems in Spain”, November 2007, and “Bicycle Parking Facility Manual”, March 2009, the objective of which is to foster cycling as one more link in the transport chain in urban and surrounding areas.

Likewise, one of the objectives of the Andalusian Urban Sustainability Strategy (Governing Council, 3rd May 2011) is to foster non-motorised mobility, linking urban development to the availability or viability of non-motor driven transport.

In 2004, the Andalusian Parliament approved an initiative called “**Andalusian Pact for Cycling**”, in which it encouraged both public and private institutions to foster cycling as a means of transport. More than a hundred institutions have now signed the agreement. The Parliamentary resolution reads:

*“Take into consideration the need to prepare and approve legislative measures that guarantee adaptation of the public roadways of Andalusia to bicycle traffic, so that everyone can conveniently and safely exercise the right to cycle on them. These measures should include: appropriate road markings, road designs that are appropriate for cyclists and, when necessary, an exclusive space for cyclists (cycling tracks).”*

*Demand that the Government of Andalusia design and make available a “Basic Cycling Network”, starting by recovering the network of country roads and driving roads, as well as adaptation of minor roads for use by cyclists.*

*Demand that the Government of Andalusia contemplate the inclusion of Cycling Steering Plans in the Intermodal Transport and Land Ordinance Plans of the major Andalusian Metropolitan areas. These Steering Plans should consider not only the creation of roads suitable for bicycles but also the development of campaigns for their promotion as a means of transport and the creation of infrastructures to foster bicycle-public transport intermodality.”*

## 02

## Mainstreaming cycling in planning processes in Andalusia

## 02 Mainstreaming cycling in planning processes in Andalusia

## 2.1 Planning processes in Andalusia

Due to its mainstreaming nature, cycling planning in Andalusia is linked to several planning instruments in different areas, with which it has a series of general objectives in common. The following table shows the relationships between the shared objectives and the different plans associated with each of them.

We can distinguish between two major groups in the above table: regional planning (POTA, sub-regional plans and Urban Ordinance Plans) on the one hand, and sectoral planning on the other.

TABLE 4: OBJECTIVES SHARED WITH PLANNING PROCESSES IN ANDALUSIA

Objectives	Plan	Associated authority
Sustainable mobility	<ul style="list-style-type: none"> <li>• Infrastructures Plan for the Sustainability of Transport in Andalusia 2007-2013 (PISTA)</li> <li>• Metropolitan Transport Plans (MTP)</li> <li>• Andalusian Urban Sustainability Strategy (EASU)</li> <li>• Andalusian Action for Climate Plan</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Development and Housing</li> <li>• Transport Consortiums. Regional Ministry of Development and Housing.</li> <li>• Regional Ministry of Environment and Land-use Planning</li> </ul>
Reduction of energy consumption	<ul style="list-style-type: none"> <li>• Reduction of energy consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Economy, Innovation, Science and Employment</li> </ul>
Reduction of noise and emissions and improvement of general living conditions	<ul style="list-style-type: none"> <li>• Andalusian Sustainable Development Strategy (EADS).</li> <li>• Andalusian Urban Sustainability Strategy (EASU)</li> <li>• Andalusian Climate Change Strategy (EACC)</li> <li>• Environmental Plan of Andalusia Horizon 2017 (PMA 2017)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Environment and Land-use Planning</li> </ul>
Regional articulation of metropolitan and urban areas	<ul style="list-style-type: none"> <li>• Land Ordinance Plan of Andalusia (POTA) and Sub-regional Plans</li> <li>• General Urban Ordinance Plans</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Environment and Land-use Planning</li> <li>• Local corporations</li> </ul>
Development of tourism	<ul style="list-style-type: none"> <li>• Andalusian Plan for Sustainable Tourism (PGTS) (2014-2020).</li> <li>• Integral Strategy for the Promotion of Sustainable Inland Tourism in Andalusia</li> <li>• Rural Development Programme of Andalusia (2007-2013) (PDR)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Tourism and Trade</li> <li>• Regional Ministry of Agriculture, Fisheries and Rural Development</li> </ul>
Improvement of environmental and personal health	<ul style="list-style-type: none"> <li>• Andalusian Environmental Health Plan 2008-2012 (PASA)</li> <li>• Andalusian Urban Sustainability Strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Equality, Health and Social Welfare</li> <li>• Regional Ministry of Environment and Land-use Planning</li> </ul>
Fostering more healthy lifestyles and environmental awareness	<ul style="list-style-type: none"> <li>• Aldea programme</li> <li>• Plan for the Promotion of Physical Activity and Balanced Diet 2004-2008 (PPAFAE)</li> </ul>	<ul style="list-style-type: none"> <li>• Regional Ministry of Education, Culture and Sport</li> <li>• Regional Ministry of Equality, Health and Social Welfare</li> </ul>

Source: the authors

## 2.2 Land–use planning and town planning

The regional land-use planning system in Andalusia has several levels and comprises numerous planning and management tools; the main one is the [Regional Land-Use Ordinance of Andalusia \(POTA, in Spanish\)](#). The Andalusian land-use planning model established in the POTA is the basic point of reference for regional policy objectives. It is based on four principles, representing the conceptual framework that explains how the Andalusian region is organised:

- The natural and cultural diversity of Andalusia
- A more sustainable use of resources
- Social cohesion and regional balance
- Regional integration and cooperation: the region of networks

Specific regional strategies and policies must develop and consolidate this model, and public activities must generally take it into consideration in policy design, actively supporting its application. The POTA shows an absolute need to attain the objectives, considering the biophysical matrix that supports the regional system, which is why a more sustainable use of resources is one of its fundamental principles, with great importance also given to the network concept.

On an intermediate planning scale, and in view of the need for a supra-municipal framework of reference, is the [Sub-regional Land-Use Ordinance](#). The main function of these instruments is to establish the basic elements for the region's organisation and land-use structure. Indeed, it is the regional reference land-use framework for the development of the policies, plans, programmes and projects of public administrations and agencies, and for private activities. These plans also specify the basic elements for the region's structure and articulation systems and the ordinance of the use and protection of areas on a sub-regional scale.

As the last step in the planning process, the urban model is decisive for the development of different mobility models. Local corporations, through their [General Town Planning Ordinances \(PGOU, in Spanish\)](#), are empowered to order, manage, implement and apply town planning discipline, providing public transport services. With some exceptions, the model developed in the last few decades favoured the use of cars. This trend must be inverted in order to meet the principles and objectives established in higher-scale planning processes, based on criteria governed by sustainability parameters.

TABLE 5: STATUS OF PROCESSING OF SUB-REGIONAL LAND-USE ORDINANCE.

Sub-regional Land-Use Ordinance	State
Aglomeración urbana de Almería	Approved. Decree 351/2011
Levante de Almería	Approved. Decree 26/2009
Poniente de Almería	Approved. Decree 222/2002.
Almanzora (Almería)	In process
Bahía de Cadiz	Approved. Decree 462/2004.
Bahía de Cadiz-Jerez	In process
Campo de Gibraltar	Approved, Decree 370/2011.
Costa Noroeste de Cadiz	Approved, Decree 95/2011
La Janda (Cadiz)	Approved. Decree 358/2011
Sur de la provincia de Cordoba	Approved. Decree 3/2012
Aglomeración urbana de Cordoba	In process
Aglomeración urbana de Granada	Approved. Decree 244/1999
Costa Tropical de Granada	Approved. Decree 369/2011
Aglomeración urbana de Huelva	In process
Ámbito de Doñana	Approved. Decree 341/2003
Litoral occidental de Huelva	Approved. Decree 130/2006
Sierra de Huelva	In process
Aglomeración urbana de Jaen	In process
Sierra de Segura (Jaen)	Approved. Decree 219/2003
Aglomeración urbana de Malaga	Approved. Decree 308/2009
Costa del Sol oriental-Axarquía (Malaga)	Approved. Decree 147/2006
Costa del Sol occidental (Malaga)	Approved. Decree 142/2006
Aglomeración urbana de Sevilla	Approved. Decree 267/2009

Source: the authors

## 2.3 Sectoral planning

The planning process for fostering cycling in Andalusia is conceived as a key part and common denominator mainstreamed in all activities related to sustainable mobility, climate change, rural development, habitability and quality of life, health, education, tourism and even employment.

Planning transport system infrastructures in Andalusia is a key part of the regional system. Their design and development, described in the [Infrastructure Plan for the Sustainability of Transport in Andalusia 2007-](#)

2013 (PISTA), plays an important role in the regional model defined by the POTA, of which it contemplates fundamental aspects such as the population's need for mobility and access to the goods and services that it consumes and the environmental impact of said mobility, particularly from the global perspective of climate change. The PISTA is a key point of reference in the development of this Plan. Reducing greenhouse gas emissions, improving environmental conditions and combating climate change through activities related to transport, increasing its energy efficiency, improving quality of life or enhancing the competitiveness of our urban and metropolitan areas are objectives established in the PISTA, in which the development of cycling as a means of transport should play a leading role.

With these same criteria, and based on article 197 of the Statute of Andalusia, the [General Sustainable Tourism Plan of Andalusia 2008 - 2011 \(PGTS, in Spanish\)](#) develops the planning and organisation of regional tourism activities based on criteria of maximum sustainability. Given the possible significance of cycling tourism, the PGTS is the second sectoral instrument with a regional impact to be considered as a clear point of reference for the Cycling Plan of Andalusia.

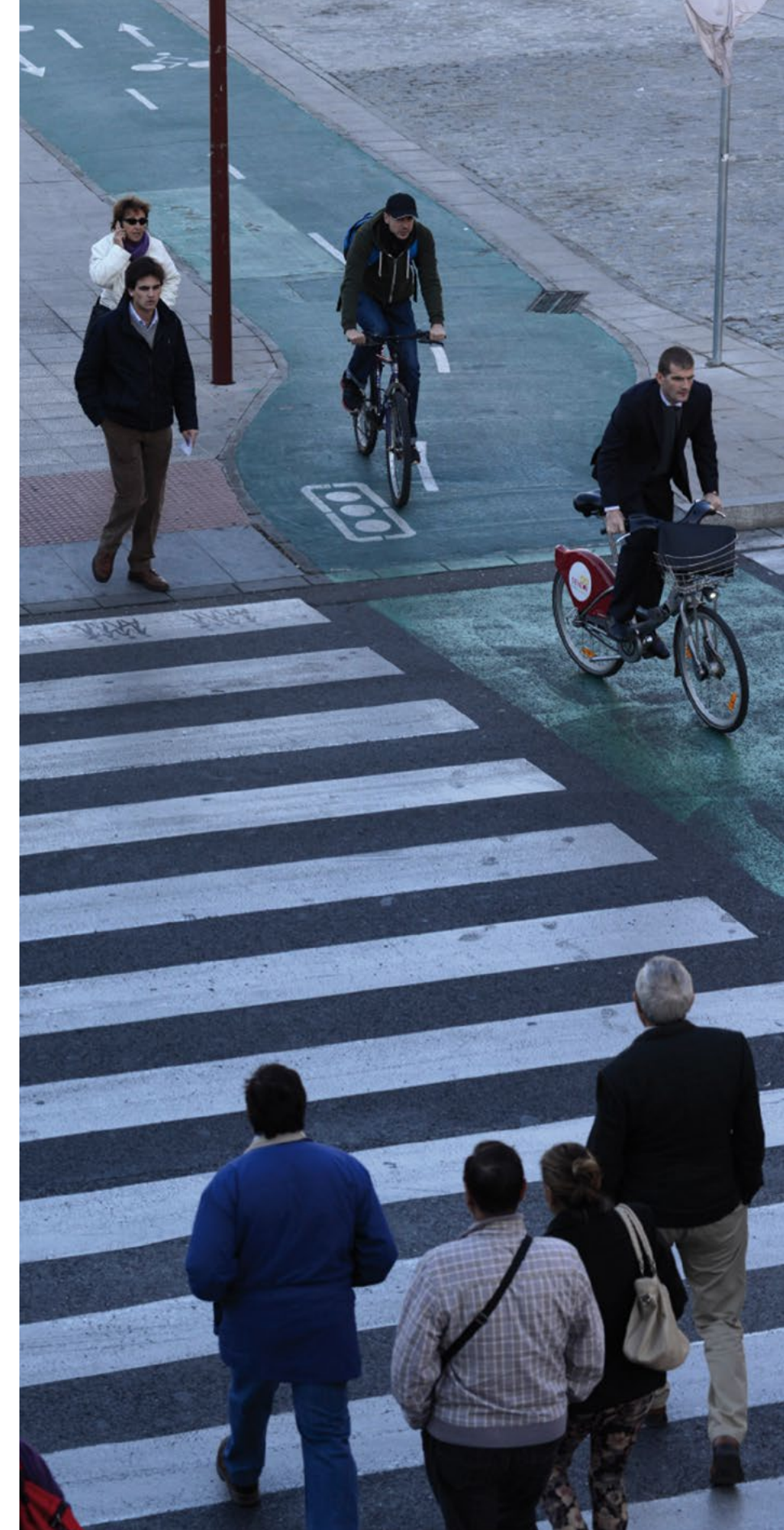
The [Integral Strategy for the Promotion of Sustainable Inland Tourism in Andalusia](#) has a significant impact on the development of tourism products associated to cycling in our inland urban and rural areas.

The [Rural Development Programme of Andalusia 2007-2013 \(PDR, in Spanish\)](#) refers to a series of measures that include some aimed at economic diversification in rural settings. The creation of a Regional Network of Cycling Paths, as contemplated here, will favour this type of measure, providing one more way in which to boost rural economic activity and employment, as well as revitalising rural areas in favour of sustainable development and a fairer distribution of income from tourism.

In energy matters, the [Energy Sustainability Plan of Andalusia \(PASENER\)](#) was conceived as the energy planning instrument that establishes energy saving targets in Andalusia. For 2013 it sets the energy saving target at 1,465.1 ktoe, with 40% directly linked to action in the transport sector. The Cycling Plan of Andalusia will also help to reach this target.

There are more different plans and strategies in the environmental field. The [Andalusian Sustainable Development Strategy \(EADS, in Spanish\)](#), the [Andalusian Urban Sustainability Strategy \(EASU, in Spanish\)](#), the [Andalusian Environmental Plan Horizon 2017 \(PMAA 2017\)](#) and the [Andalusian Climate Change Strategy](#) objectives that include reducing pollutant emissions and improving overall living conditions. They also recognise the advantages of fostering cycling as a means of transport, basically on an urban and metropolitan level.

The [Sustainable City Programme](#) (previously City 21) fostered by the Regional Ministry of Agriculture, Fisheries and the Environment and the Andalusian Federation of Municipalities and Provinces aims to improve the quality of the urban environment in the region. The programme provides technical support and promotes activities and collaboration agreements for the 292 Andalusian municipalities involved, with special support provided to the creation of cycling tracks in some of these municipalities.

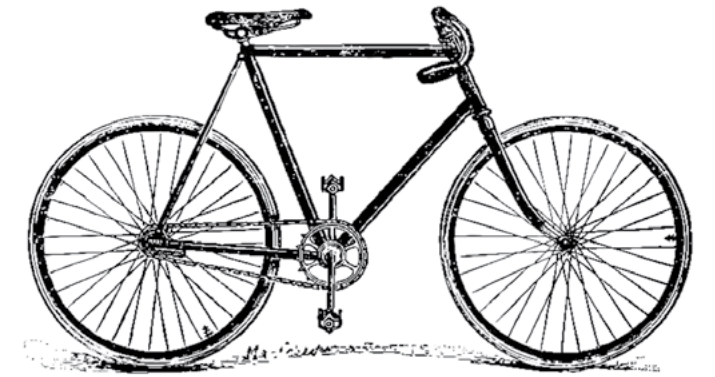




govern mobility at this level. They focus on a more sustainable mobility model, with greater investments in infrastructures for public transport while promoting non-motorised means of transport. To date, it has only been approved for the Seville area, and the plans for Cadiz, Malaga and Granada are formulated, and the Seville plan is under review. The Network of Metropolitan Transport Consortia of Andalusia is also dealing with metropolitan traffic management. These consortia are responsible for the management and coordination of the public transport networks in the region's different metropolitan areas.

Finally, within sectoral planning, on an urban scale, we should highlight the role of the [Local Agendas 21](#), a document that contemplates the global action plan related to sustainability for the municipalities in which it is approved. Also, the municipalities involved in the Covenant of Mayors also have a [Sustainable Energy Action Plan \(SEAP\)](#), which represented a significant reduction in CO2. In the urban context, there are other municipality-specific plans and programmes that could also be linked to this document.

Due to the regional nature of the POTA and sub-regional plans, the Cycling Plan of Andalusia must adapt to the provisions made in these planning instruments. On the other hand, the relationship between them and sectoral planning elements runs in two directions; in other words, they have common or related objectives.



The Cycling Plan of Andalusia, then, is conceived as a cross-sectional tool in two ways: on the one hand, it is related to two regional planning scales and, on the other, it is linked to multiple sectoral fields of Andalusian policy-making.

The [Telecommunications Infrastructure Strategy for Andalusia 2020](#) also contributes to Sustainability policies, as its implementation reduces the needs for daily mobility. It is important to highlight that construction of the cycling networks contemplated in Cycling Plan of Andalusia provides the opportunity to include the pipelines required to house the broadband networks included in the Strategy.

With regard to health, there are two planning instruments related to fostering cycling. The first is the [Andalusian Environmental Health Plan](#), the purpose of which is to reduce health risks associated with the environment by better identifying the environmental factors that have a negative impact, and by adopting management procedures to correct them, involving both environmental and healthcare activities. The plan's objectives are to prevent risks by means of vigilance instruments and comprehensive assessment procedures, with more attention being paid to health aspects in sectoral policies, especially on a local level, through inter-sectoral measures aimed at the development of healthy environments.

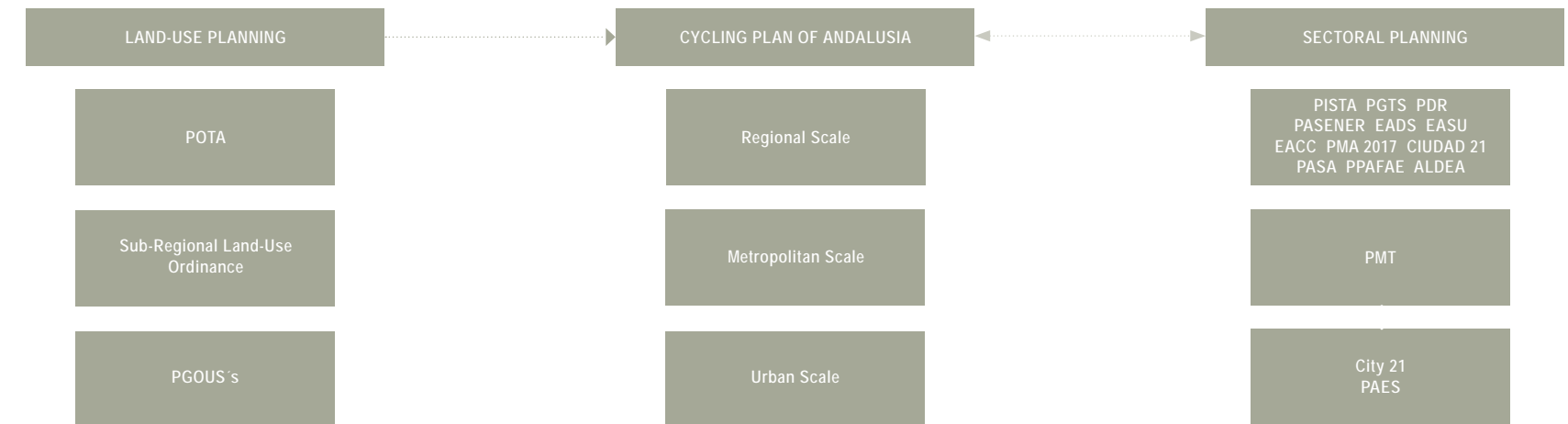
Also related is the [Plan for the Promotion of Physical Activity and Balanced Diet \(PPAFAE, in Spanish\)](#). This plan seeks the direct participation of other sectors, besides healthcare, and aims not only to prevent disease but also to promote health. Therefore, it promotes a balanced diet and physical exercise as a means of preventing weight problems and

sedentary lifestyles. The plan does not only promote healthy habits but it also aims to raise awareness in order to reduce the risk of serious diseases. In this respect, promoting physical exercise as a regular habit by walking or cycling every day among a large percentage of the region's inhabitants could be a very positive strategy.

In the field of education, the main point of reference in Andalusia is the [Aldea Programme](#). Its basic objective is to integrate environmental and educational issues in order to promote a commitment to change habits as part of a search for a fairer society that is more humanitarian and concerned with environmental quality. One of the activities associated with the Aldea Programme that is directly related to the objectives of the Cycling Plan of Andalusia is the Urban Sustainability Sub-programme. The activities in this sub-programme aim to increase the awareness of students and teachers of the importance of aspects related to sustainability and the urban environment, improving urban environmental quality through citizen involvement and the promotion of environmentally-friendly attitudes and behaviour, including the use of bicycles.

So far, the sectoral planning contemplated is characterised by its development on a regional scale. However, there are also sub-regional sectoral plans of interest for the Cycling Plan of Andalusia. This is the case of the [Metropolitan Transport Plans \(MTP\)](#) designed as instruments for the ordinance and coordination of infrastructures and services that

Figure 1: Cycling Plan of Andalusia in the framework of Andalusian planning



Source: the authors

## 03

## Scope

## 03 Scope



MEASURES TO FOSTER CYLING HAVE TO BE CONTEMPLATED ON THREE SCALES, URBAN, METROPOLITAN AND REGIONAL, WITH DIFFERENT PREFERENTIAL USES.

Bicycle planning in a region with the extension and complexity of Andalusia transcends merely fostering its use as a means of transport. The different uses of bicycles can be divided into two main dimensions:

- On the one hand, **cycling can be seen as one more means of transport**, both private and public. This use is bound to be of special significance in the strategies to foster transport sustainability applied by the Regional Government of Andalusia, the development of which is largely the responsibility of the Regional Ministry of Development and Housing, in collaboration with other authorities involved, particularly on a municipal level.
- On the other, bicycles are also increasingly used for **sport, leisure and tourism**. Although these uses are the responsibility of other regional ministries, they are directly linked to the Regional Ministry of Development and Housing because their development can take place simultaneously to foster cycling as a means of transport in infrastructures that are also this ministry's responsibility.

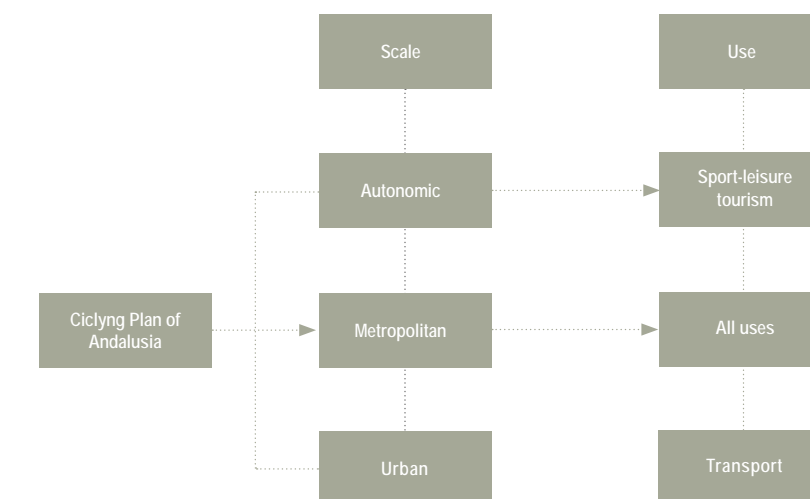
Promoting the use of cycling is contemplated on three levels; **regional, metropolitan and urban**, related to different uses of bicycles as shown on the enclosed figure.

On a regional scale the predominant uses are related to tourism, leisure and sport rather than transport per se. It is on a metropolitan and urban scale where cycling has a very important function as means of daily transport, either alone or in bicycle-public transport intermodality.

As well as the scales of application and different uses of bicycles, comprehensive planning of this kind entails a review of the different responsibilities of the authorities involved. Special attention will be paid to the **mainstreaming role played by fostering cycling in the policies of the different administration levels** highlighted in the previous section .

The bicycle, therefore, is conceived as one of the vehicles or instruments that enable different authorities to reach some of the targets identified in their sectoral plans, for which reason the Cycling Plan of Andalusia should also be implemented through its respective Sectoral Programme. Some guidelines to be followed when editing these Sectoral Programmes have been included in the final sections of this document.

Figure 2: Relationships between the scales of application of bicycle uses



The Cycling Plan of Andalusia in the framework of Andalusian Planning.



# 04

## Diagnosis

THIS SECTION INCLUDES THE INFORMATION AVAILABLE TO TRY AND UNDERSTAND THE CURRENT STATUS OF CYCLING IN ANDALUSIA. THIS DIAGNOSIS IS REQUIRED SO THAT THE PLAN WILL SUBSEQUENTLY CONTEMPLATE A PROPOSAL FOR CYCLING NETWORKS ON EACH OF THE DIFFERENT SCALES: REGIONAL, METROPOLITAN AND URBAN.

### 04 Diagnosis

#### 4.1 General diagnosis

Below is a consideration of relevant aspects of the diagnosis, physical and urban medium, demands and infrastructures. Nevertheless, reference must be made to the conditioning factors mentioned in point 1.6, particularly parking facilities and socio-cultural factors, proposals for which can be found in the respective sections of the plan.

Andalusian Regional Model, and will therefore be used as the basis for establishing the layout of the Regional Cycle Track Network in Andalusia.

The region varies from altitudes of more than 2,000 m in the Sierras Béticas, peaking in Sierra Nevada with the highest in the Iberian Peninsula. In Sierra Morena most altitudes range from 200 to 600 m, while nearly 40% of the region is made up of flatlands located in the Guadalquivir valley, the Los Pedroches valley and the Intrabetic Furrow. 55% of the region has gradients of less than 15%.

##### 4.1.1 The physical and urban setting

In general, the physical characteristics of the region facilitate cycling as a means of sport and tourism and as an option for leisure activities.

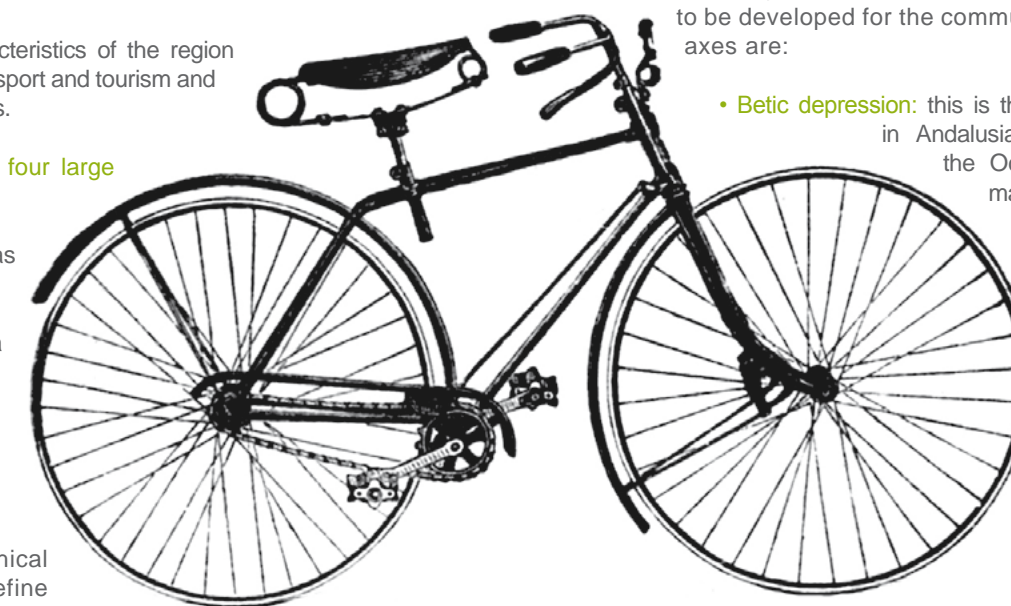
Andalusia can be divided into **four large geographical units**:

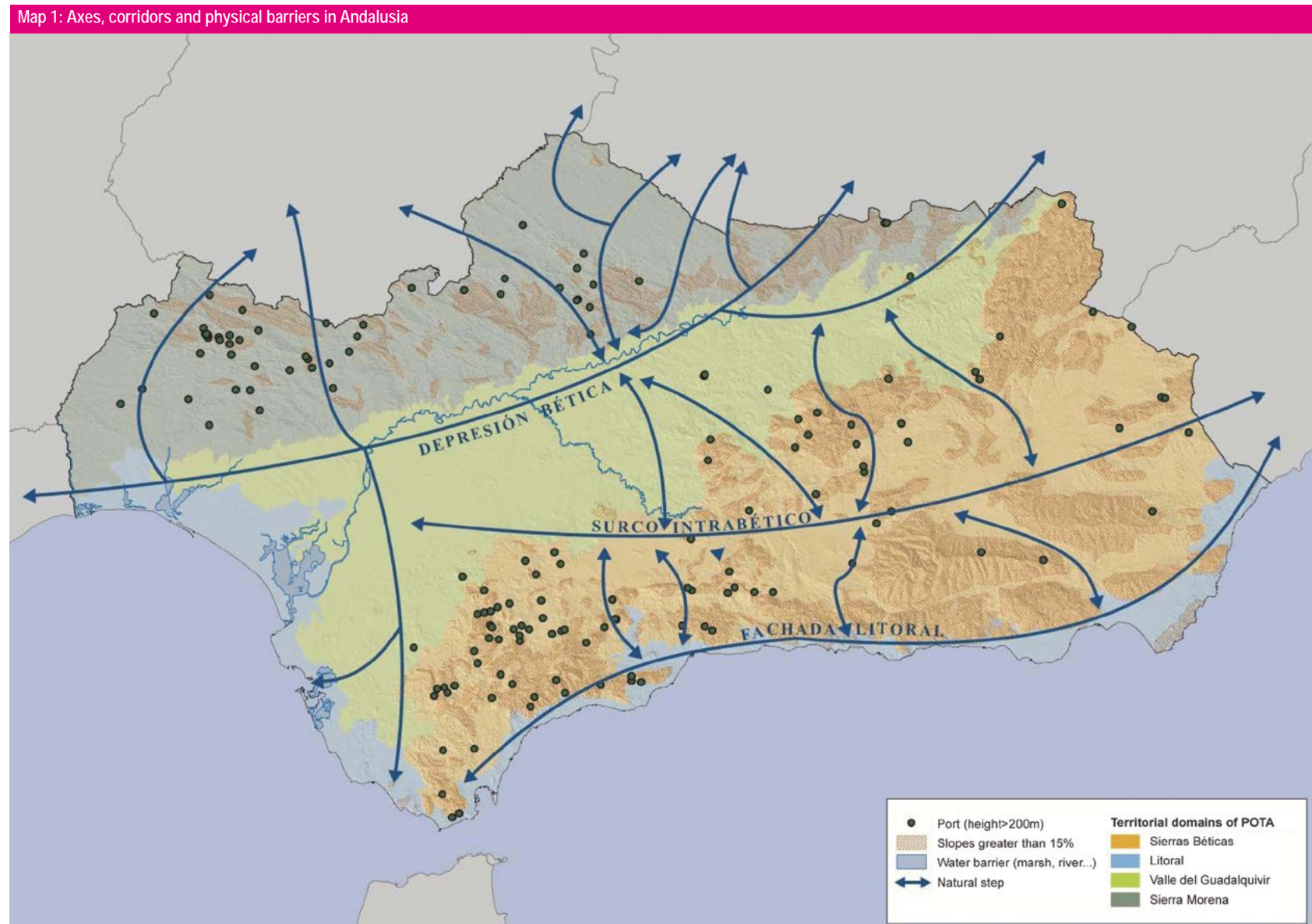
- The Sierras Béticas mountain range
- The Sierra Morena mountain range
- The Guadalquivir valley
- The coast.

These are the geographical units used in the POTA to define the Territorial Domains of the

The region's structure has always determined its communication and transport systems and it also conditions the Cycle Track Network to be developed for the community. The main communication axes are:

- **Betic depression**: this is the main artery of communication in Andalusia, connecting the Plateau with the Ocean. The last section includes marshes, which have always been an obstacle for communication. This axis connects to the plateau through a series of natural passes located in Sierra Morena and caused by faults and water courses.
- **Coastal facade**: where the most abrupt areas are found in the Mediterranean.





Source: Atlas Histórico de Andalucía

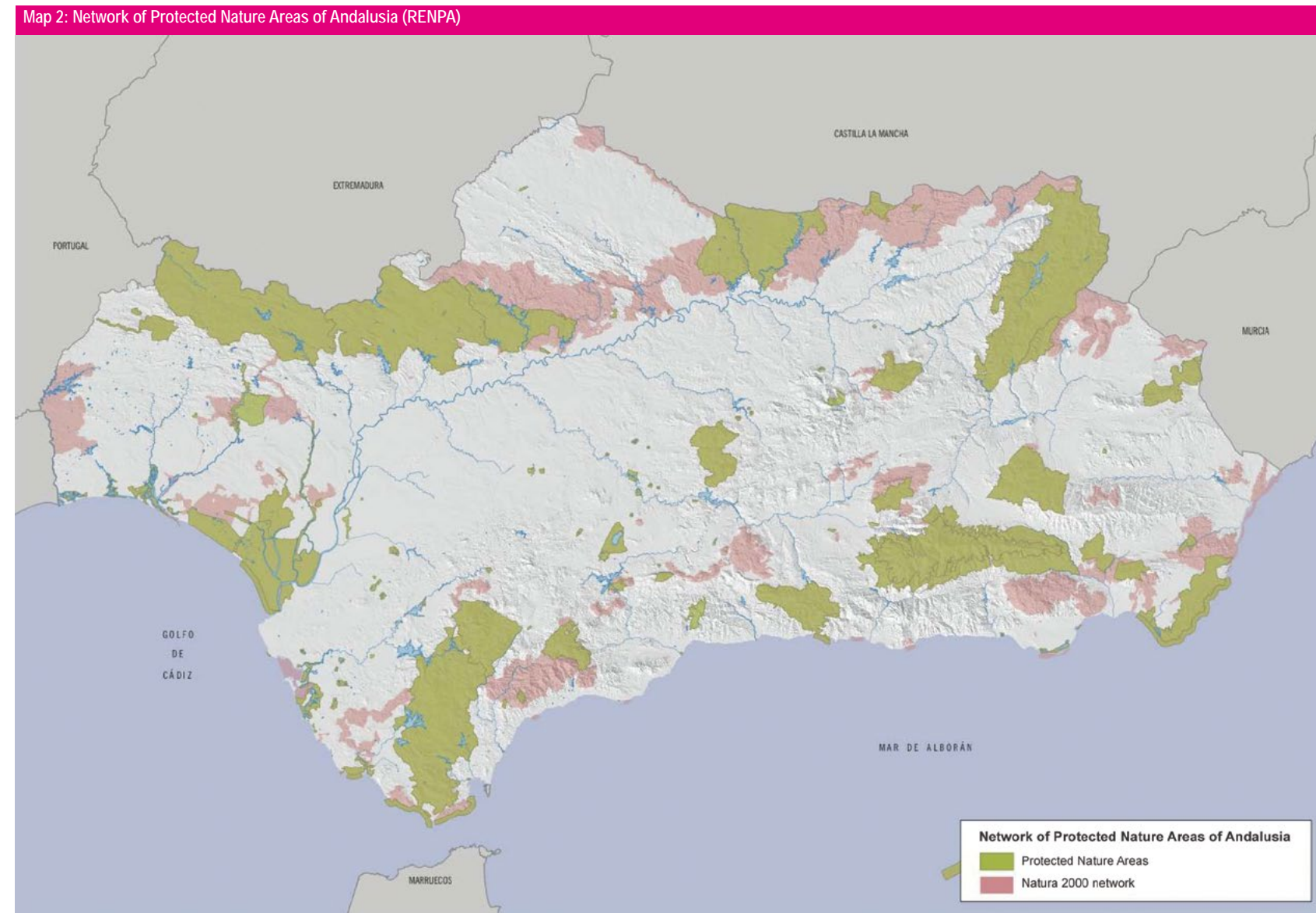
• **Intrabetic furrow:** this configures a strategic corridor for eastern Andalusia between the Guadalquivir valley and the east. It runs parallel to the coast and has access to the Guadalquivir to the north and to the Mediterranean coast to the south.

The greatest obstacles for communication are found in the mountain areas of the Betic systems and the wetlands of the Guadalquivir marshes. The areas with a gradient of more than 15% are shown on the following map (45% of the total surface area) together with the different communication axes, corridors and physical barriers of Andalusia.

A highly favourable factor for the development of the region's cycling communication system is its large number of hours of sunshine. Most of the region has more than 2,800 hours of sunshine per year. The

climate is another favourable factor, as it is largely Mediterranean, with some continental or oceanic influence in some places. The variability of its extension, however, provides it with a diversity of weather that is of great interest for cycling tourism. The same region has areas with microclimates such as Grazalema, which registers the highest rainfall of the peninsula, an alpine climate in mountainous areas, a tropical climate on the Granada coast and a sub-desert climate in the dry areas of the south-east.

This diversity of climates and land layouts provides the region with an equally diverse ecological heritage. The Network of Protected Nature Areas of Andalusia (RENPA, in Spanish) includes a total of 247 areas, including those that belong to the Natura 2000 network. The RENPA covers 2.8 million hectares, 2.7 million of which are on land (30.5% of



Source: the authors

the region). In terms of forest surface, 4.6 million hectares represents 53% of the region's total surface area.

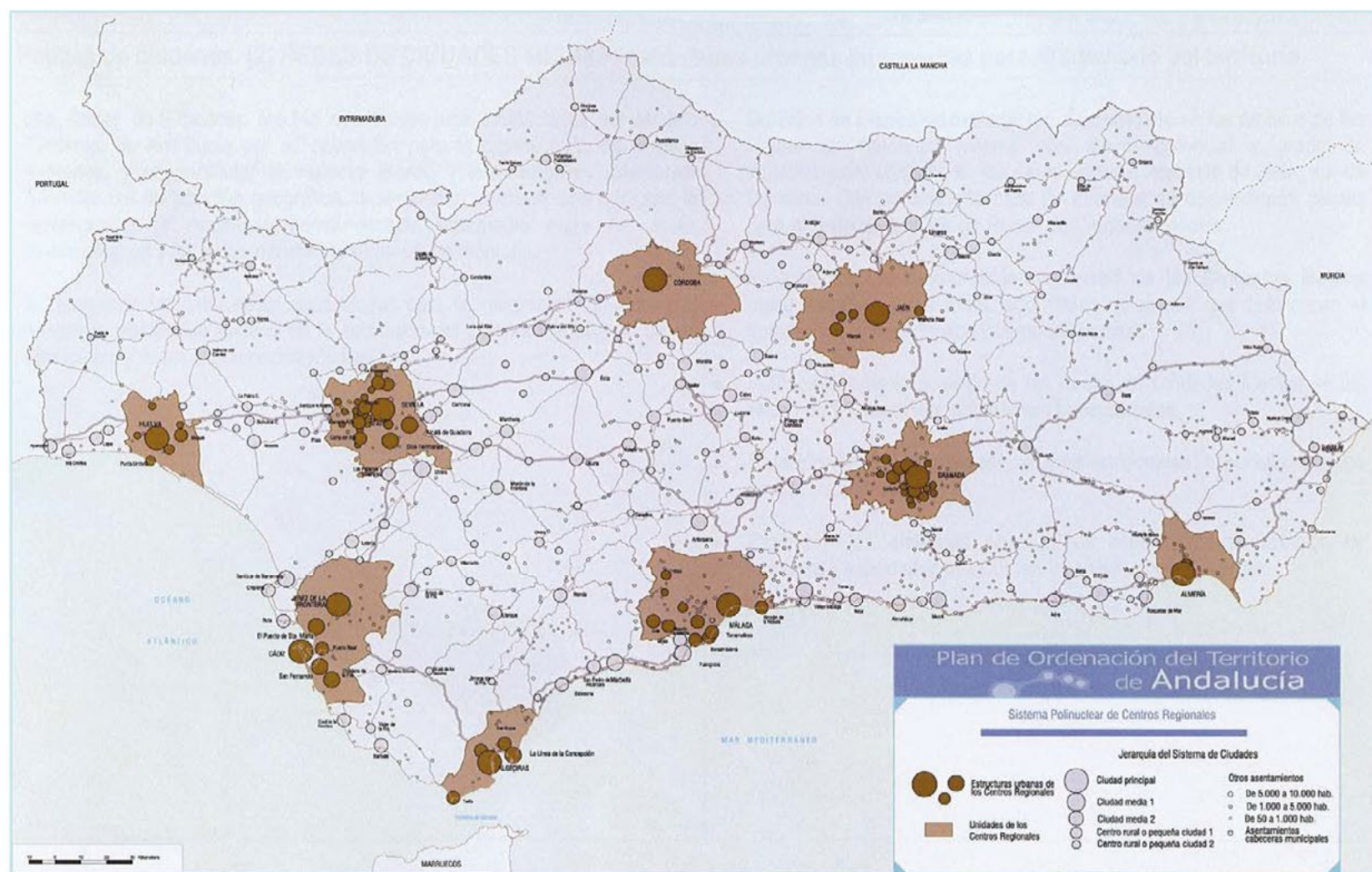
The following map shows the Network of Protected Nature Areas of Andalusia, distinguishing between those protected by regional legislation (which in turn can belong to the Natura 2000 network) and those that only belong to Natura 2000.

On the other hand, the cities of Andalusia have a great cultural, productive and human heritage, characterised as a polynuclear urban system (there is no single primary city). The conditions of the Andalusian settlement system thus ensure a rich and varied representation throughout the region, with no major imbalance. This is largely due to the first level in the hierarchy of this system of cities comprising nine urban

agglomerations around the eight provincial capitals plus the Algeciras Bay. Regional balance is thus ensured, supported by an important set of medium-sized towns.

Regional land-use planning in Andalusia has recognised this advantage/virtue and its enhancement has been one of the focal points of its activities. In metropolitan and urban settings, despite recent growth following extensive models, the cities, towns and villages of Andalusia

Map 3: Cities and towns of Andalusia



Source: the authors

are clearly representative of compact models. This is an essential advantage when it comes to fostering non-motor driven means of transport.

Thanks to the climate, its cities and the rich cultural and natural heritage of Andalusia, it is a region with an extraordinary potential for cycling, both as a means of transport and for tourism, sport and leisure use by the region's inhabitants and its visitors alike.

#### 4.1.2 Users of bicycles as a means of transport

In the context of global mobility in Andalusia, according to the information obtained from the PISTA, there are 2,300 million journeys by residents in motorised vehicles, of which 1,545 million (66.4%) correspond to working days and around 800 million (33.6%) to weekends and holidays.

Furthermore, 675 million journeys are made every year in the region by tourists, leading to a total of 3,000 million journeys in motor-driven vehicles. Information concerning modal distribution shows that private vehicles represent more than three quarters of all motor-driven mobility (81%), with the rest corresponding to public means of transport.

Considering the total population of Andalusia, this means that each inhabitant makes an average of nearly 260 journeys per year in private cars. On working days, the figure is 160 journeys per capita and year, although this varies considerably in different settings. In metropolitan areas, which house around 70% of the region's population, the motorised mobility rate is close to 400 journeys per year, with considerably lower rates in medium-sized towns and rural areas.

These figures are bound to be affected by the evolution of the economy, which had a turning point when the PISTA was being edited, but they represent a valid reference regarding global data.

On a regional level there are no statistics regarding the demand for bicycle journeys. In metropolitan areas and/or large towns, non-synchronised house-to-house surveys have been conducted by different public agencies covering a very large period of time. In general, they find that bicycles have been used little since the last few decades of the last century, representing less than 1% of total mobility.

The social survey conducted by the Statistics and Cartography Institute in 2011 shows an increase in Andalusia's new urban agglomerations, where cycling represents 1.4% of global mobility.

There are also highly fragmented figures regarding the use of bicycles in some infrastructures and figures for the number of cyclists in some urban areas, particularly the city of Seville where users have been counted since 2006. According to this information, around 6% of all journeys made in the region's capital are by bicycle.

The Annual Cycling Barometer is a report published by the Directorate General of Traffic since 2008. It only included nationwide figures until 2011 but the last edition also included a breakdown by autonomous regions.

The most important results and conclusions of this barometer (2011) in Spain include:

- In relation to the use of bicycles:
  - 20.5 million Spaniards have bicycles for their personal use and almost 3 million use one nearly every day.
  - 40% of them ride a bicycle quite often.
  - 24.9% of them did so in the last week.
  - 7.4% do so every day or nearly every day (6.6% in the 2009 barometer).
- With regard to sociology related to cycling, 87.5% of the population knows how to ride a bicycle, although ownership is only found in 52.7%. Cycling as sport and for leisure continues to be the most common use, although daily journeys are on the increase.
- When asked about the main advantages of cycling, the interviewees (users or not) spontaneously mentioned advantages related to mobility (48.5%), health and physical wellbeing (42.2%) and, finally, leisure (3.4%).





### 4.1.3 Users of bicycles for leisure, tourism and sport

Bicycles are also used often by thousands of Andalusian residents as a means of leisure and they have grown in number considerably in the last few years. Indeed, an important number of the existing cycle tracks are primarily used for sport or leisure.

Thousands of people take part in sports related to cycling, however hard they may be. Cycling clubs have hundreds of members and new clubs are founded every year. When well located, built and signposted, cycling routes are an immediate success and welcomed as a much used leisure infrastructure (Vías Verdes, Camino del Agua, Huelva – La Bota cycling path, etc.).

It is also increasingly common to find tourists who visit Andalusia by bicycle, as anticipated by private initiatives. There are both regional and other companies that organise cycling visits to the region. The number of companies that provide these and other cycling-related services is also increasing, as the use of bicycles as a means of transport, leisure and sport is also growing.

Cycling tourism is one of the tourism sectors that currently have the greatest growth perspectives. In Europe, the estimated number of cycling tourism journeys per year is 2,300 million, with an economic impact of more than 44,000 million Euros.

We are therefore witnessing the creation of a complete and highly dynamic business sector, which not only represents employment but also generates wealth that is fairly distributed throughout the region.

With regard to cycling as a sport, no surveys or statistics are available for Andalusia. Nonetheless, as seen earlier, the Annual Cycling Barometer of 2011 showed that leisure and sport were the primary reasons for using bicycles.

Eight-two per cent (82%) of the barometer’s interviewees who use a bicycle say that they do so for sport quite often, 15.7% every day or nearly every day, 34.3% once or several times per week, 24.3% a few times per month and 7.7% less often. Also, 81.9% go on bike rides quite often, 12.3% every day, 29.2% every week, 31.3% a few times a month and 9.1% less often.

The number of cycling clubs could be a good indicator of cycling for sport fans. In September 2012, the Andalusian Cycling Federation represented 434 clubs (388 in 2011), distributed by province as follows:

TABLE 6: DISTRIBUTION OF CYCLING CLUBS BY PROVINCE IN ANDALUSIA 2012									
Province	Almeria	Cadiz	Cordoba	Granada	Huelva	Jaen	Malaga	Seville	Total
Clubes	38	47	50	61	31	46	89	72	434

Source: Cycling Federation of Andalusia

### 4.1.4 Infrastructures

The figures concerning cycling infrastructures depend on the Administration involved and even on the characteristics and definition of “cycle path” (presence of tarmac, appropriate separation) used.

#### Inventory of infrastructures 2003

In 2003, the Regional Ministry of the Environment made the only general inventory to be found in Andalusia. It included both urban and metropolitan tracks and what are known as “green routes”.

Although this information has not yet been used, ten years later, it is of great qualitative value as a reference and shows the following trends:

- Green routes and cycle tracks for leisure and sport are predominant and also the only infrastructures of some magnitude with regard to length and continuity. This is the main reason why they are the most widely used by far.
- Large variations between provinces, not only with regard to existing cycle tracks but also to planned infrastructures.
- The large distance currently planned.
- The great variety of designs, materials, layouts, and in general types, showing that there is no common code of action and maintenance for cycle path construction. Whether the sections considered should even be classified as such is also occasionally questioned.

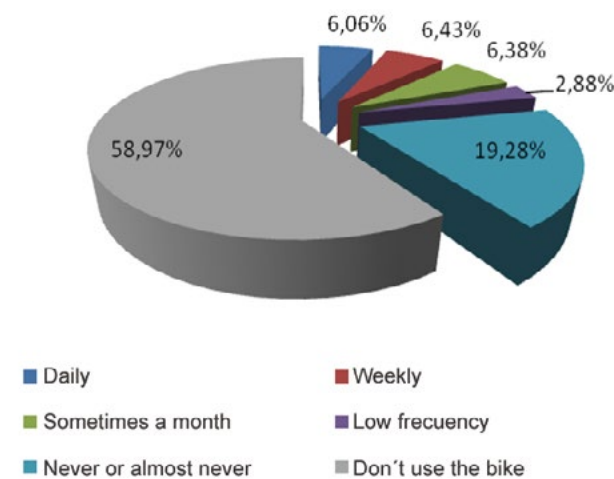
#### Subsequent infrastructures

In the last few years, the Regional Ministry of Development and Housing has undertaken a number of projects in which cycle tracks have been built, often as infrastructures secondary to larger constructions (multimodal roads).

The total length of the contemplated cycle tracks is 377.29 km, approximately 55% of which are in project phase (206.91 km). Forty-eight of the total projects cover three kilometres or less. Cadiz is the province with the largest number of kilometres (158.47 km), followed by Seville (93 km), Huelva (45 km) and Jaen (34.68 km). However, most of them are still in project phase.

- The main disadvantages are the hazards of motorised traffic and the lack of specific infrastructures (cycle tracks, parking facilities and storage).
- The interviewees mention that there are growing numbers of areas for cycling but believe that they are still insufficient.
- La mayoría de los entrevistados está de acuerdo en habilitar espacios reservados para bicis en el transporte público (79,4%) o que se puedan llevar en éstos con o sin espacios habilitados (67,2%).
- The breakdown by autonomous region shows that 40% of the interviewees who live in Andalusia use a bicycle with some frequency. It is used daily or nearly every day by 10.4%. In this respect, it is the leading region, followed by Valencia (9.9%), Castilla la Mancha and Castilla-Leon (both 9.3%).
- The only figures regarding daily cycling are for Spain as a whole, with 6% of the interviewees travelling by bicycle practically every day.

Graph 4: Frequency of use among bicycle users in Spain



Source: Annual cycling barometer, July 2011



The status of these projects is currently as follows:

**TABLE 7: REGIONAL MINISTRY OF DEVELOPMENT AND HOUSING PROJECTS THAT INCLUDE THE CONSTRUCTION OF CYCLE TRACKS (AMOUNT AND KM)**

Province	Projected		Underway		Complete		Total	
	amount	Km.	amount	Km.	amount	Km.	amount	Km.
Almeria	1	2,13	0	0	1	5,5	2	7,63
Cadiz	10	83,38	2	32,41	9	42,68	21	158,47
Cordoba	0	0	1	2,63	4	12,38	5	15,01
Granada	4	13,60	0	0	2	2,86	6	16,46
Huelva	4	19,09	3	4,60	2	21,32	9	45,01
Jaen	5	16,70	0	0	4	17,98	9	34,68
Malaga	1	5,56	0	0	1	1,47	2	7,03
Seville	14	66,45	3	9,02	9	17,53	26	93
Total	39	206,91	9	48,66	32	121,72	80	377,29

Source: Regional Ministry of Development and Housing

The Regional Ministry of Environment and Land-use Planning has also collaborated in projects that involved the construction of cycle tracks, through the Sustainable City Programme in 40 municipalities.

The total km of cycle tracks involved are distributed as follows.

**TABLE 8: DISTRIBUTION OF KM OF CYCLE TRACKS BUILT IN THE CONTEXT OF THE SUSTAINABLE CITY PROGRAMME, BY PROVINCE**

Province	Almeria	Cadiz	Cordoba	Granada	Huelva	Jaen	Malaga	Sevilla	Total
Km	9,0	38,48	7,4	7,6	18,65	12,2	23,12	34,76	151,21

Source: the authors

In all, more than 151 km of cycle tracks have been built, with collaboration in the adaptation of another 20. All 40 of these projects are 3 km long or more, largely benefiting the provinces of Cadiz, Seville, Malaga and Huelva, in that order. The total investment was in excess of 17 million euros.

Finally, important cycle path projects have been undertaken as part of different programmes, or directly by local corporations, in the nine cities and other areas.

As preparation for this document, all these cycle tracks were inventoried and documented. They can be found in the section concerning diagnosis in cities and towns.



### Regional support

The following sources of regional support can be identified as a basis for most of the proposed regional Network of Cycle Tracks, particularly in urban areas:

- **Network of Green Routes:** an initiative of Fundación de Ferrocarriles Españoles that makes use of old unused railway line sites to provide a consolidated leisure option with considerable success. The constructive characteristics of these tracks vary considerably from one to another. In Andalusia there are a total of 22 green routes, which cover a distance of 535 km.
- **Drovers' roads:** the recovery of drover's roads is probably the most striking structural project that has led to public access to a large number of pathways that could be travelled by bicycle. The Andalusian Network of Drovers' Roads covers a potential distance of 30,000 km, connecting municipalities and districts with each other and the rest of the peninsula.

In metropolitan areas they have been more evident in the form of green gates (530 km) and metropolitan green corridors (216 km).

These roads cannot be tarmacked and they are often in poor condition, as well as having discontinuous layouts. There are

some with encumbrance problems affecting part of their length.

- **GR footpath:** they form part of the European network of long-distance footpaths. Andalusia contains 19 type-approved tracks that form part of the network, with a total length of nearly 3,000 km. Part of them cannot be used for cycling, and their vocation is to be used to be preferably adapted to trekking.
- **Minor roads:** they are normally characterised by little traffic (low AADT) so those that do not form part of the main road network could be used. They also usually cross areas with significant landscape value.
- **Roads linked to river courses:** these roads have no motor-driven traffic and their landscape value is also high.

In relation to their overall condition, in many cases these roads, droving roads and green routes, etc., have different problems that could hinder or even prevent their use by cyclists. For example:

- Road surface in poor condition, blocked by sand in the summer and mud in the winter. Paving cracked or invaded by vegetation.
- Narrow roads or roads damaged by neighbouring farms ploughing the margins or even part of the roads themselves.

- Fencing off public roads and even their complete closure to traffic by the private farms that they cross.

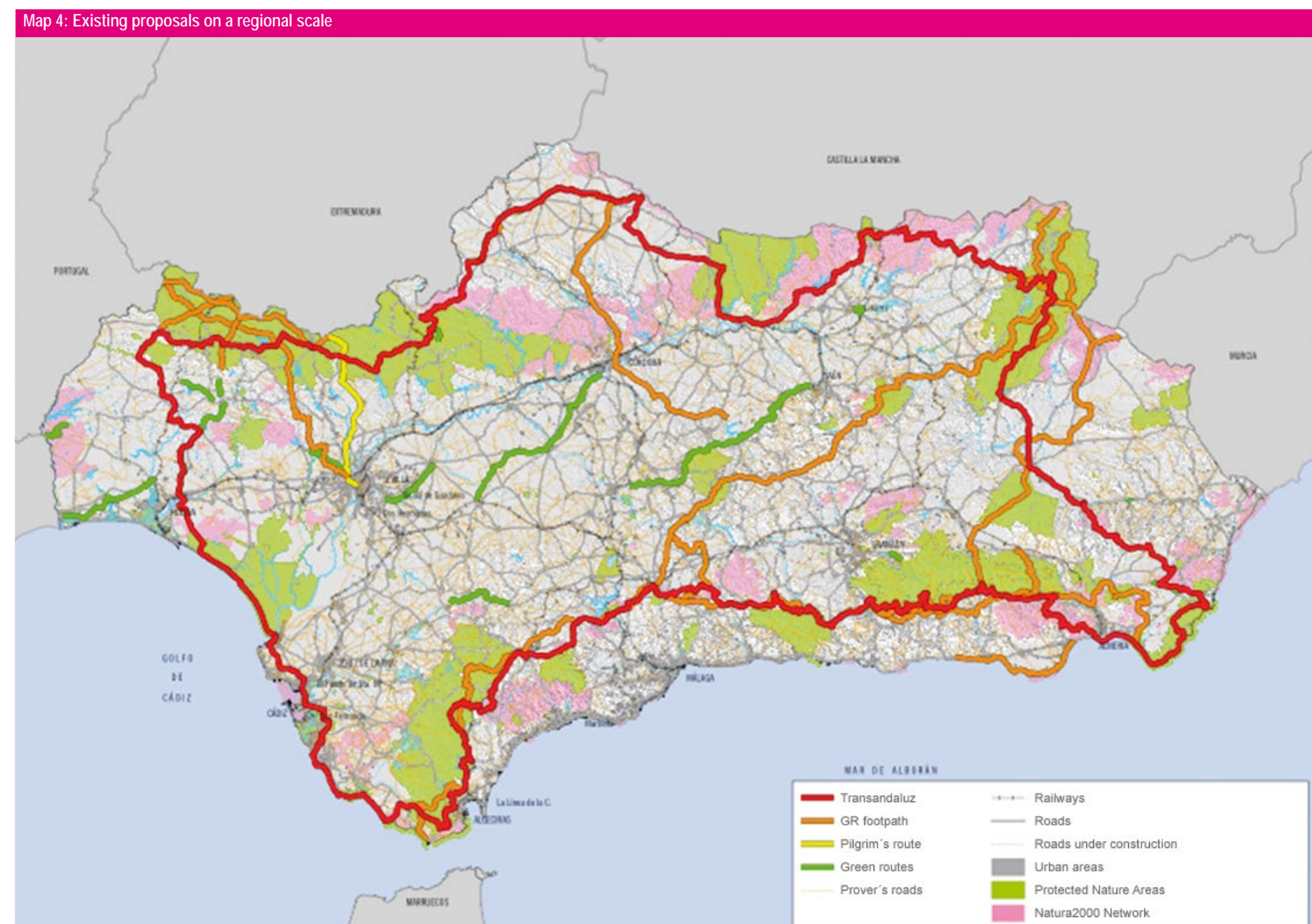
Problems like these often hinder the use of these roads for sport and tourism. They could be reduced or even completely solved with a regular maintenance service established in coordination with local corporations or sports associations.

Thus, so far the initiatives of the regional government of Andalusia or other agencies have primarily focused on recreational or environmental activities. At the same time, some tarmacked roads associated with transport and mobility have been constructed by Provincial Delegations of the Regional Ministry of Development and Housing and local corporations.



TABLE 9: STATUS OF GREEN ROUTES IN ANDALUSIA				
	Adapted	Travel guide	Length km	Landscape
Almeria				
Volula del Río	Si	No	1,6	Hills
Lucainena	Si	Si	5,5	Sub-desert
Almanzora	Si	No	11	Hills and plain
Cadiz-Seville				
La Sierra	Si	Si	36	Hills and river banks
Cordoba				
La Sierra	Si	No	28	Countryside and river banks
Sub Betic	Si	Si	56	Hills
Granada				
Sierra Nevada	No	No	6	Mountains
Sierra de Baza	Si	No	7	Plain
Huelva				
Guadiana	Si	No	17	Mediterranean woodland
Coastal area	Si	No	49	Marshes
Molinos del Agua	Si	No	36	Countryside, woodland and grazing land
Odiel	No	No	17	Mediterranean wood and river banks
Riotinto	No	No	29	Grazing land, pine and eucalyptus woods
Jaen				
El Aceite	Si	Si	55	Countryside and hills
Guadalimar	Si	No	20	Olive groves, plain and gallery forest
Linares	Si	No	6	Valley, olive groves and river banks
Minas de Plomo	No	No	11	Olive groves on hillsides
Minas de Plomo	No	No	9	Plain and olive groves
Seville				
Minas de Plomo	No	No	25	Countryside
La Campiña (II)	No	No	65	Countryside
Itálica	No	No	30	Countryside
Sierra Norte de Sevilla	Si	Si	15	Mediterranean wood and river banks

Source: Green Routes website



Source: the authors

### Current initiatives

There are finally several initiatives worth highlighting that should be considered when designing the Andalusian Network of Cycle Paths, especially on a regional scale:

- **The Strategy to Foster Cycling in the Costa del Sol Tourism Corridor**, promoted by the Regional Ministry of Tourism and Trade's "Qualifica" consortium. There is a preliminary study of the infrastructural possibilities of this corridor.
- **The Guadalquivir Project**, managed by the "Guadalquivir Turístico"

consortium. The project's primary objective is to add value to the main course of the river Guadalquivir and its affluent, the river Genil, for sustainable tourism use. One of the project's programmes, called "The road of the Guadalquivir", foresees the use of the river's margins for cycling. This project was included when defining the Andalusian Network of Cycle Paths.

- **TransAndalus network**: it is a management initiative that makes use of the region's existing roads and routes to offer a circular journey of more than 2,000 kilometres ([www.transandalus.org](http://www.transandalus.org)). It is an initiative of private origin that is very successful thanks to how the offer is structured and used. The TransAndalus network is one of the most important points of reference for mountain bike tourism in Andalusia, and is used by thousands of people.

- **EuroVelo network:** it is a European Cyclists' Federation (ECF) project aimed at developing a European network of routes for cycling tourists to be able to cross Europe. It consists of a total of 14 routes and numbers 1 and 8 reach Andalusia.

### 4.1.5 Intermodality

The most significant information about bicycle intermodality in Andalusia is published by the Seville Area Transport Consortium in relation to the Bus+Bike service. This and other similar experiences in metropolitan areas of the region are described in the section about urban agglomerations.

Intermodality between cycling and the public transport network is yet to be developed. There are no common criteria for allowing bicycles on vehicles or regarding the presence and parking of bicycles in regional public transport nodes, including airports and central railway stations.

The public road transport network in Andalusia is large, with just over 5,000 stops. The facilities that provide access are important nodes for facilitating such intermodality. Around 85 towns, usually the most highly populated, have bus stations.

The current conditions established for public transport concessions contain no guidelines or rules that demand that bicycles be treated as a means of transport, so whether they are admitted or not depends on the transport provider. In the conditions for the renewal of concessions, the admission of bicycles is foreseen as an improvement.

In some metropolitan cases, as we shall see, transport consortiums have tried to regulate the transport of bicycles, resulting in the admission of folding bikes that are classified as luggage.

There are also 146 railway stations in Andalusia that also represent an opportunity for intermodality.

### 4.1.6 Legislation

There is little legislation currently related to cycling and what there is not very specific and, especially in urban areas, fails to satisfy the needs of bicycle traffic. In these conditions, not only does it not foster cycling, but indeed represents an obstacle that urgently needs to be modified.

The following table shows all the legislation in place nationwide and in the autonomous region of Andalusia that has an effect on the use of bicycles.

TABLE 10: STATE AND ANDALUSIAN REGIONAL LEGISLATION	
Scope	Legislation
State-wide	Legislative Royal Decree 339/90, of 2 March, which approves the articulated text of the Law on Traffic, Circulation of Motor-driven Vehicles and Road Safety
	Law 19/2001, of 19 December, reforming the articulated text of the Law on Traffic, Circulation of Motor-driven vehicles and Road Safety, approved by Legislative Royal Decree 339/1990, of 2 March.
	Royal Decree 1428/2003, of 21 November, which approves the General Regulation of Traffic for the application and development of the articulated text of the Law on Traffic, Circulation of Motor-driven vehicles and Road Safety, of 2 March (BOE 23/12/2003) .
	Law 18/2009, of 23 November, which modifies the articulated text of the Law on Traffic, Circulation of Motor-driven Vehicles and Road Safety, of 2 March, in sanction-related matters.
Regional	Ordinance on pedestrians' and cyclists' traffic in Seville. Official Journal of Seville No. 117, Tuesday, 22 May 2008.
	Ordinance on cyclists' traffic in Malaga. Official Journal of Malaga No. 117. 2011.
	Ordinance on pedestrians' and cyclists' traffic in Granada. Official Journal of Granada No. 134, 15 July 2010.

Source: the authors

The **Traffic Regulation** is the main state-wide legislation and, in most urban areas lacking specific ordinances, the only legislation for the regulation of pedestrian and bicycle traffic. However, it does not respond to the needs of non-motorised means of transport, often hindering their development, as cycling is only approached from the perspective of interurban traffic.

Regulation of the use of bicycles in state legislation is found in the terms shown on the following table, and the general regulation for other vehicles is otherwise applicable.

This regulation may be considerably changed by amendments that the Directorate General of Traffic is expected to announce in relation to General Traffic Regulations.

Indeed, the previous government (2007 – 2011) developed a draft version of a very ambitious change to Traffic Regulations, which substantially improved cycling conditions, especially in urban settings, and the bicycle's classification as a vehicle, with its own definition, rights and obligations.

These changes were the subject of considerable debate, with an agreement finally being reached with the business and social sectors linked to cycling. Among other issues, the information available about the reform of the Traffic Regulation refers to the compulsory use of helmets in urban areas and to drive on the right.

Therefore, the current regulation is far from capable of responding to most of the situations that occur on a daily basis on roads and in urban areas in relation to bicycles.



TABLE 11: STATE REGULATION OF THE USE OF BICYCLES

Aspecto	Regulación
Definition of cycle	The Road Safety Act defines "cycle" as a "vehicle with at least two wheels, solely activated by the muscular effort of the people who ride it, particularly through pedals and cranks". It also defines bicycle as "two-wheeled cycle".
Type approval	Bicycles suitable for use on roads have to be distinguished from bicycles classified as toys.
Age	It refers to the maximum age of minors to travel on type-approved seats and the minimum age for travelling on motorways and A roads. It is difficult to apply, however, as there is no type-approval system for these seats in Spain.
Use of trailers	It establishes that the maximum weight of a trailer cannot exceed 50% of the mass of the tractor vehicle, in this case the bicycle. It is again difficult to apply, due to the difficulty of manufacturing a trailer that does not exceed 50% of a bicycle's mass.
Alcohol and narcotics	It establishes the maximum alcohol level for cyclists on roads subject to traffic laws. It also establishes that cyclists must undergo detection tests.
Changes of direction	If there is no specific lane for turning, cyclists must position themselves to the right of the road whenever possible, before they start to turn.
Overtaking	It establishes the conditions for overtaking pedestrians, vehicles pulled by animals and two-wheeled vehicles not in urban areas. It also establishes that overtaking among cyclists who ride as a group is not classified as overtaking.
Lights	It regulates the need for reflecting elements and lights.
Acoustic warnings	It specifies that cycles must have a bell in order to circulate.
Use of helmets	It regulates the obligation to wear helmets on interurban roads, with some medical exceptions in extreme heat.
Protection	Cyclists must wear reflecting jackets.
Position on the road	In general, it reserves the hard shoulder for the use of bicycles and accompanying cars and, if necessary, the smallest possible part of the road.
Sport and cycling races	It regulates the need for prior authorisation, for signposting/markings, for healthcare personnel and assistants.
Cyclist passes	It regulates their markings.
Types of road	It defines 6 types of cycle paths.
Technical conditions	It establishes the characteristics of cycles in order to be able to run on the roads covered by the Regulation.

Fuente: Elaboración propia

## 4.2 Diagnosis of urban agglomerations.

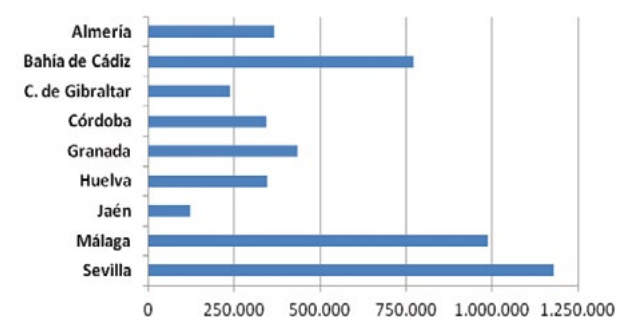
For the purpose of this Plan, the nine main urban agglomerations of Andalusia are the areas located around the eight provincial capitals plus Algeciras. They comprise the municipalities serviced by their local transport consortium. The boundaries are defined based on mobility-related functional relations and criteria for the organisation of public transport in these areas.

There is general, but not absolute, coincidence with the boundaries of sub-regional land ordinance plans. In the case of Huelva and Almeria, the areas defined in this Plan include land covered by two sub-regional plans and some municipalities only form part of one of the two plans.

### 4.2.1 General characteristics

The nine main agglomerations of Andalusia defined for the purpose of this plan contain a total of 197 municipalities, 25.55% of the region, which house 5,671,070 inhabitants, 67.32% of the total population.

Graph 5: Population in urban agglomerations. 2012



Source: IECA.

With regard to journeys, a large share of the region's demand occurs in these agglomerations. These cities are therefore the most appropriate setting for sustainable mobility policies to be effective. In metropolitan and urban mobility, most journeys are related to work and studies. Due to their

recurrence, they are more easily encouraged to use alternatives to private cars. At the same time, they are settings where the application of policies in addition to providing and improving the necessary infrastructures are more effective: park-and-ride facilities, measures aimed at reducing traffic or town planning policies that promote proximity.

Therefore, the action taken in urban agglomerations will be decisive for a new alternative mobility model, promoting walking, cycling and public transport. The information available about mobility in this setting (there are several studies conducted at different times for some agglomerations) indicates the evolution of demand in the last few decades as unfavourable for sustainable mobility. The scenario that these studies reveal is one of increased mobility derived from population growth, with increased travelling distance. In these metropolitan settings, in the early nineties practically half of all journeys were made on foot or by bike. Now they represent less than a third of the total. Journeys that were previously made on foot are now made in private vehicles. Also, in absolute terms, the demand for public transport has remained unaltered.

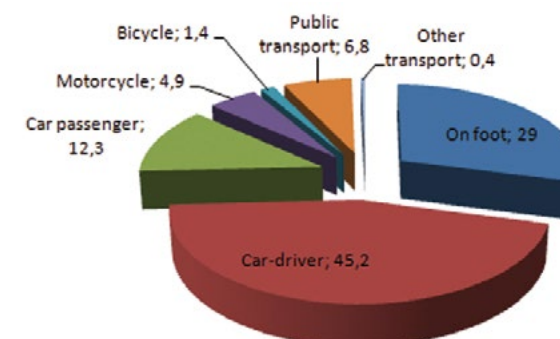
The predominant use of cars in metropolitan areas was largely induced by a segregatory policy in occupation of space, which increases travelling distances and encourages people to use cars, and low building density, which prevents residential areas from being equipped with a good public transport service at a reasonable cost. Another variable in the same direction can be found in important increases in population motorisation rates.

The Statistics Institute of Andalusia published the [2011 Social Survey: Mobility in the Urban Regions of Andalusia](#), which includes information about journeys on working days by means of transport in the nine regions or urban agglomerations (Table 12).

In relation to the use of bicycles, three of the nine areas did not have sufficiently large samples and, in general, as the study refers to a limited group, the representativeness of the data is lower than in other means of transport. In any event, it shows that cycling journeys represent a small share of the total, with an average of 1.4% in the 9 areas.

Even so, this figure was higher than that shown in previous studies.

Graph 6: Journeys on working days according to main means of transport. 2011



Source: IECA. Social survey 2011. Mobility of urban regions of Andalusia







TABLE 12: PERCENTAGE OF JOURNEYS ON WORKING DAYS ACCORDING TO MAIN MEANS OF TRANSPORT. 2011.  
(THESE DATA MAY DIFFER FROM OTHERS PROVIDED IN THIS DOCUMENT AS THEY ARE DERIVED FROM DIFFERENT SOURCES AND METHODOLOGIES).

Urban region	Municipalities	Population	Total journeys	On foot	Car driver	Car passenger	Motorcycle / Scooter	Bicycle	Public transport	Other transport	% Motorised
Almeria	19	508.657	1.099.878	32,1	47,2	11,8	1,7	1,6	4,0	1,5	60,8
Bay of Cadiz	12	807.793	2.176.140	28,6	42,4	13,5	8,1	1,3	5,6	0,4*	64,1
Campo de Gibraltar	7	267.062	541.212	24,8	49,1	15,8	4,8	0,6*	4,1	0,8*	69,7
Cordoba	16	398.762	902.612	33,3	40,9	11,0	5,4	2,1	7,2	-	57,4
Granada	50	566.830	1.382.297	31,8	43,0	9,2	5,2	1,5	8,2	1,1*	57,4
Huelva	21	398.584	959.108	30,1	44,8	14,7	3,1	2,5	4,8	-	62,6
Jaen	14	218.264	439.574	38,4	39,6	10,6	2,9	0,8*	7,6	0,1*	53,1
Malaga	32	1.294.982	2.775.480	30,4	45,8	10,5	6,5	0,5*	6,2	0,1*	62,8
Seville	50	1.543.901	3.405.252	24,0	48,1	13,6	3,3	1,9	9,2	-	65,0
Total	221	6.004.835	13.681.553	24,0	45,2	12,3	4,9	1,4	6,8	0,4	62,4

\*The size of the underlying sample is less than 20 cases, so the statistical reliability of the estimate is small.  
Source: Institute of Statistics and Cartography of Andalusia. 2011 Social survey: Mobility in the urban regions of Andalusia.

It is therefore essential for the basic objective of this plan to define cycle path networks and formulate specific strategies to foster this means of transport in the region's nine urban agglomerations. This document provides a proposal regarding said networks on a metropolitan scale and a strategy for fostering the use of bicycles in these settings.

There have already been some planning initiatives for infrastructures linked to bicycles as a means of transport in two regional areas, Malaga and the Bay of Cadiz. A proposal was also made for Seville in the Metropolitan Transport Plan. On the other hand, a citizens' initiative presented a proposal for the development of a metropolitan network of cycle paths in the metropolitan area of Seville. They all constitute interesting background and are taken into consideration in the proposals formulated herein.

#### 4.2.2 Potential use of bicycles in urban agglomerations

The nine urban agglomerations have different characteristics regarding their suitability for the use of bicycles, especially as a means of transport for daily obligations (work, studies, shopping), as this mobility requires greater functionality.

As well as weather considerations, which are not unique but certainly favourable throughout Andalusia, other factors affect each agglomeration's specific potential, such as geographical features, the layout of population settlements, the urban model and the public transport system.

Intermodality is also a source of important potential for cycling, while representing an incentive for the use of public transport, increasing its area

of action. The combination of cycling and public transport is one of the objectives of fostering sustainable mobility.

In adverse topographical conditions, it is difficult for cycling to increase its share of journeys and, in this respect, Andalusia's nine agglomerations present different characteristics. Based on the fact that, as a means of transport, gradients of less than 4% can be classified as suitable for cycling, and that from 6% on conditions become discouraging, four of the agglomerations can be defined as highly suitable. They are Seville, Huelva, Granada and Bay of Cadiz, which in general have gradients of less than 4% in their more highly populated areas.

The coastal corridor of Malaga is favourable, while there are significant difficulties in North-South directions, with gradients of more than 6%. The city of Malaga itself presents problems for cycling in the north-east sector.

The coastal areas of Almeria and Campo de Gibraltar do not have these conditions, due to the interior hills which, due to their proximity to the coast, interrupt the coastal corridor and, especially in the latter, the large amount of infrastructures in the Bay of Algeciras and the presence of marshlands.

The Almeria area has two different areas, the agglomeration closest to the city of Almeria and the Poniente district. Considered separately, they present better conditions for cycling.

Cordoba is a singular area, as its reduced metropolitan development also reduces the potential use of bicycles in the city which, nonetheless, has a highly favourable layout.

Finally, the Jaen area is unfavourable, and again presents a weak urban agglomeration around the city. Electric bicycles could be an alternative



for solving some gradients. For use on cycling paths, the local by-laws would have to clearly regulate the characteristics that distinguish electric bicycles from electric motorcycles.

Interurban distances and the arrangement of the system of cities is also a decisive factor for the development of metropolitan transport by bicycle. Admitting that distances of 8-9 kilometres could be the acceptable limit for cycling journeys, the region's agglomerations present important limitations in this respect.

Starting with the distances from town to each area's capital, only in Seville, Huelva and Granada are they shorter than this distance. Electric bicycles could also broaden their scope of action.

In some agglomerations, however, there are also axes favourable for cycling. This applies to Seville, Granada, Malaga and, to a lesser extent, Almeria and Cadiz. These areas have axes with journeys to or from intermediate points, so the distances are shorter. On the other hand, they are tourism areas where cycling infrastructures are even more justified, both as a means of transport and for leisure or sport. Remember that they have an important floating population, particularly in holiday periods.

Finally, as mentioned earlier, intermodality with public transport also gives cycling significant potential in metropolitan settings. The service improvements derived from the establishment of metropolitan consortiums in each of these areas provide a singular opportunity in this respect, with some cases including specific intermodality programmes that could be exported elsewhere.

In general, all public means of transport should be considered to facilitate intermodality by providing parking facilities at principal nodes and thus journeys in several stages. With regard to transporting bicycles on public transport, the railway affords the best conditions. Not only do Seville, Malaga and the Bay of Cadiz have specific commuter routes, but the underground system is already operative in Seville and under construction in Malaga, Granada and Bay of Cadiz, where we should also mention two maritime transport lines between the capital and Puerto de Santa María and Rota, respectively.

#### 4.2.3 Existing infrastructure

A significant number of metropolitan cycle paths have been built or adapted in all the areas. They include action taken as part of the Green Routes, Green Gateways and Green Corridors programmes. They are therefore basically not tarmacked and have different design characteristics. There have also been Regional Ministry of Development and Housing projects undertaken at the same time as road projects.

All these infrastructures, which were not part of a plan and were created under different programmes by different authorities, do not generally comprise networks. They are discontinuous infrastructures that therefore generate uncertainty in their use.

This discontinuity is occasionally enhanced by geographic factors, such as the presence of water courses or marshlands, and also the presence

of other infrastructures that have a barrier-like effect. There is also a lack of connection between these metropolitan roads and urban cycle paths, which are highly developed in some large cities.

This section must refer to the infrastructure available in the cities of urban agglomerations in as much as they comprise a planning unit. Such planning has to establish strategies, as we shall see later, in which the system should be based on a series of elements that will initially be based on consolidating the use of bicycles in the most central towns of each agglomeration.

The existing infrastructures in each agglomeration are now shown after a summary of their individual characteristics; indeed, this is one of the most important contributions of this document as far as information is concerned. The following tables show their lengths and ratios by population and surface area.

Nearly 900 kilometres of roads suitable for daily mobility have been inventoried in the nine agglomerations. The areas of Seville, Bay of Cadiz and Huelva are particularly important, the first because of the capital's urban network and the last because of its interurban network. In the Bay of Cadiz there is greater balance between urban and metropolitan networks.

The roads primarily used for leisure or sport are more than 800 km long, and they are predominantly located in areas such as Granada or the Bay of Cadiz; the two together contain half of this total length. The majority are green routes, green gateways and green corridors.

Area	Population	Surface area	Existing cycle paths (m)	Ongoing cycle paths (m)	Cycle paths (m) /100inhab	Cycle paths (m) /s.a. (km2)
Almeria	507.178	2.130	77.815	706	15,48	36,87
Bay of Cadiz	783.847	3.062	169.117	33.577	25,86	66,20
Cadiz	266.922	1.528	29.517	0	11,06	19,32
Cordoba	399.170	2.738	65.184	3.846	17,29	25,21
Granada	569.116	2.147	62.408	5.301	11,90	31,53
Huelva	400.240	3.247	126.701	5.315	32,98	40,66
Jaen	221.643	1.747	17.864	0	8,06	10,23
Malaga	1.021.755	1.429	92.973	7.408	9,82	70,24
Seville	1.528.816	4.905	242.823	21.482	17,29	53,88
Total	5.698.687	22.933	884.401	77.635	16,88	41,95

Source: the authors

### 4.2.4 Intermodality

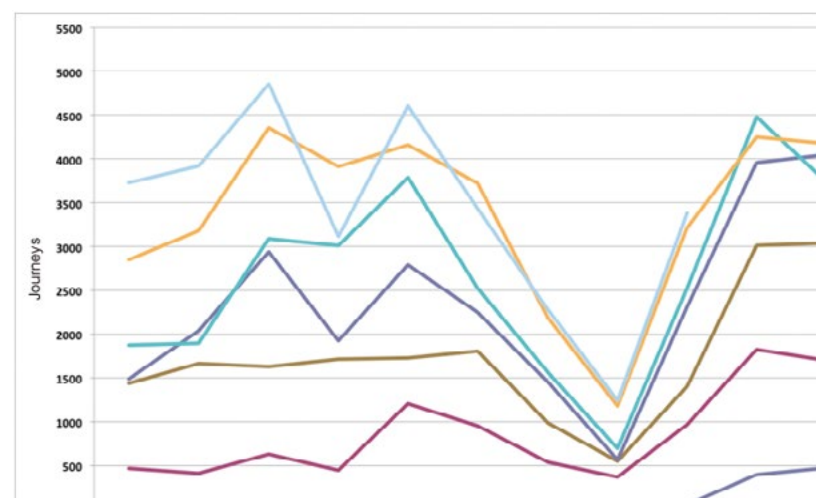
The cycling intermodality data available are basically those published by the Seville Transport Consortium in relation to the Bus+Bike service according to which metropolitan bus users have a free daily bicycle loan service.

Although conclusions cannot be reached for all the agglomerations from these data, it is interesting to note the positive effect of the implementation of a measure that facilitates intermodality between bus and bicycle.

As the following graph shows, the establishment of the Bus+Bike system, which facilitates city transport that does not depend on motorised traffic, was a success. In only four years, the number of journeys has multiplied by four. This spectacular increase is due to the provision of a fast connection that considerably reduces the time taken to reach the destination by not depending on general traffic conditions. It therefore helps to reduce traffic congestion.

The success of the Bus+Bike service can be seen not only in the increase in users but also in their satisfaction. The last survey was conducted in November 2010, and it found that 97.5% of its users describe the system and how it works as “good” or “very good”.

Graph 7: Evolution of number of Bus+Bike service users. Seville 2006-2012



Source: the authors. Data from the 2006-2011 Bus+Bike Statistical Report and 2012 monthly reports. Seville Transport Consortium.

TABLE 14: EVALUATION OF SEVILLE TRANSPORT CONSORTIUM'S BUS+BIKE SERVICE	
Object	Average score (maximum 10)
Personnel	9,1
Facilities	8,16
Maintenance	7,47
Overall evaluation	8,41

Source: 2010 Bus+Bike user survey. Seville Transport Consortium.

Since 2010, in the Bay of Cadiz, this service has been known as + BIKE because the service enables users of any type of metropolitan public transport with a Consortium card to freely use a bicycle to complete their journeys. At present, bicycles are loaned at the sea terminals of Cadiz and Puerto de Santa María and the Jerez de la Frontera bus station.

Since September 2011, the Almeria Transport Consortium also provides a Bus+Bike service, albeit with a very small number of bicycles. It has also extended its promotion of intermodality with another programme called Take your bike on the bus. Thanks to a series of agreements with the metropolitan public transport concession holders, bicycles are transported free of cost on these lines. Such measures, however, will not be fully successful until the area has a good cycle path network to foster the use of bicycles on a more regular rather than anecdotal basis.

The new major rail infrastructures have also considered cycling intermodality, although it requires further development. Line 1 of the Seville underground (Metro de Sevilla) permits bicycle access to stations and the transport of bicycles. One of each train's units is prepared and identified for this purpose. However, for service reasons, it is limited at rush hour. From 7.30 a.m. to 9.30 a.m. and from 12.30 p.m. to 3.30 p.m on working days, the limit is 2 bicycles per train and five stations. There are no constraints at any other time, unless the staff detect high occupancy rates.

Renfe Commuter services admit two bicycles per carriage, but they are forbidden at rush hour on the more demanded lines.

In sum, intermodality has been based to date on the public transport-public bicycle combination, with little attention paid to private bicycles travelling with their riders on public transport. In this respect, there are no common criteria for the admission of bicycles on the vehicles or regarding the presence and parking of bicycles in regional public transport nodes, including bus, commuter railway, medium-distance railway and underground stations.

### 4.2.5 Public bicycle systems

There is considerable diversity in bicycle loan or rental systems, from those aimed at certain segments of the population, such as the university community, to those for everyone in general. In view of their greater repercussion, the latter are of greater interest for policies promoting the use of bicycles. There can be different types of coverage (times, technology, financing, etc.) and they all are complicated to manage and have service provision constraints.

In general, public bicycle systems in Spain have not been very successful and, in some cities, systems promoted by the Andalusia Energy Agency ceased to operate after just a few months. Indeed, the Balance of the Public Bicycle in Spain establishes that only 27% of all Spanish public bicycle systems are used more than 1 daily loan per bike, and that in 53% it is less than 0.25. Although use rates are very low, the costs are very high. This shows the need for a hierarchy and priorities in the measures implemented.

It is believed that public loan systems should have been preceded by other supplementary measures to ensure the safe use of bicycles, basically well

planned cycle paths and traffic mitigation measures. Simple service access systems are also required, with sufficient loan stations in appropriate locations.

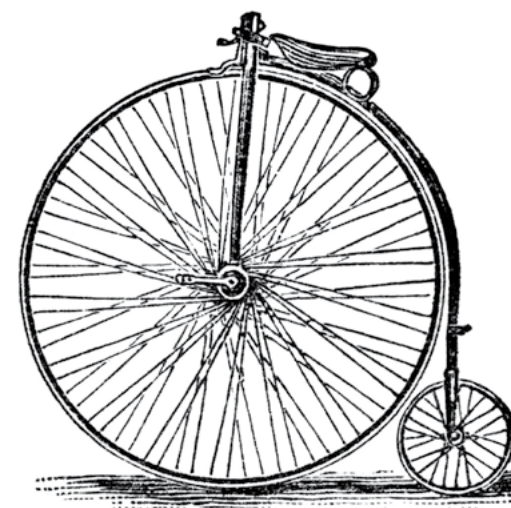
These services are available in Andalusia in the cities of Seville and Cordoba, with different characteristics and results.

The bicycle loan system in Cordoba, known as Eco-Bici Cyclocity, is free and has 35 bicycles located at four strategic points in the city: the railway station, Paseo de la Victoria, Avenida de Barcelona and Baños Califales. The system was introduced in 2003 (with 60 bicycles), when the system registered an average of 31 journeys per day. In 2010 a total of 5,936 people were subscribed to the service. Its reduced use could be due to the small number of bicycles and collection/drop-off points.

The Seville system, Sevici, introduced in 2007, together with a well-planned and large cycle path network, is one of the reasons for the successful use of bicycles in the city. Users can subscribe to the service for the long (year) or short term (week). The number of people subscribed for long term use peaked at around 70,000 in 2009. According to the latest figures, there are around 3,200 bicycles, 260 stations and 4,000 anchorage posts. The number of long-term subscribers exceeds 50,000 and there are more than 21,000 daily users. This represents just over 25% of all city journeys on bicycles. The greatest problem that the service has suffered is related to vandalism.

Through the Andalusian Energy Agency, the Regional Ministry of Economy, Innovation, Science and Business has promoted public bicycle systems in different towns and university campuses as pilot experiences. These activities are now included in the programme of grants for the sustainable energy development of Andalusia, valid until 30 December 2014.

Malaga Bici, the public bicycle hire system, became operational in July 2013. The system is intended to include ten to twenty pick-up/drop-off stations by the main bus stops, with a total of 400 bicycles and around 600 anchorage points. This service will use the urban bus pass as a means of access to public bicycle hire. The system is established to supplement public transport at the beginning and end of urban journeys, hence fostering intermodality.



## 4.2.6 Diagnosis by area

ALMERIA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
18	505.009	2.129,9	237,10
<b>Population</b>			
<b>Area</b>	<b>2006</b>	<b>2011</b>	<b>increase (%)</b>
457.558	505.009	10,37%	
<b>Capital</b>	<b>185.309</b>	<b>190.349</b>	<b>2,72%</b>
<b>Metropolitan area</b>	<b>272.249</b>	<b>314.660</b>	<b>15,58%</b>
Regional characterisation	It includes two types of area: the flat areas on the coast (suitable for cycling) and more abrupt inland areas. The proximity of hills to the coast means that the coastal flatlands have important discontinuities. The area contains around 90% of the population and the main towns.  The city of Almería, as the sub-regional service centre, centralises a set of nearby municipalities located to the north and exerts its strong influence on the nearest area to the west, particularly Aguadulce. The west is another important sub-unit that ranges from tourism or service areas to farming activities: Roquetas, El Ejido and Adra. Finally, the settlements in the municipality of Níjar present regional dynamics without the effects of the agglomeration.		
Mobility	Importantly, the participation of public transport is low. This actually is the agglomeration with the smallest share. A large proportion of journeys are made on foot (32.1% of the total). Cycling journeys are very few. The main journey destinations include the urban centres of Almería, the aforementioned towns to the west and the university campus, also to the west of Almería.		
Characteristics of public transport	Public transport is based on bus services, with different lines; the most important terminal is the intermodal station at Almería. The railway connects the capital to Seville, Granada and Madrid, although its role in the agglomeration is merely testimonial.  As well as the intermodal station in Almería, the main transport nodes are the bus stations of Adra, Berja, El Ejido and Roquetas de Mar.		
Initiatives developed to foster the use of bicycles	In relation to the "Take your bike on the bus" system, the consortium has signed agreements with different companies that allow bicycles to be taken on buses free of cost. A public bicycle loan system in the University Campus (2007), funded by the Andalusian Energy Agency, which is not currently operative. The consortium has a bicycle loan system that was established in 2011 at the Almería station, with a small number of bicycles (6).  Main initiatives in the city of Almería: <ul style="list-style-type: none"> <li>• Construction of a small network of bicycle parking facilities.</li> <li>• Conditioning of Rambla Amasteros as a cycle street, Zone 30, to be used jointly by motor-driven vehicles, cyclists and pedestrians.</li> <li>• General Council Regulation of Traffic 6, which refers to the use of bicycles with some discrimination: "unless the space is reserved for that purpose, bicycles cannot be used on pavements, they must be used on the road".</li> <li>• Since 2008 there has been a commitment to draft the Cycling Steering Plan,</li> </ul>		
Current metropolitan network	No metropolitan network to date or planned for the near future. The only cycle path that could be described as metropolitan, the Green Gateway of Almería, is less than one kilometre long and largely intended for leisure.		
Current urban network	Only Roquetas de Mar has any considerable length of cycle paths, partly derived from Environment's City 21 programme. The paths in Almería are largely linked to new urban developments. There are 18 kilometres in all.		

BAY OF CADIZ AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
10	781.892	3.062,00	255,35
<b>Population</b>			
<b>Area</b>	<b>2006</b>	<b>2011</b>	<b>increase (%)</b>
749.318	781.892	4,35%	
<b>Capital</b>	<b>130.561</b>	<b>124.892</b>	<b>-4,34%</b>
<b>Metropolitan area</b>	<b>618.757</b>	<b>657.000</b>	<b>6,18%</b>
Regional characterisation	The agglomeration's system of towns presents a highly defined polynuclear model. The city of Cadiz, as the service centre (administrative, educational), and Jerez as the largest town, perform important supramunicipal urban functions.  The Bay sub-unit comprises 7 coastal municipalities (8 including Chipiona) and Jerez, the largest town in the agglomeration, further inland and with some hills. They are all important from the perspective of the volume of their population. The presence of very low areas near the sea and protected nature areas and, in particular, the distances between towns (more than 10 km) are constraints for the development of cycling on a metropolitan level.  The size of a large number of towns and the presence of a commuter service by rail represent an opportunity for journeys in several stages, including bicycles. On the other hand, tourism and the presence of adjacent residential corridors are variables that favour different uses for cycle paths and journeys to or from those residential areas. This is the case of the Sanlúcar-Chipiona-Rota corridor, interrupted towards Puerto de Santa María by the Rota US Naval Station.		
Mobility	In this agglomeration a high percentage of journeys is made in private vehicles. Also, with a polynuclear system of towns with a large number of locally sourced services, interurban travel is less important than usual in more conventional settings. Sites of attraction include old city/town centres and the university sites located in Cadiz, Jerez and Puerto Real.		
Características del transporte público	An important part of the public transport system is the railway with long-distance and regional trains and, particularly from a metropolitan perspective, a commuter service: <ul style="list-style-type: none"> <li>• The C-1 Cadiz-Jerez line has 12 stops, including San Fernando, Puerto Real and Puerto de Santa María.</li> <li>• The C-1a line connects Las Aletas and the university in Puerto Real.</li> </ul> The planned train-tram from Chiclana de la Frontera to Cadiz, and the new La Pepa bridge, plans a tram line between Puerto Real and Cadiz, also stopping at the university. Both projects include cycle paths. Besides the conventional bus service, there are two catamaran lines that connect Cadiz to El Puerto de Santa María and Rota.  As well as the railway and maritime stations, other public nodes of transport are the bus stations of Sanlúcar de Barrameda and Rota. In Jerez it is combined with the railway station, as they are close together, and the Cadiz station has projected work on adjacent land.		
Initiatives developed to foster the use of bicycles	<ul style="list-style-type: none"> <li>• Bay of Cadiz Cycling Steering Plan (PDBBC, in Spanish). This document was drafted in 2009 by the consortium. It establishes different objectives for fostering cycling and, after analysing the condition of the cycle paths, proposes what are basically urban networks divided into two levels.</li> <li>• Creation of the Bay of Cadiz Network of Open Spaces and Green Routes (2007): it establishes primary and secondary networks, with the former consisting of largely tarmacked roads (linked to road widening works, railway infrastructures, etc.) and the latter of dirt roads (Green Gateways, public farm roads, etc.).</li> <li>• Boat + Bike programme: it enables public transport users in the Bay of Cadiz to use free bicycles for use in the municipalities that benefit from the maritime service.</li> <li>• Bus+Bike programme: the Jerez de la Frontera town council has set aside an area in the bus station for the Consortium for a public-transport+bike service.</li> <li>• Provincial Sustainable Urban Mobility Strategy (PMUS of 14 municipalities)</li> <li>• Sustainable Interurban Mobility Plan of the Southern Atlantic Coast of Cadiz</li> <li>• Interurban Mobility Plan of Los Barrios and San Roque</li> <li>• Public bicycle system in Chipiona and Puerto Real, with the help of the Andalusian Energy Agency</li> </ul>		
Current metropolitan network	On this scale there is an extensive network basically comprising paths for leisure and sporting purposes, although they are treated differently and do not form a network. At the same time, basically due to CFV activities, there are some tarmacked interurban cycle paths, such as from La Ballena to Sanlúcar de Barrameda and from Chipiona to Rota.  As well as important sections planned for leisure-sport, there is a planned network to connect the eight municipalities around the Bay, which should probably be considered when the use of bicycles increases in the area.		
Current urban network	Under different programmes such as City 21, a number of projects have been undertaken in the urban areas of the Bay, generally compact towns suitable for cycling, especially Cadiz and Jerez. There has been considerable cycle path development in Rota, Jerez, Puerto de Santa María and Sanlúcar de Barrameda. Importantly, there are very different municipal regulations, which should be coordinated to prevent different references for metropolitan travel.		

CAMPO DE GIBRALTAR AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
7	267.062	1.527,5	174,84
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
Area	253.717	267.062	5,26%
Capital	112.937	117.810	4,31%
Metropolitan area	140.780	149.252	6,02%
Regional characterisation	<p>As a whole the area has relatively high gradients but in nearly all the towns these gradients are less steep. The towns are either by the sea (Algeciras, La Línea, Tarifa) or located in river-formed corridors with low gradients (Los Barrios). La Línea is very suitable for daily cycling, unlike Algeciras, which has steeper gradients.</p> <p>The urban subunit located on the arch of the Bay is particularly suitable for cycling as it is the case in other nearby settlements. It comprises the towns of Algeciras, La Línea-Los Barrios and San Roque, which house around 90% of the area's population. The relationships between these towns are complex due to the road layout and the presence of protected nature areas (Palmones Nature Area).</p> <p>Functionally, it is a polycentric system with two large towns, Algeciras and La Línea de la Concepción, which tend to structure an urban network and establish a series of dependencies based on the provision of goods and services.</p>		
Mobility	The IECA survey shows reduced participation in public transport and journeys on foot. Journeys by bicycle are also reduced, as in most agglomerations. Algeciras is highlighted as a site of attraction, especially for Los Barrios and Tarifa, and there is also an important relationship between La Línea and San Roque.		
Características del transporte público	<p>Public transport is based on urban and interurban buses. The railway connects Algeciras with elsewhere through a node around Antequera, which is of little significance for metropolitan transport.</p> <p>The main transport nodes include the railway and bus stations of Algeciras (located in the same square) and the La Línea bus station.</p>		
Initiatives developed to foster the use of bicycles	No planning initiatives that affect cycling have been identified. Algeciras had a bicycle loan system, introduced with the help of the Andalusian Energy Agency, which connected to some parts of the University of Cadiz, but it is currently not operational.		
Current metropolitan network	The interurban cycle paths in the area are largely for leisure and sport and measure around 40 km, highlighting the green corridor between the two Bays and the Green Gateways of Algeciras and La Línea. There are also around 10 km of cycle paths from Los Barrios to Alcalá de los Gazules (under the auspices of the CFV, parallel to what was once the main Jerez-Los Barrios road, using the old service road).		
Current urban network	The only existing infrastructure is located in La Línea, with a length of only some three kilometres, and in Algeciras, with around 7 km. They are of different types, with few markings and signs and do not form a network.		

CORDOBA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
16	398.762	2.737,8	145,65
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
Area	388.350	398.762	2,68%
Capital	322.867	398.762	1,79%
Metropolitan area	65.483	70.103	7,06%
Regional characterisation	<p>In the Cordoba area's system of towns, the city of Cordoba is of great significance, with more than 82% of the agglomeration's population, the highest figure in Andalusia. The population of the rest of the municipalities is therefore very small. Cordoba, due to its size and location of urban equipment and services, is of central significance not only for the agglomeration but also for the entire province.</p> <p>The large surface area of the city of Cordoba means that distances are not compatible with cycling as a means of transport, as the shortest is 25 kilometres. However, thanks to the urban model and layout of the city itself, it presents ideal conditions for cycling.</p>		
Mobility	<p>With regards to modal distribution (2011 IECA survey) the participation of public transport and bicycles is greater than average in other regional agglomerations. This should be related to Cordoba's importance in the agglomerations system of towns and hence the incidence of urban mobility.</p> <p>The closest relationships in the agglomeration are between Cordoba and towns on the Guadalquivir axis, such as Almodóvar del Río.</p>		
Características del transporte público	<p>Public transport is based on buses, with lines from local towns to the city of Cordoba. The conventional railway does not provide a good service to the corridor, particularly because of the accessibility of the stations in question. There is a metropolitan railway service to the University (Rabanales), which forms part of the regional system, but whose features and frequency are more typical of commuter services.</p> <p>The main transport node comprises the Cordoba railway and bus stations, separated by a single avenue with several city bus stops.</p>		
Initiatives developed to foster the use of bicycles	<p>Besides developing an extensive cycling network, the city of Cordoba has developed important initiatives in favour of cycling:</p> <ul style="list-style-type: none"> <li>• Cycling Steering Plan: 1997. The network covers the entire city except the old city centre. There are numerous bicycle parking facilities linked to the plan's development.</li> <li>• Bicycle loan system installed in 2003 under the name of Eco-Bici Cyclocity. Free but small: 60 bicycles located at four strategic points of the city.</li> <li>• PMUS, 2011. Its objective with regard to cycling is to complete the pending routes identified in the plan and provide more public bicycles.</li> <li>• Bicycle Office: recent creation of the Bicycle Office, together with the Mobility Area and Mobility Observatory.</li> <li>• The Rabanales university campus has a public bicycle loan system in use, introduced with the help of the Andalusian Energy Agency</li> </ul> <p>There have been other related initiatives: Historic City Centre accessibility plan, semi-pedestrianisation of the Guadalquivir riverbank, network of pedestrian routes or transport plans for new industrial estates</p>		
Current metropolitan network	The metropolitan infrastructure for bicycles basically comprises several sections generated by the Green Gateways and Green Route programmes. In all, there are around 300 kilometres of cycle paths for leisure or sport.		
Current urban network	The only urban network is found in the city of Cordoba. It is 58 kilometres long. However, there is insufficient demand to support the network. Different discontinuities are found in the design of lines, together with construction problems. The network also has important discontinuities.		

GRANADA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
50	566.830	2.147,2	263,99
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
525.898	566.830	7,78%	
<b>Area</b>			
237.929	240.099	0,91%	
<b>Capital</b>			
287.969	326.731	13,46%	
<b>Metropolitan area</b>			
Regional characterisation	<p>The Granada area configures a classic metropolitan setting with a central city that is very important because of its size related to other towns included in the area and because it concentrates urban services and equipment. Granada's urban centrality over the rest of the metropolitan area, consisting of a large number of small towns, is considerable. The most heavily populated of these towns, Armilla to the south and Macarena to the north, are practically part of the city of Granada.</p> <p>We can distinguish between two basic areas in Granada:</p> <ul style="list-style-type: none"> <li>• A flat, well-populated area around the Genil plain.</li> <li>• To the west, the geographical layout is more abrupt and the population is thinner. The city of Granada itself is affected in its westernmost areas by gradients that limit daily cycling.</li> </ul> <p>There is a number of municipalities, around 13, located less than 9 kilometres from the capital, and numerous inter-municipal relationships in the area of influence, at very short distances. In the plain, this favours the use of bicycles as a means of transport.</p>		
Mobility	<p>The structure of mobility in the area is characterised by the powerful centre of attraction that is the city of Granada for the entire area. With regard to modal distribution, public transport plays an important role compared to other parts of the region, as does the significant number of journeys made on foot.</p>		
Características del transporte público	<p>Metropolitan public transport in Granada is based on buses. The network is radial in structure with a centre in Granada with two urban bus terminals, one by the railway station and another in Paseo del Violón. The two points are connected by the Granada urban network. Another important public transport node is the Granada bus station, located to the north, near the road to Jaen.</p> <p>A metropolitan underground line that will connect Granada to Armilla in the south and Macarena and Albolote in the north is currently under development. When it is operative, it will be a very important part of Granada's public transport system.</p>		
Initiatives developed to foster the use of bicycles	<p>The main initiatives focus on the city of Granada, as follows:</p> <ul style="list-style-type: none"> <li>• Sustainable Urban Mobility Plan, 2012. It enlarges the network foreseen in a previous Granada Cycling Steering Plan, practically doubling the number of cycling lanes from 50 to nearly 100 kilometres.</li> <li>• Municipal regulation on pedestrian and cyclists' traffic. 2010.</li> <li>• Public bicycle system in the University of Granada installed with the help of the Andalusian Energy Agency in 2008</li> <li>• Public bicycle systems in Maracena and Armilla, installed with the help of the Andalusian Energy Agency.</li> </ul> <p>Action generally favourable to sustainable mobility, such as the policy limiting the use of private cars in the historic city centre or campaigns in the same direction aimed at improving mobility.</p>		
Current metropolitan network	<p>On a metropolitan scale, several paths have been developed pursuant to the Green Gateways programme. They are generally related to leisure and connect the city of Granada to different local nature areas. Cycling lanes have also been provided for general use in the flatland district and southern area.</p>		
Current urban network	<p>On an urban scale, cycling lanes have only been provided in Granada, largely in the outskirts and without forming a network.</p>		

HUELVA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
21	398.584	3.246,90	122,76
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
368.863	398.584	8,06%	
<b>Area</b>			
145.763	148.918	2,16%	
<b>Capital</b>			
223.100	249.666	2,16%	
<b>Metropolitan area</b>			
Regional characterisation	<p>The Huelva area is a large area that includes the province's entire coast and the area between the coast and the Andévalo inland area. The former contains important marshes and protected nature areas that could affect the development of infrastructures. It is on flat land and in view of its population and tourism, very suitable for cycling.</p> <p>The city of Huelva stands out in this system of towns for its size and particularly as a centre for services and equipment, closely linked to the nearby towns, Aljaraque, San Juan del Puerto, Punta Umbría and Moguer. There is also a set of medium-sized towns that perform important urban functions on the western coast and Almonte on the other end.</p> <p>This system maintains interurban distances of over 10 kilometres from the capital, except for the settlements in Aljaraque, very closely related to the capital. There are shorter distances between nearby towns (Lepe-Cartaya, San Juan-Moguer) and tourist settlements on the coast.</p>		
Mobility	<p>By far the main centre of attraction for mobility is the city of Huelva. There are also other dependence relationships between smaller and medium-sized towns. Some examples are Ayamonte, Lepe and Almonte.</p> <p>With regard to modal distribution, according to the IECA 2011 social survey, Huelva has nearly the lowest participation of public transport of all Andalusia.</p>		
Características del transporte público	<p>The area's public transport system is based on buses, with a radial network with its centre at the Huelva bus station, the most important node. Other towns have bus stations: Ayamonte, Isla Cristina, Lepe, Punta Umbría and Almonte.</p> <p>By rail, Huelva has a medium-distance service to Seville and Zafra with stations in Gibraleón and San Juan del Puerto. On a metropolitan level, it is a service with a small demand.</p>		
Initiatives developed to foster the use of bicycles	<p>The Diputación Provincial, supported by the Andalusian Energy Agency, has a Sustainable Urban Mobility Plan for the province of Huelva that includes fostering the use of bicycles. Other initiatives have been developed in this framework, such as the Interurban Cycling Mobility Plan of Ayamonte, Isla Cristina and Lepe.</p> <p>Other municipalities have also developed municipal sustainable mobility plans that contemplate fostering the use of bicycles. The Mobility and accessibility study of the municipality of Huelva was drafted in 1999.</p>		
Current metropolitan network	<p>On an interurban level, the area's cycle paths are predominantly for leisure, fundamentally Green Routes (Gibraleón–Cartaya, San Juan–Trigueros, continuing to the north) and projects associated with the Green Gateways programme. There is also a Huelva-Aljaraque-Punta Umbría-El Portil connection thanks to the regional government together with a Mazagón-Mata-lascañas and Ayamonte-Isla Canela connection. These are unconnected actions that often provide services to tourist areas.</p>		
Current urban network	<p>There have been a number of actions on an urban level, partly related to Environment's City 21 programme; they affect all the towns on the west coast plus Gibraleón. The extension is more than 10 kilometres in some of them. In Huelva, however, and because of its size, coverage is limited to 15 km</p>		

JAEN AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
14	221.261	1.746,9	126,66
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
216.798	221.261	2,06%	
<b>Area</b>			
116.769	116.781	0,01%	
<b>Capital</b>			
100.029	104.480	4,45%	
<b>Metropolitan area</b>			
Regional characterisation	<p>In the area's current system of towns, the city of Jaen stands out because of its size and concentration of equipment and services. The metropolitan area has an east-west population axis, with greater concentration in the latter.</p> <p>The Jaen area is hilly with high gradients, with large areas in excess of 6%. There are also significant urban areas with such gradients. This makes Jaen the least favourable in Andalusia for cycling.</p>		
Mobility	A large number of journeys are made on foot, as is fitting for the size of the main town, Jaen, and all other towns in the area. The strongest metropolitan relationships are between Jaen and the towns on the A-316 road axis.		
Características del transporte público	<p>Interurban public transport is by bus between different municipalities and Jaen.</p> <p>The principal transport nodes are the Jaen railway and bus stations, with a planned intermodal station where the railway station is currently located. Other bus stations can be found in Martos, Torredelcampo and Torredonjimeno, and one is planned for Mancha Real.</p>		
Initiatives developed to foster the use of bicycles	<p>The Jaen Sustainable Urban Mobility Plan, drafted in 2010 with funding provided by Diputación de Jaen and the help of the Andalusian Energy Agency, has chapters specifically about fostering the use of bicycles and establishes a hierarchy-based network and several bicycle parking facilities.</p> <p>The municipalities in the Jaen area have urban mobility plans with measures to promote cycling, fostered by the metropolitan consortium, with the help of the Andalusian Energy Agency.</p>		
Current metropolitan network	The area has several cycle paths for leisure use, such as the green route on the Jaen-Puente Genil railway line and the tarmacked section from Jaen to Los Villares, a CFV initiative.		
Current urban network	Recently, under the auspices of the City 21 programme, a total of 9 kilometres of cycle paths were developed in the city's urban expansion area.		

MALAGA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
15	1.012.031	1.429,1	708,16
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
930.296	1.012.031	8,79%	
<b>Area</b>			
560.631	568.030	1,32%	
<b>Capital</b>			
369.665	444.001	20,11%	
<b>Metropolitan area</b>			
Regional characterisation	<p>The agglomeration of Malaga comprises three major natural units: the precoastal hills, the Guadalhorce valley and the coast itself. Gradients of more than 6% are common in the precoastal hills. The valley and coast are areas more suitable for cycling.</p> <p>The coast houses around 83.73% of the population, with large towns, such as Torremolinos, Benalmádena and Fuengirola, as well as the capital city (around 57% of the area's population). Next to this axis we can identify another two important population axes in the Guadalhorce valley, one following the foot of the hills, with important towns (Alhaurin de la Torre and Alhaurin el Grande) connected by the A-404 road and the lowest part of the valley (Cártama, Pízarra), where the city's outer districts expand inland, such as Churriana.</p> <p>The agglomeration of Malaga represents a break with the classic traditional model of a metropolitan area in which municipalities functionally dependent on the central city. The dynamics induced by tourism on the western coast and the location of services make a two-way dependence model between the city of Malaga and the western coast.</p> <p>Additional elements for defining the agglomeration's structure are the dynamics detected around the Guadalhorce valley, induced by the location of the Andalusia Technology Park and trends in the metropolitan housing market; they reinforce this setting's role as the new site of functional centrality.</p>		
Mobility	<p>The mobility survey conducted in 2011 by the IECA shows that the agglomeration (although the survey covered a larger area) has a more or less typical modal distribution. Private vehicles are clearly predominant (62%) with public transport registering a very small share, just under 6% of all journeys.</p> <p>As well as the city of Malaga, the main city in the area, with important administrative services, there are other areas attractive to travellers, basically the western Costa del Sol.</p>		
Características del transporte público	<p>As well as the interurban and urban bus service that reaches many of the towns in the area, there are two commuter lines with a role to play in intermodality with cycling:</p> <ul style="list-style-type: none"> <li>• C1, with more than 7,500,000 travellers per year, Malaga to Fuengirola, with a planned enlargement to include Estepona and Marbella.</li> <li>• C2, from Malaga's Centro Alameda station to Álora, with much less demand.</li> </ul> <p>In the city of Malaga, the underground (Metro), lines 1 and 2 under construction, will become a structuring element of the public transport system, as it connects the more central areas in the city, including the old city centre, university, administrative centres, sports centres, main urban and metropolitan transport nodes, etc.</p> <p>The main public transport nodes are:</p> <ul style="list-style-type: none"> <li>• El Perchel, (C1 and C2, railway and bus stations and underground station in the future)</li> <li>• Centro Alameda (commuter and Metro lines),</li> <li>• Victoria Kent station (transit point for lines C1 and C2)</li> <li>• And the Muelle Heredia interchanger.</li> </ul>		
Initiatives developed to foster the use of bicycles	<ul style="list-style-type: none"> <li>• Informative Study of the Cycling Network in the Malaga Area (2007), published by the Malaga transport consortium with a grant from the Andalusian Energy Agency. It contemplates a network with two route categories, primary and secondary networks, with a total of 317.1 km.</li> <li>• Creation of a cycling network for transport in the Andalusia Technology Park, implemented with a bicycle loan system.</li> <li>• Bicycle loan system on Teatinos Campus, since 2007, with 100 bicycles, installed with the help of the Andalusian Energy Agency.</li> <li>• Cycling Steering Plan of Malaga (2008, included as Informative Annex to PGOU).</li> <li>• Sustainable Mobility Plan (2011 advance phase). It represents a set of actions aimed at implanting more sustainable means of travel.</li> <li>• The plan practically assumes the design of the PDB. Both documents were subsidised by the Andalusian Energy Agency.</li> <li>• Local regulation about Cycling Mobility in the City of Malaga, effective on 22 June 2011.</li> <li>• Public Bicycle System, Malaga Bici, which became operational in July 2013.</li> </ul>		
Current metropolitan network	On a metropolitan level there are around 30 km of paths for leisure and sport and some tarmacked sections parallel to roads. These include a section from around the A-404 road to the Guadalhorce motorway, north-west of the airport, or in the vicinity of Alhaurin el Grande and Cártama. These sections are normally short and at long distances from each other.		
Current urban network	Except for the city of Malaga, little has been done elsewhere, and there are no networks. Partly under the auspices of Environment's City 21 programme, there are sections of cycle paths in Las Lagunas (Mijas), Fuengirola and, particularly, Benalmádena. The length of the pathways in Malaga itself is around 44 kilometres.		

SEVILLA AREA			
Nº. of municipalities	Population 2011	Surface area km2	Density inhab/km2
46	1.519.639	4.905,2	309,80
<b>Population</b>			
<b>2006</b>	<b>2011</b>	<b>increase (%)</b>	
Area	1.438.451	1.519.639	5,64%
Capital	704.414	1.519.639	-0,20%
Metropolitan area	734.037	816.618	11,25%
Regional characterisation	<p>In the Seville area, the largest urban agglomeration of Andalusia, we can distinguish between three large physical areas: the Guadalquivir valley; the escarpments of the Aljarafe; and Los Alcores and surrounding countryside. The latter, and other areas on the outskirts are somewhat ridged. But in general, it is flat land suitable for cycling as a means of transport and of great potential for leisure-related uses.</p> <p>Sevilla houses nearly 50% of the area's population, and there are large towns to the south-east (Dos Hermanas has more than 100,000 inhabitants) and an important urban complex developed in the Aljarafe district. Functionally, it is a somewhat mature metropolitan area, in which both the central capital and also the Aljarafe district have first class healthcare and educational services and shopping centres, and it also includes other large towns such as Dos Hermanas and Alcalá de Guadaíra.</p> <p>Interurban distances make cycling between the capital and nearby municipalities feasible. At the same time, the distances between many Aljarafe municipalities or others such as the Los Alcores district (El Viso and Mairena), Dos Hermanas and Alcalá de Guadaíra, are also favourable.</p>		
Mobility	<p>On a metropolitan level, the main source of attraction of mobility is Seville. However, other centres have evolved, including the central area of the Aljarafe and more heavily populated towns, with greater balance between generation and attraction of journeys between the central city and the metropolitan area. Mobility continues to be largely radial, with Seville at its centre, but there has been an increase in other relationships, as befits a maturation process.</p> <p>With regard to modal distribution, we must highlight the participation of public transport. This is the leading agglomeration in this respect, and particularly the demand is satisfied by cycling. According to the latest estimates, in the city of Seville cycling represents around 6% of all mobility and 9% of mechanical mobility. These journeys are also on the increase in the metropolitan area.</p>		
Características del transporte público	<p>The public transport system of the Seville area is the most highly developed in Andalusia. It has commuter trains, with services to municipalities in the area linked to the Seville-Cordoba and Seville-Cadiz lines and recent services on the Huelva line in the northern Aljarafe district. There are also services to support the railway ring created around the city of Seville. We should also mention line 1 of the underground (Metro) that became operational in 2009, the mainly radial metropolitan bus network and the city of Seville's public bicycle service. As well as Seville, there are also urban public transport services in Dos Hermanas, Alcalá de Guadaíra and La Rinconada.</p> <p>The most important nodes are the railway stations (Santa Justa and San Bernardo in Seville and one in Dos Hermanas) and the El Prado and Plaza de Armas bus stations, also in Seville. Around San Bernardo there is an important intermodal node with commuter trains, underground, a tram line with its terminal in the heart of the city (Plaza Nueva) and metropolitan buses, as well as urban lines. The underground stations are also important nodes.</p>		
Initiatives developed to foster the use of bicycles	<p>On a metropolitan level, the following are the most outstanding initiatives:</p> <ul style="list-style-type: none"> <li>• Metropolitan Transport Plan of the Seville Area. It includes a proposal for a cycle network for the entire area</li> <li>• Metropolitan Area of Seville Network of cycling routes. Diputación Provincial de Sevilla</li> <li>• Metropolitan Transport Consortium's Bus+Bike service</li> <li>• University of Seville's Integral Cycling Plan</li> </ul> <p>The following initiatives are highlighted on a municipal level</p> <ul style="list-style-type: none"> <li>• Steering Plan for Fostering Transport by Bicycle 2007-2010</li> <li>• Sevici. Public bicycle service</li> <li>• Municipal regulation on the circulation of pedestrians and cyclists. 2007</li> <li>• Bicycle registering service.</li> </ul>		
Initiatives developed to foster the use of bicycles	<p>Around 130 kilometres of cycling network for leisure purposes are available in this area, highlighting the Metropolitan Green Corridor, the Green Corridor of the Guadaíra and the Green Gateway of Alcalá de Guadaíra.</p> <p>Suitable for use as transport infrastructures are different projects basically located in the Aljarafe district and other points of the area, such as the metropolitan north road (to La Rinconada). In all, around 20-25 kilometres.</p>		
Current urban network	<p>In this chapter, we have to highlight the urban network of Seville, according to the 2007 Steering Plan, which has created a network divided into three levels, throughout the entire city. This network presents considerable coverage, including residential areas and points of attraction. In all, around 140 kilometres of cycle paths.</p> <p>On an urban level, some municipalities in the area, partly under the auspices of the City 21 programme, have also developed cycle paths. This is the case of Dos Hermanas, La Rinconada and Mairena del Aljarafe.</p>		

### 4.3 Diagnosis on urban scale

Cycling is growing in general in the cities of Andalusia, as a means of daily transport and for leisure and sport activities. In the last ten years or so, many towns have created cycling infrastructures, including actions aimed at pedestrianisation and the promotion of cycling in their town planning processes. Cordoba, Seville, Malaga and Granada are the cities where these initiatives first arose, and where a policy to actively foster cycling has been applied more or less decisively.

The preparatory work for this document detected cycle paths in nearly 100 towns (98), including most of the 60 with more than 20,000 inhabitants in Andalusia, which can be classified as the ideal threshold for the adoption of integral measures for cycling. Part of this was due to the programmes adopted by the Regional Ministry of Environment.

City	Population 2012	Streets (km)	Existing Cycle paths (m)	Under construction Cycle paths	CPa–ths/1000 inhab	Paths/ Streets %
Algeciras	116.917	(km)	6.674	0	57,08	2,30%
Almeria	191.443	415	17.912	706	97,25	4,32%
Cadiz	123.948	126	8.769	0	70,75	6,94%
Cordoba	328.841	782	58.458	3.098	187,19	7,48%
Granada	239.017	518	22.779	5.301	117,48	4,40%
Huelva	148.568	223	15.744	0	105,97	7,05%
Jaen	116.731	220	7.831	0	67,08	3,55%
Jerez de la Frontera	211.900	789	15.076	7.182	105,04	1,91%
Malaga	567.433	1.477	44.521	3.959	85,44	3,01%
Seville	702.355	1.181	135.878	0	193,46	11,50%
Total	2.747.153	6.022	333.642	20.245	134,55	5,54%

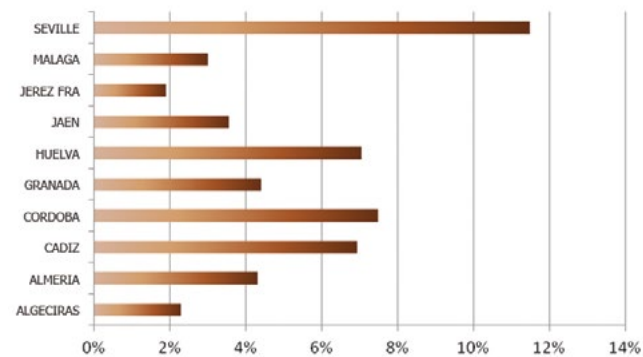
Source: the authors

Following is a summary of the use of bicycles in the 10 largest cities of Andalusia, all of which exceed 100,000 inhabitants. They are the province capital cities plus Jerez de la Frontera and Algeciras in the province of Cadiz. We show the main data found in documents such as Municipal Cycling Plans or Sustainable Mobility Plans.





Graph 8: Length of cycle paths relative to total street length



Source: the authors

### 4.3.1 Algeciras

Algeciras is the largest town in the Campo de Gibraltar district (116,917 inhabitants). It is located in the bay of Algeciras, a strategic geographic point in the Strait of Gibraltar, where the Mediterranean Sea and the Atlantic Ocean meet. It therefore has the largest commercial port in Spain. Its economy is based on it being a communication hub for Africa and local industries.

Around half of the city's streets have gradients of more than 6%, so cycling development is more feasible in the coastal area. The existing cycling network crosses the city from north to south, and passes in the vicinity of the main nodes of transport, although it does not reach one of the most important points, the Hospital. The cycle paths on the coast present discontinuity around the port.

There is a leisure network that reaches as far as Punta Getares, but it is not connected to the urban network.

The inventory shows a total length of 6,67 km of urban cycle paths, according to the attached plan.

Algeciras once had a public bicycle system, supported by the Andalusian Energy Agency (AAE), which connected some parts of the city with university facilities, but it is now out of use.

### 4.3.2 Almeria

With a population of 191,443 in 2012, it is an increasingly important city in the economic, cultural and sports fields, and an important communication node thanks to its port and recently remodelled international airport.

The city of Almeria lies on the coastal alluvium deposits that form the delta of the river Andarax, between the Mediterranean Sea, the Gádor hills and the left bank of the river. There are quite high points in the city, such as the Alcazaba ridge (around 180 feet above sea level) or the Torrecárdenas ridge (around 360 feet).

There are few cycle paths in the city of Almeria, highlighting those found in Avenida Salmerón and Calle Padre Méndez, and the Cañada university campus area.

A cycling street was prepared in 2010 in Rambla Amastiteros, but no more similar initiatives are planned. This so-called Zone 30 aims to serve motor-driven vehicles, bicycles and pedestrians.

The present cycle paths do not connect any of the main centres of attraction or cover important journeys (equipment such as hospitals or transport nodes).

There are no cycling mobility figures, which are probably low in view of the shortage of infrastructures. Since 2008 there have been plans to draft a Cycling Steering Plan. New cycles paths are not included in the PGOU, although it contains criteria for new developments.

The Andalusian Energy Agency supported the public bicycle system in the La Cañada de San Urbano university campus through an agreement with the University of Almeria.

The network is therefore insufficiently developed and few completed or pending measures. The inventory shows a total length of 17.9 km of urban cycle paths, according to the attached plan.

### 4.3.3 Cadiz

With 123,948 inhabitants, it is the second most heavily populated city in the province of the same name, after Jerez de la Frontera. Its economy is largely based on trade, due to the presence of ship building enterprises and the port and tax-free area. The other basic support of the city's economy is tourism, thanks to its beaches and significant historic heritage.

This is an extremely compact city with a small surface area, where many journeys can be made on foot, which is why cycling has not been strongly promoted. In general, the city has narrow streets where it is difficult to create specific infrastructures for bicycles, but there is room for zones for pedestrians or with strict speed limits.

The currently available cycling network primarily consists of two longitudinal axes located in Avenida de la Bahía y Avenida Juan Carlos I and the old city sea front in Campo del Sur, with 8.77 kilometres of urban cycle paths. The PGOU, however, foresees the construction of 22 kilometres.

The PGOU merely proposes a layout for the network of cycle paths, which would have to be confirmed by the Sustainable Urban Mobility Plan (PMUS, in Spanish) mentioned in the PGOU. The network of cycling routes would connect all the districts, make them more accessible and ensure connections between public transport stops or stations in Plaza de Sevilla, without interfering with pedestrian routes, with which it would be compatible. Also planned is the approval of a municipal regulation about cycling to make cyclists' and pedestrians' rights compatible.



### 4.3.4 Cordoba

The city of Cordoba is at the foot of the Sierra Morena hills and on the banks of the Guadalquivir River, which crosses it to the south from east to west. The municipality's altitude thus ranges from 90 to 693 metres. Most of the city is practically flat and difficulties for non-mechanised means of transport are only found in the northern districts.

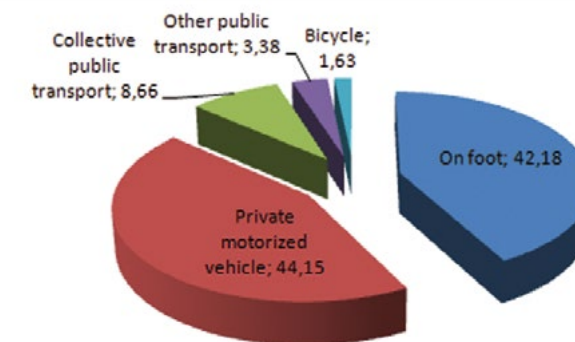
Most of the urban economic activity takes place in the city centre or the neighbouring Ciudad Jardín district.

Cordoba has the structure of a compact city. 80% of the population lives within a 3 km radius of the city centre. Most public facilities, such as hospitals and universities (except the Rabanales university campus that is around 6 km away) and economic centres are less than 2 km away from the centre.

All this favours cycling as a means of travelling through the city. Indeed, the city of Cordoba pioneered the construction of cycle paths and the use of bicycle loan services. These initiatives, however, have not brought transcendental changes to the city's mobility.

According to the Advance Sustainable Urban Mobility Plan of Cordoba (2011), modal distribution in the city is as follows:

Graph 9: modal distribution in the city of Cordoba



Source: Sustainable Urban Mobility Plan of Cordoba (2011)

On a typical working day in the city of Cordoba there are a total of 913,772 journeys, 403,394 (44%) of which are made in private cars, with only 14,808 (1.63%) made on bikes.

Most journeys are related to work and studies, 37.71% and 18.08% of the total, respectively.

**TABLE 16: MODAL DISTRIBUTION IN THE CITY OF CORDOBA. PERCENTAGE AND EVOLUTION**

	2004	2010
On foot	47,24%	42,18%
Bicycle	0,68%	42,18%
Car	37,22%	44,15%
Collective public	11,36%	8,66%
Other public	3,50%	3,38%

Source: Sustainable Urban Mobility Plan of Cordoba. Advance. 2011

A comparison with the 2004 figures reveals a worrying increase in mobility in private cars. Although the participation of bicycles has increased, there has been a considerable reduction in journeys made on foot.

Cyclists in Cordoba are largely male, with a considerable difference between genders; 68.9% are men versus 31.1% women. Bicycles are most used by people who are under 35 years of age, 25-34 years of age in men and 18-24 years of age in women.

The surveys conducted show that cycling is primarily for leisure and sport. A significant proportion of bicycle users, 27.7% and 16.8%, use them occasionally or monthly, respectively.

As for the initiatives of the Cordoba City Council, as early as October 1997 it approved the city's Cycling Steering Plan. It establishes a network comprising 9 routes.

The inventory taken for the Andalusia Cycling Plan shows a total length of 60 km for the entire municipality, 58 km of which are urban, as shown on the attached plan.

There are many stretches of cycle path that have no continuity, so these paths cannot be seen as part of a network providing a service like other means of transport.

In the city centre itself, bicycles coexist with other means of transport, both cars and pedestrians, according to the street's priority, and in the old city centre there are areas especially set aside for cyclists.

The city also has a bicycle loan-rental service, called Eco-Bici Cyclocity, consisting of 35 bicycles distributed at four points of the city that can be accessed by whoever needs one.

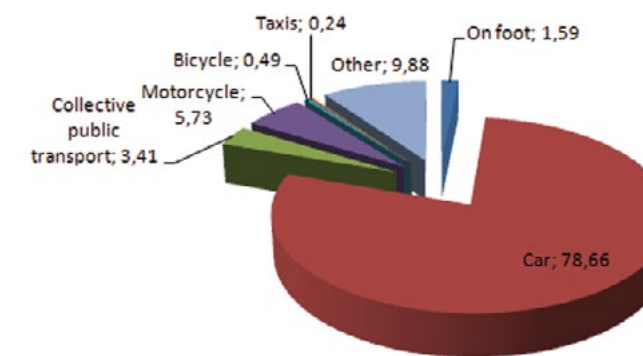
The 2011 Sustainable Urban Mobility Plan establishes the objectives of completing the routes that are still pending from the Steering Plan, enlarging the loan service with 500 bicycles and 65 more pick-up points, etc. It will also represent the implantation of a number of ZONES 30.

### 4.3.5 Granada

Due to its urban and historic configuration, Granada is a city that is ideal for pedestrian use. Only the expansion towards the Plain, in a ring of residential municipalities, has considerably increased motor-driven traffic. However, the old city centre has become increasingly pedestrianized, recovering public space. At the same time, some action has been taken to foster cycling.

The city is generally flat and 80% of the roads have gradients suitable for cycling. The western half of Granada and the other nearby municipalities are also suitable. On the other hand, the eastern half presents serious difficulties, aggravated by the fact that it is an ancient type of city, Mozárabe, with extremely narrow streets, although they can be travelled by foot over short distances.

On a working day, there are an average of 982,608 journeys, 40% of which are to or from outside the city, largely from its metropolitan area. 78% of the journeys related to the metropolitan area are in private vehicles, with cycling representing only 0.49%.

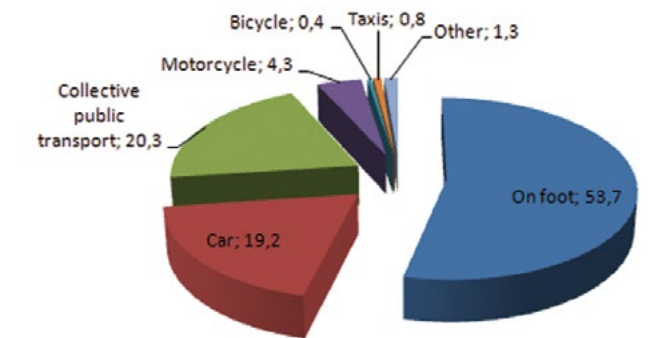
**Graph 10: Modal distribution in Granada. Mobility in relation to the urban agglomeration**

Source: Sustainable Urban Mobility Plan of Granada. Advance. 2011

For urban mobility, limited to journeys to and from the city, the modal distribution, according to 2004 figures adjusted to 2007, is shown in the graph 11

The total estimated number of journeys made by bicycle on a working day is 4,280, only 0.435% of the total. Commuting represents 70% of the total journeys.

The Granada city council took its first steps related to cycling networks in 1999, including them in the PGOU and the draft of the Cycle Path Steering Plan, which contemplates the creation of a basic cycling network of at least 50 km, structured in different phases of construction in the short and medium term. The type is a general cycle path/lane, in a single direction and two directions, depending on the size of the road in question and co-existence sections.

**Graph 11: Modal distribution in the city of Granada. Journeys within the city**

Source: Sustainable Urban Mobility Plan of Granada. Advance. 2011

These two documents define a first cycling network, which is completed with the Cyclopolis network, on a metropolitan scale, seeking connections with the municipalities on the surrounding plain.

The recent draft of the PMUS (2011) proposes doubling the initially planned length of the cycling network, but often contemplates streets with 20 or 30 km/hour speed limits as compatible with cycling. It also includes a large network of parking facilities for bicycles.

Only part of the planned network is currently available, largely consisting of unconnected sections; 50% of it is a single path that runs parallel to the ring road.

The inventory taken for this Andalusia Cycling Plan shows a total length of 28.65 km for the entire municipality and 24.04 km for the urban area, according to the attached plan.

With regards to other types of initiative, in collaboration with the European Union, the Granada City Council has established the GoPedelec programme, a system for the loan of electric bicycles that aims to promote this type of vehicle among the population. There is also a public bicycle system at the University of Granada, funded by the AAE (2008), but it can only be used by the university community.

Local policies have tended towards the selective and progressive restriction of private traffic in the old city centre, in a surface area of around 200 hectares, establishing automatic barriers. This enables the implantation of new pedestrian areas and the consolidation of those already in place, while progressively eliminating surface parking facilities and favouring the use of bicycles.

### 4.3.6 Huelva

Huelva, 148,568 inhabitants, is on what is known as the "Flat land" where the rivers Tinto and Odiel converge, and belongs to the "Guadiana Basin". Large areas of the city are therefore suitable for cycling.

The relatively compact nature of the city and its short distances are an additional incentive for the use of bicycles, although these short distances are the reason why many people travel on foot, as in other cities of Andalusia.

A mobility and accessibility study of the municipality of Huelva was drafted in 1999, which was used to prepare a Mobility Plan that included the integration of cycling.

Some infrastructures have been built in the last ten years, representing 15.75 km of urban cycle paths, 17.7 km within the municipality's borders. In the city, the cycle paths are mostly found around Avenida de Andalucía (from the university campus – El Carmen – to Calle San Sebastián) and two perpendicular paths to Parque Moret and Avenida del Nuevo Colombino, with no connection to the main transport nodes or hospital areas.

The existing paths are not yet connected to important cycling infrastructures built by the estuary and between Aljaraque and Punta Umbría.

In 2011 it was agreed to pedestrianize the Santa Marta district, opening a door to the establishment of roads shared by bicycles and motor-driven traffic.

#### 4.3.7 Jaen

Jaen has a population of 116,731 and a surface area of 424.30 km<sup>2</sup>. It lies at the feet of the Santa Catalina ridge, with hills and sharp slopes that define its town planning. They are wider in the flatter areas and new districts and boulevards. To the south and south-east are the Jaen and Jabalcuz hills, with the flatlands around the river Guadalbullón, which is very close to the city, to the north.

Most of the city of Jaen therefore has gradients of more than 6%, which affects the implantation of cycle paths and policies to foster cycling. The old city centre has a pedestrian vocation (there are already zones 20), but cycling can be fostered in the northern area, where the gradients are acceptable and there are numerous industrial estates and the university.

The Sustainable Urban Mobility Plan of Jaen, drafted in 2010, has chapters specifically related to fostering cycling and establishes a hierarchical network and several bicycle parking facilities.

There is currently a series of urban cycle lanes that do not form a network. These infrastructures are mostly around the Madrid road and the university campus on the one hand, and in the residential developments located at the end of Avenida de Andalucía on the other.

The current paths represent 7.8 km of urban cycle paths, according to the attached plan. The development of the PMUS will involve the construction of 29 km of new cycle paths. In non-urban areas, the plan is that the new ring roads (north, east and south) will also have lanes for cyclists.

The ENBICI public bicycle system was introduced in 2010, with the support of the Andalusian Energy Agency through an agreement with the council. It had 5 loan stations and 50 bicycles. It was in service for only a year.

#### 4.3.8 Jerez de la Frontera

Larger than some provincial capitals and the province's most important town, Jerez is centrally located and well communicated, and has become the main communications node and one of the most important logistic and transport centres in western Andalusia. Its size and strategic position in an area that is ideal for farming and livestock breeding are the reasons for its capacity for growth and economic dynamism.

This is a compact city suitable for fostering cycling. It also has the advantage that it has wide avenues with room for cycle paths.

There are important major avenues (Avenida de Andalucía, Avenida Juan Carlos I, Avenida de Europa and Avenida de la Universidad) that require connection between each other and with the main transport nodes and old town centre. It currently has 15 km of cycle paths that the PGOU plans to increase.

Two experiences involving bicycle loans (by the AAE and the City Council) were not successful.

#### 4.3.9 Malaga

Malaga has a physiographic and planning-related configuration that favours cycling mobility. The gradients are very small or zero in most of the city. There are narrow streets in both the old city centre and most districts, which vehicles are unable to access. There was also a recent pedestrianisation plan in the old city centre, which fosters non-motorised journeys.

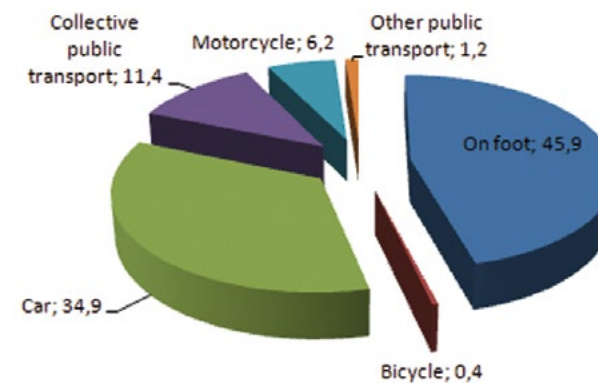
Large areas of the city have large avenues with enough space for cycling, connecting the districts with the city centre. The distances involved are too long to be completed on foot but ideal for cycling.

There are also public transport stations and terminals near the city centre, favouring intermodality with bicycles.

In this respect, the implantation of an underground (Metro) network that will connect the most central parts of the city (old city centre, university, administrative centres, technology park, main urban and metropolitan transport terminals) should substantially increase access to the centre, reduce the pressure of cars in the area and, therefore, provide an urban environment that will favour pedestrianisation and use by bicycles.

According to the Sustainable Mobility Plan of Malaga, the modal distribution in the city is as follows:

Graph 12: Modal distribution in the city of Malaga



Source: Municipal Sustainable Mobility Plan of Malaga. Advance. 2011

On a typical working day, a total of 1,680,250 journeys are made, only 6,721 of which are by bicycle. The main reason for cycling journeys in the city is leisure, representing 55%, with commuting to work and study representing 28% and 16%, respectively.

The survey conducted in 2008 shows that 27% of the population of Malaga has a bicycle at home. 8.5% of them say that they use it every day, and 20.7% two or three times a week.

According to the advance of its Municipal Sustainable Mobility Plan (2011), the city had few cycling infrastructures, consisting of unconnected sections of cycle lanes, with a length of 11.5 km, 6.6 of them through the urban centre. This may be the reason for the reduced use of bicycles as a means of transport in the city.

The network constructed since then has increased significantly, especially in Calle Pacifico, Carlos Cómpera to Avenida de Cervantes, Avenida Carlos Haya and Dr Marañón to Armengual de la Mota.

It is a large network, but lacks the continuity required to represent an interconnected system, which does not yet reach the university campuses. New paths are being built on the outskirts and in new developments, but they require connecting to the city. The inventory taken shows a total length of 44.5 km in the urban area, according to the attached plan.

A pilot experiment was undertaken to provide a public bicycle system called SmartBikes, with two pick-up points in the old city centre, near public car parks. Despite the limited experience, users tended to grow, suggesting that a more ambitious proposal could be successful. The council has recently announced an initiative to obtain a more ambitious bicycle loan system.

Finally, Malaga drafted a Cycling Steering Plan (2008), as a monographic study in the PGOU, with a proposal for eighteen corridors configuring a 125 km main cycling network. The Municipal Sustainable Mobility Plan of Malaga, advance document, contains these proposals.



### 4.3.10 Sevilla

Despite the excellent physiographic and weather conditions of the city of Seville, the evolution of the modal distribution of transport has tended to favour cars. This is largely due to the heavy growth of the entire metropolitan area for residential use, while the city, the population of which remains stable, continues to maintain part of the equipment and productive activities.

From 1990 to 2007, cars went from representing 32% to 54% of all journeys in the metropolitan area. Bicycles were reserved for residual use.

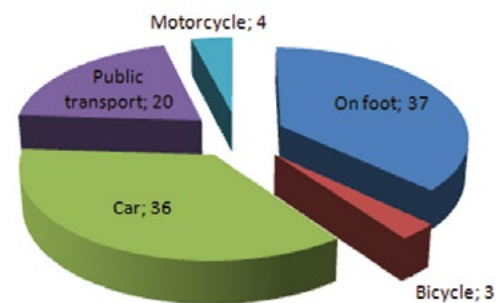
Cars vehicles were less important for journeys in the city, although more than in other cities of Andalusia.

In 2003, the city of Seville had approximately 12 km of cycle paths, with isolated sections and reduced utility. "Bases and Strategies for the Integration of Bicycles in the Urban Mobility of Seville" was drafted in 2005; it defines a first basic network of 77 km of cycle paths, connecting the city's main districts and travel destinations.

The new General Urban Ordinance Plan (PGOU, in Spanish) of Seville was approved in 2006; its determinations also include the creation of a network of cycle paths for the city.

The "Steering Plan for Fostering Transport by Bicycle in Seville 2007-2010" was approved in 2007; it includes a series of additional development projects.

Graph 13: Modal distribution in the city of Seville



Source: House-to-house mobility survey, October–November 2007.

Among other things, the above represented:

- Construction of a large network of cycle paths, more than 120 km, from 2006 to 2009.
- Implementation of a public bicycle hiring service (SEVici).
- Regional initiatives such as the Metropolitan Consortium's bus-bike service.

The inventory taken for this Andalusia Cycling Plan shows a total length of 135 km within municipal borders. The first Mobility Survey in Seville since the start of these initiatives was conducted in 2007. It shows that the bicycle represented only 3.2% of the city's modal distribution.

The estimates of the 2010 "Study of Mobility on bicycles in the City of Seville" (Town Planning Sustainability Observatory, Seville City Council) show that bicycles represent 5% in global modal distribution and 6.6% in the distribution of motorised modes.

The figures published by the Seville Bicycle Office, which depends on the City Council's Town Planning Office (GMU, in Spanish), also show a positive evolution. As the next graph shows, the increase in the number of cyclists in Seville was 670% on working days in the two-year period (2006 – 2008), with a total of 44,399 cyclists. The 2009 figures show that users had increased to more than 68,000. Using a similar method to compare this with the previous figures the most recent count was provided by the University of Seville when it published "Research on the use of bicycles in the city of Seville, 2011". The main conclusions derived from this research are:

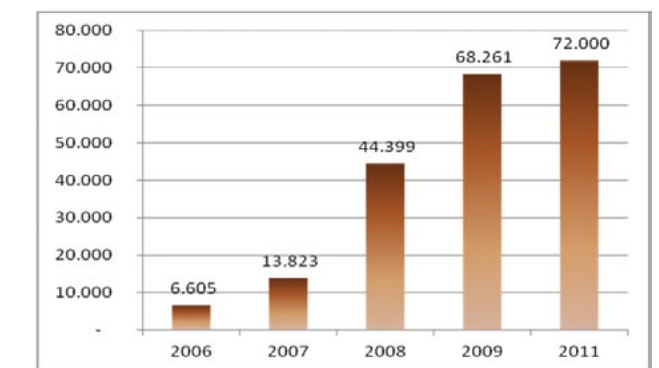
- A 10% increase in the number of bicycles relative to 2009. Although this increase is important, it represents a smaller growth rate than previous years.
- Significant growth in the use of bicycles in outlying districts.
- The use of SEVici represents just under one third of the total journeys.
- Around 30% of all bicycle users are women but in the morning rush hour this percentage grows to 40%.
- The estimated number of daily journeys on working days without rain is just over 72,000 and the average distance per journey has been estimated at 5.1 km.
- This number of journeys represents approximately 9% of all

mechanised journeys, and 5.6% of total journeys, including those made on foot.

- Approximately one third of the people who have started to cycle as a means of transport in the last few years, used to use their cars. The other two thirds used to use public transport or walk.

These figures show that Seville is the leading Spanish city with regard to cycling as a means of transport, at considerable difference from the rest.

Graph 14: Evolution of number of bicycle journeys in Seville 2006-2011



Source: the authors. Figures from the Seville Bicycle Office, GMU and University of Seville.

A brief analysis of the case of Seville helps to identify the rationale behind its success. The factors that most contributed are probably the following:

- Global design of cycle path network after a mobility study, with accessibility criteria, so that the network itself guarantees safe access to the main detected centres of attraction/generation of journeys
- Uniform design of the network so that it is perceived by the user as a homogeneous unit and not as the mere juxtaposition of disperse paths.
- Rapid construction (one year for the first 77 km), so that a large number of users benefited from the infrastructure from the very beginning, generating an effective “word of mouth” effect. Note that the utility of a transport network can only be appreciated once it is completed.

#### 4.4 Diagnostic summary

A synthetic view of the information presented in this diagnosis provides a snapshot of the overall situation regarding the use of bicycles and cycling infrastructure in Andalusia:

- There is **little information** about cycling as a means of transport and, what little there is available, shows that its use is relatively marginal in general terms. Nevertheless, experiments that have aimed to foster cycling as a means of transport have been very successful, particularly in the city of Seville, where the number of cyclists increased sharply in just three years. The integration of policies aimed at encouraging cycling as a means of transport alone could explain this success, especially if we include the measures adopted regarding metropolitan bus-bike intermodality.
- On a **regional scale, existing infrastructures** are largely sections of cycle paths for leisure and sport. Nearly all of them are designed with that in mind (windy roads, steep gradients, width, lack or presence of paving), preventing their use as transport infrastructures. However, there is a growing demand for cycle paths for sports use only. This demand should be satisfied, especially considering the danger involved in some regular cycling routes, which use roads that are not prepared for such a use.
- **With regard to the design and status of the existing lanes and paths for cycling as a means of transport**, accessibility criteria between the main travel generation-attraction centres were not always taken into account. Existing cycle paths are characterised by their lack of homogeneity (design, construction, use), considering the large number of agencies that are building cycle paths to cover different uses and demands. Some of these sections are poorly maintained or do not have suitable characteristics for cycling (painted hard shoulders, deficient integration in pavements).
- **Cycle path construction** has accelerated in the last few years, although there are no common construction or infrastructure management criteria. In nearly all cases, except possibly long projects, they are not connected to each other and therefore do not form a consistent network.

- In general, with the mentioned exceptions, **the construction work has taken too long.**
- **Regarding intermodality between bicycles and public transport**, there is no coordinated policy for such integration, irrespective of the considered relationships. However, there have been some promising experiments, such as the Bus-bike system established by the Seville Area Transport Consortium, which is a growing success among interurban bus users.
- **Public bicycle systems** are only useful if they are decisively introduced, providing citizens with a large number of bicycles on loan throughout the city, with terminals located strategically in transport nodes, old city centres, industrial areas, shopping centres and metropolitan facilities.
- A large proportion of journeys are made on foot in the cities of Andalusia, not only for cultural and weather-related reasons, but also due to the urban configuration. In this respect, the initiatives adopted by several local councils aimed at pedestrianizing town centres, recovering public space and declaring zones 30 and 20, favour travelling by bicycle. But this requires appropriate legislation, in the form of municipal regulations, to clearly establish the relationships and priorities between different means of transport.

In general terms, projects related to the promotion of cycling have been characterised by their dispersion, lack of integral planning and shortage of economic resources and sufficiently large budgets, the result of which is that the use of bicycles for daily journeys is still reduced.

There are examples, however, such as the city of Seville where, thanks to a decisive, integral and coherent policy applied by the local authorities, cycling is just one more means of transport.



# 05

## Objectives and strategic lines of action

THE RESULTS OF THE DIAGNOSIS, TOGETHER WITH THE REGIONAL GOVERNMENT OF ANDALUSIA'S OBJECTIVES REGARDING MOBILITY, REPRESENT A UNIQUE OPPORTUNITY TO CONSTRUCT A COMMON STRATEGY FOR PROMOTING CYCLING EVERYWHERE, SO THAT IT BECOMES A PREFERRED MEANS OF TRANSPORT IN URBAN AND METROPOLITAN AREAS AND A CONVENIENT AND USEFUL MEANS OF LEISURE, TOURISM AND SPORT IN GENERAL THROUGHOUT THE REGION.

Fostering cycling has a positive effect, in one way or another, on many of the objectives of different regional ministries. Indeed, it can benefit the environment, the energy system, the transport and infrastructure system, tourism, the habitability of urban and metropolitan areas, health, education, equality policies, social policies, the economy, etc.

The Plan's basic purposes are: to help to change the mobility model, steering it towards greater levels of environmental, social and economic sustainability, and to introduce the bicycle as an essential part of that change, thus helping to develop a set of sectoral policies for the Regional Government of Andalusia aimed at sustainability.

Considering the three scales of regional application, the specific objectives for each of them are:

- **On a regional scale** to increase safe accessibility in Andalusia by creating a regional cycle path network that is basically for use for leisure, tourism and sport.
- **On a metropolitan scale** to integrate bicycles as a means of transport in the development strategies of intermodal systems, for inclusion as ways of improving the intermodal capacity of metropolitan public transport networks and for the development of regional mobility by bicycle in short interurban journeys. Also, to favour the use of cycling for activities related to leisure, tourism and sport.
- **On an urban scale**, to foster cycling in urban settings by supporting the creation of urban cycle path networks and the provision of supplementary services, which should form part of urban strategies to foster cycling as a preferred means of transport.

### 5.1 General objectives

With the definition of the Plan, and according to the above objectives, the aim is to establish a rational, efficient framework for the planning and implementation of actions and measures to foster cycling in Andalusia, with the following general objectives:

- To articulate and support the region and metropolitan areas therein by establishing a Cycle Path Network in Andalusia that represents an effective and efficient instrument to support more sustainable development in the region.
- To contribute to socio-economic development and to the reduction of unemployment levels by promoting the establishment of the Cycle Path Network of Andalusia.
- To reduce energy consumption and dependence in Andalusia, together with the unfavourable effects of climate change.
- To improve the quality of life of the people who live in Andalusia, both by helping to reduce pollutant gas and noise emissions and by potentially improving personal health and preventing physical and mental disorders.
- To increase the participation of cycling transport in modal distribution and facilitate its connection to public transport.
- To encourage society to cycle as a means of transport and for leisure.
- To increase the use of bikes in tourism and sporting activities.

General strategic lines are developed, and specific objectives are determined for each of the Plan's regional scales based on these qualitative objectives.

## 5.2 General strategic lines

**01. Coordinate different existing regional initiatives and supports so that, together with actions taken by any authority, they are integrated into a common strategy related to the Cycle Path Network of Andalusia.**

This coordination will not only take place from the perspective of infrastructure but also in relation to management, signposting/markings and overall maintenance.

The Cycle Path Network of Andalusia will make the most of the existing cycling infrastructures and services (green routes, driving roads, public roads, service roads, urban networks, sections of metropolitan cycle paths, etc.), proposing itinerary management actions rather than constructive measures whenever possible. The network of minor roads could form part of the network's itineraries, providing traffic is not intense and they are duly marked and conditioned.

**02. Foster intermodality with public transport.**

One of the basic factors for ensuring the success of the Cycle Path Network of Andalusia is to guarantee the possibility of its access by public transport. The design of its different elements (routes and networks) shall include details of access to it. The infrastructure must have intermodality conditions and supplementary services (public bikes, parking facilities and good transport conditions for bicycles on public transport) must be provided.

It is also believed that the combined use of bicycles and public transport will improve the participation of both transport modes in mobility, increasing the system's sustainability.

**03. Ensure an integral approach to the networks to overcome possible fragmentation conflicts and construction design differences.**

The networks must be designed with an overall vision of the different routes, as a single, integrated option. In this respect, all the routes should meet established construction, marking, equipment, maintenance and identification criteria. All these elements must be constantly controlled during their creation and maintenance.

**04. Establish basic technical criteria for the construction, design, marking and maintenance of cycle paths, which should guarantee certain quality levels according to their use.**

The Cycle Paths of Andalusia will be developed according to design criteria that give priority to the comfort and safety of users, by building specific infrastructures, adapting other roads or reducing traffic, etc. A series of technical criteria must be established, to be applicable on the three scales (urban, metropolitan and regional) to create an integrated service and a period maintenance service in coordination with local authorities and the respective

agencies and associations involved. Appropriate functionality levels must also be guaranteed for supplementary services and infrastructures (parking facilities, public bikes, intermodality, etc.).

**05. Increase awareness of cycling mobility.**

To date, and partly due to its testimonial presence in urban and metropolitan mobility, awareness of cycling mobility is highly deficient. Except in areas where it has been successful, such as the urban area of Seville, there are no reliable statistics about the use of bicycles as a means of transport and existing or planned cycling infrastructures. Periodic counts will therefore have to be performed as well surveys to obtain information about this demand.

**06. Develop legislation in favour of cycling.**

Within the responsibilities of the regional government, Andalusia needs legal instruments and regulations to support cycling on every level, and which should particularly not have a negative impact on cycling as a means of transport in urban and metropolitan settings. This legislation should also regulate the relationship between cycling and other means of transport on the three scales identified in the Plan.

**07. Develop educational, promotional and awareness campaigns related to cycling.**

These will materialise through the development of the sectoral programmes and social participation channels established in the plan.

**08. Integrate promotional strategies in sectoral policies.**

A series of sectoral programmes will be created to specify the measures to promote cycling in tourism, employment, environment, energy, education, health, leisure and sport policies.

**09. Resolve conflicts with other means of transport, reducing the risk of accidents.**

Conflicts with other means of transport cannot be resolved solely by segregating infrastructures. Especially in dense urban areas, measures are required to reduce traffic rates, enabling different means of transport to be used simultaneously. However, minor roads can also be prepared for cycling on a regional and metropolitan scale.

## 5.3 Specific objectives on a regional scale

**01. Define the layout of the Regional Cycling Network.**

A diagram and description of the proposed layouts are included in section 7 of this document. This diagram defines a series of axes or routes which will require detailed study prior to development.

These major cycling axes have been defined based on existing regional supports, infrastructures and initiatives, while also considering the physical structure of Andalusia defined by orographic barriers and corridors, together with cycling association demands. The regional network will enable or facilitate access by bicycle to all areas of Andalusia.

The design of the regional network considers the representativeness of the region's main spaces and natural axes (protected nature areas, rivers and coast), and its most important urban areas. The design also aims to represent as many different natural and cultural landscapes as possible, to make the network appealing to tourism and sports.

The network also aims to provide physical continuity for current infrastructures, especially the Network of Green Routes, improving their conditions.

**02. Create a supply of infrastructures for cycling tourism.**

The regional network is a highly suitable instrument on which to base a supply of infrastructures for cycling tourism on different scales (short or long-distance, easy or difficult, mountain or road bikes). The existence of a specific infrastructure could be used to create an integral tourism offer, as cycling tourism is an activity that meets the requirements contained in the General Sustainable Tourism Plan.

In this respect, the creation of the Cycle Path Network of Andalusia could be supplemented if the design, information and markings of tourism routes were added to metropolitan and urban networks in cities. This would foster cycling tourism in towns and cities and could even lead to local inhabitants becoming more aware of their own historic or cultural attractions.

There is a growing demand for this type of tourism among visitors from central and northern Europe.

**03. Establish the bases for a sport and leisure-related cycling strategy.**

The Sectoral Sport and Health Programmes to be developed will define measures and actions aimed at promoting cycling as a sport in general, together with a healthy lifestyle.



#### 04. Foster intermodality with public transport to facilitate the development of cycling tourism activities.

To ensure the success of the regional network from the perspective of tourism and sport, it is essential to guarantee access to it by public transport. In the design of the different axes, special attention will be paid to the inclusion of different intermodality terminals.

These points could be important sources of tourist attraction in themselves, in as much as they should provide different services for cyclists (repair shops, bicycle rental businesses, catering services, bicycle-friendly accommodation, storage services, etc.).

Furthermore, common criteria must be established in regional intermodality relations, enabling cyclists to use the regional public transport network, and intermodal connections to other regions, with their bicycles (spaces, prices, rights and duties, billing, etc.).

These criteria should also define the conditions of use or presence of infrastructure for bicycles at transport nodes (parking facilities, storage facilities). The idea is to provide bicycle transport for users who cycle as part of interurban mobility.

#### 04. Promotion of intermodality.

On a metropolitan scale, given the distances involved and the limitations of cycling for daily mobility, an important part of its potential is based on intermodality. It can be developed by transporting bicycles on public transport vehicles, creating parking facilities in public transport nodes or providing bicycle+public transport services, following the example of previous initiatives.

#### 05. Define a general strategy to promote cycling.

The overall diagnosis of the use of bicycles in urban agglomerations is that cycling is still residual in the modal distribution of mobility, not taking into account the exceptions that should be seen as experience for other areas and even though there have been important initiatives related to infrastructures. In this respect, a general model is required to foster cycling in urban agglomerations, particularly aimed at commuting.

This does not only involve the development of cycle paths to provide access to the main points of origin/destination, but also connection to transport hubs. Appropriate information will have to be provided to potential users, with correct route markings and the availability of metropolitan maps and guides. This type of network requires constant maintenance and periodic follow-up evaluations.

outcomes with regards to rate of investment and construction, some cities/towns have cycling networks. However, we need to precisely identify their layout and current condition. Surveys conducted among bicycle users show that the urban cycling network needs to be completed, ensuring its continuity and connectivity, and accident black spots have to be corrected.

#### 03. Promote municipal projects to complete and improve urban cycling networks.

The Plan must provide local corporations with appropriate tools for identifying the current shortcomings of the urban cycling network and promote the necessary municipal projects related to both cycle paths and supplementary measures, especially parking facilities for bicycles.

#### 04. Develop Municipal Cycling Promotion Plans.

In the framework of Sustainable Mobility Plans, the leading towns/cities of Andalusia must have programmes to promote cycling, aimed at changing modal distribution of transport and favouring non-motorised means.

#### 05. Favour the co-existence of different means of transport.

In general, the towns and cities of Andalusia have a central area housing productive and leisure activities and retail outlets. The layout of the streets does not enable the construction of independent cycle paths, so priority must be given to projects that contemplate the co-existence of cycling with motor-driven means of transport (areas with speed limits or cycle streets), or pedestrianisation with cycling permitted.

#### 06. Fomentar la implantación de la bicicleta pública.

Las bicicletas públicas han demostrado ser un elemento incentivador del uso de la bicicleta. Su implantación, ya sea mediante gestión pública o privada, es un elemento indispensable actualmente en los planes de movilidad. Las iniciativas deben partir de un análisis de viabilidad y de estudios específicos que permitan adoptar decisiones adecuadas en la planificación, diseño y gestión.

#### 07. Connect to the metropolitan network.

The success of cycling promotion policies in cities has a positive effect on the modal distribution of transport in their metropolitan areas. This, however, requires guaranteed connections between metropolitan and urban networks. The Plan's network proposals will meet these objectives.

### 5.4 Specific objectives on a metropolitan scale

#### 01. Inventory existing cycling infrastructure.

The potential for cycling as a means of transport in metropolitan areas has already been discussed. In this setting, different agencies, particularly in the last few years, have undertaken important projects; however, in most cases the demand for cycling facilities and use of cycling for commuter travel has not increased.

It is important to have an inventory, map and description of the current network, identifying what it is missing. Information also has to be gathered regarding accident black spots, in order to undertake their correction.

#### 02. Definition of networks.

Based on the diagnosis of each area and the criteria defined for these networks, proposals are included; their function is to complete the metropolitan network, ensuring its continuity and connectivity.

#### 03. Connectivity with regional network.

The different cycling networks of Andalusia must be interconnected. In this respect, each urban agglomeration's network must be connected to the proposed regional network, thus guaranteeing continuity and true network status.

#### 06. Propose a specific strategy to foster cycling in each agglomeration.

Based on the above overall strategy, a specific strategy is required for each agglomeration, based on the diagnosis, to increase the use of bicycles, involving both regional and local authorities, cycling associations and public transport operators.

### 5.5 Specific objectives on an urban scale

#### 01. Define a general strategy model to foster cycling in cities

The results of introducing cycle paths in several Andalusian cities have been varied. The cause has to be identified in order to adopt a general strategy to foster cycling on this scale, determining essential lines of action regarding infrastructures, management, intermodality, education, awareness and information. The target is for 15% of mechanic mobility to be by bicycle by 2020.

#### 02. Inventory current cycling infrastructures.

Different local corporations have developed sustainable mobility policies that include cycling promotion plans. In their development, with different





# 06

## Guidelines

THE TECHNICAL AND FUNCTIONAL CRITERIA FOR PLANNING AND DESIGNING CYCLING NETWORKS ON THE THREE SCALES CONSIDERED IN THE PLAN ARE DESCRIBED, AS ARE THE STRATEGIES OF ACTION FOR FOSTERING CYCLING AND THE DEVELOPMENT OF SECTORAL PROGRAMMES INVOLVING SEVERAL ADMINISTRATIONS, CHANGES TO LEGISLATION AND ACTIVITIES RELATED TO PARTICIPATION AND DISSEMINATION.

Lack of a joint experience in the application of measures to foster cycling as a means of transport has led to a technical and regulatory context that has not favoured the experiments conducted in Andalusia.

Furthermore, the most highly developed project, in the city of Seville, shows that it is difficult to provide operational technical solutions for projects of this magnitude, due to their scale and scope of application. The technical and operational problems that have arisen in this and other similar cases show a lack of common criteria among the agents responsible for drafting projects and the companies that carry them out.

Likewise, there have often been regulatory shortcomings not only in the design and construction of the infrastructure, but also in the regulation of its use, or the relationship between cyclists and other public road users. The applicable legislation is the Traffic Regulation, which occasionally hinders the use of bicycles as a means of transport. This also has an effect on cycling in interurban areas, where legislation focuses on the use of bicycles for sport.

Appropriate conditions based on firm intentions are essential for new and ambitious policies to be successful.

This planning process thus signals the start of a period when the promotion of cycling as a means of transport becomes a cornerstone in the Regional Government of Andalusia's sustainable mobility policies applicable to the entire region.

This places us as a spearhead in the development of cycling in southern Europe, where weather and land conditions are, in principle, favourable for the use of this means of transport.

### 6.1 Cycling network planning and design criteria

#### 6.1.1 Functional criteria

The Plan's proposal will have its physical expression in the Cycle Path Network of Andalusia. In turn, this network will comprise a Regional Network and nine Metropolitan Networks linked at different points to urban networks.

The general criteria for creation of the networks are as follows:

- **Use of existing regional initiatives and supports.** The network's design will make use of the existing regional initiatives and supports defined in the diagnosis. Every effort will be made to avoid projects that involve the development of new cycling infrastructures that are not based on existing regional supports, giving priority to management, conditioning and marking projects. Resources will thus focus on routes known by and used by cyclists, which will be improved and integrated into a broader project, making use of the synergies generated by their regular use by cyclists and the interest of different authorities and groups in adding value to them, thus making investments more efficient. Future road initiatives must also consider the integration of cycling.
- **Intermodality.** The network's design will consider intermodality as an essential factor. It will favour the possibility of access to the regional network by public transport, with journeys that combine public transport and cycling in several stages. This precaution will be completed with a significant effort to facilitate the transport of bicycles, and to support intermodal connections to outside Andalusia.



- **Continuity.** The network's continuity must be guaranteed, avoiding discontinuities in its layout. It does not necessarily have to comprise only segregated lanes, but different solutions can be combined according to the characteristics of each section of the infrastructure. Nevertheless, the types chosen in each case should not vary excessively and safety must always be the priority.
- **Connectivity.** The network must have a functional design, in the sense that it must connect the region's main areas of attraction and generation, on any of the contemplated scales.
- **Universal use and convenience.** The network must be designed to be used by the most vulnerable potential users, such as children, guaranteeing accessibility for all kinds of user profiles in safe conditions.

### 6.1.2 Technical criteria

The construction of cycle paths to date lacks a definition of common technical elements. Projects are characterised by a lack of homogeneity, resulting in many of them not serving the purpose for which they were conceived.

These criteria must differ according to the primary use of the cycle paths in question, either for transport requirements or for sporting use. The functionality of these two types of path is different, so their design should also differ.

Following are basic technical guidelines for the construction of the Cycle Path Network of Andalusia in its different areas of application:

- **Continued, well-organised construction.** This will ensure that the network becomes functional in a short period of time. It will provide a growing continuous layout that favours both the "word of mouth" effect and the success of its implantation, by preventing the construction of small, unconnected and not very functional sections.
- **Convenient routes.** The network must:
  - Be separate from motor-driven traffic as much as possible, preferably by segregation or the use of dividing barriers, or use roads where there is less traffic equipped with traffic-pacification and calming measures. The inclusion of dangerous lateral elements for cyclists, such as metal barriers, posts, edges, etc., will be avoided. In urban areas, cycle paths will generally not be installed over pre-existing footpaths.
  - Have protection against adverse weather conditions, in the form of a correct choice of paving, the design of the routes and the provision of urban equipment or trees to provide shade.
  - Have appropriate maintenance throughout, especially non-tarmacked roads.
- **Markings/signposting.** It is essential to provide clear, simple and homogeneous markings/signs throughout the network, including information about journey times and distances to significant points

of interest. These markings/signs must be specific and easily distinguishable for the cycling infrastructure. Road safety information

must be provided both for motor-driven traffic and for cyclists and pedestrians, so that they are aware of the areas provided for them, applicable constraints and right-of-way information at crossings or where they co-exist.

- **Appropriate type for each situation.** A homogeneous type of construction must be used for each route. The road surface, dimensions and markings/signposting, plus the necessary equipment, must be adapted to the type of setting and intended use (commuting, leisure, sports, tourism). In farming or woodland areas, or where cyclists use green routes, droving roads or minor roads, the road surface will be made of compacted and treated soil or granular material; it will be regular and usable at all times, and well drained. In urban and metropolitan settings, the preference will be for red tarmac or concrete, so that it will be easily distinguishable from surfaces intended for other uses. In general, the paths will be bidirectional, with an average width of at least 2.5 m.

- **Confluence with motor-driven traffic.** Possible conflicts with motor-driven means of transport must be reduced to a minimum, as must mandatory STOP points.

- When there are crossings with motorised vehicles at points of low density traffic, preferential bike lanes will be provided at intersections. If the lane is on pavement level, it will remain at the same level at the intersection, with motor-driven traffic having to cross the cycle path and not the other way around. The use of appropriate devices will prevent motor-driven

vehicles from using cycle paths.

- On the other hand, there may be intersections governed by traffic lights at crossings with high-speed and/or dense traffic. At these intersections, the cycle path must be marked on the paving and, if applicable, separate from the pedestrian crossing. Traffic light phases will be adjusted to pedestrian traffic.

- At crossings that are not parallel to a pedestrian crossing, where cyclists are fully integrated into the motorised traffic, intersections will preferably be planned by establishing an advanced waiting area for cyclists (between the pedestrian crossing and/or traffic light and the stop line for cars) or by designing a waiting area between lanes on wider roads. At the same time, traffic lights will be adjusted so that cyclists can start to move while the cars are still stopped.

- **Stop distance.** This must be considered when designing and locating markings/signs, especially when cyclists cross the routes of cars or pedestrians, or even those of other cyclists.

- **Gradient and curve radius.** Whenever possible, and especially in urban areas, gradients and the necessary effort on the different routes will be reduced to a minimum. In any event, the gradients will have to adapt to the specific characteristics of the area through which the route passes, so the above recommendations cannot be applied when it crosses mountain passes or unlevel areas in general. In these cases, signs should be posted with the average and maximum gradients (percentages). The curve radius required for a cyclist to take a curve comfortably and safely depends on his or her speed, the cant and the sideway force coefficient.



In general, it will be adapted to the infrastructure supporting the cycle path.

In case of smaller radii, a sign should be posted advising of the need to proceed with caution.

- **Telecommunications infrastructure.** When constructing new cycle paths or restoring the existing paths, it is intended to include pipelines suitable for housing broadband networks. The possibility will also be studied of using these pipelines for a cycle path monitoring and information system.

### 6.1.3 Regional network, criteria

The regional network will be developed based on the following specific criteria:

- On a regional scale, the aim of the network is basically for **sport, tourism and leisure**. The fundamental objective is to contribute to the non-motorised articulation of Andalusia, while acting as a physical support for the configuration of a solvent and operative option for leisure and tourism.
- It is a basic network, which defines a first level of connection and will be completed with the metropolitan and urban networks that represent the second and third level of connection. It connects all the Regional Centres and leading population areas (coast and the

networks of the most important medium-sized inland towns). This not only ensures the articulation of the main centres of tourist attraction, but also intermodality, which must be one of the main factors according to which the network is designed.

- As well as joining the main regional centres and population areas, the Regional Network will articulate the most important Protected Nature Areas, providing added value for connectivity.
- The global design of this network will include the greatest possible variety of **tourism values** (landscapes, national parks, major urban areas, cultural and culinary attractions, etc.), ensuring that the main tourism values of Andalusia are represented.
- The routes must be attractive in their own right, beyond the connected points of interest. Therefore, in case of different options, the selected solution shall be the route with the greatest nature-related and/or cultural interest.
- On the sections of the Regional Network where a separate lane has to be built, it will preferably be a bidirectional lane at least 2.5 metres wide, although **the recommended width is more than 3 m**, of homogeneous type and appearance. In any event, the width must enable two cyclists to travel side by side in the same direction without hindering cyclists travelling in the opposite direction.
- The cycle paths supported by **green routes, driving roads or green corridors** will be of the cycle pathway type, generally compatible with

pedestrian use, with soil or granular material surface.

- Cycle paths on the **road network** will basically require appropriate markings/signposting and adaptation, when applicable.
- The physical conditions of the cycle paths **will be adapted, in general, to the current relief**. Therefore, particularly in relation to the maximum gradients considered, the criteria will be more flexible than in urban and metropolitan settings.
- They must be duly signposted, with informative panels about the routes. They should also be equipped with appropriate facilities (tree-shaded areas, rest areas, etc.).

### 6.1.4 Metropolitan network, criteria

The following criteria, common to the nine areas, are determined for the metropolitan networks:

- On a metropolitan scale, the network will largely be used for transport. As mentioned earlier, together with some non-metropolitan medium-sized towns in Andalusia, this is the most appropriate setting for fostering policies that favour more sustainable means of transport. An appropriate policy regarding cycling infrastructures and supplementary elements could represent a significant switch in travel habits from private motor vehicles.
- They must **join the main towns and settlements and the most important metropolitan working areas and facilities**, with priority given to those that have urban networks. A high degree of connectivity between home, job and services is basic for the success of policies that promote cycling as a means of transport on this scale.
- They will connect with **transport nodes**. Seeking intermodality, the metropolitan networks will connect to commuter bus, railway and underground stations.
- They will include **links to the area's urban networks and the axes of the regional network**. Connectivity with urban networks will enable people to continue by bicycle from origin to destination, without having to transfer to other means of transport. The links to the regional network will contribute to the image of the cycle path network of Andalusia and permit access for the purpose of sport, leisure or tourism. The connection points must be equipped with informative signs that enable cyclists to determine and select their routes.
- **Characteristics of layouts and surfaces for infrastructures used for regular mobility.** The metropolitan network will have low gradients that do not demand heavy physical effort when commuting. The surfaces will generally be red tarmac finishes.
- In general, two-directional paths are preferred. In any event, priority is required for maintaining homogeneous design criteria throughout. In general, the metropolitan network will also be supported by minor

roads or the service roads of major infrastructures; it can occasionally make use of driving roads or become part of new platforms reserved for public transport or multimodal roads.

En general también la red metropolitana se apoyará en carreteras secundarias o vías de servicio de grandes infraestructuras, sin renunciar al uso en ocasiones de vías pecuarias, o a su incorporación en nuevas actuaciones de plataformas reservadas para transporte público o vías multimodales.

- In general, vocational pathways for leisure and sport shall also be defined, with surfaces appropriate for such uses, in attractive areas of the agglomeration, such as nature and cultural areas, and so on, and they shall have continuity with transport paths.
- Although distances of 8-9 kilometres are established as acceptable for commuting by bicycle, the defined network will often exceed such distances if we consider important towns. This is because of these considerations, taken overall and deduced from the diagnosis:

- Although the networks are defined either for transport or for leisure-sporting use, in practice the former will also be used for these purposes.
- Particularly in coastal urban agglomerations (five out of the nine), the presence of significant tourist activity will mean that these paths will be used both for commuting (transport network) and for uses related to tourism, sport and leisure in general (sport-leisure network).
- The important urbanisation process in these settings means that there are often points of departure and destination other than the most consolidated towns,
- Finally, in the medium term, electric bicycles are expected to become more popular, enabling cyclists to travel longer distances than with conventional bikes.

### 6.1.5 Urban network, criteria

The following criteria are determined for the urban scale:

- The urban network shall be fundamentally **designed for daily journeys**. Urban cycling infrastructures must be specifically conceived to cover daily accessibility requirements, such as travelling to work, schools, etc. , giving priority to road safety for cyclists.
- Although they must be adapted to the specific urban structure of each town, **the infrastructures must constitute a network**, with structured and well-programmed planning of both a primary and secondary networks. The basic idea is a radial network, with routes that travel from the outskirts to the town centre, connecting with a central core that leads to the points of greatest attraction and/or demand for mobility. The

infrastructures must form a network, as part of a structured and well-programmed plan, with a primary network plus secondary networks that provide access to shopping areas and different districts. The functionality of the cycling infrastructures available prior to the Plan will be maintained.

- The type of cycle path used in urban settings will be adapted in each case to the available space and the characteristics of the existing roads. A homogeneous type will therefore not be possible, and the network's image will be maintained by other elements, such as markings/signposting. Two-way paths will be projected in general.

- The network will have to be combined with other road solutions where bicycles can travel sharing the platform with cars in the safest possible way (Cycle streets or zones with speed limits). If the objective is for bicycles to be a practical and competitive vehicle, most of their routes will be shared with other means of transport in most of the town, particularly old town centres, where priority will be given to non-motor-driven traffic. The implantation of reserved BUS-BIKE lanes on ring roads should be studied.

- Within the different Sustainable Mobility Plans it will be important to take steps to reduce traffic speed in areas where it co-exists with cycling, such as elevated pedestrian crossings, road narrowing, elimination of lanes for motor-driven traffic, pedestrianisation, reduction in the priority of motor vehicles over pedestrians and cyclists, regulation of traffic lights, increasing waiting periods for cars and reducing the interval between them, etc. These Plans will also include other necessary elements, such as parking facilities, information and promotional activities, as the development of infrastructures alone is not sufficient to increase the use of non-motor-driven means of transport.

- Town planning will include cycling infrastructures. The bicycle must be considered in town planning, and particularly in new developments, as a vehicle with participation in the modal distribution of transport, reserving part of the road for its use in equal conditions.

- The use of bicycles in towns will be appropriately regulated. Town Planning Regulations will clearly regulate the use of bicycles in detail, covering all aspects and circumstances, especially their co-existence with other means of transport (pedestrian, motor vehicles, railway, other vehicles such as skateboards, skates, etc.) and their parking on the public roadway.

- The entire urban network will be equipped with specific and appropriate markings/signposting that defines right of way and forms of interaction at all times. Markings and signposting will not be limited to road safety, but must include directions, guidance and information. Users will thus be able to reach their destination by the fastest and safest route. This must be supplemented with other resources such as a cycling map of the town. The network's continuity must be guaranteed in case of temporary incidents.

## 6.2 Criteria for supplementary services

### 6.2.1 Parking facilities

Intermodal nodes, travel attraction areas (job areas, equipment, shopping and leisure centres), points of tourist attraction and rest areas must be equipped with cycle parking facilities. They must have the following characteristics:

- Be solid, to prevent both bicycle and parking facility theft.
- Have room for at least six bicycles each.
- Enable support and securement of the bicycle.
- Be multipurpose, housing all types and sizes of bicycles, and permitting the use of all types of padlocks and chains.
- Be easily identified (by signs) as cycling parking facilities.
- Bicycle storage-type facilities may be installed wherever necessary.
- They will preferably be installed inside buildings or lots, with a surveillance mechanism. Their installation outside public buildings must be justified.
- They must be installed inside public car parks, in areas with surveillance.

### 6.2.2 Intermodality

The bicycle's potential as a means of transport is strengthened in its combination with different means of public transport for multi-stage journeys. Intermodality conditions are therefore essential for fostering cycling in large cities and especially on a regional and metropolitan scale.

The bicycle's greater efficiency than other means of transport in distances of less than 5 km make it particularly suitable for the first/last stages of journeys. This combination may be necessary in areas with a low population density, such as the urban agglomerations of the most important Andalusian cities, as it increases the number of people with access to stations in a reasonable time. Public transport stations are generally intended to serve the population that lives less than 500 m away (travelling on foot), so bicycles represent a significant increase in the scope of action of public transport.

Car+public transport intermodality solutions with dissuasive parking are less effective, as cars are not efficient for short journeys and the viability of this combination is greater in larger agglomerations. The combined use of bicycle and public transport, however, is more flexible and enables door-to-door travel. Bicycle and public transport intermodality, then, generates an increase in the use of these two sustainable means of transport, as they do not compete (other than for short distances) but are complementary.





The following lines of action have to be developed to promote this intermodality:

- Availability of cycling networks that provide safe access to public transport stations.
- Adaptation of vehicles to transport bicycles, and provision of more flexible service conditions.
- Availability of parking facilities for bikes in or near to stations, based on safety, availability and accessibility criteria.
- Availability of a bicycle loan system near public transport stations and centres of attraction for travel.

The design of both the urban and metropolitan network has considered the location of transport nodes, guaranteeing cycle paths providing safe access to stations.

The other three lines of action are not exclusive. Although some countries, such as England, allow bicycles to travel on public transport, most European countries prefer to provide parking systems in stations and public bicycle systems.

Parking facilities-public bicycles are recommendable for commuting rather than only cycling, in order to prevent the service from being overloaded at rush hour, when most commuting takes place, and to refrain from hindering the commercial speed of public transport.

But for other purposes such as sport and leisure, required on holidays or at other times of day, it is essential to have more flexible access to vehicles with bikes, providing enough space for their transport.

### 6.2.3 Public bicycles

Public bicycle services represent a magnificent supplementary factor for mainstreaming the use of bicycles as means of transport in urban and metropolitan areas. They should be seen as an individual public transport service.

Irrespective of the services' management conditions, public bicycle systems in Andalusia will meet the following criteria:

- Be conceived as supplementary services to the prior presence of consolidated cycle path networks.
- Be designed with a view to promoting intermodality between bicycles and public transport.
- Have enough stations to cover practically the entire urban setting that they serve, with sufficient density for the distance between stations to be walked (in general, no more than 300 metres between stations).
- Have enough bicycles and bicycle posts to guarantee the continued

presence of bikes at the different parking terminals.

- Have a price system that is very affordable and easy for users to understand and use. If possible, it should also be possible to integrate this system in the price systems applicable to other public transport services.

### 6.2.4 Electric bicycles

The main condition for promotion of the use of bicycles as a means of transport in our cities and metropolitan areas is the presence of large areas with high gradients. Gradients of less than 4% are generally suitable but, when they exceed 6%, the necessary effort is a clear dissuasive aspect. In between, stretches of road that are not too long could be acceptable.

In this respect, the diagnosis highlights Andalusian agglomerations and cities with different potential, and some parts of them that are not very suitable for cyclists because of this variable. In the short-medium term, electric bicycles could be a valid solution for solving these problems while increasing the distances that can be used for commuting by bike.

It will also be necessary, then, to foster electric bicycles as a means of transport and establish the conditions for them to be classified as such. Specifically, they will have to be allowed on cycle paths for bicycles only. The European Cycling Confederation defines electric bicycle as bicycles with assisted pedalling, with the following characteristics:

- When the cyclist stops pedalling, the electric mechanism stops working
- Electric motor driven by batteries with a power rating of less than 0.25 Kw
- Speed of no more than 25 km/hour

If these conditions are not met, these vehicles must be classified as motorcycles or electric scooters.

### 6.2.5 Creation of a regional bicycle register

To protect against theft, there should be a regional bicycle register, with the possibility of installing identifying signs, and establishing measures aimed at making it difficult to buy or sell stolen bicycles.

## 6.3 Basic criteria for sectoral programmes

The ultimate objective of the Andalusia Cycling Plan is to contribute to a process of change in the region towards a more sustainable environmental, social and economic model. The Plan must therefore contribute to the development of sectoral policies by the Regional Government of Andalusia, aimed at sustainability. At the same time, some sectoral programmes will have an impact on reaching the targets of the Andalusia Cycling Plan.

Mainstreaming the use of bicycles is the common element of such sectoral policies. Therefore, an essential part of the work done to foster cycling will be the design and development of sectoral policies aimed at this purpose.

This Plan therefore includes some criteria for the development of sectoral programmes, such as an across-the-board tool that will favour and enable the coordination of each policy with regard to fostering cycling, above and beyond policies related to mobility, transport and infrastructure.

The Regional Ministries that develop sectoral policies that affect the use of bicycles must be involved in the mainstreaming policies, participating and adopting measures contained in such sectoral programmes. They will be coordinated by the administrative unit established in the Regional Ministry of Development and Housing, which in turn will facilitate the participation of the stakeholders involved.

Five sectoral programmes are proposed:

- Tourism.
- Employment and economy.
- Culture, leisure and sport.
- Environment and energy.
- Health and education.

## 6.4 Legislation

As mentioned earlier, there are evident shortcomings in the legislation regarding cycling and its use as a means of transport. The current Traffic Regulation does not consider the bicycle as a means of transport, and it is contemplated only for sport on interurban roads.

Reality, however, is revealing the need for legislation regarding cycling as a means of transport, particularly in urban settings.

A review of legislation relating to cycling should meet the following criteria:

- Foster the use of bicycles in urban and metropolitan settings.
- Appropriately regulate the use of bicycles with other means of transport, giving them priority over motor-driven means, particularly in urban and metropolitan areas.
- Provide legal support for cycling in aspects such as transport of loads and people, lighting, aesthetic accessories, etc.

One of the pending aspects, then, in the development of the Cycling Plan of Andalusia, is to propose additional legislation or changes to current laws. This process is very important with regard to traffic and cycling in urban and metropolitan settings, where the Traffic Regulation does not contain effective solutions.

This problem will be solved by fostering the approval of specific municipal regulations, in the form of a “typical” regulation document, providing solutions on a municipal level for:

- Cycling traffic conditions both on existing cycle paths and elsewhere (priority measures, traffic in “counter-direction”).
- Regulatory guarantees on the relation between cycling and other motor-driven or pedestrian means of transport.

Furthermore, we also have to review the sectoral legislation that could be affected by or play an important role in the Plan’s objectives.

It would be particularly important to have an effect on town planning legislation, to ensure that related instruments at least include measures that specifically approach the following issues:

- Definition of urban cycle paths, specifying the road width and planning conditions established for cyclists.
- Singular conditions of cycle path networks (presence on road, morphology, width, paving and other physical characteristics, and conditions of roads where traffic is shared.
- Adaptation of public area design to cycling traffic and presence.
- Introduction of municipal regulations for the adaptation of areas for bicycle parking and storage in buildings, independently from their use.
- Introduction of criteria for the installation of minimal public parking facilities for bicycles.

## 6.5 Criteria for participation, dissemination and monitoring

Promoting the participation of social stake holders, particularly cyclists, in the preparation and implementation of the different instruments derived from the Plan is one of the major instrumental objectives proposed in this document.

The primary objective of the Plan is for all stakeholders to be involved. They are not only the agents usually involved in infrastructure planning, but also include varied social stakeholders and the institutions or authorities that have undertaken different initiatives.

Dissemination activities should be seen as an instrument placed at the service of the population, to provide them with access to information and use of the offer included in the plan in favour of cycling.

This specific programme on the use of bicycles must target the different levels and scales considered, that is all public road users, and suggest different communication strategies regarding the proposed sectoral programmes.

It should also approach reactions against the development of instruments for fostering cycling, providing reliable, updated information about the implantation process and results.

Finally, regarding the plan’s follow-up, it must be highlighted that policies to foster cycling represent adding a new means of transport to the structure of Andalusian mobility, and this can only be accomplished from a global and coordinated perspective of the action to be taken.

There is thus a need for an agency that, from the administration, takes on encouragement, coordination and management functions regarding participation in the development of the plan’s objectives and proposals.



# 07

## Proposals

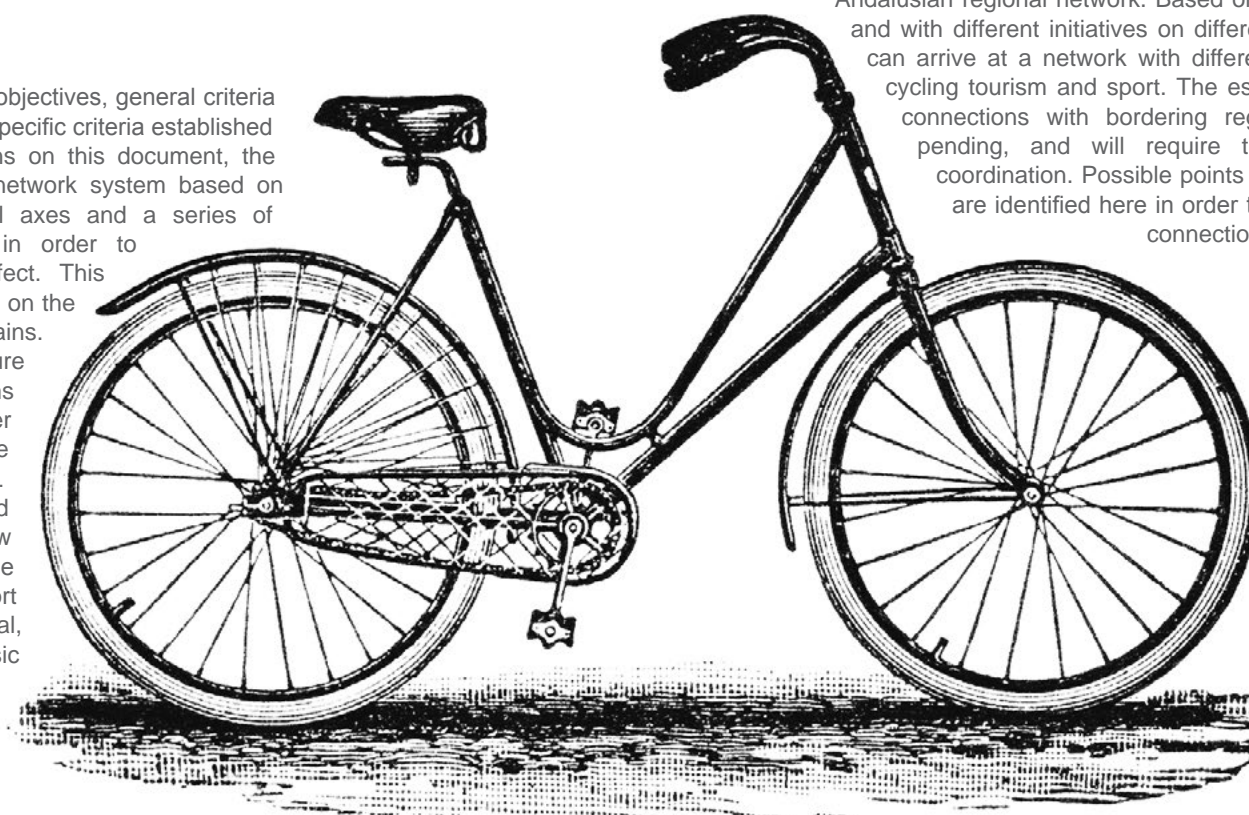
WITH THE RESULTS OF THE DIAGNOSIS, AND AFTER ESTABLISHING THE CRITERIA AND GUIDELINES, CYCLING NETWORKS ARE PROPOSED ON THE THREE SCALES DEFINED IN THE PLAN, CONSIDERING ASPECTS RELATED TO INTERMODALITY, PARKING AND SECTORAL PROGRAMMES; PROGRAMMING STRATEGIES ARE DETERMINED AND THE COSTS AND BENEFITS DERIVED FROM THE PLAN'S APPLICATION ARE ESTIMATED.

### 07 Proposals

#### 7.1 Regional network

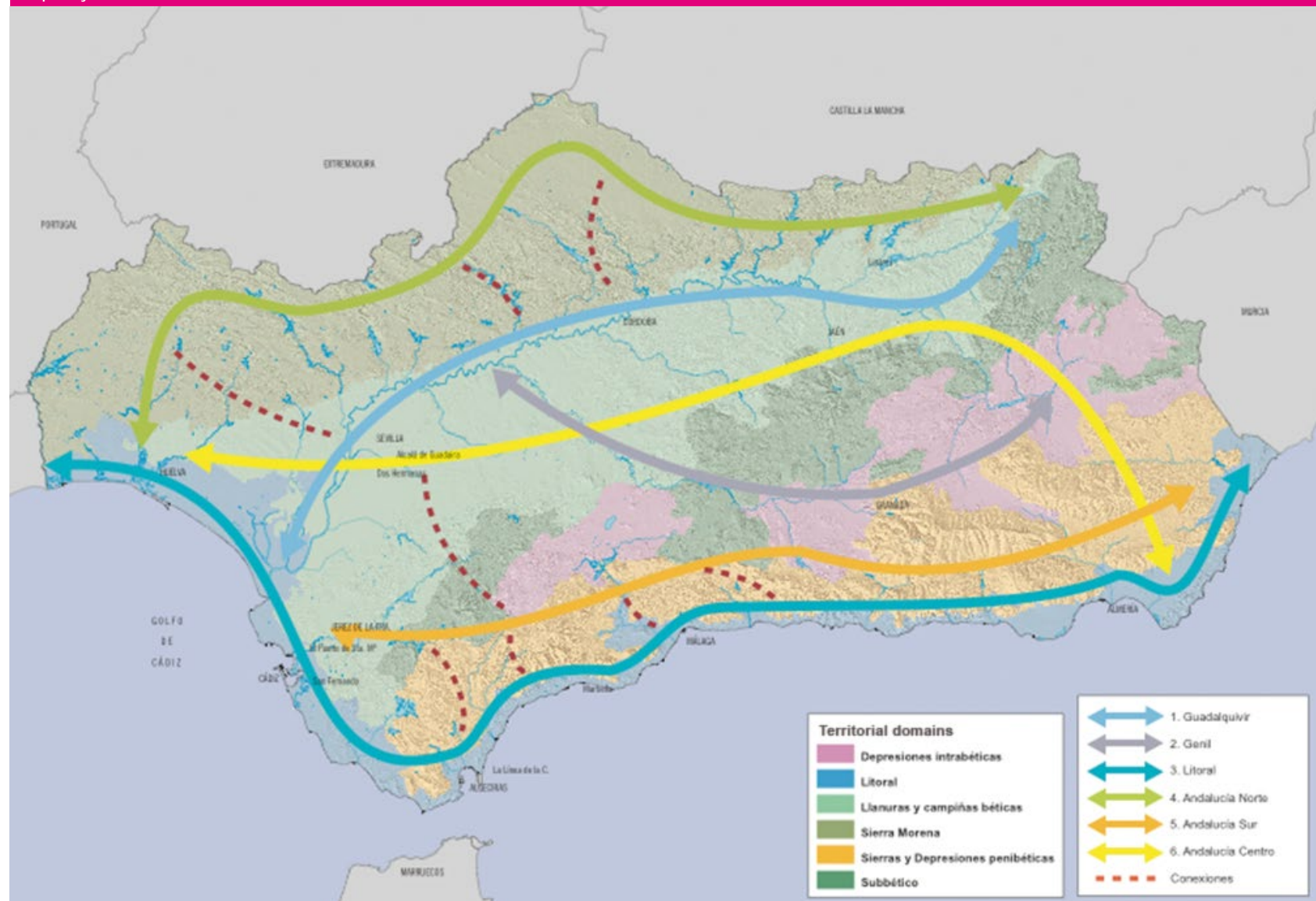
##### 7.1.1 Introduction

Following the diagnosis, objectives, general criteria regarding networks and specific criteria established in the respective sections on this document, the advance ended with a network system based on six basically longitudinal axes and a series of transversal connectors in order to generate a network effect. This idea is now shown based on the region's territorial domains. The distribution of nature areas and urban systems (maps included in chapter 4 – Diagnosis) are decisive in the network's definition. Based on that system and regional supports, we now define a series of cycle paths for tourism, sport and leisure use in general, aimed at configuring a basic



Andalusian regional network. Based on this proposal and with different initiatives on different scales, we can arrive at a network with different options for cycling tourism and sport. The establishment of connections with bordering regions remains pending, and will require the necessary coordination. Possible points of the network are identified here in order to enable such connections.

Map 5: System of connections



Source: the authors

After defining the network, which is based on eight axes and in which the most important aspects of each are identified in squares, we add two further chapters. The first analyses the type of infrastructure that supports each section of the network, and the second shows the type of work required, also by section.

### 7.1.2 Definition

The proposed regional cycling path network is based on a total of 8 axes, with the priority objective of providing continuous roads from west to east (five of them) plus three from north to south.

This network should be effectively generated to provide connectivity between the region's major areas and particularly cover large urban areas and medium-sized towns together with the region's most important nature areas.

Indeed, the network defined by these 8 axes covers the entire Andalusia region and the east-west arrangement of some of these axes, and the north-south arrangement of others, is derived from a series of circular routes, enabling the design of coherent cycling tourism offers. As mentioned earlier, other routes of different lengths can be articulated on a district or local scale by using sections of this network or, if necessary, adding other sections.

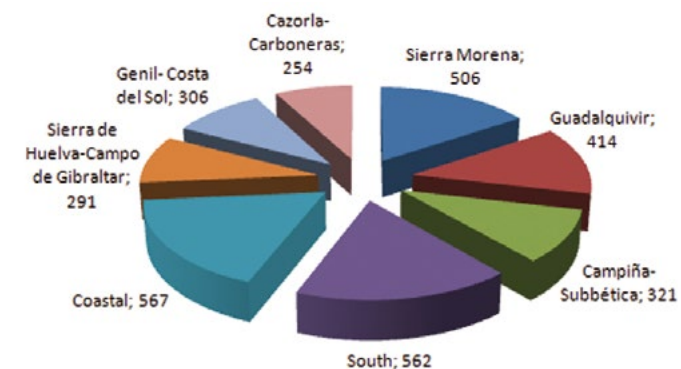
These axes should not be seen independently, but as a way of defining and organising the development of a future, coherent network.

TABLE 17: REGIONAL AXES		
Axes	Name	Length in km
1	Sierra Morena	506
2	Guadalquivir	414
3	Campaña-Subbética	321
4	South	562
5	Coastal	567
6	Sierra de Huelva-Campo de Gibraltar	291
7	Genil- Costa del Sol	306
8	Cazorla-Carboneras	254
Total	Axes	3.221
Total	Network (no overlaps)	3.080

The network as defined here contains four “overlaps”, or sections common to two axes. They are the sections from Seville to Arahal (axes 3 and 6), from Ronda to Cortes de la Frontera (axes 4 and 6), from Laújar de Andarax to Almeria (axes 4 and 5) and, finally, from Écija to Puente Genil (axes 3 and 7).

Counting these common sections once, the length of the network totals 3,080 km. The longest axis is coastal, with 567 km, and the shortest is Cazorla-Carboneras, 254 km.

Graph 15: Length of regional axes







## Longitudinal axes

### Axis 1. Sierra Morena.

It crosses Sierra Morena, connecting Huelva, Cordoba and Jaen to the east. It is easy to design if it is basically linked to the current network of secondary roads, crossing the entire mountain system that delimits Andalusia to the north, thus providing non-motor driven continuity to the entire area while affecting four provinces, Huelva, Seville, Cordoba and Jaen in a west-east direction.

It covers important nature areas located in this part of the region and a set of important medium-sized towns, including Aracena, Cazalla de la Sierra, Constantina, Fuente Ovejuna, Villanueva de Cordoba and Andújar.

Contact with two transversal axes and the Guadalquivir axis in the vicinity of the town of Andújar in Jaen, guarantees this axis's connectivity with the rest of the network.

The section of this axis that crosses the province of Huelva, adding the section of the coastal axis that provides continuity from Trigueros to Ayamonte, follows axis 1 as defined in the Eurovelo project.

AXIS 1. SIERRA MORENA.	
<b>Ends</b>	San Juan del Puerto (connection with metropolitan network of Huelva) Andújar (Jaen)
<b>Length</b>	506 Km
<b>Provinces served</b>	Huelva, Seville, Cordoba and Jaen
<b>Nature areas</b>	Sierra de Aracena and Picos de Aroche, Sierra Norte de Sevilla, Sierra de Hornachuelos, Sierra de Cardeña and Montoro.
<b>Principal cities and intermodal points</b>	Huelva, Sevilla Aracena, Constantina, Hinojosa del Duque, Pozoblanco, Andújar.
<b>Links to other axes</b>	Coastal, Genil-Costa del Sol, Guadalquivir

### Axis 2. Guadalquivir.

It follows the entire length of the Guadalquivir River and it is linked to the river's integral recovery project. This project has to be coordinated with the Guadalquivir Consortium project.

This axis is of structural importance, not only because of its position in the region, but also because of its cultural and historic content. The idea is also to contribute to a project to recover the Guadalquivir's entire water course, included as a project of great importance in the determinations of the POT.

In the area close to where the Guadalquivir is born, traffic is easier and more specific. Also, there are also roads and infrastructures from Seville that could easily contain a section of cycle path reaching as far as its estuary in Sanlúcar de Barrameda, included in existing projects. The layout of the central section is pending definition.

It connects the Doñana nature reserve, three of Andalusia's major urban areas and important medium-sized towns, including Úbeda and Baeza, with and important architectural heritage and inland tourism, where there are current singular projects to link the cycle paths with the town centres.

It is connected to the three transversal axes, so its connectivity to the rest of the network is quite versatile.

AXIS 2. GUADALQUIVIR.	
<b>Ends</b>	Sanlúcar de Barrameda-Cazorla
<b>Length</b>	414 Km
<b>Provinces served</b>	Cádiz, Seville, Cordoba and Jaen
<b>Nature areas</b>	Doñana. Paraje Natural del Brazo del Este, paraje Natural curso alto del Guadalquivir. Cazorla, Segura and Las Villas
<b>Principal cities and intermodal points</b>	Sanlúcar de Barrameda, Seville, Cordoba, Andújar and Cazorla
<b>Links to other axes</b>	Coastal, Sierra de Huelva-Campo de Gibraltar, Genil-Costa del Sol, Sierra Morena and Sierras Orientales

### Axis 3. Campiña and Sub-betic

The objective of this axis is to cover the central country areas of Andalusia and the sub-betica region. It has few natural obstacles and is facilitated by the presence of good Green Routes. One of the additional objectives will therefore be to connect these Green Routes themselves, so that there is physical continuity providing for a continued service.

It serves major inland urban areas, Seville, Cordoba and Jaen, and important medium-sized towns, including Écija and Puente Genil.

Its ends in Seville and Villagordo, in the province of Jaen, also basically mark the ends of the section of the Guadalquivir axis that is pending layout design. This axis is thus an alternative for travelling east-west through the centre of the region. On the other hand, given the Cordoba connection through the branch that continues along the Campiña Green Route from Écija, it could provide a connection between Andalusia's nine urban agglomerations while the aforementioned section of the Guadalquivir axis is being defined.

### AXIS 3. CAMPIÑA AND SUB-BETIC

<b>Ends</b>	Seville-Villagordo (northern Jaen).
<b>Length</b>	321 Km
<b>Provinces served</b>	Seville, Cordoba and Jaen
<b>Nature areas</b>	Sierras Subbéticas
<b>Principal cities and intermodal points</b>	Seville, Arahal, Marchena, Écija, Cordoba, Puente Genil, Lucena, Cabra, Martos, Torredonjimeno and Jaen
<b>Links to other axes</b>	Guadalquivir, Genil-Costa del Sol, Sierra de Huelva-Campo de Gibraltar

### Axis 4. South

It articulates the Bética and Penibética hills, basically supported by the area's network of secondary roads. Except for some key points, its design should not be too problematic, other than the presence of some significant relief in some parts. It covers important nature areas close to the coast and, in the vicinity of Cadiz, its junctions with the transversal axes provide broad access to coastal areas.

On its eastern end, the axis splits into two at Guadix, attempting to reach the coast, where at the end of this branch it has a section in common with the coastal axis, enabling greater connectivity with the urban agglomeration of Almeria. On the other hand, the axis continues to Baza, where it connects to the easternmost transversal axis, thus increasing the network's overall connectivity.

AXIS 4. SOUTH	
<b>Ends</b>	Jerez de la Frontera-Almeria
<b>Length</b>	561 Km
<b>Provinces served</b>	Cádiz, Malaga, Granada and Almeria
<b>Nature areas</b>	Los Alcornocales, Sierra de Grazalema, Sierra de las Nieves, Torcal de Antequera, Sierra Nevada
<b>Principal cities and intermodal points</b>	Jerez, Ronda, Antequera, Granada, Guadix, Baza, Almeria
<b>Links to other axes</b>	Coastal, Sierra de Huelva-Campo de Gibraltar, Genil-Costa del Sol, Sierras Orientales

### Axis 5. Coastal

Its function will be to link the whole coastline, taking advantage of the multiple tourism infrastructures available and the relative mildness of the climate, especially during summer when the extreme heat renders cycling very

difficult inland. This may be the most heterogeneous route, not only because of its length but also because of the diversity of landscapes it crosses and the significant urban transformation taking place in some coastal areas.

Difficulties largely found on the Costa del Sol (due to urban transformation) and the coast of Granada (due to rough terrain) threaten the continuity of this axis. In the latter it goes inland and the Costa del Sol section would be pending its specific design (western area) or validation, as it runs alongside the N-340, with heavy traffic.

Pending a solution to these problems, with the South axis going from the Bay of Cadiz to Almeria with a layout very close to the coast, connections through transversal axes guarantee connectivity to all coastal urban agglomerations. To a large degree

This route coincides with the current project for Route 8 of the EuroVelo network.

AXIS 5. COASTAL	
<b>Ends</b>	Ayamonte-San Juan de Terreros (border with Murcia).
<b>Length</b>	567 Km
<b>Provinces served</b>	Huelva, Cadiz, Malaga, Granada and Almeria
<b>Nature areas</b>	Marismas de Isla Cristina, Pinares de Cartaya, Laguna del Portil, Marismas del Odiel, Doñana, Los Alcornocales, Sierras de Tejada, Aljara and Alhama, Acantillados de Maro cerro Gordo, Punta Entinas Sabinar and Cabo de Gata.
<b>Principal cities and intermodal points</b>	Ayamonte, Lepe, Huelva, Sanlúcar de Barrameda, Puerto de Santa María, Algeciras, La Línea, Estepona, Marbella, Fuengirola, Torremolinos, Malaga, Nerja, Motril, Almeria
<b>Connections</b>	Sierra Morena, Guadalquivir, Sur, Sierra de Huelva-Campo de Gibraltar, Genil-Costa del Sol, Cazorla-Carboneras.

## Transversal axes

### Axis 6. Sierra de Huelva-Campo de Gibraltar

This axis has a strong network effect, as it links to the five longitudinal axes in a north-south direction. It crosses a wide variety of landscapes, as between Sierra de Huelva and Parque de los Alcornocales it links to other hill and country areas, the Guadalquivir valley and the region's most important urban agglomeration.

Supported basically by secondary roads, it makes use of the Green Route of Itálica and the Morón drivers' road and also connected to the Sierra de Cadiz Green Route, which currently provides important services for cycling tourism.

AXIS 6. SIERRA DE HUELVA–CAMPO DE GIBRALTAR	
<b>Ends</b>	Zalamea la Real-Algeciras
<b>Length</b>	291 Km
<b>Provinces served</b>	Huelva, Seville, Cadiz and Malaga
<b>Nature areas</b>	Sierra de Grazalema, Alcornocales
<b>Principal cities and intermodal points</b>	Sevilla, Arahal, Morón de la Frontera, Ronda, Algeciras
<b>Connections</b>	Sierra Morena, Guadalquivir, Campiña-Subbético, South and Coastal

### Axis 7. Genil-Costa del Sol

It connects the Guadalquivir valley with the Penibética hills on the one hand and with the Costa del Sol on the other, as it branches out by Puente Genil. The branch that follows the river in the direction of Granada currently presents significant physical continuity problems.

The Genil is included in the Guadalquivir consortium as its primary affluent, so this project must be coordinated with the consortium.

Continuity to the north from Palma del Río represents a significant change of landscape as it crosses the Sierra de Hornachuelos nature park and enhances its function as network articulator due to its central position in the region, linking to all the other axes.

AXIS 7. GENIL–COSTA DEL SOL	
<b>Ends</b>	Sierra Morena (near to Navas de la Concepción) –Malaga - Granada
<b>Length</b>	306 Km
<b>Provinces served</b>	Cordoba, Seville, Malaga and Granada
<b>Nature areas</b>	Sierra de Hornachuelos, Laguna de Tiscar, Parque Natural Sierras Béticas, Torcal de Antequera
<b>Principal cities and intermodal points</b>	Palma del Río, Écija, Puente Genil, Lucena, Antequera, Malaga, Loja and Granada
<b>Connections</b>	Sierra Morena, Guadalquivir, Campiña-Subbético, South and Coastal





## Axis 8. Cazorla-Carboneras

Transversal axis that follows the Trasandalus network proposal and basically comprises secondary roads. It provides north-south connectivity to western Andalusia, creating a direct connection in the north between the provinces of Jaen, Granada and Almeria, closing the network to the east.

It comes into contact with a largely mountainous landscape that includes some of the region's important nature areas. Indeed, the route starts in the north from the heart of the Sierras de Cazorla, Segura y Las Villas nature park.

AXIS 8. CAZORLA-CARBONERAS	
Ends	Cazorla-Carboneras (Almeria).
Length	254 Km
Provinces served	Jaen, Granada, Almeria
Nature areas	Sierra de Cazorla, Segura y Las villas, Cabo de Gata.
Principal cities and intermodal points	Cazorla, Baza, Carboneras
Connections	Guadalquivir, South, Coastal

### 7.1.3 Support

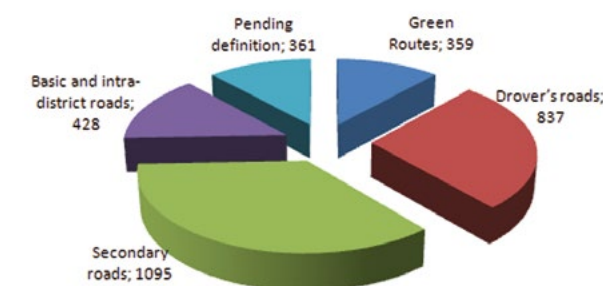
The network is basically supported by existing roads, particularly secondary roads that, due to their low MDI, make this specific use for cycling compatible, and it also makes use of infrastructures with a strong cycling tourism vocation such as a considerable number of Green Routes. It is also supported by rural and some drovers' roads. The section that connects Guadix and Baza follows the unused Almanzora valley railway line (Guadix-Almendricos).

Precisely because of the variety and status of some of the infrastructures in question, a validation study and adjustments will be required before work begins in order to confirm its viability.

Two sections of the network are supported by roads with heavier traffic; they are a section of the Coastal axis between Rincón de la Victoria and Motril and a section of the Sierra Morena axis in Huelva, covering around 17 km to the south of Santa Ana la Real. These sections will require new cycling platforms.

Finally, specific difficulties involved in the definition of layouts together with the presence of singular projects that include cycle path development (Guadalquivir consortium, which also affects the Genil on the western Costa del Sol) explain why another three sections are pending definition. They are the Seville-Andújar section on the Guadalquivir axis, Puente Genil-Granada on the Genil-Costa del Sol axis and the section between La Línea and Fuengirola on the Coastal axis.

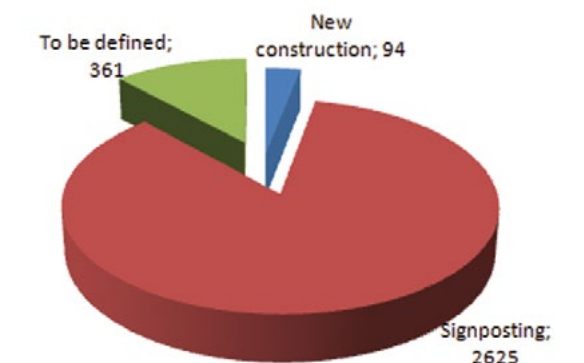
TYPE	LENGTH (KM)
Green Routes	359
Drover's roads	837
Secondary roads	1.095
Basic and intra-district roads	428
Pending definition	361



### 7.1.4 Types of action

The proposed types of action are directly related to the physical support of the proposed paths. We have to distinguish between sections for which appropriate signposting is sufficient and possible improvements to infrastructures (Green Routes, drovers' and rural roads, with low MDI values). In this respect, the new construction ratio is established in the budget section for two sections of national highways, specifically the N-435 and N-340.

TYPE	LENGTH
New construction	94
Signposting	2.625
To be defined	361

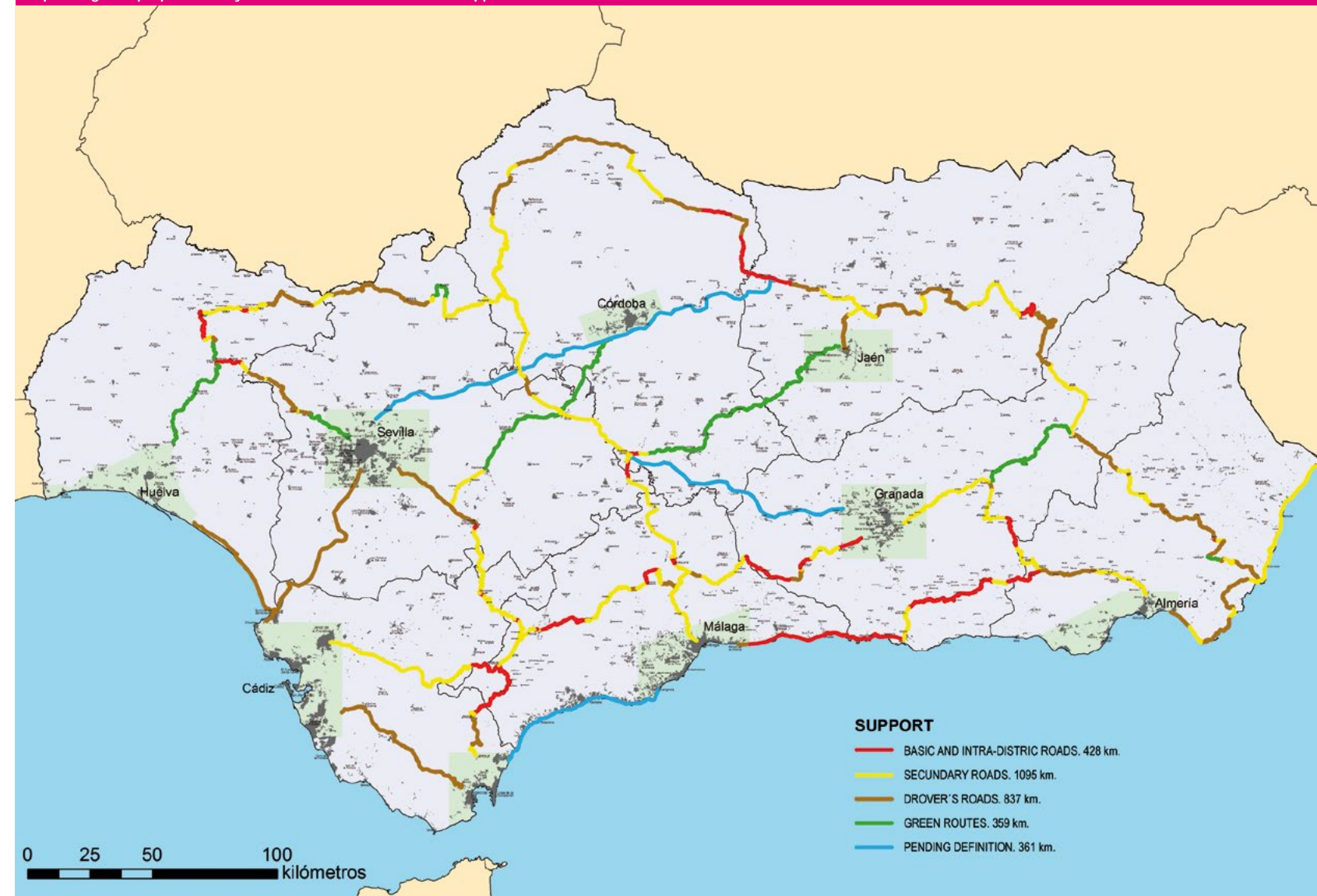


Map 6: Regional proposal for Cycle Path Network of Andalusia



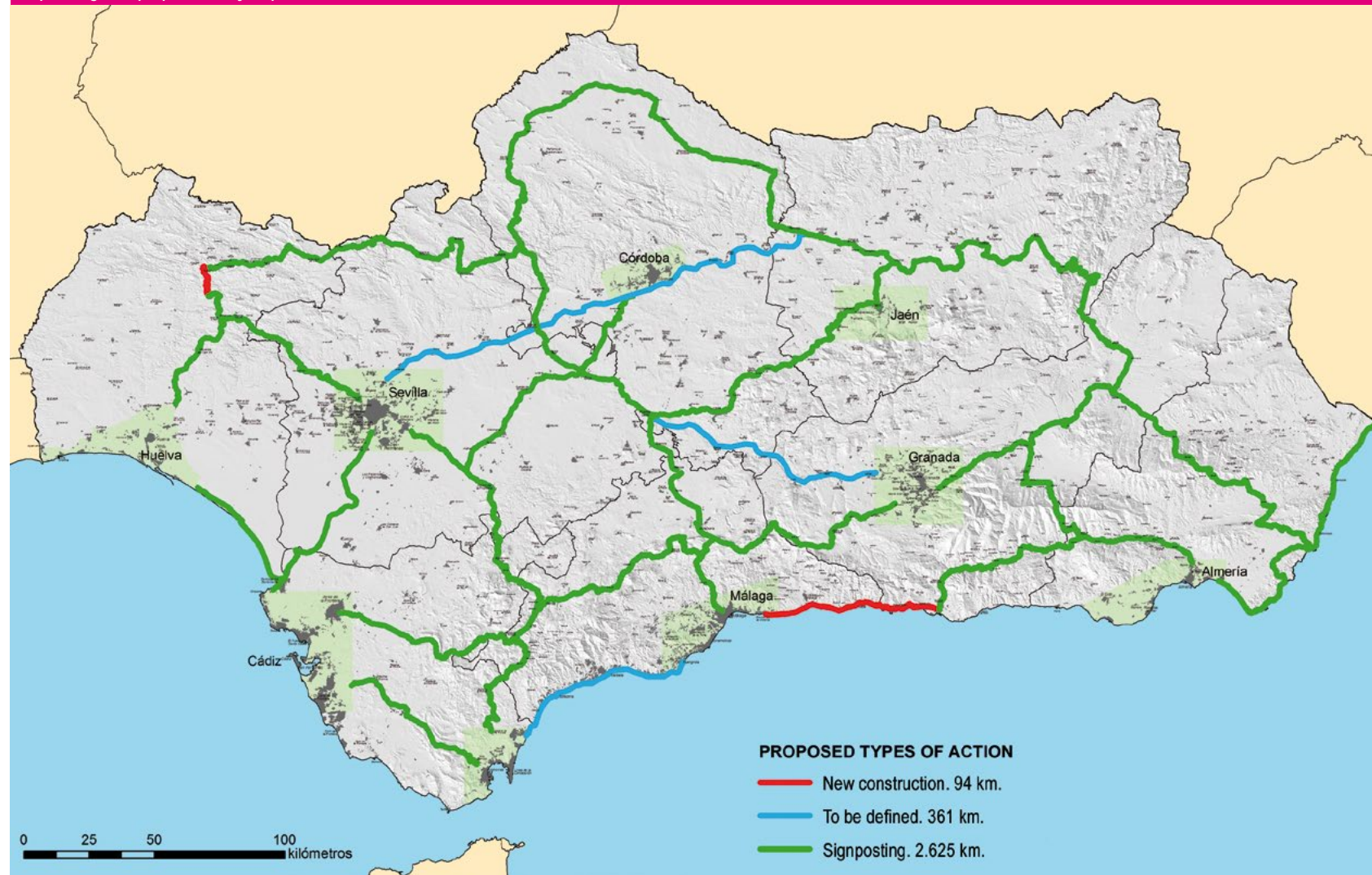
Source: the authors

Map 7: Regional proposal for Cycle Path Network of Andalusia. Supports



Source: the authors

Map 8: Regional proposal for cycle path network of Andalusia. Actions



Source: the authors

## 7.2 Metropolitan networks

### 7.2.1 Introduction

Based on the criteria established in the chapter about action criteria and individual diagnoses for agglomerations (point 4.2), the proposed metropolitan network for the nine urban agglomerations has been defined.

The network distinguishes between transport paths and leisure-sport paths. The latter are connected to the transport network so that all cycles paths have continuity in agglomerations.

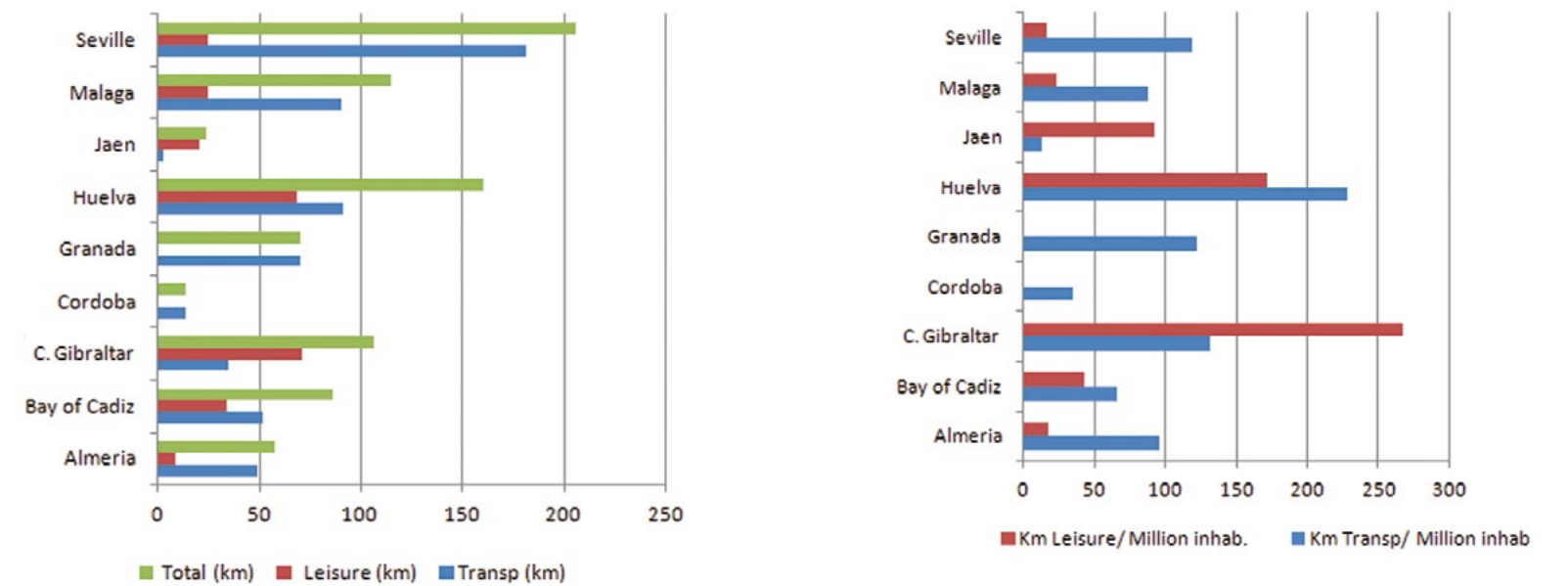
In all, the network proposed in the nine agglomerations totals 837.92 km, 585.79 km of which are for transport and 252.13 km for leisure-sport. The latter often correspond to improvements on current paths, such as Green Routes in Huelva, or to roads, as in Campo de Gibraltar.

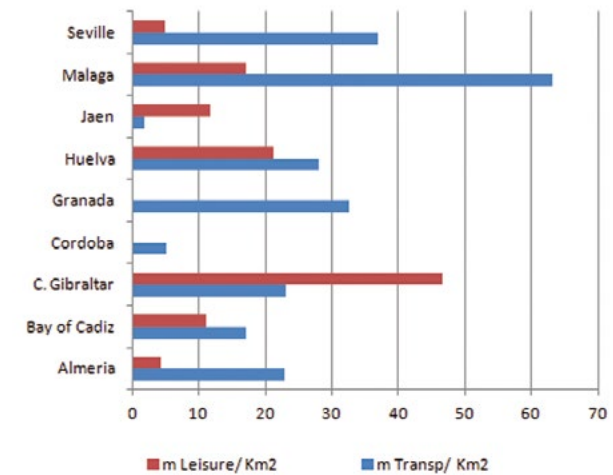
These types of paths are not proposed in two of the agglomerations, as current infrastructures cover these needs; this is the case for Granada and Córdoba.

TABLE 18 PROPOSED METROPOLITAN CYCLING NETWORK IN URBAN AGGLOMERATIONS IN ANDALUSIA

Urban agglomeration	Population	Surface area (km <sup>2</sup> )	Transp (km)	Leisure (km)	Total (km)	Km Transp/ Million inhab	Km Leisure/ Million inhab	m Transp/ Km <sup>2</sup>	m Leisure/ Km <sup>2</sup>	Total km/ million hab.	Total m/ Km <sup>2</sup>
Almeria	507.178	2.130	48,82	8,9	57,72	96,26	17,55	22,92	4,18	113,81	27,10
Bay of Cadiz	783.847	3.062	52,06	33,75	85,81	66,42	43,06	17,00	11,02	109,47	28,02
C. Gibraltar	266.922	1.528	35,22	71,23	106,45	131,95	266,86	23,05	46,62	398,81	69,67
Cordoba	399.170	2.738	14,00	0	14,00	35,07	0,00	5,11	0,00	35,07	5,11
Granada	569.116	2.147	69,92	0	69,92	122,86	0,00	32,57	0,00	122,86	32,57
Huelva	400.240	3.247	91,26	68,86	160,12	228,01	172,05	28,11	21,21	400,06	49,31
Jaen	221.643	1.747	3,00	20,57	23,57	13,54	92,81	1,72	11,77	106,34	13,49
Malaga	1.021.755	1.429	90,26	24,47	114,73	88,34	23,95	63,16	17,12	112,29	80,29
Seville	1.528.816	4.905	181,25	24,35	205,6	118,56	15,93	36,95	4,96	134,48	41,92
Andalusia	5.698.687	22.933	585,79	252,13	837,92	102,79	44,24	25,54	10,99	147,04	36,54

For comparative purposes, this information is shown on the following graphs:





In the transport network that, together with other actions, responds to the Plan's basic objectives in cities and metropolitan areas, fostering cycling as one more means of transport for regular journeys, the proposal presents an average of 60 km per agglomeration. The degree of complexity and urbanisation of each agglomeration, together with their surface area and, to a lesser extent, land relief, are variables that clearly have an impact on the length of these networks.

Indeed, the two largest Andalusian agglomerations have the most developed networks (Seville and Malaga), with the smallest metropolitan areas (Jaen and Cordoba) having the smallest networks. The surface area and size of the stable population explain some transport network/population ratios, especially in the case of Huelva. It is a very large area and its stable population density is much lower than average.

Each of the nine agglomerations' networks is now presented with the following descriptive sections:

01. Highlighted aspects of the diagnosis.
02. Connections that materialise the general criteria in the agglomeration.
03. List of actions to be taken and basic characteristics, in table form.
04. Departments of the Regional Government of Andalusia and other authorities affected by the development or maintenance of the actions.
05. There is an indication of the links to the regional network that provide access to the area. These links ensure connectivity between the three cycle path scales contemplated in the plan, together with the regional network's continuity, which generally depends on other networks in metropolitan areas.
06. The maps shows the action required to obtain the network, based on existing cycle paths. In order to show the connections between metropolitan and urban networks, this map show both existing and planned sections.

The Cycling Plan of Andalusia (CPA) will include cycle path proposals contained in newly built road infrastructures as defined in sub-regional land ordinance plans, although they are not contemplated in the CPA programme prior to 2020.

## 7.2.2 Almeria area

### Regarding the diagnosis

Urban settlements are largely on the coast, in flat areas, but as there are hills near the coast there are also important discontinuities, especially between Almeria and the westernmost coast, an area with potential for promoting cycling. The eastern area (Níjar) is farther away and weakly related to the capital.

This area only has some cycling infrastructures with a degree of continuity on the western coast, between Aguadulce and Roquetas. The rest are unconnected sections in El Ejido, N-340 in Aguadulce, Huerca de Almeria and N-344 near El Toyo.

There are Regional Ministry of Environment initiatives with completed paths, the La Campita Green Corridor, just under one kilometre long, and the Roquetas de Mar-Cañada Real de la Costa Green Gateway, 3.5 km long and including wooden crossways.

### Connections

- The idea is to connect the towns in eastern Almeria on the N-340 road between Puebla de Vicar and Aguadulce, completing the currently unconnected cycle paths.
- New Aguadulce-Roquetas-La Mojonera-El Ejido route supported by the Alicún and A-1050 roads. This facilitates connection between different settlements and access to places of work related to the area's intensive farming.
- Almeria with the towns located to the north of its agglomeration: Huerca de Almeria, Viator and Pechina, also favouring access to the hospital in Torrecárdenas.
- To the east, cycling connections from Almeria to La Cañada de San Urbano and, on the coast, to the university and El Toyo residential area.
- A priority is a study of the Aguadulce-Almeria connection, providing a link between the two functional units that represent the Almeria area in this plan.

### Actions

Code	Name	Length (km)	Comments
AL-01	El Ejido-Roquetas	15,70	Via the A-1050
AL-02	Roquetas-Aguadulce	6,72	Via the Alicún road
AL-03	Vicar-Aguadulce	6,85	Via the N-340a, and including an improvement of previously completed sections
AL-04	Aguadulce coastal	0,77	Connection between the Roquetas Green Gateway with the Rambla de las Hortichuelas cycle lane in Aguadulce.
AL-05	Cañada de San Urbano	2,30	Connection of the Almeria network with this town
AL-06	Almeria University-Airport-El Toyo	8,60	From the university via the A-3202 driving south around the airport, to connect with the N-344 cycle path. Includes its connection with the El Toyo cycling network.
AL-07	Pechina-Viador-Almeria	7,88	Via the A-3111
AL-0-01	Almeria-Aguadulce.	8,90	Via the N-340 a road, a very complicated route because of the terrain.
	Transport	48,82	
	Leisure	8,90	

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

### Relationship to regional network

Two of the regional axes converge in this agglomeration, the coastal axis and the southbound longitudinal axis that ends in the agglomeration.

They both have a final section in common before they reach the agglomeration from the north, so there are two points of connection, in Pechina with both axes and in the east, by El Toyo, with the coastal axis as it continues to the Murcia border.



### 7.2.3 Cadiz area

#### Regarding the diagnosis

The presence of marshes (salt flats and estuaries) and other protected nature areas and the distances between towns (more than 10 km) are limiting factors for the development of cycling on a metropolitan scale.

However, the polycentric system of towns of appreciable size and the presence of a short-distance railway network and a maritime route from Cadiz to Rota and Puerto de Santa María represents an opportunity for travel combining cycling with public transport.

Heavy development of tourism, nearly continuously affecting the coast, generates travel over distances that are favourable for cycling. Given the dense network of routes for leisure-sports purposes, there are also great opportunities for the development of cycling tourism.

Considerable work has been done on a metropolitan scale, fundamentally by the Regional Ministry of Development and Housing (La Ballena-Sanlúcar on the A-2027 or the pathway parallel to the A-491 between Chipiona and Rota) and the Regional Ministry of Agriculture, Fisheries and the Environment

(Green Gateways of Chiclana and Jerez de la Frontera, partially the Sanlúcar-Chipiona-Rota green route). The platform of the Chiclana-San Fernando tram line also has a cycle path.

The Dos Bahías Green Corridor starts between San Fernando and Puerto Real; it reaches Campo de Gibraltar and is included in the coastal regional axis.

#### Connections

- Connect the powerful urban system comprising the six coastal towns plus Jerez de la Frontera with links to the provincial capital from Puerto Real and San Fernando.
- As a leisure route, consideration is being given to conditioning the platform of the old Jerez-Arcos railway line.
- Opportunities on a metropolitan level derived from enabling the regional axis with the Dos Bahías green corridor (coastal axis linking to Medina Sidonia)

#### Actions

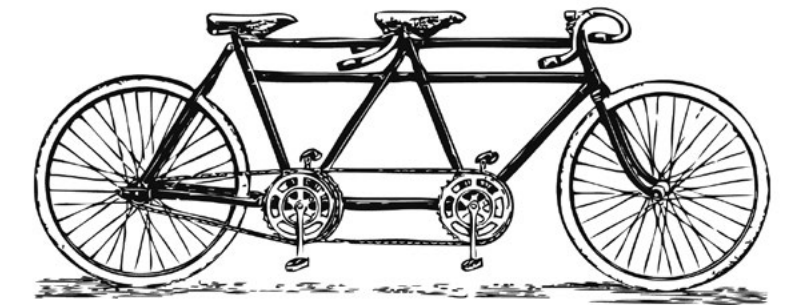
Code	Name	Length (km)	Comments
CA-01	Sanlúcar de Barrameda-Chipiona	6,68	Recovering the old railway line. These routes are for both leisure and transport. Soft treatment
CA-02	Access to Rota	3,39	Via the old railway line.
CA-03	Rota-El Puerto de Santa María	6,19	Via the A-491
CA-04	El Puerto de Santa María-Jerez de la Frontera	6,81	Via roads parallel to the NIV or, alternatively, via the Portal road. Seek connection to urban network.
CA-05	Puerto Santa María-Puerto Real	5,83	Via existing roads, which also provide access to Los Toruños
CA-06	Puerto Real-San Fernando	7,87	Via the railway line, or the A-4 service road
CA-07	San Fernando-Cadiz	6,76	Via the existing road
CA-08	Chiclana-San Fernando	8,53	Cycle path linked to the Chiclana tram line
CA-0-01	Via ferrocarril Jerez a Arcos	25,22	Via the old railway line
CA-0-02	Chipiona-Rota	8,53	Via the old railway line. These paths are for both leisure and transport. Soft treatment
	Transport	52,06	
	Leisure	33,75	

#### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

#### Relationship to regional network

The Bay of Cadiz is connected by three of the regional network's axes, the coastal axis that crosses this agglomeration and the Guadalquivir and Southern axes that end here. The coastal axis links to Sanlúcar de Barrameda on the west and on the east it has continuity through the Dos Bahías green corridor. The Guadalquivir axis links to Sanlúcar and the Southern axis takes the A-3013 in Jerez de la Frontera.



### 7.2.4 Campo de Gibraltar

#### Regarding the diagnosis

The arrangement and size of the agglomeration's population settlements limits its potential for cycling as a means of transport to the arch of the Bay and its connections to more inland towns (Los Barrios, Campamento, Estación de San Roque). At the same time, the presence of singular nature areas (Palmones and Guadarranque rivers and their estuaries) and important infrastructures in the arch (A-7) limit the options for the cycling network.

The area already has a number of cycle paths, both urban in the city of Algeciras, which can give continuity to the metropolitan network, and others, such as the Guadiaro-Castellar de la Frontera route using the A-2100 or the path parallel to the A-405 between Estación de San Roque and Castellar.

Some projects have been undertaken by the Regional Ministry of the Environment: La Línea de la Concepción and Algeciras Green Gateways. The latter also connects to the Dos Bahías green corridor, which forms part of the regional network. The A-381 service road, which used to be the 440 district road, and the Almoraima cycle path, parallel to the A-405, are much used leisure-sport cycling routes and there are the subject of Regional Ministry of Development and Housing development projects.

#### Connections

- Connect Algeciras to La Línea, covering the arch of the Bay.
- Connection to inland settlements close to the arch of the Bay: Los Barrios, Taraguilla and Estación de San Roque
- Continuity of projects in the eastern part of La Línea.
- For sport and leisure purposes, assume cycling projects supported by the road to Jimena (A-405) and old C-442 (Los Alcornocales), and

guarantee the link to the Dos Bahías green corridor. To the south of Algeciras, connect to the existing road at Punta Carnero.

### Actions

Code	Name	Length (km)	Comments
CG-01	Algeciras-Los Barrios	4,51	Via the old Los Barrios road (CA-9209).
CG-02	Algeciras-San Roque	10,96	Via the A-7. Agreement with Ministry required
CG-03	Estación de San Roque	2,94	Connects the CG-2 to the La Almoraima cycle path.
CG-04	Campamento-San Roque	4,05	Via the CA-34.
CG-05	Acceso a la Línea de la Concepción	1,86	Via El Zabal, to connect with the La Línea green gateway
CG-06	La Línea-Paseo del Mediterráneo	2,74	To connect to Puerto de La Atunara
CG-07	La Línea-Tariguilla	8,26	Via Campamento, Puente Mayorga and Guadarranque
CG-Ocio-01	Ruta de los Alcornocales	45,78	From Los Barrios, via the C-440 and A-381 service road
CG-Ocio-02	Getares	3,10	Connection to existing path at Punta Carnero
CG-Ocio-03	Castellar-Jimena	22,35	Cycle path linked to a Regional Ministry of Development road project
	Transport	35,32	
	Leisure	71,23	

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

### Relationship to regional network

This agglomeration is connected to two of the regional network's axes, the coastal axis and the transversal axis that takes it to the agglomeration of Seville and Sierra de Huelva. Its access is via the Castellar-Jimena route, so its connectivity with the metropolitan network is guaranteed. The coastal axis links to the Los Barrios-Algeciras metropolitan connection and, to the east, through the La Almoraima green corridor.

## 7.2.5 Cordoba area

### Regarding the diagnosis

In view of its size and provision of equipment and services, Cordoba maintains a high level of urban centrality over the entire province. Its large surface area means that the metropolitan process is weak, limited to the Guadalquivir axis, and of reduced intensity except for some of the municipality's own areas.

The only cycling infrastructures that can be described as metropolitan are on the road that runs parallel to the Guadalquivir, the A-431, between Cordoba and the Medina Azahara road and the road through Villarubia. There are also cycle paths in the Rabanales campus, disconnected from Cordoba despite its proximity. Included in the Regional Ministry of Agriculture, Fisheries and the Environment's Green Gateway programme are the Vereda de Trassierra green corridor, 8.91 km long, and the Green Gateway that connects the city of Cordoba with the Rabanales university campus, measuring 5.651 km.

The latter, which uses the La Alcaldía country road, represents a route of more than 6 km, rising towards the north before turning south towards the campus via the Guadalmeñato canal. The urban proposal for Cordoba includes a pathway that connects directly to the campus from that road, reducing the distance to 3.5 km

### Connections

- Continue cycle paths to the east as far as Alcolea.
- Complete the cycle path axis that connects the settlements of the Guadalquivir from Cordoba to Villarrubia.

### Actions

Code	Name	Length (km)	Comments
CO-01	Cordoba-Alcolea	5,00	Via the old main road to Alcolea
CO-02	Cordoba-Villarrubia	9,00	Via the A-431, including access to Medina Azahara (museum and archaeological site)
	Transporte	14	

There are no projects affecting the leisure network, as there are already two Green Gateways suitable for cycling.







### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

### Relationship to regional network

Cordoba is related to the regional network through the Guadalquivir axis, which crosses the area, and the longitudinal Campiña-Subbético axis by the branch that follows the Campiña Green Route from Écija. It ends when it meets the conventional railway line towards Bobadilla and the Guadalquivir axis is pending definition. The connections of these axes with each other and the Cordoba urban network therefore need to be studied.

## 7.2.6 Granada area

### Regarding the diagnosis

The area to the east of the capital is rough terrain with a weak settlement system. Therefore, potential for cycling as a form of travel is found in the flat lands and the south. Most towns are within 9 km of the capital and the distances between them are often minor, facilitating mobility by bicycle.

Different initiatives have connected some towns by cycle paths: Vegas del Genil y Churriana de la Vega. There are also some unconnected cycle paths, between Atarfe, Santa Fe, Belicena and Purchil. Parallel to the Genil river, there is a cycle path from the Science Park to Purchil.

The Granada metro has also built a cycle path between Albolote and Maracena, pending connection to Granada.

In this agglomeration, we have to highlight a dense network of roads suitable for cycling modelled by the Regional Ministry of Agriculture, Fisheries and the Environment to link an important number of towns. They are the following Green Gateways:

- Green Corridors of the northern part of Granada: Camino de Víznar green corridor; Camino de los Eriales and Juncaril stream green corridor; Cibillas Valley green corridor; Camino de la Alhambra green corridor.

- Green Corridors of the southern plain of Granada.

- Green Corridors of the southern part of Granada: Calar de Sierra Nevada Drivers' Roads green corridor; Camino de la Espartera green corridor; green corridor of the southern plain of Granada.

- Green Corridors of the western part of Granada: Las Coladas green corridor in the western plain of Granada; Camino de la Malahá green corridor.

### Connections

As shown on the connection map, the proposals are based on the existing Green Gateway network, understanding that they could be useful as a transport network and completing some routes, while improving or enabling some difficult crossroads.

- To the north, Pinos Puente-Atarfe-Albolote-Maracena-Granada axis with possibility of transit to Metro in Albolote. Connection of Peligros to Granada.

- On the plain, complete the Atarfe-Vegas del Genil-Cullar Vega-Churriana-Armilla axis, establishing crossing connections to the Granada ring road cycle path.

- To the south, continuing the previous axis, the Armilla-Ogijares-La Zubia-Huetor Vega axis, connecting to the southern part of Granada via several connectors. Otura, a little farther south, is also connected to this arch.

- Complete the cycle path parallel to the Genil river, west of Granada, to Cenes de La Vega.

- Complete the cycle path linked to the Granada Metro, from Albolote to Armilla.

### Actions

Code	Name	Length (km)	Comments
GR-01	Chimeneas to the A-92	4,65	Completes the cycle path on the GR-SO-07, which is extended to the A-92, around the airport
GR-02	Lachar-Cijuela-Santa Fe.	9,50	Via A-92 service roads. Completes existing cycle paths
GR-03	Valderrubio-Fuente Vaqueros -Chauchina	4,62	Via the GR-NO-13
GR-04	Pinos Puente-Atarfe-Albolote (Metro station)	9,48	Via the N-432 and the GR-NO-04
GR-05	Peligros-Granada	2,47	Via existing roads to Calle de Joaquina Eguaras
GR-06	Belicena-Cullar Vega y Purchil-Camino del Genil	6,52	Via existing roads
GR-07	Ambroz-Churriana La Vega-Armilla	10,37	Via the GR-SO-04, Camino del Río Dilar, Carretera de las Gabias, and N-323a
GR-08	South of Granada Green Corridor	7,46	Adaptation of the corridor for everyday use, in its Armilla, Ogijares, La Zubia, Cajar and Huetor-Vega sections
GR-09	Granada-Cajar	2,88	Via a local road and Camino de Zute
GR-10	Granada-Ogijares	2,62	Via the GR-SO-52
GR-11	Cenes de La Vega-Granada	3,97	By roads parallel to the Genil river
GR-12	Otura-Armilla	3,38	Connection of Otura to the GR-07 in Armilla.
GR-13	Metropolitan. Albolote-Armilla	2,00	Complete the Metro cycling route, including connections with Maracena and Armilla
	Transport	69,92	

No proposals are made regarding sport and leisure cycle paths, as all the Green Gateways and Corridors in the agglomeration are performing this purpose.

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

### Relationship to regional network

The Granada area is connected to the regional network via the Genil axis, which ends here and is pending definition, and the southern longitudinal axis that accesses via the A-338 and connects to the metropolitan network in Churriana de la Vega to the east. To the west, it accesses via the GR. 3201, connecting to the metropolitan cycling network in Cenés de la Vega.

## 7.2.7 Huelva area

### Regarding the diagnosis

In the large Huelva area, the connections between the west and the east depend considerably on the presence of the Odiel and Tinto rivers and their estuaries, so it is necessary to pass through the city of Huelva to give continuity to the coastal connections. There is only population on the coast in the east, and the only metropolitan transport connections of interest are those of the Palos-Mazagón axis.

Its position on the coast makes it very suitable for cycle paths of mixed use (transport-leisure). The gradients are low and the average distances between towns are acceptable. There are also many legally protected nature areas (pine groves, marshlands), enhancing the area's interest for tourists.

The area already has some tarmacked cycle paths, Huelva-Punta Umbría and different unconnected sections on the west coast (Isla Cristina, Ayamonte).

On the other hand, it also has powerful leisure-sports infrastructures that can also be used for everyday travel, including the Coastal Green Route between Ayamonte and Gibralfón (which needs improving) and a cycle path from Mazagón to Matalascañas, both surfaced with compact gravel suitable for cycling. There is also the Huelva-Gibralfón-San Juan del Puerto and El Loro Green Gateways, the latter of which connects the previous routed with Mazagón through the Doñana nature reserve.

### Connections

- Complete the west coastal axis between Punta Umbría and Ayamonte. It requires a study of how to cross estuaries and minor marshes, such as the Piedras and Carreras rivers.
- Also in the west, connect the most inland axis, Lepe-Cartaya-Aljaraque-Huelva, to the Green Route and coastal path.
- Connect the west and east through Huelva, with problems derived from the area's physical conditions.
- Connection between Huelva and the north-east: San Juan del Puerto, Trigueros and Gibralfón.
- In the east, the S. Juan del Puerto-Palos-Mazagón axis.
- Include new leisure paths linked to the edge of the marshes.

### Actions

Code	Name	Length (km)	Comments
HU-01	Punta Umbría-El Portil	1,86	For the coastal edge
HU-02	El Portil-El Rompido	4,50	For the coastal edge
HU-03	Cartaya-El Rompido	6,47	Using a path parallel to the main road
HU-04	El Terrón	4,29	Point where it crosses the Piedras river to be studied
HU-05	El Terrón-Lepe	3,39	Via the HU-3301. Pista del Corchuelo can be used as an alternative.
HU-06	El Terrón-La Antilla	6,75	Via roads and paths parallel to the A-5054 and A-5055
HU-07	Isla Antilla-Isla Cristina.	10,87	Via the Isla Antilla sea front, and roads among pine groves, parallel to the coastal road, until it connects to the existing cycle path. Includes a connection with La Redondela via the HU-3400
HU-08	Connection between Isla Cristina and the coastal Green Route	1,98	Cycle path links to road works performed by the Regional Ministry of Development and Housing on the A-5150
HU-09	Isla Canela y La Isla del Moral	2,53	Connecting with the ports.
HU-10	Ayamonte. Connections to the Green Route	0,95	To accede to the green route
HU-11	San Juan del Puerto-Moguer, Palos de la Frontera	12,24	Connection between San Juan del Puerto and Palos de la Frontera, via the A-494 and the La Rábida Green Route
HU-12	Puerta Verde de La Rábida	10,12	Improvement of the Green Gateway and adaptation for everyday use; includes crossing the Tinto river via La Tubería
HU-13	La Rábida-Huelva	4,72	Via the N-442, connecting the port's cycle path with the La Rábida Green Gateway. How to cross the Tinto river and the phosphogypsum ponds will have to be studied when the area has been restored.
HU-14	Palos-Mazagón	11,53	Via the A-5026 and the A-494
HU-15	Huelva-San Juan del Puerto	9,06	Via the A-5000
HU-Ocio-01.	Coastal Green Route	49,00	Repair and improvement of the Green Route (leisure and transport)
HU-Ocio-02.	Huelva-Gibralfón	10,44	Road around the marshlands
HU-Ocio-03.	Corrales-Coastal Green Route	9,42	Road around the marshlands
	Transport	91,26	
	Leisure	68,86	

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations
- ADIF

### Relationship to regional network

The regional routes that affect this agglomeration are the Coastal axis and the Sierra Morena axis. They both end in the area and link to the metropolitan network, the first with the Camino del Loro green corridor in Mazagón and the second in Trigueros via the Molinos de Agua Green Route.

## 7.2.8 Área de Jaen

### Sobre el diagnóstico

One important element is the layout of the terrain, both in the capital and in its vicinity. The metropolitan process is as yet incipient and the closest towns to Jaen are more than 10 km away. However, the towns located to the west, which are quite close together, are connected via the Oil Route green route.

To the east, the towns around the Guadalbullón river are at a distance from Jaen that is acceptable for cyclists.

The only cycling infrastructure that is tarmacked is the A-6050, between Jaen and Los Villares, which has a cycle path. In this same area to the south of Jaen, the Regional Ministry of Agriculture, Fisheries and the Environment constructed the 5-km long Jabacruz green corridor, which runs parallel to the aforementioned cycle path.

### Connections

- Enhance the function of the Green Route as a link between the towns located to the west and from them to Jaen. This requires a new connection from Jamilena to the route in Torre del Campo.
- Construct a circular sport and leisure path between Jaen and the Guadalbullón, also connecting to the local convention centre and Municipal Stadium, extended to the south and north throughout the urbanised axis..





### Actions

Code	Name	Length (km)	Comments
JA-01	Jamilena-Oil Green Route	3,00	Using rural roads suitable for cycling
JA-ocio-01	Jaen-Puente Jontoya	20,57	Leisure route that connects to the municipal stadium and convention and exhibition centre.
	Transport	3,00	
	Leisure	20,57	

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- ADIF
- Diputación and Local Corporations

### Relationship to regional network

Jaen is crossed by the Campiña-Subbético axis which accesses via the Oil Green Route and continues to link to the Guadalquivir axis in the vicinity of Villagordo via the J-3100. Continuity between the green route and this road must be guaranteed.

## 7.2.9 Malaga area

### Regarding the diagnosis

The coastal ridges and the arrangement of the population system limit the use of bicycles as a mean transport to the coastal axis and Guadalhorce valley. The population is found largely on the coast (more than 83%), with comparatively few inhabitants living in the towns in the Guadalhorce valley.

The dynamic, largely due to tourist activities on the western coast, and the location of services, implies a one-on-one dependence model between the city of Malaga and the western coast. Between these areas there is heavy mobility that could be undertaken by bike, but especially by the Bicycle+Public Transport combination, thanks to the Malaga-Fuengirola short-distance line.

There are unconnected sections of cycle paths of different characteristics in Cártama, Alhaurín de la Torre-Churriana, coast of Torremolinos and Rincón de la Victoria. The Regional Ministry of Agriculture, Fisheries and the Environment built the Malaga Green Gateway which starts in Puerto de la Torre towards Almogía.

### Connections

- Complete cycling route from Malaga to Fuengirola with links to short-distance stations.
- On the east coast, continuity of existing route between Malaga and Rincón de la Victoria.
- In the Guadalhorce valley, give service to the two radial population axes (Cártama-Technology Park-University and Alhaurín-Churriana-Costa), with cross-connections between them.

### Actions

Code	Name	Length (km)	Comments
MA-01	Fuengirola-Torremolinos	14,33	Via the coastal boulevard, connecting with railway stations
MA-02	Benalmádena	10,47	Connection between the high part of Benalmádena and the coast
MA-03	Torremolinos-Malaga	10,70	Via the coastal boulevard, connecting with railway stations
MA-04	Churriana-Alhaurín-El Tarajal	20,67	Via existing roads; it includes a connection between Alhaurín and Churriana via the A-366
MA-05	Alhaurín de la Torre-Campanillas	9,70	Via what is known as Pista de Alhaurín and the MA-5.001
MA-06	Cártama-Malaga Technology Park	13,11	Via the A-7054 and the A-7076
MA-07	Puerto de la Torre-Avenida de Lope de Vega-Metro	4,03	From Puerto de la Torre, via Calle Lope de Rueda and Avenida Lope de Vega
MA-08	Rincón de la Victoria-Malaga	7,25	Around the coast
MA-OCIO-01	Malaga-Almogía	13,20	Leisure route via the A-7075
MA-OCIO-02	Pizarra- Guadalhorce	11,27	Leisure route that starts at Cártama station, reaches Pizarra and continues to the banks of the Guadalhorce river
	Transporte	90,26	
	Ocio	24,47	

### Administrations involved:

- Regional Ministry of Development and Housing
- Regional Ministry of Environment and Land-use Planning.
- Ministry of Development
- Diputación and Local Corporations

### Relationship with regional network

The Malaga area is crossed by the region's coastal axis. On the western coast, the connection is found in Fuengirola, and in Rincón de la Victoria to the east. At the same time, one of the branches into which the central transversal axis divides in Puente Genil ends in Malaga. The link between this axis and the metropolitan cycling network is found in Almogía, where there is access to a sport-leisure path defined in the Malaga metropolitan network. This connection occurs via the A-7075

### 7.2.10 Seville area

#### Regarding the diagnosis

In the Seville area, the physical limitations for cycling are limited to the sharp climbs in the Aljarafe and Los Alcores districts. In general, the terrain is flat and suitable for cycling as a means of transport and with potential for leisure-related use. Seville, with just over 50% of the area's population, performs a clear urban centrality function. But some towns to the southeast of the capital, such as Alcalá de Guadaira and Dos Hermanas, and the Aljarafe district, house important metropolitan facilities and services.

The distances between some towns and Seville, and occasionally between these towns and their population axis, means that the development of cycle paths for commuting is feasible. At the same time, the presence of important public transport lines by rail and an underground line that reaches several towns in the metropolitan area provides significant potential for bicycle-public transport intermodality. The existence of a dense cycling network in the capital also encourages cycling from nearby towns.

Existing actions include different unconnected lines linked to roads, particularly in the Aljarafe district. There are also leisure-sport paths such as the two phases of the Metropolitan Green Corridor of Seville and the Alcalá de Guadaira- Universidad Pablo Olavide Green Gateway. The Itálica green route connects Camas to Santiponce and Alzncóllar. Although these are sport and leisure infrastructures, they can also be used for commuting.

#### Connections

As shown as the proposal's plan, the lines of action would be:

- Complete a grid connecting the towns in the Aljarafe district, distinguishing four radial (Camas-Olivares, Castilleja-Sanlúcar la Mayor, Mairena-Almensilla and San Juan de Aznalfarache-Coria) and two transversal axes (Valencina-Gines-Bormujos-Palomares-Coria and Olivares-Umbrete-Bollullos-Coria).

- Connect the towns to the north of Seville (Alcalá del Río, La Rinconada, la Algaba and Santiponce)

- Ensure connection of the triangle formed by the principal towns/cities, Seville, Alcalá de Guadaira and Dos Hermanas.

- Connect the towns of the Guadalquivir area to the north of Seville (Villaverde, Cantillana, Tocina and Alcolea del Río) with railway stations.

- Ensure connections between metropolitan and urban networks, especially that of the city of Seville.

- Enable safe access to existing leisure routes (Green Corridor, Itálica green route, Road to Santiago, Water Route)

- Enable connections to towns in the Los Alcores district, with new cycling routes for transport and leisure.

#### Actions

Code	Name	Length (km)
SE-01	Cycle lane from Seville to La Rinconada	6,13
SE-02	Connection from Seville to Camas (station) from El Alamillo and Puerta Triana.	8,27
SE-03	Santiponce-Camas (short-distance station), via Avda. de Extremadura and Tartessos	3,01
SE-04	Castilleja de Guzman-Valencina (A-8077)	2,04
SE-05	Western Mairena del Aljarafe ring road and closure of the existing network ring.	2,60
SE-06	Valencina-Salteras station (A-8077)	1,61
SE-07	Road through Salteras (A-8077)	2,44
SE-08	Olivares. Connection via Calle Itálica-Juan Pablo II	0,78
SE-09	Olivares-Villanueva del Ariscal short-distance station (A-8075)	1,54
SE-10	Villanueva del Ariscal (town centre)-to short-distance station). A-8075	0,88
SE-11	Espartinas-Villanueva del Ariscal (A-8075)	0,81
SE-12	Umbrete-Espartinas (A-8059)	0,97
SE-13	San Juan (Metro station)-Gelves. (A-5058)	3,32
SE-14	Coria-Gelves. (A-5058)	5,95
SE-15	Bormujos-Hospital de San Juan de Dios	1,54
SE-16	Gines-Bormujos	2,25
SE-17	Sanlúcar La Mayor (short-distance station)-Umbrete (A-8076)	2,92
SE-18	Palomares-Mairena-San Juan (SE-3304)	2,53
SE-19	La Algaba-Sevilla (A-8006, SE-3412)	0,99

Code	Name	Length (km)
SE-20	Pablo de Olavide-Alcalá de Guadaira-extended to the A-92	17,36
SE-21	Palomares-Mairena. (SE-3303)	1,85
SE-22	Aznalcázar-Benacazón station (A-473)	6,99
SE-23	Umbrete-Bollullos de la Mitación (PIBO) (A-8059)	1,64
SE-24	Almensilla-Palomares (A-8054)	5,71
SE-25	Palomares link between the A-8051 and SE-3304	1,52
SE-26	Link from the A-8077. Valencina-Santiponce	5,15
SE-27	Dos Hermanas-Alcalá de Guadaira. (A-392)	6,33
SE-28	Southern Mairena del Aljarafe ring road	2,36
SE-29	Camas – Castilleja de Guzmán	2,77
SE-30	Sanlúcar la Mayor-Benacazón	3,74
SE-31	Road through Villanueva del Ariscal	1,77
SE-32	Gines - Espartinas	3,60
SE-33	Central connections, Aljarafe district	11,72
SE-34	Bollullos-Almensilla-Coria	9,23
SE-35	Palomares to the A-8058	2,13
SE-36	Santiponce – La Algaba – Seville	9,48
SE-37	Alcalá del Río-La Rinconada	3,40
SE-38	Connection to Alcalá Green Gateway	2,19
SE-39	Connection to Alcalá Green Gateway II	1,87
SE-40	Villaverde del Río – Brenes railway station	5,50
SE-41	Cantillana – Railway station	4,20
SE-42	Tocina – Railway station	2,08
SE-43	Alcolea del Río – Railway station	3,97
SE-44	Bollullos De la Mitación – Bollullos de la Mitación (PIBO) (A-8059)	0,93
SE-45	Mairena del Alcor-Alcalá de Guadaira (A-398)	6,79
SE-46	Connections between Dos Hermanas and Seville	6,39
SE-Ocio-01	Carmona-Alcalá de Guadaira via the old railway line. Los Alcores Green Route	24,35
	Transport	181,25
	Leisure	24,35

The large number of sections in this area is due to the prior existence of projects drafted by Diputación de Sevilla and the Regional Ministry of Development, most of them short.

#### Administrations involved:

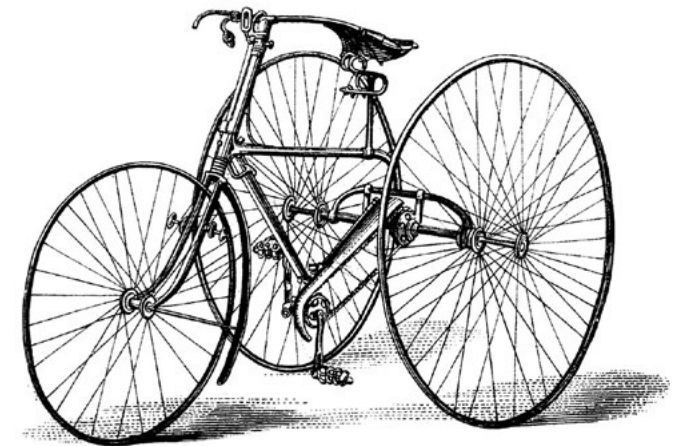
- Regional Ministry of Development and Housing
- Ministry of Development
- Diputación and Local Corporations
- Regional Ministry of Environment and Land-use Planning.
- ADIF

#### Relationship to regional network

Seville area is crossed by two regional network axes, the Guadalquivir axis and the transversal axis from Sierra de Huelva to Campo de Gibraltar.

The first connects to the south through the metropolitan green corridor and is pending definition to the north.

The second connects with Sierra de Huelva through the Itálica Green Route in Alzncóllar, and the other end links to Alcalá de Guadaira via the Morón drivers' road.





**INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS**

**ALMERIA**

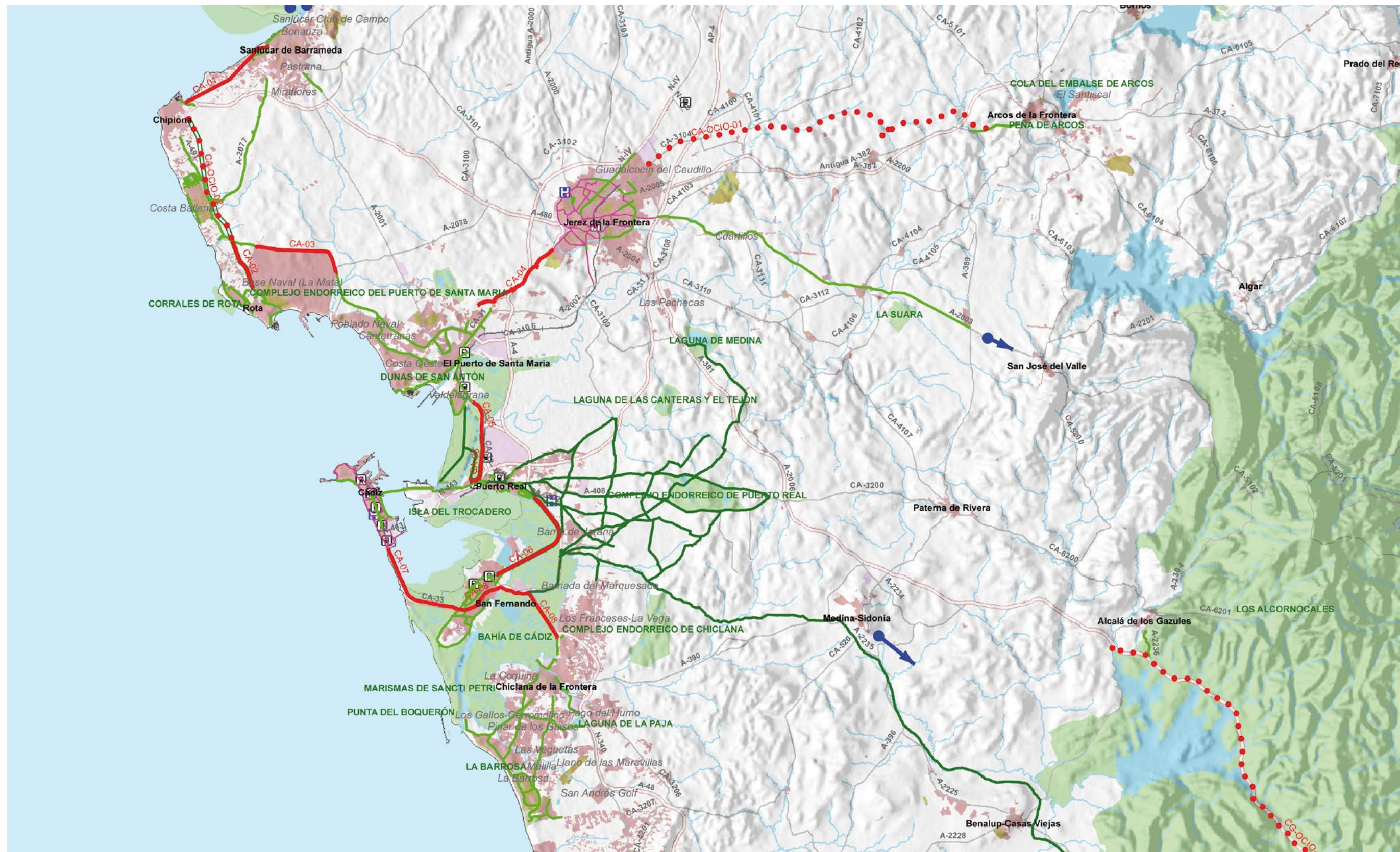
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- ▶ Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

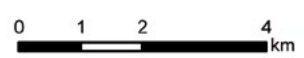
### BAY OF CADIZ

#### Proposed Metropolitan cycling network

- Transport
- Leisure and sport
- ▶ Relationship to regional network

#### Existing cycle paths

- Cycle paths
- Green gateways and Corridors
- Green routes





# INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

## CAMPO DE GIBRALTAR

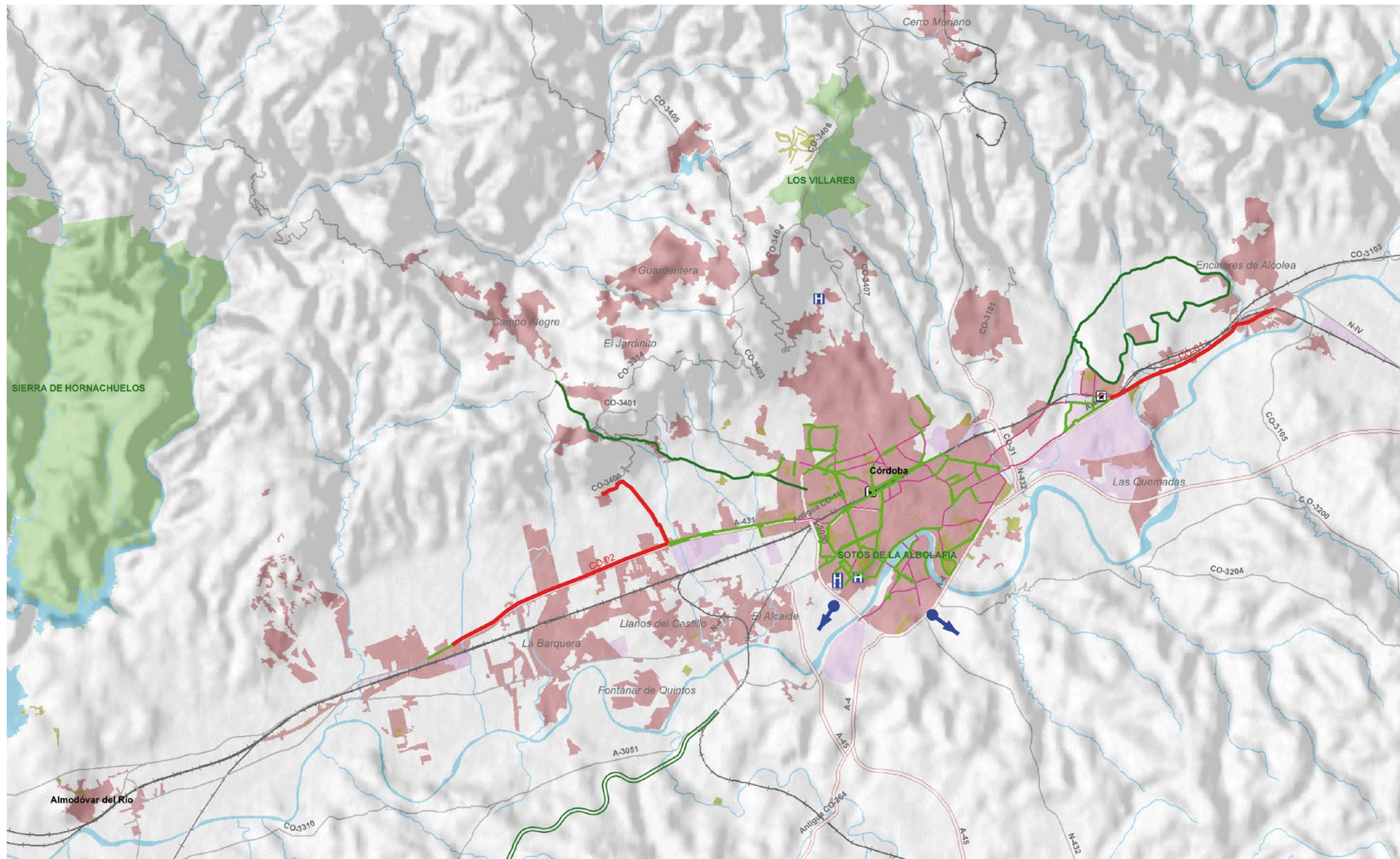
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



**INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS**

**CORDOBA**

**Proposed Metropolitan cycling network**

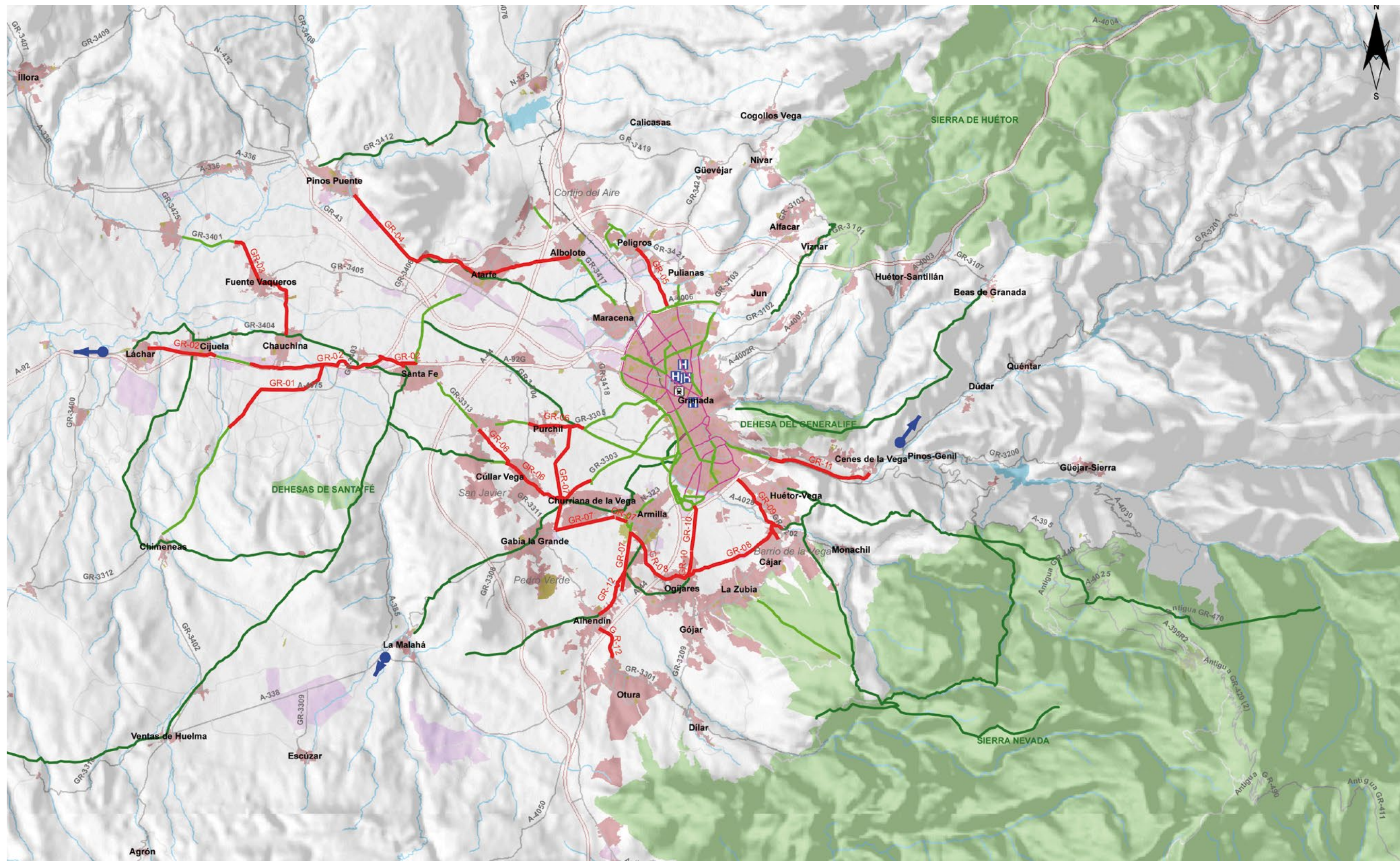
- Transport
- Leisure and sport
- ▶ Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km





## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

### GRANADA

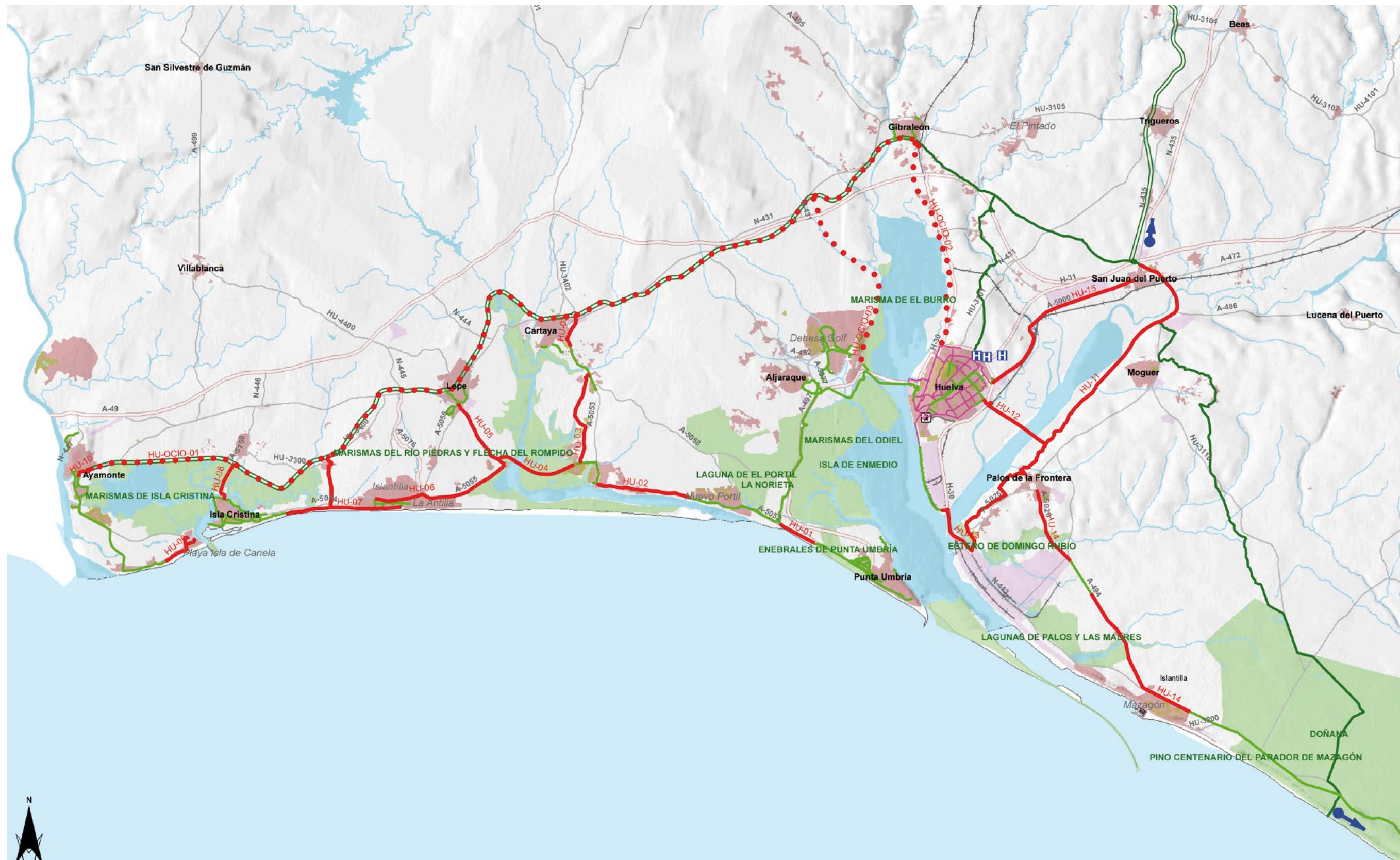
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- ▶ Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

### HUELVA

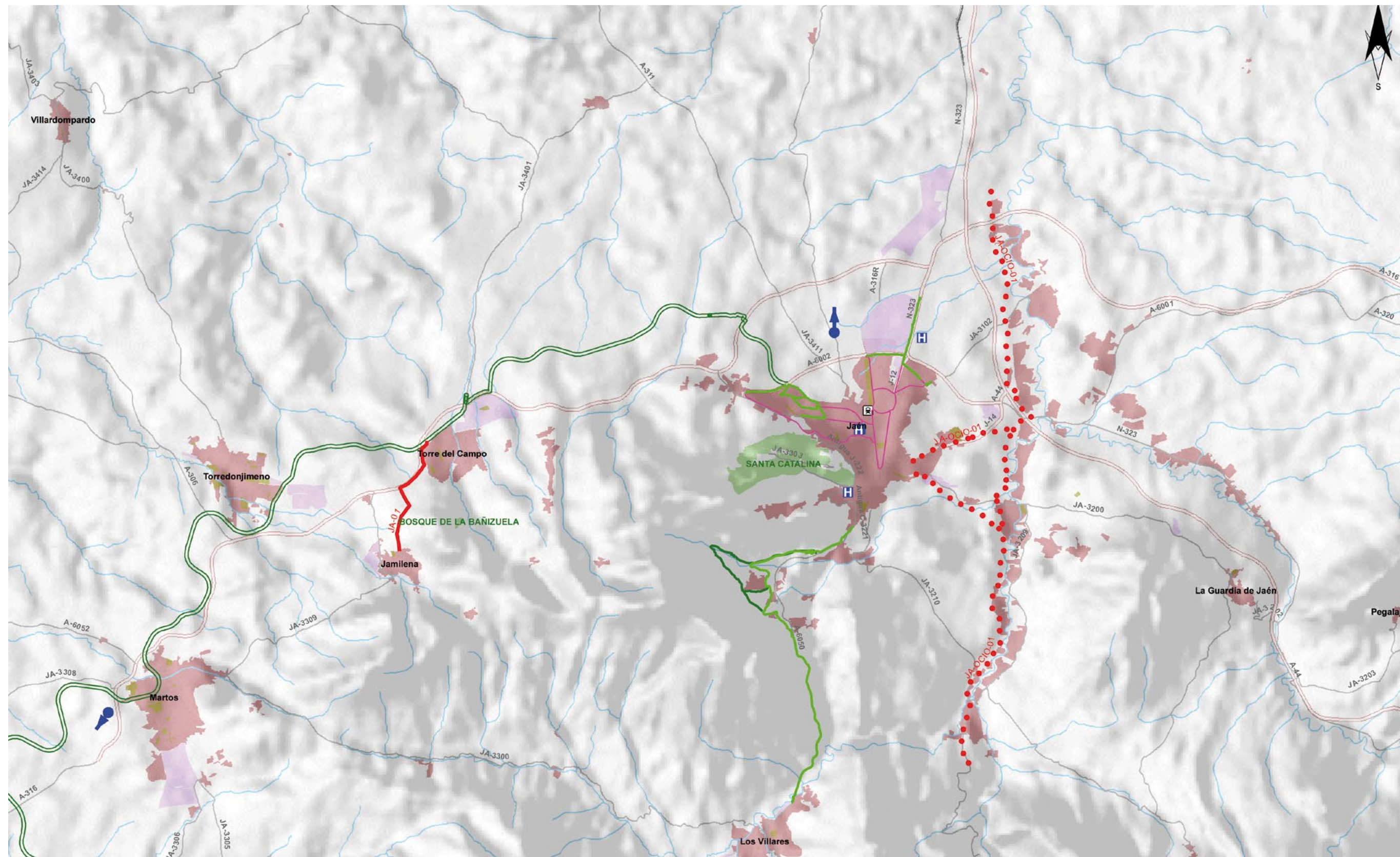
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

### JAEN

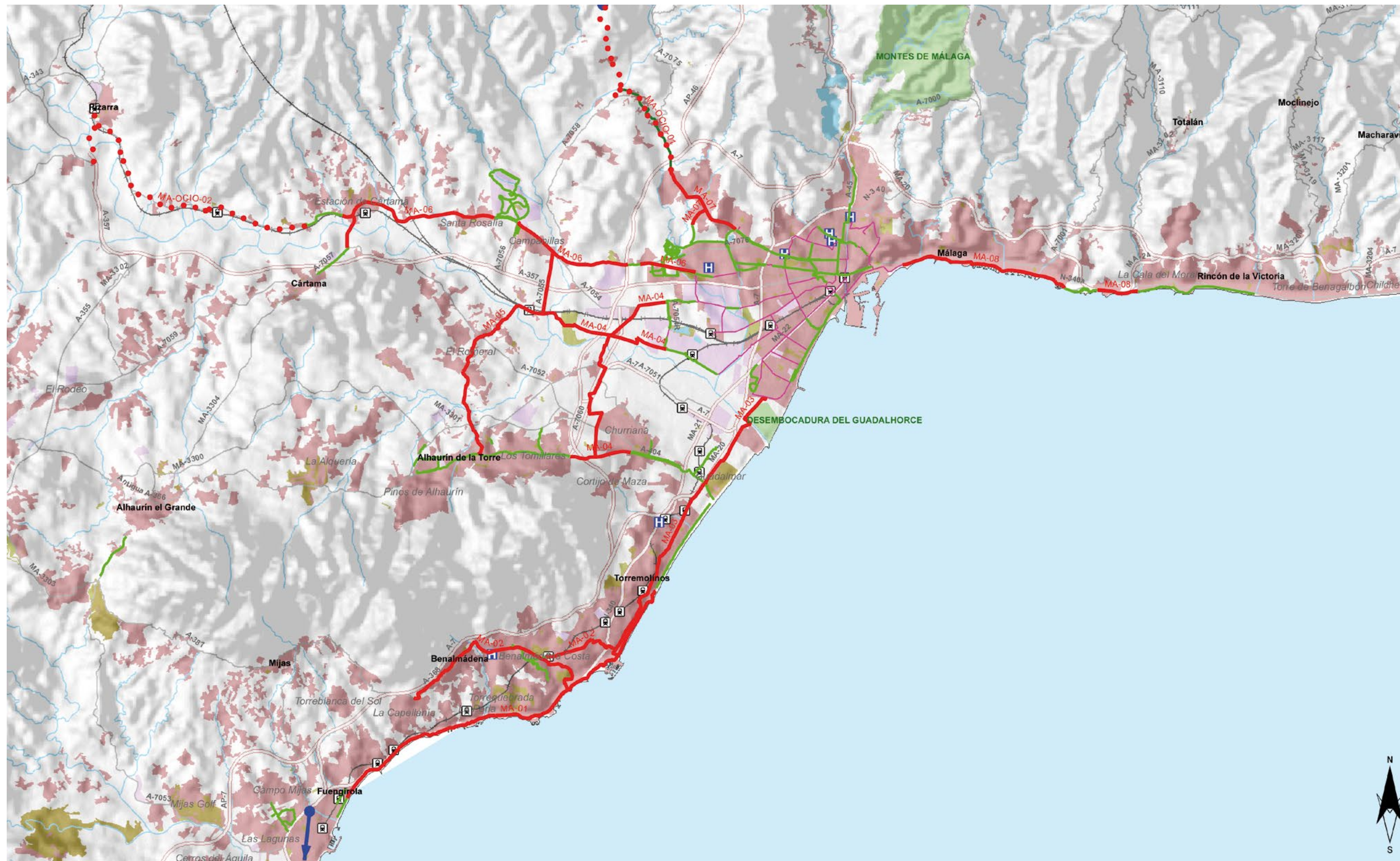
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- ▶ Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

### MÁLAGA

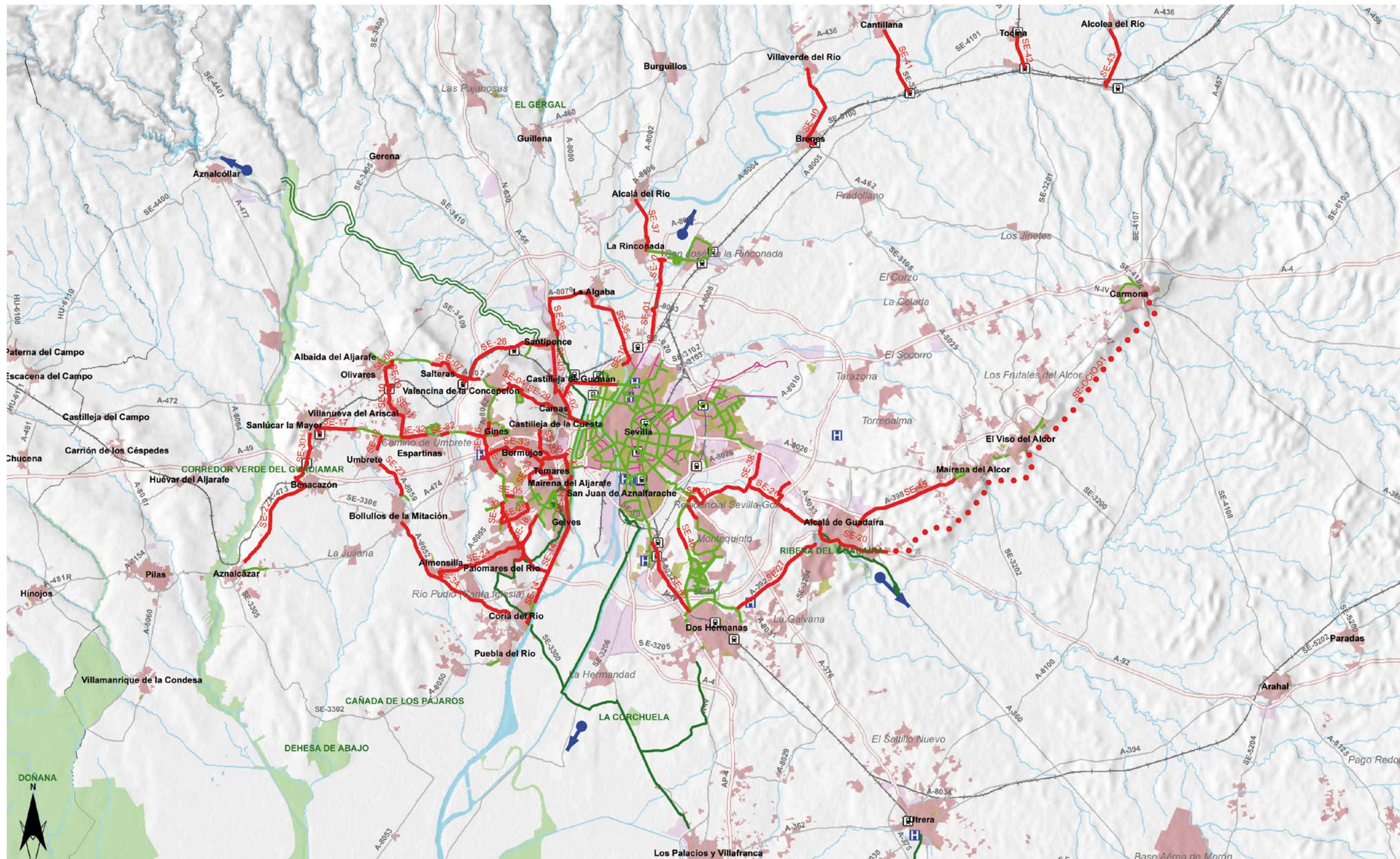
**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



## INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

### SEVILLE

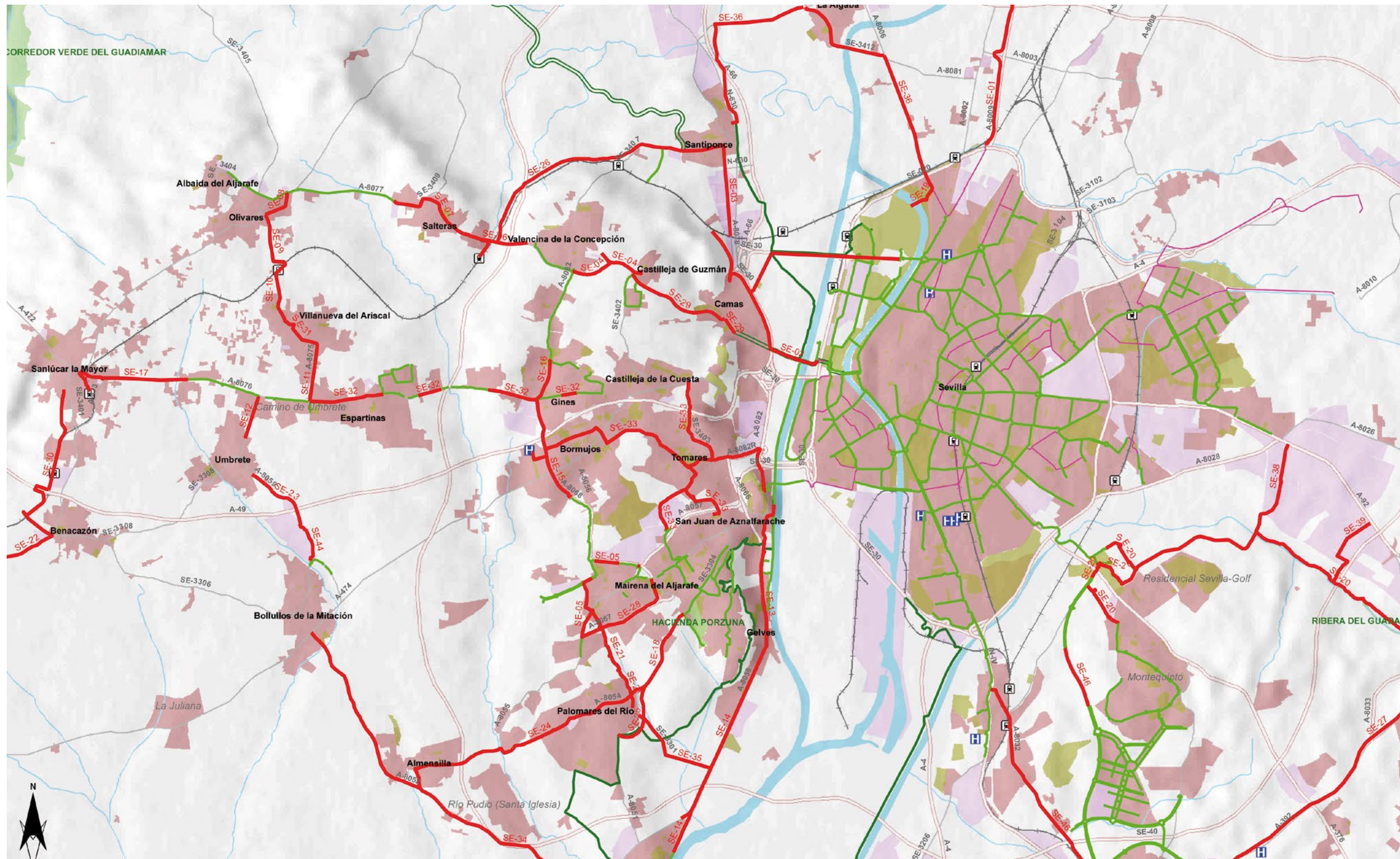
**Proposed Metropolitan cycling network**

- Transport
- · · Leisure and sport
- Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km



### INVENTORY AND PROPOSALS OF METROPOLITAN NETWORKS

#### SEVILLE (EXTENSION)

**Proposed Metropolitan cycling network**

- Transport
- Leisure and sport
- ▶ Relationship to regional network

**Existing cycle paths**

- Cycle paths
- Green gateways and Corridors
- Green routes

0 1 2 4 km

## 7.3 Urban networks

### 7.3.1 Introduction

One of this Plan's basic objectives is the effective implantation of cycling for everyday mobility, the use of bicycles as a means of transport.

This objective is naturally more linked to towns and cities, particularly large Andalusian cities, given the intense commuting found in them and their spatial concentration; here the switch from private cars is more feasible, so that measures supplementary to the development of cycling infrastructures will be more effective.

Furthermore, fostering cycling in Andalusia's major cities, the functional centres of metropolitan areas, is the first step towards a significant increase in the use of bicycles therein. This will be followed by more cycling between the central city and its metropolitan areas and also for journeys that begin and end in such areas.

This explains why this chapter of the Plan contemplates proposed cycling networks for the 10 most important Andalusian towns, the eight provincial capitals plus Jerez de la Frontera and Algeciras, in the province of Cadiz, the functional centres of the most consolidated new metropolitan areas (Cadiz and Jerez in the Bay of Cadiz) of Andalusia.

This does not mean that other Andalusian towns are not involved in the plan's objectives and proposals. Indeed, a global budget is established for the development of cycle paths in other towns that

also have significant potential for cycling. In this respect, there are another 10 towns with a population of over 50,000 inhabitants and a third group of approximately 40 towns that have a population of more than 20,000.

The cycling networks of towns with a municipal census of more than 50,000 inhabitants should be defined within a year. In general, one criterion to be considered when establishing priorities regarding new towns susceptible to intervention will be their proximity to the main metropolitan area and continuity with metropolitan cycle paths.

Following the principles established for these networks in the chapter about criteria for action and individual urban diagnoses, a proposed network has been defined for each of the 10 cities classified as metropolitan centres. The defined networks, then, meet general network criteria and the specific criteria for urban networks defined in chapter 6, regarding guidelines: continuity, connectivity, support of existing infrastructure, intermodality, transport vocation, city grid, two-directional paths, historic town centres with specific measures without new infrastructures, traffic reduction activities, and links between the three established regional cycling network scales: urban, metropolitan and regional.

Urban networks can be adapted in agreements with local corporations, but they will always follow and respect the criteria established in this document. The Plan distinguishes between the basic network required to provide current paths with continuity and charge the system, and a supplementary network that increases both the density and length of the entire proposal. This distinction between types of cycle path must be among the criteria applied for project programming.

The proposed basic network is based on the existing infrastructure and, with interventions involving around 20 km, provides these towns and cities

with a functional network that serves the main residential areas plus key areas containing employment nodes, equipment and public transport hubs.

The objective of these networks is also to provide continuity for existing cycle paths, establishing a series of inner city routes that link to the most important metropolitan accesses and connections. This facilitates rapid use of the network and its accessibility for a large number of potential everyday users: commuting, shopping, visits etc.

Each city's network is presented with the following content structure:

- Highlighted aspects of the diagnosis
- Objectives
- Basic references of the network
- Links to the metropolitan network

The maps shows the basic and supplementary network is considered, distinguishing between existing and proposed networks.

The most important figures associated to the proposal are shown on the table and represent 313 km of new cycle paths for these 10 towns, an average of 31 km, with the smallest number being 13 km for Jaen and the largest 42 km for Jerez de la Frontera.

### 7.3.2 Algeciras

#### Regarding the diagnosis

A city that lies alongside the coast, Algeciras has an urban layout that makes communication continuity difficult. Because of its relief, the best area for cycling is the stretch near the coast.

It has a cycling axis to the north of the port, which follows the sea front and adjacent streets, and another to the south, via the Getares road.

#### Objectives

To close the existing cycling network on the coast, opposite the port and extend it to new urban developments and main centres of activity, increasing its density and providing it with better connections with the main transport nodes, bus and nearby railway station.

TABLE 19: URBAN CYCLING NETWORK PROPOSAL

Town	Population	Surface area (km <sup>2</sup> )	Streets (m)	CYCLING NETWORK (M)			FINAL URBAN CYCLING NETWORK (EXISTING + PROPOSED)		
				Existing	Construction	Proposal (m)	Final CN (m)	Final CN /100in-hab	Final CN /streets
Algeciras	116.917	85,8	290.659	6.674	-	22.481	29.155	24,94	10,03%
Almería	191.443	296,2	414.995	17.912	706	33.655	52.273	27,30	12,60%
Cádiz	123.948	12,3	126.316	8.769	-	20.259	29.028	23,42	22,98%
Córdoba	328.841	1255,2	781.523	58.458	3.098	30.940	92.496	28,13	11,84%
Granada	239.017	88	518.188	22.779	5.301	35.251	63.330	26,50	12,22%
Huelva	148.568	151,3	223.276	15.744	-	37.591	53.335	35,90	23,89%
Jaén	116.731	424,3	220.388	7.831	-	12.991	20.822	17,84	9,45%
Jerez Fra	211.900	1188,3	789.188	15.076	7.182	42.483	64.740	30,55	8,20%
Máaaga	567.433	395,1	1.477.177	44.521	3.959	40.296	88.776	15,65	6,01%
Seville	702.355	141,3	1.181.911	135.878	-	36.805	172.683	24,59	14,61%
Las 10	2.747.153	4037,8	6.023.621	333.642	20.245	312.752	666.639	24,27	11,07%



### Regarding the network

The proposed basic network comprises a north-south axis that crosses the city, and an east-west axis that follows the old Los Barrios road, plus proposed new sections providing access to the port and the hospital, new radial sections starting from the bus and railway stations, and two new east-west axes starting from the bullring and the Menacha Industrial Estate.

In all, the existing network is enlarged by 22 km, to form a network of more than 29 km of cycle paths that cover the entire city centre and connect to different university colleges, hospitals and transport nodes.

### Relationship to the metropolitan network

The beginning of the Algeciras urban network forms part of the metropolitan arch structuring the cycling network over the Bay, ending at La Línea. There are plans for inland connections with Los Barrios, Palmones and San Roque, and a study of a connection to the existing network at Punta Carnero.

## 7.3.3 Almeria

### Regarding the diagnosis

This city is flat in the part nearest to the coast, although it does have some slopes and short cycle paths that do not reach significant points of interest. The university campus is outside the city itself, half way to a property development (El Toyo) that, although originally for tourists, is mostly occupied by first home owners, and includes cycle paths.

Almeria's intermodal station includes trains and inter-town buses near the coastal axis, where most of the city's most important streets converge.

### Objectives

In Almeria, the objective is to establish a more complete and continuous network that communicates from the port to the university campus, integrates the intermodal station and covers the city to the north by means of its principal arteries, Rambla de Belén, Av. Del Mediterráneo and transversal axes.

### Regarding the network

The proposed basic network connects the La Cañada campus to the city via a coastal axis with north-south axes via Avenida del Mediterráneo, Avenida de Ronda and Avenida Federico García Lorca, and east-west via Juan XXIII

and Antonio Muñoz Zamora, Nuestra Señora de Montserrat, Avenida de Pedro Méndez, Nijar-Los Molinos road and Calle Italia. The red becomes denser with the extension of Calle Murcia to Nicolás Salmerón Park through the city centre and extensions to the Mediterranean Games Stadium and the sports facilities at the end of Calle Belén.

A total of just over 33 new kilometres are proposed, to comprise a 52 km network, which involves providing cycle paths on 12.6% of the city's streets.

### Relationship with the metropolitan network

With regards to links to the metropolitan network, we have to highlight the characteristics of the Almeria area defined for the purpose of this Plan by two units that comprise the area closest to Almeria and the Western District.

The link between these two units poses something of a problem because of the distance and especially due to the orographic conditions, so this future connection will be studied in the metropolitan network.

If a connection is established with the towns located to the north of the capital, the La Cañada de San Urbano district and El Toyo, this could directly connect to the regional network's coastal axis.

## 7.3.4 Cadiz

### Regarding the diagnosis

The special characteristics and arrangement of Cadiz, a highly compact linear city with the old city centre on one end and the way it has grown with a principal axis as the centre of most urban activities, make it difficult to find space for cycle paths in streets that are already full to capacity. The city's size and compact nature make it suitable for travelling on foot.

There are several university facilities in the north-east of the old city centre and the campus is outside the city, in Puerto Real. A new bridge is under construction and the project includes a platform reserved for cyclists which will connect to the urban network.

### Objectives

To establish a network surrounding the perimeter of the old city centre that connects to longitudinal axes that provide structure and link to the metropolitan network and the network planned in the new bridge providing access to Cadiz.







#### Regarding the network

The proposal is for a basic network comprising three longitudinal axes (Avenida de Astilleros y Cortes de Cadiz, Avenida de Andalucía and Fernández Ladreda) that converge in the ring that surrounds the old city centre. This is completed in the new areas with several transversal routes that provide the network with connectivity.

The proposed new cycle paths total 20.25 km, which form a grid that crosses the city in a balanced manner, given the particular characteristics and morphology of Cadiz.

The singular characteristics of Cadiz with regards to urbanisation explain why, when adding proposed to existing cycle paths, it presents the highest percentage of urban roads with lanes for bicycles.

#### Relationship to the metropolitan network

The proposal is to provide continuity for urban routes, connecting with the Puerto Real campus and San Fernando through the isthmus, using both existing infrastructures and others that are under construction.

### 7.3.5 Cordoba

#### Regarding the diagnosis

Cordoba is a dense city around a large old city centre with homogeneous developments around it that have left few empty spaces. There is a new heavily populated development to the south, on the other side of the Guadalquivir, terraced houses to the north in the vicinity of Avenida del Brillante and industrial developments to the north-east and south-west.

University facilities are found on the Rabanales campus, outside the city and to the north-east, and again in the south-west, in the vicinity of the city's hospitals.

The bus and railway stations are central, opposite each other across the same avenue, where there are also numerous bus stops. This area, then, provides intermodality for public transport.

Cordoba was a pioneer in Andalusia in initiatives to foster cycling, and it has quite a large cycling network, often moving in a single direction and without the necessary continuity. Likewise, the public bicycle service does not seem large enough to satisfy commuting demands. Cycling has not grown

significantly and the percentage of travel by bike is similar to that found in most Andalusian towns.

#### Objectives

To provide continuity to existing sections, generating a network effect and guaranteeing access to the university campuses and new urban developments to the south of the Guadalquivir.

The goal is to provide access to a consistent cycling network for the most heavily populated areas.

#### Regarding the network

The proposal is for a basic network that provides continuity for the axis between El Higuero and the Rabanales university campus via Avenida de América and Avenida y Carlos III, closing a ring around the old city centre with projects in Campo Madre de Dios and Ronda del Marrubial. This solves the problem of the network's current discontinuity, creating a perimeter around the main districts around the old city centre and south of the river.

This intervention in Cordoba represents nearly 31 new kilometres. Added to the existing 61 km, they will generate a network with a total of more than 92 km.

#### Relationship to the metropolitan network

Given the special characteristics of the Cordoba area, with its large surface area and a metropolitan process limited to the corridor over the Guadalquivir, the idea is to add continuity to previously constructed sections, accessing Villarrubia to the west and Alcolea to the east.

### 7.3.6 Granada

#### Regarding the diagnosis

Although it has areas with unfavourable topography, the city has a strong university tradition and therefore has a significant potential cycling population. University facilities are found in different parts of the city, and should all be connected by the cycling network.

The development of a metro line that connects the railway and bus stations to the towns in the metropolitan area of Granada is an opportunity for greater participation of public transport which can also be supported by stretches covered by bicycle.

The cycling network is more highly developed in the new urban areas than in the consolidated city and a significant part of it is based on the ring road, near to different settlements in the metropolitan area located on the Granada plain.

#### Objectives

To close perimetral and radial routes that connect the most important facilities, paying special attention to university facilities and residential areas, providing continuity to nearby towns within the metropolitan area, with clear potential for the promotion of cycling in the Granada area overall.

#### Regarding the network

The proposed basic network plans to add continuity to the existing network between Camino de Ronda and Luis Amador and create a new north-south axis between the northern Campus and Campus de a Salud through Zaidín. Different communications are established between the north-south axes via transversal southwest/northeast routes in the extension of Avenida de Madrid, Calle Recogidas and following the course of the Genil River. The basic network also includes connection to the Almanjajar district by different radial pathways that connect the fair ground, the bus station and the most important hospitals.

The proposed network represents 35 new kilometres to total close to 63 km., connecting the existing cycle paths and bringing them closer to the old city centre, more heavily populated areas and the most important public facilities and centres of activity.

#### Relationship to the metropolitan network

The urban network of Granada enables a good number of metropolitan connections both in the plain and northern areas (Peligros, Albolote, Maracena) and in the west (Santa Fe, Cullar Vega, Gabia La Grande, Purchil) and south of the city (Alhendín, Otura, Ojigares, La Zubia, Cájar,...).

### 7.3.7 Huelva

#### Regarding the diagnosis

In view of its compactness and layout, Huelva is a city that is very suitable for cycling, although its size is also an encouragement to travel on foot. It has developed a series of cycle paths that cover the main road of access from the motorway (Avenida de Andalucía), passing through the university campus.



Other sections, such as by the estuary, constructed by the Huelva Port Authority, have no continuity and do not reach the bus or railway station, making intermodality difficult. The hospitals located outside the city have no access by bicycle.

#### 👉 Objectives

The idea is to create a circuit around the perimeter of the city centre, with inner routes that reach both stations and the university.

Routes are also contemplated inside the city, providing the network with continuity, plus others that link to the estuary boulevard and the network that continues to Aljaraque and Punta Umbría.

#### 👉 Regarding the network

The basic network connects the university campus to the city centre via Avenida de Andalucía and continues to the hospital area. A grid is established with a perimeter that follows Avenida del Nuevo Colombino, Avenida de Italia, Carretera de Gibraleón, Avenida de la Cinta and Avenida de Honduras. This connects the main transport nodes and guarantees route continuity.

This basic network is supplemented by transversal axes along Calle Galaroza and Avenida de Santa Marta and Pio XII with Junípero Serra, together with connections to the existing network on the Aljaraque road and Paseo de la Ría.

The proposal includes 37 new kilometres of cycle paths that complete a 53 km network, which represents the highest percentage of urban streets with cycling lanes in Andalusia, 24%. The end product is thus a grid that connects the main centres of activity, facilities and transport nodes.

#### 👉 Relationship to metropolitan network

The urban network of Huelva links to the metropolitan network proposed in this plan at different points. It finds continuity through Aljaraque and the existing path to Punta Umbría with the coastal axis towards Ayamonte, and it also links to the towns located to the north and east, basically through different existing green route and Green Gateway facilities.

### 7.3.8 Jaen

#### 👉 Regarding the diagnosis

The size of Jaen, very suitable for walking, and its topographic conditions, makes it one of the large Andalusian cities with the most constraints for the

development of commuting by bicycle. The only existing stretches of cycle paths are in new property developments, in areas more suitable for cycling than the city itself.

The bus and railway stations are neither near or connected to the existing cycling network which does, however, connect to the university campus, at an altitude significantly different from that of the city.

#### 👉 Objectives

The objective in Jaen, topographical difficulties notwithstanding, is to establish a continuous network connecting the Los Olivares district in the north, and the university, to the railway and bus stations, following El Paseo, the leading urban artery, with Plaza de la Constitución, close to the old city centre.

#### 👉 Regarding the network

The basic network provides continuity for the existing network to the north, through Paseo de la Estación and Avenida de Madrid to Plaza de la Constitución. Likewise, the basic network integrates the existing network in Avenida de Andalucía and Avenida Arjona, plus new transversal routes that facilitate connectivity between the university campus and the railway station.

The proposal doubles the network with around 13 new kilometres that provide continuity for the two areas that currently have cycle paths, and also connects it to the city centre.

#### 👉 Relationship with metropolitan network

The weakness of the metropolitan process and the distances between the towns closest to Jaen reduce the viability of a metropolitan cycling network, which is basically limited to the eastern axis that, via the Oil Green Route, links the capital to Torredelcampo, Torredonjimeno and Martos.

### 7.3.9 Jerez de la Frontera

#### 👉 Regarding the diagnosis

A city with a resident population of more than 200,000 inhabitants thanks to its strategic location, Jerez is at the heart of important metropolitan and regional roads. It has potential for cycling, and has abundant, wide radial axes for such infrastructures. It has a dense city centre and important new property developments.

The railway and bus stations are very near each other, in the same square, around 1 km from the university campus located in the new area of Jerez.

#### 👉 Objectives

The objective is to create a complete network that links the old city centre with the university, public transport stations and the main parks and public facilities, dispersed in a town of heterogeneous design that results in large population density differences.

#### 👉 Regarding the network

The basic network provides continuity to the existing axes in the form of Avenida de Andalucía and Avenida de la Universidad, surrounding the old city centre and following Avenida de la Granja to the hospital.

The proposed cycling network, which surrounds the old city centre, is also connected to the hospital and transport nodes, with radial routes via Ronda de Muleros-Calle Alborán-Calle Fresa, Avenida de la Serrana and Avenida del Duque de Abrantes.

The proposal contemplates 42 km of new cycle paths that will close the existing paths and form a network of more than 65 km, which connects the city, its leading centres of activity and transport nodes.

#### 👉 Relationship to metropolitan network

The plan contemplates a connection between Jerez and El Puerto de Santa María, precisely in an area with considerable gradients to be taken into account. One of the regional network's axes, the southern axis that crosses the central corridor of the Betico system, ends to the east of Jerez.

### 7.3.10 Malaga

#### 👉 Regarding the diagnosis

Because of its size (its population is the second highest in Andalusia) and its central position in the Costa del Sol, Malaga is destined to play an important role in the objective of increasing cycling as a means of commuting.

The potential for intermodality with the short-distance service to Fuengirola and two nearly completed metro lines, are also important elements in the same direction. The orography is an unfavourable variable in the north-east part of Malaga.



The university campus is outside the city itself, to the west. This is where the greatest population density is found too, around several radial roads originating in the centre.

There is an important cycling network, although it does not serve the most heavily populated areas or connect to the university campus. Although new sections are under construction, they do not appear to solve the problem of the current network's significant discontinuities.

#### Objectives

To complete and provide continuity for the existing network, connecting the university campus with the city and bringing cycle paths close to the old city centre. This would represent a network providing broad coverage to the city's most heavily populated areas.

#### Regarding the network

The proposed basic network comprises the north-south axis from Ciudad Jardín to Avenida de Andalucía, and extends the existing network to the west towards the university campus and La Caleta, passing through the port area to the east.

The basic network will surround the old city centre following the bed of the Guadalmedina, Paseo del Parque, La Merced and San Felipe Neri and new crowns are established via San Miguel, Cristo de la Epidemia y La Victoria, to the north-east, Camino de Suárez-Carlos Haya to the north and Juan XXIII to the west, together with the new radial axis that runs parallel to the metro in Calle

Hérode de Sostoa-Avenida de Velázquez.

The proposal contemplated more than 40 new kilometres of cycle paths that will form a network of more than 88 km in all.

#### Relationship to metropolitan network

The urban cycling network of Malaga is connected to the metropolitan network on both ends of the coast and to the two populated areas in the Guadalhorce valley, one close to the feet of the hills (Alhaurín de la Torre and Alhaurín el Grande) and one in the lowest part of the valley.

### 7.3.11 Seville

#### Regarding the diagnosis

Seville, with a topography that makes it very suitable for cycling, has the largest cycling network in Andalusia and the means of transport has a high rate of participation in mobility, having registered a great increase in the last few years.

The strategy for fostering cycling must aim to complete this network, solving some discontinuities and making it denser to increase its coverage of some

areas. Secondly, the Plan contemplates connecting the network with its important metropolitan area, where some important cycle paths are already in place, particularly in the Aljarafe district.

#### Objectives

To complete the existing network with greater grid density and connect to the foreseen metropolitan networks, specifically from San Jerónimo to La Rinconada and San José, and from Tablada to San Juan de Aznalfarache and riverside towns.

#### Regarding the network

The city of Seville's basic network is supported by the existing paths that surround the old city centre and establishes crowns to the east via Luis de Morales and Ronda del Tamarguillo, extensions to the north and south to San Jerónimo and Bellavista and a north-south axis on the other side of the river that covers La Cartuja, Triana and Los Remedios.

The basic network proposes an extension of the La Cartuja-Los Remedios axis via Avenida de García Morato.

The construction of the 37 new km of cycle paths would complete a network of close to 173 km.

#### Relationship to regional network

Seville's large urban network is connected in the Plan through different links, highlighting three river crossings by Santiponce, Camas and San Juan de Aznalfarache and connecting to the important Aljarafe district.

Connections are also contemplated to important towns located to the south-east, Dos Hermanas and Alcalá de Guadaíra, and to other towns located to the north of the agglomeration.



INVENTORY AND PROPOSALS OF URBAN NETWORKS

**ALGECIRAS**

**Basic Network**

- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0 500 1.000  
Meters



INVENTORY AND PROPOSALS OF URBAN NETWORKS

**ALMERIA**

**Basic Network**  
 Existing  
 Proposed

**Supplementary network**  
 Existing  
 Proposed

0 500 1.000  
 Meters

- |                  |                      |
|------------------|----------------------|
| Estación autobus | Hospital             |
| Estación tren    | Facultad             |
| Estación metro   | Campus Universitario |



INVENTORY AND PROPOSALS OF URBAN NETWORKS

**CADIZ**

**Basic Network**

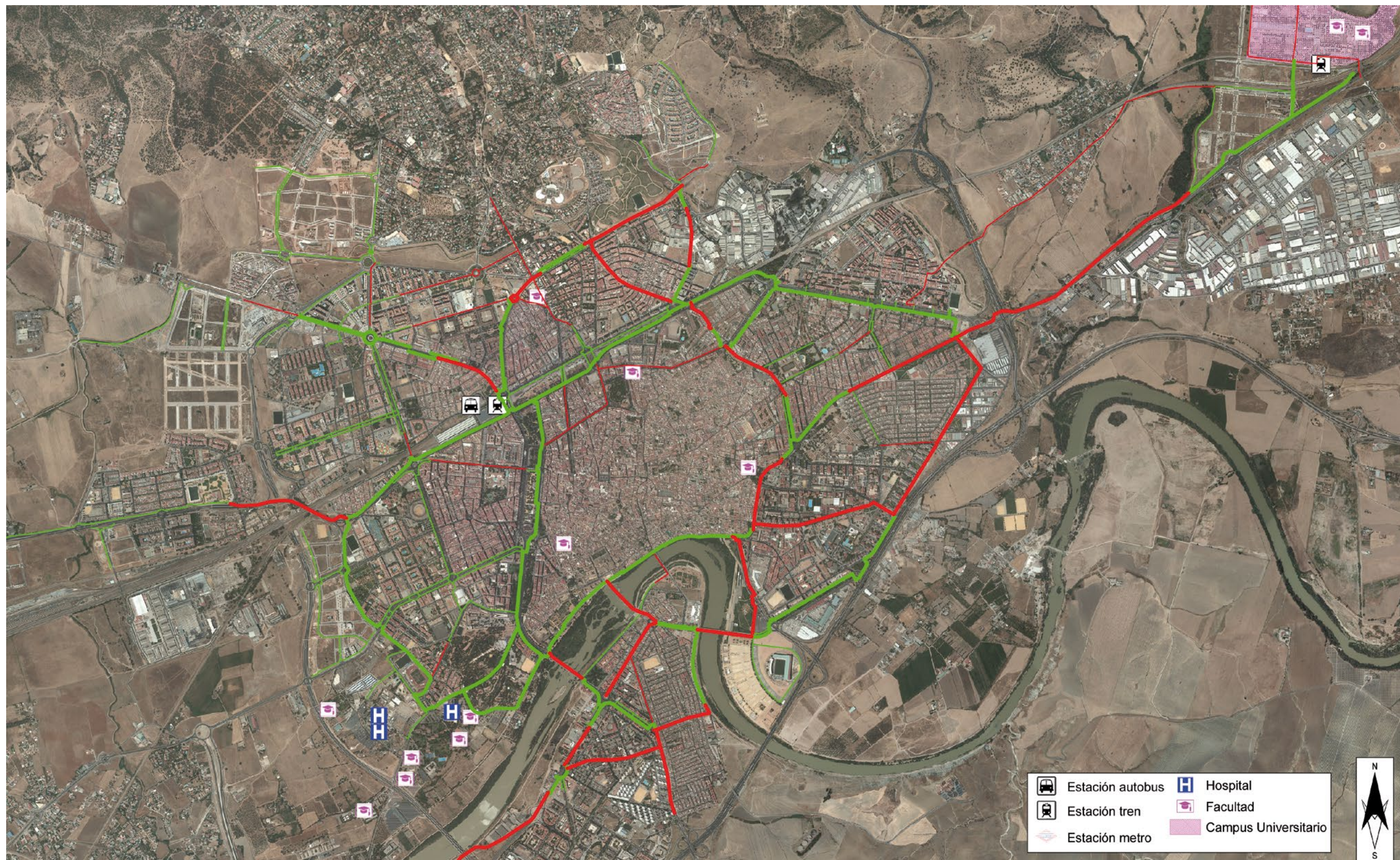
- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0 500 1.000 Meters

Estación autobus	Hospital
Estación tren	Facultad
Estación metro	Campus Universitario



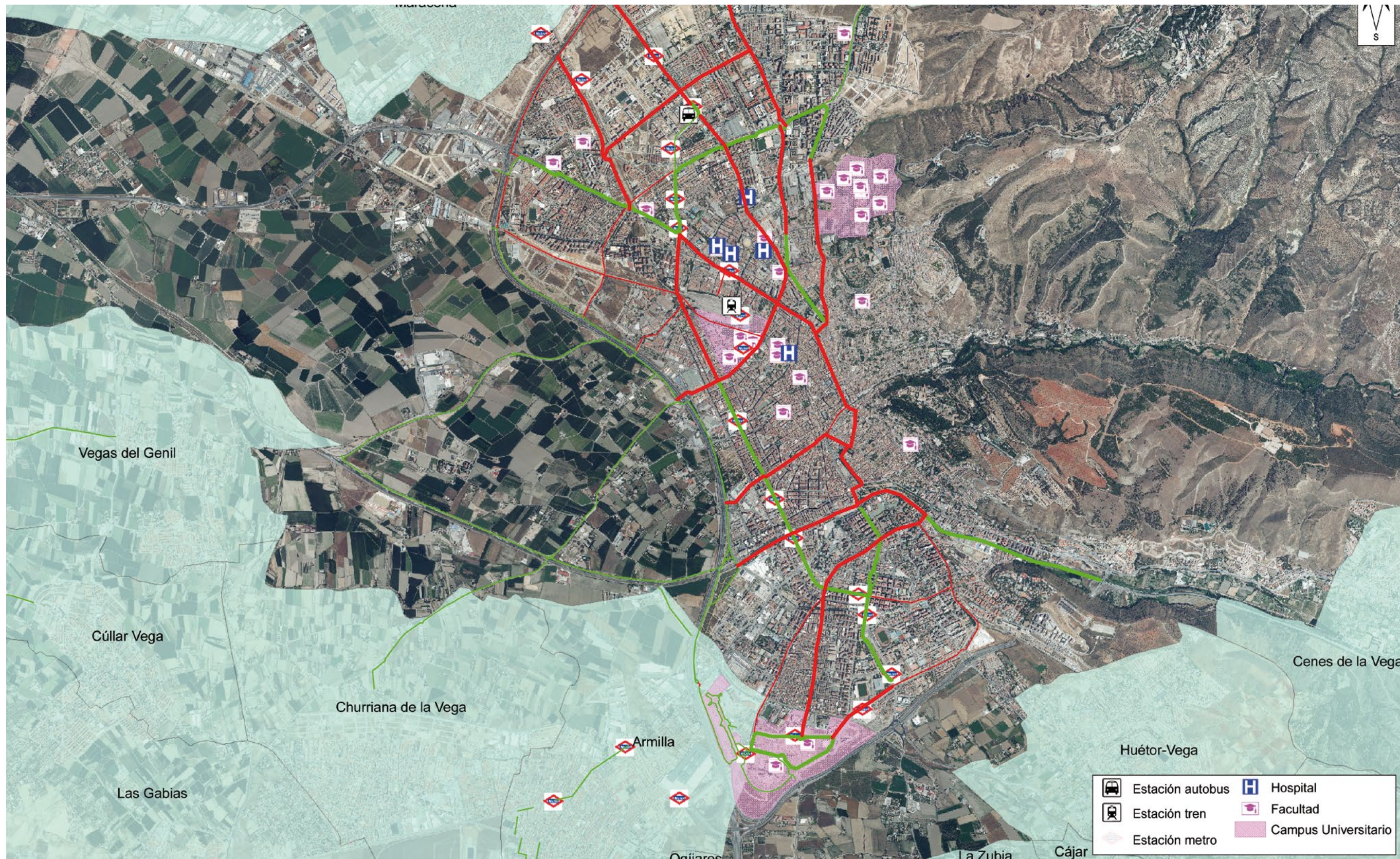
INVENTORY AND PROPOSALS OF URBAN NETWORKS

**CORDOBA**

**Basic Network**  
 Existing  
 Proposed

**Supplementary network**  
 Existing  
 Proposed

0 500 1.000  
 Meters



INVENTORY AND PROPOSALS OF URBAN NETWORKS

GRANADA

**Basic Network**

- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0      500      1.000  
 Meters

	Estación autobus		Hospital
	Estación tren		Facultad
	Estación metro		Campus Universitario





INVENTORY AND PROPOSALS OF URBAN NETWORKS

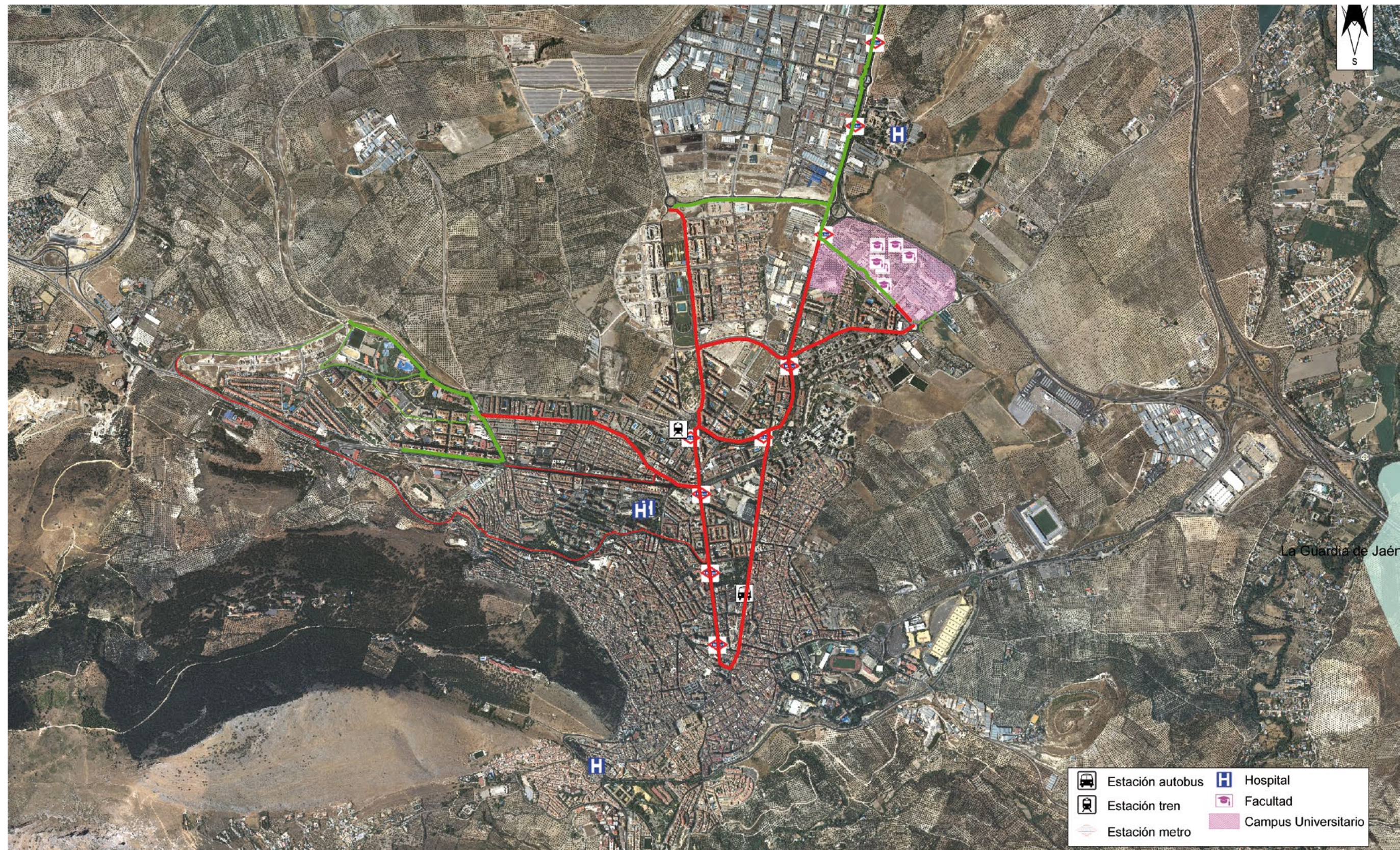
**HUELVA**

**Basic Network**  
 — Existing  
 — Proposed

**Supplementary network**  
 — Existing  
 — Proposed

0 500 1.000  
 Meters

- |                  |                      |
|------------------|----------------------|
| Estación autobus | Hospital             |
| Estación tren    | Facultad             |
| Estación metro   | Campus Universitario |



INVENTORY AND PROPOSALS OF URBAN NETWORKS

JAEN







**Basic Network**

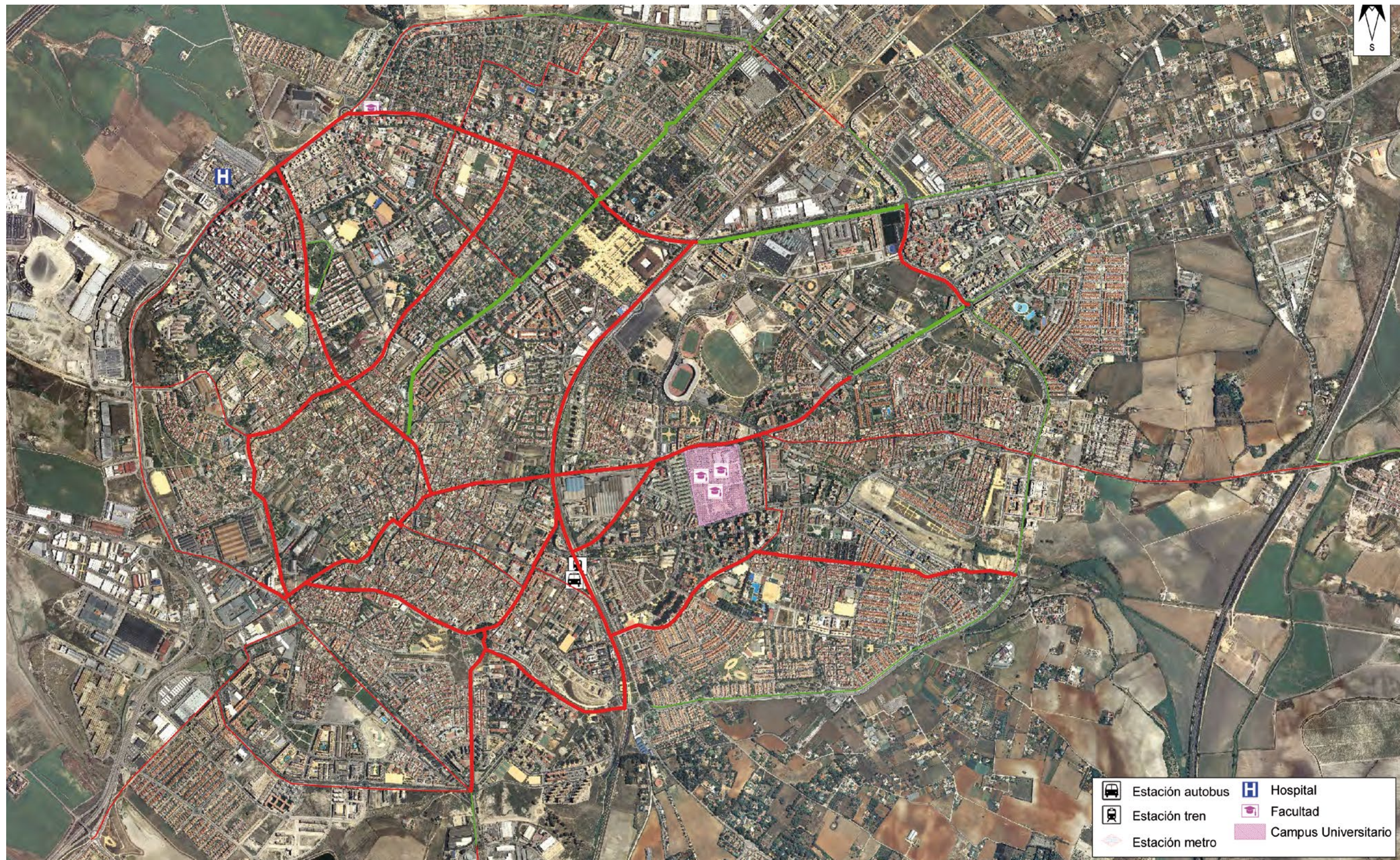
- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0      500      1.000  
 Meters

- |  |  |
|--|--|
|  Estación autobus |  Hospital             |
|  Estación tren    |  Facultad             |
|  Estación metro   |  Campus Universitario |









INVENTORY AND PROPOSALS OF URBAN NETWORKS

JEREZ DE LA FRONTERA

**Basic Network**  
 Existing  
 Proposed

**Supplementary network**  
 Existing  
 Proposed

0 500 1.000  
 Meters

- |  |  |
|--|--|
|  Estación autobus |  Hospital             |
|  Estación tren    |  Facultad             |
|  Estación metro   |  Campus Universitario |



INVENTORY AND PROPOSALS OF URBAN NETWORKS

**MALAGA**

**Basic Network**

- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0 500 1.000 Meters

- |                  |                      |
|------------------|----------------------|
| Estación autobus | Hospital             |
| Estación tren    | Facultad             |
| Estación metro   | Campus Universitario |



INVENTORY AND PROPOSALS OF URBAN NETWORKS

**SEVILLE**

**Basic Network**

- Existing
- Proposed

**Supplementary network**

- Existing
- Proposed

0 500 1.000 Meters

## 7.4 Intermodality and parking facilities

Cycle path networks require safe parking facilities, helping to reduce one of the risks that have a negative impact on cycling, bicycle loss or theft.

The number of parking facilities has to be related to network length units. It is thus defined that 750 metres is the minimum distance required for the provision of parking facilities in urban areas and 1,500 metres in the metropolitan network.

Nonetheless, priority will be given to the points mentioned in the criteria section, such as areas where many journeys end due to a concentration of facilities, employment or shopping, leisure and tourist centres, as well as public transport nodes linked to intermodality.

Parking spaces shall be provided at these points according to the foreseeable demand, located with criteria that provide appropriate security, surveillance and permanence, preferably inside buildings or lots.

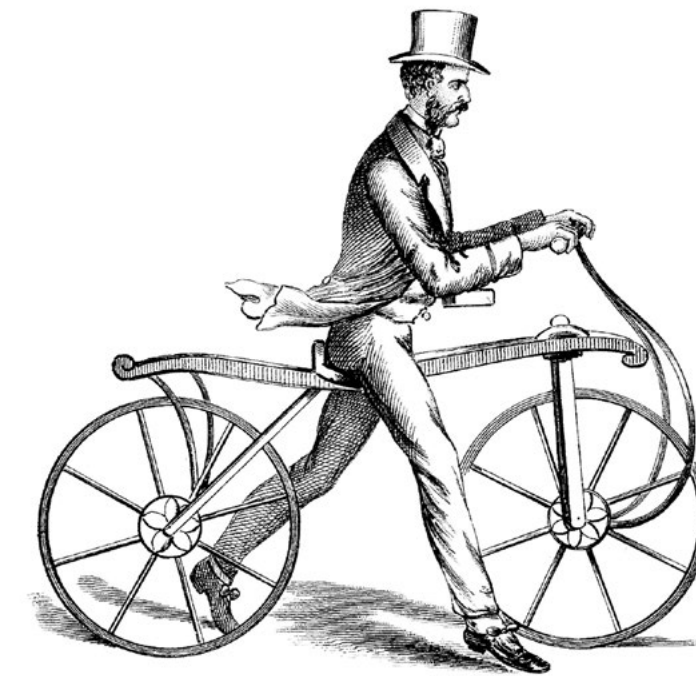
In relation to intermodality services between bicycles and public transport, a better approach to current reality and actual needs is required, in the form of metropolitan transport plans that contemplate intermodality in depth. The following lines of action are, however, established:

### 01. Promotion of Bike+Public transport intermodality

- Promotion of Bus+Bike services, such as one-day loans that are practically free, as successfully implanted in Seville, in all metropolitan areas.
- In this respect, the conditions to be established for the operation of bus stations in major cities should include the provision of a Bus+Bike service as a requirement or improvement.
- Location of public bicycle loan points in public transport stations.
- Implantation of parking systems in public transport stations, in sufficient number and with appropriate characteristics in each case. When available, they should be included in parking areas for other vehicles with surveillance services.
- Study and subsequent installation of bicycle storage facilities, especially in transport nodes where different means of transport converge or with large capacities.

## 02. Transport of bicycles on public transport

- Promotion of the availability of spaces set aside on public transport vehicles, using versatile bicycle storage techniques (hanging bikes, reclining seats, etc.) or coaches specifically for bicycle storage on lines where there is a heavy demand.
- Clarify the conditions for admitting bicycles on public transport, and the price, if any.
- Standardise the transport of bicycles on public transport and specify the essential conditions required, eliminating discretionarity. This aspect is particularly important in regional interurban transport and connections to outside Andalusia.
- Adaptation of public transport stations and vehicles for direct access for bicycles (stairs, turnstiles, platforms, lifts) and appropriate signposting.



## 7.5 Sectoral programmes

SECTORAL PROGRAMME OF TOURISM	
<b>Rationale</b>	<ul style="list-style-type: none"> <li>• Cycling tourism is an increasingly common activity in Andalusia. It is increasingly common to find people who tour the region or visit its cities by bicycle. In some European countries, cycling tourism represents a significant percentage of the tourist demand.</li> <li>• The Cycle Path Network of Andalusia will foster the development of sustainable tourism in the region, according to the General Sustainable Tourism Plan of Andalusia.</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• To consolidate, coordinate and integrate existing cycling tourism initiatives.</li> <li>• To enable the provision of varied tourism products related to cycling, according to the length and difficulty of the route, or the presence of elements of interest that characterise the proposed routes such as, for example, monumental, culinary or landscape-oriented routes.</li> <li>• To integrate the cycling tourism aspect of the regional Cycle Path Network with that of the metropolitan and urban networks.</li> <li>• To inform cycling tourism companies of the existence of the Cycle Path Network of Andalusia so that they can adapt the services that they provide..</li> </ul>
<b>Lines of action</b>	<ul style="list-style-type: none"> <li>• Creation of tourism routes for cyclists based on different themes, for both regional and metropolitan settings, in the framework of the Cycle Path Network of Andalusia.</li> <li>• Creation of a quality seal for cycling in Andalusia for tourist service companies and/or adaptation of existing seals for application to networks of greater international renown.</li> <li>• Guarantee of the existence of services for cycling tourism along the created routes: parking facilities, rest areas, specialised services, hotels, hostels, other accommodation, bars and restaurants, repair shops, bicycle rental outlets, etc.</li> <li>• Guarantee that bicycles can be carried on public means of transport and their interconnection with tourism routes.</li> <li>• Publication of a Cycling Tourism Guide of Andalusia, including all the information about all the options: tourism routes, services, traffic regulations, maps, etc.</li> <li>• Design and implementation of cycling tourism advertising and promotion on social networks, the internet, guides, tourism promotion events, TurEspaña, Spanish and international tour operators, tourism consortia, associations of tourism companies, etc.</li> </ul>
<b>Scope of action</b>	Tourists, visitors and Andalusian population in general and throughout the region, with special attention paid to areas with singular values, such as protected nature areas, historic heritage, etc.
<b>Authorities and stakeholders involved</b>	<ul style="list-style-type: none"> <li>• Regional Ministry of Tourism and Trade.</li> <li>• Regional Ministry of Local Administration and Institutional Relations.</li> <li>• Provincial Government (Diputaciones Provinciales).</li> <li>• Federation of Municipalities and Provinces of Andalusia (FAMP, in Spanish).</li> <li>• Tourism Consortia.</li> <li>• Associations of tourism companies.</li> </ul>

SECTORAL PROGRAMME OF EMPLOYMENT AND ECONOMY	
<b>Justificación</b>	<ul style="list-style-type: none"> <li>The Cycle Path Network of Andalusia is conceived as an element aimed at stimulating economic activity, employment and sustainable development.</li> <li>Cycling as a means of commuting has enormous potential, as well as directly affecting other aspects such as the reduction of transport costs and increasing mental and physical occupational health.</li> <li>As well as the economic benefits to be generated by fostering cycling tourism, there are studies that show the economic potential of cycling as a means of transport. The construction of cycling infrastructures also generates double the level of employment as other types of road infrastructures per investment unit.</li> <li>The use of bicycles not only helps to reduce household spending, but also reduces public expenditure on health and infrastructures, helping to reduce the region's deficit and redirecting the budget to cover other needs.</li> <li>The number of companies linked to bicycles is increasing in Andalusia, as the use of bicycles as a means of transport, sport and leisure is also growing. As a result, a complete and highly dynamic business sector is being created; it not only is a source of employment but also generates wealth well distributed throughout the region.</li> </ul>
<b>Objetivos</b>	<ul style="list-style-type: none"> <li>To generalise the use of bicycles as a means of transport for commuting.</li> <li>To inform the business sector related to cycling of the existence of the Cycle Path Network of Andalusia, so that it can adapt and enlarge its service portfolio.</li> <li>To promote new business and employment opportunities related to cycling without solely focusing on the cycling tourism sector.</li> <li>To collaborate with the Sectoral Programme of Tourism in the elements that are common to the two programmes.</li> </ul>
<b>Líneas de Actuación</b>	<ul style="list-style-type: none"> <li>Design and application of a bicycle purchasing programme so that they can be used as a means of transport for commuting.</li> <li>Promotion of measures to encourage companies' employees to use bicycles and public transport for commuting. Creation of agreements with companies and associations or business confederations.</li> <li>Promotion of the use of cycling to commute to school or educational centres. For all ages, including teachers, parents, staff and students.</li> <li>Promotion of cycling for commuting among civil servants.</li> <li>Promotion of business and employment initiatives related to cycling.</li> <li>Integration of bicycles in the region's statistical indicators.</li> </ul>
<b>Ámbito de actuación</b>	<ul style="list-style-type: none"> <li>Business community.</li> <li>Young entrepreneurs.</li> <li>Places of work.</li> </ul>
<b>Administraciones y Agentes Sociales Implicados</b>	<ul style="list-style-type: none"> <li>Regional Ministry of Economy, Innovation, Science and Employment.</li> <li>Regional Ministry of Public Finance and Public Administration.</li> <li>Regional Ministry of Local Administration and Institutional Relations.</li> <li>Provincial Governments (Diputaciones Provinciales).</li> <li>Rural Development and Reactivation Centres.</li> <li>Business associations.</li> <li>Unions.</li> </ul>

SECTORAL PROGRAMME OF CULTURE, LEISURE AND SPORT	
<b>Rationale</b>	<ul style="list-style-type: none"> <li>Cycling for sport and leisure is very common and increasingly widespread.</li> <li>The establishment of the Cycle Path Network of Andalusia will be a fundamental support for the development of these activities, which in turn favour other sectors.</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>To improve the current support available for cycling activities related to leisure and sport.</li> <li>To define bicycle-related sport and leisure products to be integrated into the Cycle Path Network of Andalusia.</li> <li>To foster healthy exercise by cycling among individuals, families and groups.</li> <li>To inform cycling enthusiasts via clubs, centres and associations of the new Cycle Path Network of Andalusia.</li> </ul>
<b>Lines of action</b>	<ul style="list-style-type: none"> <li>Refurbishment of the current options for cycling as leisure and sport and creation of new cycling-related leisure and sport products.</li> <li>Creation of cycling routes (leisure) in combination with other cultural aspects, such as visits to museums, public spaces, etc.</li> <li>Support for the organisation of leisure activities and cultural events related to cycling, and facilitation of access by bicycle to all kinds of cultural and sporting activities: concerts, sporting events, fairs and other events.</li> <li>Creation of an annual schedule of simultaneous cycling trips throughout the region.</li> <li>Greater integration of cycling in current leisure and sport programmes, in order to foster the use of bicycles also as a means of transport.</li> <li>In collaboration with the Sectoral Programme of Health and Education:             <ul style="list-style-type: none"> <li>Teaching people of all ages to ride a bicycle.</li> <li>Teaching road safety, the parts of a bicycle, basic repairs and maintenance.</li> </ul> </li> </ul>
<b>Scope of action</b>	<ul style="list-style-type: none"> <li>General population in both urban and rural areas.</li> <li>Cyclists.</li> </ul>
<b>Authorities and stakeholders involved</b>	<ul style="list-style-type: none"> <li>Regional Ministry of Education, Culture and Sport.</li> <li>Regional Ministry of Local Administration and Institutional Relations.</li> <li>Federation of Municipalities and Provinces of Andalusia (FAMP, in Spanish).</li> <li>Cycling clubs (Federation).</li> <li>Sport associations.</li> <li>Leisure business associations.</li> <li>Citizens' associations.</li> </ul>

SECTORAL PROGRAMME OF ENVIRONMENT AND ENERGY	
<b>Rationale</b>	<ul style="list-style-type: none"> <li>The Network of Driving Roads, which is the responsibility of the Regional Ministry of Agriculture, Fisheries and Environment, is one of the regional supports that will be playing a major role in structuring the Cycle Path Network of Andalusia.</li> <li>Fostering cycling mobility is a recurring and priority measure in relation to energy and urban environment in Andalusia, in order to ensure a more sustainable social model, a healthier environment and more inhabitable towns and cities.</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>Coordination and integration in different sectoral planning instruments, the objectives of which are to reduce energy consumption and pollutant emissions into the atmosphere, and to improve environmental health and the inhabitable of urban centres.</li> <li>Integration of the region's current regional support in the Cycle Path Network of Andalusia, in coordination with the Sectoral Programme of Tourism.</li> <li>Coordination of adaptation of the current regional support to the established technical and design guidelines, whenever possible.</li> <li>Integration of environmental and educational aspects in order to promote a commitment to a change of habits and behaviour aimed at seeking a society that is fairer, more based on solidarity and more concerned for the quality of its environment.</li> <li>Promotion of environmental awareness by experimenting with the environmental benefits of cycling.</li> </ul>
<b>Lines of action</b>	<ul style="list-style-type: none"> <li>Creation of task forces to adapt the measures or programmes that form part of different sectoral planning instruments to the specifications contained in this Plan.</li> <li>Guarantee infrastructure requirements and foster their establishment by the competent authorities in other cases.</li> <li>Study specific environmental and energy-related benefits related to cycling and compare with other means of transport.</li> <li>Design common investment criteria for public grants and resources related to the environment, mobility and energy to favour, if possible, the application of this plan.</li> </ul>
<b>Scope of action</b>	<ul style="list-style-type: none"> <li>Schools and other educational centres.</li> <li>Civic and district centres.</li> <li>Homes and facilities for the elderly.</li> <li>Youth groups.</li> <li>General population in both urban and rural areas.</li> </ul>
<b>Authorities and stakeholders involved</b>	<ul style="list-style-type: none"> <li>Regional Ministry of Environment and Land-use Planning.</li> <li>Regional Ministry of Economy, Innovation, Science and Employment.</li> <li>Regional Ministry of Local Administration and Institutional Relations.</li> <li>Diputaciones provinciales.</li> <li>Metropolitan consortia</li> <li>Federation of Municipalities and Provinces of Andalusia (FAMP, in Spanish).</li> <li>NGOs.</li> <li>Citizens' associations.</li> </ul>



SECTORAL PROGRAMME OF HEALTH AND EDUCATION	
<b>Rationale</b>	<ul style="list-style-type: none"> <li>• Cycling does not only help the health and physical and mental wellbeing of people thanks to physical exercise, but also improves air quality and traffic and reduces respiratory conditions, allergies and stress.</li> <li>• Among children and adolescents, exercising regularly by cycling can help to enhance their mood and improve their academic performance by favouring concentration and memory skills.</li> <li>• Among the ways of promoting healthy lifestyles, cycling is one of the strategies to be used to foster physical exercise, helping to combat sedentary lifestyles and different chronic health conditions.</li> <li>• Fostering cycling both as a means of transport and in relation to leisure or sport favours the acquisition of healthier habits, helping to reduce obesity rates in both children and adults.</li> <li>• Citizens' involvement and the promotion of pro-environmental attitudes and behaviour, such as cycling, are necessary in order to obtain a more sustainable model of society.</li> <li>• Education and training are possibly the most powerful tools for increasing awareness of habits that benefit both human and environmental health.</li> </ul>
<b>Objectives</b>	<ul style="list-style-type: none"> <li>• Foster healthier lifestyles and environmental awareness to improve the health of the region's inhabitants, with special focus on schools.</li> <li>• Integrate lines of action related to fostering cycling with measures contained in the Environmental Health Plan of Andalusia, the Plan for the Promotion of Physical Exercise and Balanced Diet, the Integral Children's Obesity Plan, the Integral Accidentability Care Plan in Andalusia, the Promotion of Health in the Workplace Strategy and Local Health Plans.</li> <li>• Develop lines of action to promote cycling in the Aldea Education Programme.</li> <li>• Take this Plan's objectives to a local level, with regional balance criteria, including fostering cycling in the development of Local Action in Health and Local Health Plans.</li> <li>• Increase social awareness of the benefits for health, for equality and for quality of life in general derived from cycling.</li> </ul>
<b>Lines of action</b>	<ul style="list-style-type: none"> <li>• Create task forces for the adaptation of the measures of the Andalusian Environmental Health Plan, the Plan for the Promotion of Physical Activity and Balanced Diet and the different Integral Health Programmes involved in Local Action in Health. In the same respect in relation to the Aldea Education Programme and programmes for the integration of disabilities.</li> <li>• Increase awareness of and foster cycling in the development of local action in health so that towns include specific actions in Local Health Plans.</li> <li>• Foster preventive counselling, from the Integral Plan related to Accidentability in Andalusia, in intersectoral interventions scheduled in the "Sobre Ruedas" project, for safe and responsible mobility among young Andalusians.</li> <li>• Include actions to foster cycling in the Forma Joven programme, including teaching youth mediators as transmitters of information and knowledge on an equal footing.</li> <li>• Intensify the strategic line of cycling in the information sessions and survey regularly applied when implanting the Promotion of Health in the Workplace strategy in companies.</li> <li>• Inclusion of content related to fostering cycling as a way of ensuring an active life, in training activities related to the promotion of healthy lifestyles and disease prevention in the framework of the different programmes and plans of the Regional Ministry of Health and Social Welfare (Integral Cardiopathy Plan, Integral Diabetes Mellitus Plan, Healthcare Plan for Patients with Chronic Diseases, etc.).</li> <li>• Help to disseminate the Cycling Plan of Andalusia by the normal means between the Regional Ministry of Education, Health with its professionals, and among Health Associations.</li> <li>• Teach educators, parents and healthcare professionals of the importance of their role in transmitting healthy lifestyles regarding cycling.</li> <li>• In collaboration with the Sectoral Programme of Leisure and Sport, help to teach people of all ages to ride bicycles, and provide road safety training, together with classes on the parts of a bicycle, basic repairs and maintenance.</li> <li>• In collaboration with the respective department, foster cycling as a means of commuting to school.</li> </ul>
<b>Ámbito de actuación</b>	<ul style="list-style-type: none"> <li>• All kinds of schools or training centres.</li> <li>• Civic and district centres.</li> <li>• Homes and centres for the elderly.</li> <li>• General population in both urban and rural areas.</li> </ul>
<b>Administraciones y Agentes Sociales Implicados</b>	<ul style="list-style-type: none"> <li>• Regional Ministry of Education, Culture and Sport.</li> <li>• Regional Ministry of Health and Social Welfare.</li> <li>• Regional Ministry of Local Administration and Institutional Relations.</li> <li>• Federation of Municipalities and Provinces of Andalusia (FAMP, in Spanish).</li> <li>• Federation of Residents' Associations.</li> <li>• Consumers' Federation.</li> <li>• Youth associations.</li> <li>• Local corporations, Provincial Governments (Diputaciones Provinciales).</li> <li>• Associations related to road safety and accident rates</li> </ul>



## 7.6 Participation. Cycling board of Andalusia

In order to channel social participation in favour of the knowledge and development of policies in favour of cycling, and particularly this plan, without prejudice to other similar initiatives that could materialise in the future, we propose the creation of the Cycling Board of Andalusia.

The basic objectives of the Cycling Board of Andalusia will be at least the following:

- Constitute a discussion forum related to strategies for the promotion of cycling
- Monitoring and support of actions related to cycling in its different uses, and especially as a means of transport
- Promote social awareness of the advantages of cycling in different fields
- Formulation of proposals and participation in cycling-related seminars, congresses, etc.

Singularly, the Cycling Board will play an important role of participation and support in the Plan's development process. It will also be a point of contact with Andalusian parliamentary groups, attracting their attention for decision-making regarding measures, legal provisions and actions required to generate more awareness and use of bicycles in Andalusia.

The composition of the Board should contain representatives of the Regional Ministry responsible for transport, and specifically cycling, Metropolitan Transport Consortia, Cycling Associations and associations related to sustainable mobility, Consumers' Associations, Neighbourhood Associations, bicycle manufacturers and other companies linked to the sector, and universities.

The appointment of Cycling Board members for reasons other than their positions shall respect the principle of parity of gender as established in article 19.2 of Law 9/2007, of 22 October.



## 7.7 Dissemination programme

The dissemination programme follows the previously described idea of giving priority to guaranteeing access to information about cycling for the general population, and particularly cyclists. This programme, then, must respond to the approach that underlies the entire plan, an attempt to foster cycling for different uses and on different regional scales.

Together with other means of dissemination, including activities developed in the framework of the Cycling Board, and other more conventional activities, the basic instrument proposed is a specific website about cycling in Andalusia, managed by the Regional Ministry responsible for transport. It will provide information about cycling in general and, in particular, about the options available in that respect in Andalusia.

This tool should also be supplemented with information available via applications for mobile devices based on Geographic Information Systems, which can be used both for sport and commuting purposes.

The information to be included should be collateral to the Plan's content, such as legislation affecting the sector, the relationship between cycling and physical and mental health, associations, current affairs, etc.

The site should provide special attention and specific features related to the different options contemplated in the plan on different scales. With regards to the regional network, it should contain information about distances and times, difficulty of network sections, environmental, landscape-related and ethnological characteristics, etc. It could also suggest routes or stages defined by types of criteria.

For metropolitan areas, special attention must be paid to the dual nature of the supply, commuters and also users related to leisure, sport and tourism. In the case of the latter, the information provided could be similar to that provided for the regional network. In relation to commuting, however, it should focus on ideal routes between towns, accesses to transport nodes or important points of destination, time estimates, etc.

On an urban scale, irrespective of general information about the network, it is essential to provide access to information provided by local corporations via municipal websites.

Information should also be published about developments to promote cycling such as incentives to companies for favouring commuting by bike, specific campaigns and other campaigns related to tourism.

The Regional Ministry responsible for the topic will be responsible for creating and updating the website and providing links to it from informative sites related to other regional and sectoral authorities (including tourism and sport) and other cycling-related agencies.

## 7.8 Programming strategy

### 7.8.1 Regional scale

LINES	ACTIONS	MANAGEMENT
<ul style="list-style-type: none"> <li>Establishment of network development phases.</li> </ul>	<ul style="list-style-type: none"> <li>Study and detailed inventory of network support roads.</li> <li>Prioritisation of actions.</li> <li>Definition of adaptations to be made.</li> <li>Definition of brand identity.</li> <li>Dissemination of network.</li> <li>Network maintenance.</li> </ul>	<ul style="list-style-type: none"> <li>Agreements with owners of affected roads (B roads, drivers' roads, etc.). The actions should configure a network in three or four years.</li> </ul>
<ul style="list-style-type: none"> <li>Construction of network</li> </ul>	<ul style="list-style-type: none"> <li>Signposting</li> <li>Improvement of sections.</li> <li>Construction of new sections.</li> </ul>	<ul style="list-style-type: none"> <li>Project draft, public competition and execution of works.</li> </ul>
<ul style="list-style-type: none"> <li>Connection to metropolitan networks</li> </ul>	<ul style="list-style-type: none"> <li>Definition of meeting points.</li> <li>Definition of meeting points.</li> </ul>	<ul style="list-style-type: none"> <li>Agreements with local corporations, Regional Ministries (Green Gateways) and owners of roads.</li> </ul>
<ul style="list-style-type: none"> <li>Intermodality</li> </ul>	<ul style="list-style-type: none"> <li>Issue of general rules for the transport of bicycles on public transport vehicles.</li> <li>Incentivation measures.</li> <li>Parking facilities and service areas.</li> </ul>	<ul style="list-style-type: none"> <li>Definition of modes and types of bicycle transport.</li> <li>Agreements with operators</li> </ul>
<ul style="list-style-type: none"> <li>Integration in Plans</li> </ul>	<ul style="list-style-type: none"> <li>Integration of cycling in sectoral plans.</li> <li>Integration of cycling in sub-regional plans.</li> </ul>	<ul style="list-style-type: none"> <li>Coordination with competent Regional Ministries (although all sectoral plans can be edited simultaneously, the Cycling Path Network must become part of the Regional Government of Andalusia's mobility and tourism strategy).</li> </ul>
<ul style="list-style-type: none"> <li>Supplementary promotional measures.</li> </ul>	<ul style="list-style-type: none"> <li>Awareness campaigns.</li> <li>Edition of informative material (website, brochures, books)</li> <li>Promotion of cycling tourism linked to cultural and nature resources that form part of the network</li> </ul>	<ul style="list-style-type: none"> <li>Specific programmes. Agreements with managers, companies and administrations.</li> </ul>

### 7.8.2 Metropolitan scale

#### Phased lines of action

LINES	ACTIONS	MANAGEMENT
<ul style="list-style-type: none"> <li>The promotion of cycling mobility in urban centres.</li> </ul>	<ul style="list-style-type: none"> <li>In general, as defined for the urban scale</li> </ul>	<ul style="list-style-type: none"> <li>Agreements between local corporations and Regional Government of Andalusia</li> </ul>
<ul style="list-style-type: none"> <li>Extension of the central urban network to nearby municipalities</li> </ul>	<ul style="list-style-type: none"> <li>To create safe and direct junctions with urban cycling networks, including bridges and tunnels across ring roads.</li> </ul>	<ul style="list-style-type: none"> <li>Possible agreements with the agencies responsible for the infrastructures involved.</li> </ul>
<ul style="list-style-type: none"> <li>Construction of metropolitan networks. Metropolitan axes.</li> </ul>	<ul style="list-style-type: none"> <li>Construction of metropolitan cycling routes.</li> </ul>	<ul style="list-style-type: none"> <li>Possible agreement with the agencies responsible for the infrastructures involved.</li> </ul>
<ul style="list-style-type: none"> <li>Complementary promotion measures</li> </ul>	<ul style="list-style-type: none"> <li>General programmes: <ul style="list-style-type: none"> <li>Cycling to work (industrial estates, shopping centres).</li> <li>Dissemination of the new infrastructure.</li> <li>Awareness raising and road safety campaigns.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Specific programmes. Agreements with managers, private companies and administrations.</li> </ul>
<ul style="list-style-type: none"> <li>Promotion of cycling in the municipalities included in the metropolitan area.</li> </ul>	<ul style="list-style-type: none"> <li>In general, as defined for the urban scale</li> </ul>	<ul style="list-style-type: none"> <li>Agreements between local corporations and Regional Government of Andalusia</li> </ul>

**Non-phased lines of action**

LINES	ACTIONS	MANAGEMENT
<ul style="list-style-type: none"> <li>• Networks to access public transport nodes</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of cycling routes in connection with the nodes</li> <li>• Construction of parking facilities</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements with local councils</li> <li>• Agreements with public transport companies and agencies</li> </ul>
<ul style="list-style-type: none"> <li>• Public transport and cycling</li> </ul>	<ul style="list-style-type: none"> <li>• Bus + Bike, Train + Bike</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements with the companies operating the transport nodes</li> </ul>
<ul style="list-style-type: none"> <li>• Transportation of bicycles on public transport.</li> </ul>	<ul style="list-style-type: none"> <li>• Adaptation of vehicles for the transport of bicycles.</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements with operators</li> </ul>
<ul style="list-style-type: none"> <li>• Specific promotion programme to foster sports and leisure cycling networks.</li> </ul>	<ul style="list-style-type: none"> <li>• Cycling networks</li> <li>• Services</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements with the relevant public agencies</li> </ul>

**7.8.3 Urban scale**

LINES	ACTIONS	MANAGEMENT
<ul style="list-style-type: none"> <li>• Complete the network of cycle paths and parking facilities in the province capitals, plus Algeciras and Jerez.</li> <li>• Within a year, define networks in the other towns with more than 50,000 inhabitants.</li> </ul>	<ul style="list-style-type: none"> <li>• Construction of networks.</li> <li>• Parking facilities as required.</li> <li>• Parking facilities, preferably with surveillance, in public transport nodes.</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements between local corporations and Regional Government of Andalusia.</li> </ul>
<ul style="list-style-type: none"> <li>• Favour the co-existence of different means of transport.</li> </ul>	<ul style="list-style-type: none"> <li>• Promote pedestrianisation in town centres</li> <li>• Cycling streets and areas of pedestrian priority</li> </ul>	<ul style="list-style-type: none"> <li>• Agreements between local corporations and Regional Government of Andalusia.</li> </ul>
<ul style="list-style-type: none"> <li>• Standard council regulation to facilitate cycling, covering all aspects related to cycling and other means of transport.</li> </ul>	<ul style="list-style-type: none"> <li>• Drafting and publish</li> </ul>	<ul style="list-style-type: none"> <li>• Dissemination</li> </ul>
<ul style="list-style-type: none"> <li>• Recommendations of how to treat cycle paths in urban development plans and parking facilities in newly established lots</li> </ul>	<ul style="list-style-type: none"> <li>• Drafting and publish</li> </ul>	<ul style="list-style-type: none"> <li>• Dissemination</li> </ul>
<ul style="list-style-type: none"> <li>• Promotion of sustainable mobility in cities.</li> </ul>	<ul style="list-style-type: none"> <li>• Drafting and development of municipal mobility plans that include cycling.</li> <li>• Inclusion of cycling infrastructures in PGOU road plans</li> </ul>	<ul style="list-style-type: none"> <li>• Regulation via Sustainable Mobility Act of Andalusia</li> </ul>
<ul style="list-style-type: none"> <li>• Additional developmental measures.</li> </ul>	<ul style="list-style-type: none"> <li>• General programmes:                             <ul style="list-style-type: none"> <li>• To work by bike (industrial estates, shopping centres).</li> <li>• Dissemination of available options.</li> </ul> </li> <li>• Awareness campaigns.</li> </ul>	<ul style="list-style-type: none"> <li>• Specific programmes. Agreements with managers, companies and administrations.</li> </ul>
<ul style="list-style-type: none"> <li>• Implantation of public bicycle systems in large towns.</li> </ul>	<ul style="list-style-type: none"> <li>• Study of requirements. Location of stations.</li> <li>• Choice of loan system.</li> <li>• Installation</li> </ul>	<ul style="list-style-type: none"> <li>• Local Corporations-Regional Government of Andalusia</li> </ul>



## 7.9 Plan investments

All the infrastructure-related actions contemplated in the Plan represent a total cost of 421.47 million euros.

The following table shows a breakdown of these investments according to type of cycle path network as defined in the Plan for the regional, urban and metropolitan scales. The estimated timing is also shown.

They are each broken down by type of city or town in the first case, by type of network in the second and finally, in the regional network according to whether it is new construction or supported by existing infrastructure, designated for signposting and improvement. Finally, there is the cost of the parking facilities linked to the transport-oriented network.

PROGRAMS	Cost (million €)
URBAN NETWORKS programme	180,03
Centres of Urban Agglomerations (10 cities)	71,93
Other towns with more than 50,000 inhabitants	34,5
Towns with 20,000 to 50,000 inhab.	73,6
METROPOLITAN NETWORKS programme	171,29
Transport network	134,73
Leisure-sport network	36,56
PARKING FACILITIES programme	0,5
Parking facilities	0,5
REGIONAL NETWORK programme	69,65
Signposting and improvement	1,4
New construction	68,25
TOTAL	421,47

Application of the Plan is therefore programmes in two phases. The first, from 2014 to 2016, will complete a basic cycle path network in the ten most important Andalusian cities, subsequently approaching other towns with more than 20,000 inhabitants and metropolitan networks.

There will be an assessment of objectives in the 2017-2018 period, followed by investment reprogramming, if necessary.

Investment in the second phase (2018-2020) will focus on the regional network, fundamentally new construction.

## 7.10 Evaluation of investments

Although it is commonly accepted that investment in infrastructures for cycling is highly cost-effective from an environmental, social and economic perspective, it is also agreed that it is difficult to quantify the benefits associated to such investments.

In this respect, different sections of the Plan refer to cycling not representing the consumption of primary energy or emissions, to its positive impact on some physical and mental diseases, and the favourable investment unit/employment ratio and potential of cycling tourism for the economy. The cost of purchasing and maintaining a bicycle also confirms that it favours social equality in relation to urban and metropolitan mobility.

With regards to the second issue, there is a lack of statistics and consolidated methodologies, so analyses are very approximate and tend to extrapolate information from known experiences.

These analyses will distinguish between investments in cycling infrastructure aimed at commuting, and leisure-sport routes. The latter will refer to the regional network, although some such routes are also contemplated on a metropolitan scale. They are investments with an economic component closely linked to the tourism sector. Secondly, the metropolitan and urban networks are primarily aimed at recurring travel (commuting): work school, shopping, etc.

### 7.10.1 Regional network

There are no historic series about cycling tourism and it is not included in Eurostat or any other international or national tourism statistics. However, even in the current economic cycle of the crisis, both the supply and the demand are growing in Europe, although not uniformly. The most significant growth is found in Austria, Belgium, Denmark, France, Germany, Switzerland and the Netherlands.

Cycling tourism is currently one of the sub-segments of active tourism with good growth perspectives. A recent study conducted by the European Parliament called "European Cycle Route Network Eurovelo" estimates 2.3 cycling tourism journeys per year in Europe, and a total economic impact of more than 44,000 million euros per annum, based national and international cycling tourism stays. This includes 9,000 million euros from 20,4 million nights of accommodation.

Furthermore, this sub-segment is a veritable driver of socioeconomic growth for the places where it takes place, as in most cases they are small emerging destinations that find a fundamental ally in cycling tourism.

With regards to completed projects analysed in relation to their economic impact, the best known example is Northern Outer Banks in North Carolina, where the state's Department of Transport studied the impact of cycling



investments: "The economic impact of investments in bicycle facilities: a case study of the Northern Outer Banks". With a 6.7 million dollar investment, they generate 60 million dollars per year in economic activity, representing an annual return of 9 times the initial investment. They also calculated the number of jobs generated by cycling tourism: 1,400.

On the Danube route, through Austria from Passau to Vienna, with 325 km in 2010, cycling tourism spending totalled 71.8 million euros (ARGE Donau Österreich, 2011). Also, in the Canadian province of Quebec, with a 4,348-km cycling route called La Route Verte, cycling tourists spent 134 million dollars in 2006, including 38 million in taxes. 2,861 jobs were created.

In this Cycling Plan of Andalusia, the regional network, with an estimated investment of 69.65 million euros and a length of 3,080 km., is configured as a cycling tourism network which, extrapolating the described experiences, could generate annual profits of more than double the initial investment.

To this we have to add jobs in construction and for improving support roads, plus permanent jobs in the hotel and bicycle repair sector and in the sale of accessories and bicycles.

### 7.10.2 Transport networks

The Environmental Sustainability Report estimates a series of parameters of interest for this chapter about the nine urban agglomerations considered in the Plan, for which there is information about mobility. Starting with a target of 10% of total mobility by bicycle in the nine agglomerations, and subtracting current journeys, the figures are as follows:

PRIOR DATA		
Average journey distance	6	km
Daily journeys	1.176.613	
Daily distance covered	7.059.678	km
ESTIMATED SUBSTITUTION		
Car	30	%
Public transport	38	%
Motorcycles	4	%
Pedestrians	28	%
EMISSION FACTORS		
Car	215	grCO2 eq/km
Public transport	85	grCO2 eq/km
Motorcycles	90	grCO2 eq/km

The benefits of the use of these transport networks are several:

**Benefits for the environment:**

These figures show that the reduction in greenhouse effect gas emissions will represent 166,566 equivalent tonnes of carbon dioxide (CO2) per year, only considering working days.

T CO2EQ EMISSIONS AVOIDED/DAY	
Car	455,35
Public transport	228,03
Motorcycles	25,41
Total	708,79

The average price of carbon dioxide emission allowances (EUAs) is currently lower than ever because of the economic situation. We have therefore considered the average for the last three years, 11.47 euros/tonne.

YEAR	EUAS (EUROS/TON)
2008	22,02
2009	13,06
2010	14,32
2011	12,78
2012	7,32
Average last 3 years	11,47

Source: REE

Considering the average price in the last three years, the savings due to reducing emissions are 1,911,067 euros per year.

**Benefits from reducing energy consumption:**

The Environmental Sustainability Report also calculates the saving in fuel consumption as at least 40 million litres.

To estimate the barrels of oil that would not be imported, we start with the hypothesis that 72% of each barrel of oil is refined for motor vehicle fuel, representing around 350,000 barrels per year.



As we can see, in the last two years the price per barrel has remained around 100\$, so the savings would represent around 26,876,500 euros per annum in our balance of payments.

**Health benefits:**

The health benefits derived from regular cycling range from reducing coronary,

cerebrovascular diseases and colon cancer to reducing absenteeism, as shown in "The British cycling economy: 'gross cycling product'" report.

This study, conducted in 2011 by the London School of Economics and Political Science, concludes that people who regularly cycle to work take one day less sick leave per year than those who do not, and that this represents savings of 128 million pounds per year for the British economy and 25 million pounds per year for the National Health Service (NHS).

The labour cost per hour in Andalusia is 17.20 euros, with an employment rate of 37.2%. For an expected number of 588,306 bicycle users, the estimated savings totals 30,113,762 euros per year due to reduced absenteeism.

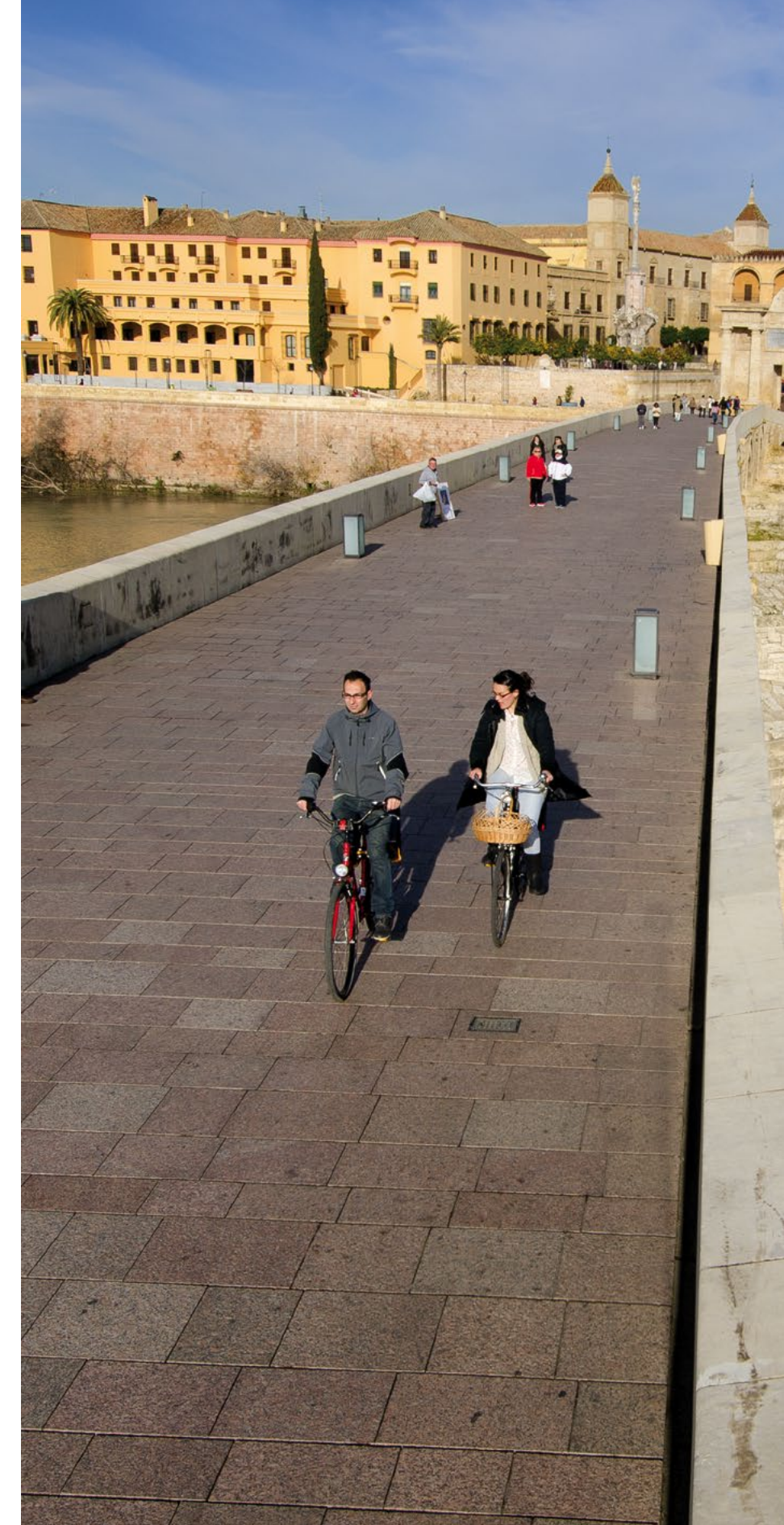
The benefit that results from economic savings derived from reduced mortality as a result of regular cycling can be estimated by the World Health Organisation's HEAT programme(5). It is based on the best possible evidence, with adjustable parameters adapted to the European context. This tool was used in the Environmental Sustainability Report with an average result for the first five years of 144.428 million euros per year.

**Benefits for traffic:**

An increase in bicycle users will reduce the number of journeys made in motor vehicles, with a reduction in traffic congestion, environmental pollution and noise. On the one hand, we can estimate the direct savings resulting from a reduction in use of cars. According to Autopista(6) magazine, the average cost of a car per kilometre is 0.23 euros. With an estimated 30% substitution rate and an occupation rate of 1.27 people/car, it is calculated at 90,135,968 euros per year, although part is due to fuel consumption, which has been previously estimated.

Regarding public transport, according to an OCU report, the monthly cost of urban transport for users in 2013 ranged from 40 euros in Malaga to 26.5 in Huelva. The mean price has been weighted according to each city's inhabitants, resulting in an average of 34.90 euros.

COST OF 50 JOURNEYS/MONTH VIA URBAN TRANSPORT (OCU MARCH 2013)	
Almeria	31,20 €
Cadiz	31,80 €
Cordoba	34,50 €
Granada	36,00 €
Huelva	26,50 €
Jaen	31,50 €
Malaga	40,00 €
Seville	34,50 €
Weighted total	34,90 €



## 7.11 Justification of adaptation of the Cycling Plan of Andalusia to regional planning

The proposed regional network, although the Guadalquivir axis between Seville and Jaen, and the axis linked to the course of the Genil River are pending definition, is consistent with the determinations of the Land Ordinance Plan of Andalusia (POTA).

Indeed, on a regional scale, the Cycling Plan of Andalusia follows the principles established in the chapter on the planning framework in the region with reference to the POTA:

- The natural and cultural diversity of Andalusia
- A more sustainable use of resources.
- Social cohesion and regional balance
- Regional integration and cooperation.

In specific reference to mobility in urban agglomerations, the POTA establishes a series of basic criteria, including the development of a mobility system based on non-motor driven transport.

In these urban agglomerations, if we compare the networks defined by the Cycling Plan of Andalusia and similar networks foreseen in sub-regional land ordinance plans, there is a high degree of coincidence, albeit with some discrepancies for different reasons.

These sub-regional plans reflect different regulations regarding the types of network that can be integrated to cycle paths for transport or leisure-sport use. They include infrastructures described as landscape roads, open air networks or recreational routes, among others.

Occasionally, connection in the region is established in the Cycling Plan of Andalusia by alternative routes that, in this context, perform a function similar to that intended in regional planning.

Finally, the more definitive nature of regional planning relative to sectoral transport planning, which is more programmatic, leads to regional planning proposals that are not included in the Cycling Plan of Andalusia, which must be considered in the development of cycling networks from 2020 on.

From this we have to subtract the reduction in energy consumption, as it is included in car savings. There is no estimate, however, of this saving related to motorcycles or public transport. The result would then be more than 413,268,669 €.

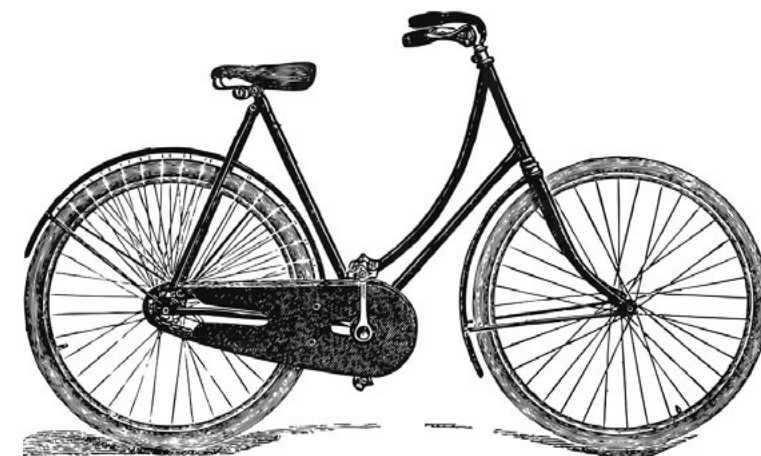
Also note that the effects of urban actions in towns that do not belong to the nine metropolitan areas, which represent around 40 million euros of the plan's investment, are also not considered in these calculations.

### Conclusions

In the context of the difficulties involved in a quantitative evaluation of the effects of the Plan's investments, they are expected to be highly cost-effective. The conclusion is that the regional network, aimed at leisure-sport use, would generate annual profits that are at least double the investment (68.75 mill €). With regards to the metropolitan transport networks, they would generate more than 400 million euros per annum, with an initial investment of 300 million.

In the environmental assessment, the most striking benefit obtained from the Environmental Sustainability Report is a reduction of 166,566 equivalent tonnes of carbon dioxide (CO<sub>2</sub>) per year. Switching from motorised travel to cycling would also highly reduce noise levels.

In the social field, besides the favourable health benefits mentioned here, reference is also due to the creation of employment. According to calculations made in projects developed by the Regional Ministry, construction of cycle paths generates around two jobs per year and kilometre, counting direct and indirect employment. Finally, as mentioned in this section's introduction, the reduced cost of purchasing and maintaining bicycles mean that promotion of cycling is a step forward in reaching a target of social equality with regards to everyday mobility.



The FEMP Urban Public Transport report of 2009 shows that the degree of cost coverage in 2007 was 50%, so the different authorities spend on average another 34.90 euros per user.

Estimating a substitution of 38% of public transport by bicycles, this would represent 73,339,936 euros savings per year for users and as much again for the public administrations. Although a reduction in public transport users would lead to increased operating costs per user, these amounts do not consider the higher cost generated by transit and interurban journeys. The savings for previous motorcycle users have not been estimated.

### Global benefits

In 2008 the city of Copenhagen took the initiative of developing a method for the cost-benefit analysis of cycling infrastructures.

The method is based on the principles established in the Danish Ministry of Transport's manual for cost-benefit analysis applied to one kilometre of cycle path, calculated both for the community in general and for the individual user.

The factors included are transport costs, safety, comfort, tourism, times and health. When all the factors are added together, the net social benefit is 4.72 Danish crowns (0.63€) per cycled kilometre.

If we extrapolate this to the Plan's proposal, the annual impact would be just over 1,000 million euros/year. This figure may seem excessively optimistic, but not when we remember our previous estimates:

BENEFIT	ANNUAL ESTIMATE
Reduction of emissions	1.911.067 €
Reduction in energy consumption	26.876.500 €
Cost of absenteeism	30.113.762 €
Car savings	90.135.968 €
Public transport	146.679.872 €
Health benefits	144.428.000 €
Total	440.145.169 €

## 08

## Follow-up of the plan

ACTION TAKEN WITH REGARDS TO CYCLE PATHS AND OTHER SUPPLEMENTARY ELEMENTS, SUCH AS PROGRAMMES TO ENCOURAGE CYCLING, NEED INSTRUMENTS WITH WHICH TO COORDINATE DIFFERENT POLICIES THAT AFFECT THE MATTER. AT THE SAME TIME, FOLLOW-UP AND ASSESSMENT INSTRUMENTS ARE REQUIRED TO INFORM OF THE DEGREE OF COMPLIANCE OF PROPOSALS AND POSSIBLE MEASURES, DEPENDING ON POSSIBLE DEVIATIONS FROM ESTABLISHED TARGETS.

This section establishes guidelines aimed at the plan's necessary coordination, follow-up and evaluation, to be performed by a specific administrative unit and the Plan's Follow-up Committee.

The establishment of a specific administrative unit to foster cycling is essential for the action taken to be successful. This unit could also be the permanent contact between the stakeholders involved, favouring a constant participative dynamic.

Irrespective of the administrative form of this unit in the future, and as an initial approximation, the administrative unit's functions will be:

- Coordinate the Plan's implementation on its different levels and scales and between the competent administrations in each case.
- Foster relations with other stakeholders related to cycling activities or infrastructures (Green Route Network, Transandalus, Eurovelo, etc.).
- Foster the preparation and coordinate the application of derived instruments that may be developed, such as specific plans or programmes.
- Coordinate and/or manage actions related to infrastructures: cycle paths and networks, signposting, supplementary elements, etc.
- Ensure compliance with technical and mobility-related cycle path and network guidelines.
- Define follow-up indicators that effectively define the status and evolution of significant cycling-related variables in Andalusia.
- Prepare periodic reports for the Plan's Follow-up Committee.

An evaluation will be performed at least once a year, and the results will be posted on the programmed website.

The Plan's Follow-up Committee will assess the degree of compliance with the plan's objectives, basically based on information provided by the aforementioned unit. The committee will be made up of representatives of departments of the Regional Ministry responsible for transport, the regional ministries affected by the sectoral programmes mentioned in this document, and the unions and business organisations that signed the 7th Social Concertation Agreement.

The appointment of Committee members for reasons other than their positions shall respect the principle of parity of gender as established in article 19.2 of Law 9/2007, of 22 October.

Together with each Follow-up and Evaluation Report, an Environmental Sustainability Report will be drafted, analysing the plan's degree of environmental integration in relation to environmental impacts and possible environmental incidents, proposing measures to improve its contribution to sustainable development and, if necessary, suggesting changes or revision.

According to the Plan's Environmental Report, an Environmental Monitoring Committee will be created, with the functions and composition defined therein.

## Appendix. Decree approving the Plan

DECREE 9/2014, OF 21 JANUARY, WHICH APPROVES THE CYCLING PLAN OF ANDALUSIA 2014-2020.

Article 56.7 of the Statute of Autonomy for Andalusia grants the Autonomous Region sole responsibility for planning, construction and funding of public works in the region, provided that they are not classified as of general interest by the State. Specifically, article 64.1.1 establishes its sole responsibility for the transport network of Andalusia, comprising railways and roads and any other route fully contained within the region's borders.

On the other hand, article 1.b) of Decree 150/2012, of 5 June, which establishes the organic structure of the Regional Ministry of Development and Housing, lists the following amongst its responsibilities: "Mobility, road and transport infrastructures such as highways, roads, cycle paths, railways... ", calling upon the Directorate General of Mobility, part of the Ministry, to foster and plan the use of bicycles.

A cabinet agreement reached on 11 December 2012 approved the formulation of the Cycling Plan of Andalusia (hereinafter, the Plan), with general objectives defined as to increase the population's overall access, favour the reduction of greenhouse effect emissions, favour health in the region by cycling, reduce energy consumption associated to transport, improve the quality of life of the region's population, promote the role of transport infrastructures, help to consolidate a new productive model for the Autonomous Region in the framework of the Sustainable Andalusia project, favour sustainable development of tourism in Andalusia and encourage cycling for sport. Said agreement also determined the contents of the Plan and the procedure for its preparation and approval.

As mentioned in the Plan Formulation Agreement, a new mobility culture is arising in advanced societies to replace the mobility model based on private motor vehicles. This model, initially related to high mobility and accessibility, is generating negative effects, among others, in relation to the environment, energy and use of space. Furthermore, due to the increased degree of motorisation found among the population and the excessive use of private cars, a level of congestion has been reached in which the very function of the transport system is questioned. What is required, then, is to establish

the bases of a new mobility model with more participation of sustainable means of transport: non-motorised means and collective public transport.

In this context, cycling is of the utmost strategic importance for mandatory mobility and also for recreational use and sport. All these important functions that cycling is called upon to perform generally require the consideration of different regional scales and strategic view in the design of infrastructures and policies in general that are related to them.

As mentioned in its Formulation Agreement, the Plan is also a strategic document that will help to support the environmental and territorial objectives of the Autonomous Region with regards to environmental and energy sustainability and the battle against climate change. This Plan, then, is of particular significance for the policies of the Regional Government of Andalusia, both because of the investment involved and because of its impact on the region's articulation on an urban, metropolitan and regional scale.

Based on these premises, the Plan establishes a series of criteria, objectives and measures for four major theme blocks related to the infrastructure for the promotion of cycling in Andalusia.

The first block covers the proposed activities related to the regional cycling network. The network is based on eight major axis, five East-West and three North-South, which configure a basic grid for cycling basically related to leisure, tourism and sport. This grid provides connections between the largest cities in the region's urban system, together with access to a large set of middle-sized towns and most of the main nature areas of Andalusia.

The second block refers to the proposed networks for the metropolitan areas around the eight province capitals plus Algeciras, as the region's main urban areas. These networks attempt to connect residential areas and town centres to each other and to major points of attraction by means of a cycling network segregated from motor-driven traffic. They are defined for use for commuting and for reasons more related to leisure and sport.

The third block includes proposed activities related to cycling paths in Andalusian towns with more than 20,000 inhabitants, albeit establishing priorities according to size and functionality in the aforementioned metropolitan areas. In this respect, a first priority level is established for the 10 cities that are at the centre of the region's most important metropolitan areas.

The fourth block includes proposed activities aimed at providing secure parking spaces to reduce the risk of bicycle theft and encourage bicycle/public transport intermodality.

As well as these theme blocks, the Plan contains a final block that refers to a total of five sectoral programmes related to the objectives of other regional departments to which the Plan can contribute, involving activities that in turn would help to meet its own objectives.

These five blocks are completed with proposals aimed at facilitating participation in the Plan's development and dissemination, seeing it as a way of providing citizens with access to the different cycling options available in Andalusia.

Once the proposed Plan was drafted and approved by the Drafting Committee on 15 July 2013, it also underwent the prescriptive public information and hearing processes. The proposal was also discussed with the social and economic agents that signed the 7th Social Cohesion Agreement of Andalusia. It also passed the Environmental Assessment procedure pursuant to Law 7/2007, of 9 July, on Integrated Environmental Quality Management, and the document was subject to a report on its impact on land ordinance as required by Law 1/1994, of 11 January, on Land Ordinance in the Autonomous Region of Andalusia.

Therefore, as proposed by the Regional Minister of Development and Housing, pursuant to article 18.4 of Law 1/1994, of 11 January, on Land Ordinance in the Autonomous Region of Andalusia, in relation to Decree 150/2012, of 5 June, which establishes the organic structure of the Regional Ministry of Development and Housing, after its examination by the Delegate Committee for Economic Affairs and deliberation by the Regional Cabinet on 21 January, I hereby

RESOLVE

#### Article 1. Approval of the Plan.

The Cycling Plan of Andalusia, hereinafter the Plan, contained herein, is hereby approved.

#### Article 2.- Duration.

The Plan approved herein is effective until 2020, without prejudice of its possible revision.

#### Article 3. Availability of credits.

The development of this Plan and the programming of its activities with regards to time shall be limited by budgetary availability.

#### Article 4. Creation, composition and functions of the Plan Monitoring Committee.

1. Dependent on the Regional Ministry of Development and Housing, the Cycling Plan of Andalusia Monitoring Committee is hereby created. It shall operate according to the rules contained in Chapter II of Title IV of Law 9/2007, of 22 October, of the Administration of the Regional Government of Andalusia, and the basic rules contained in Chapter II of Title II of Law 30/1992, of 26 November, on the Legal System applicable to Public Administrations and Common Administrative Procedure, and in this Decree.

2. The Monitoring Committee shall be chaired by the Deputy Regional Minister of Development and Housing, whose vote shall be decisive in case of a draw, and it shall also have the following members:

a) Director General of Mobility and Director General of Infrastructures, dependent on the Regional Ministry of Development and Housing, who shall be the first and second chairpersons of the Committee, respectively.

b) One member in representation of each of the following Regional Ministries: Economy, Innovation, Science and Employment; Equality, Health and Social Policies; Education, Culture and Sport; Agriculture, Fisheries and Rural Development; Environment and Land Ordinance, and Tourism and Trade, each of them designated by the respective Regional Minister. Said members shall at least have the rank of Director General in their respective ministries.

c) Two in representation of the Central State Administration.

d) Two in representation of the most important association of municipalities and provinces in the Autonomous Region of Andalusia.

e) One in representation of each of the union and business organisations adhered to the current Social Cohesion Agreement.

3. The members of the Monitoring Committee who are not members in virtue of their position, shall be appointed based on the principal of parity of gender, pursuant to article 19.2 of Law 9/2007, of 22 October.

4. From the civil servants classified as Department Heads pertaining to the Directorate General of Mobility or the Directorate General of Infrastructures, dependent on the Regional Ministry of Development and Housing, the chairperson shall appoint the Secretary and substitute Secretary, who shall be able to verse their opinions but have no vote.

5. Pursuant to article 93.2 of Law 9/2007, of 22 October, in case of vacancy, absence, illness or other legal cause, the chairperson shall first be substituted by the first deputy chairperson and secondly by the second deputy chairperson and, should they both be absent, by the Committee member who, pertaining to the Administration of the Regional Government of Andalusia, has the highest position in the hierarchy, the greatest seniority in the organisation he/she represents or is of the greatest age, in that order.

In case of vacancy, absence or illness and, in general, another justified cause, Monitoring Committee members shall be substituted, after

accrediting same before the Committee secretary, by the persons who are expressly designated as substitutes for the respective meetings.

En caso de vacante, ausencia o enfermedad y, en general, cuando concurra alguna causa justificada, las personas miembros titulares de la Comisión de Seguimiento serán sustituidas, previa acreditación ante la secretaría de la Comisión, por quienes designen expresamente como suplentes para las sesiones correspondientes.

6. The Monitoring Committee is responsible for informing of Updates and Plan Monitoring Reports.

7. Participation in Committee activities shall not be subject to economic remuneration.

#### First final provision. Development and execution.

The Regional Minister responsible for mobility-related affairs is hereby empowered to issue the provisions required for the development and execution of this Decree.

#### Second final provision. Efficacy.

This Decree shall become effective on the day following its publication in the Official Journal of the Regional Government of Andalusia.

Seville, 21 January 2014.

*Susana Díaz Pacheco*  
President of the Regional Government of Andalusia

*Elena Cortés Jiménez*  
Regional Minister of Development and Housing







JUNTA DE ANDALUCIA

CONSEJERÍA DE FOMENTO Y VIVIENDA