

CYCLING AS A SUSTAINABLE MOBILITY FORM IN THE MAGNA GRAECIA AREA OF THE CALABRIA REGION, ITALY

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ABSTRACT

With the Regional Transport Plan, Calabria Region government has launched several initiatives for sustainability in the transport and logistics sector. Among those, there is the initiative for the promotion of cycling mobility with the aim to also support the realization of the Magna Graecia cycle route. The Magna Graecia cycle route crosses three regions of southern Italy, Basilicata, Calabria and Sicily, for about 1,300 km. It is one of Europe's long-distance cycle itineraries and represents the final part of Eurovelo 7, which runs through Europe for about 7,700 km, interconnected with the national regional cycle network and the other infrastructures of the regional transport system. The realization of the Magna Graecia cycle route aims to favour forms of sustainable tourism, with particular regard to areas with a strong naturalistic and cultural value. The aim is to promote the development of mobility by bicycle, both as a means of daily transport and for tourist and recreational activities, within the general framework of sustainable mobility. Another aim is to increase the attractiveness of the territory, by trying to reduce the negative effects on health and soil consumption, and job opportunities. This is a study of the role of the regional government in promoting policies to support sustainable mobility with reference to cycle mobility, and on the technical-administrative procedure of Magna Graecia cycle route realization. It is an example of how a regional government works to pursue international sustainability objectives by implementing funding programmes.

Keywords: sustainable development, cycle route, mobility, sustainable tourism.

1 INTRODUCTION

Agenda 2030 sets the sustainable development goals that define a new model of society, according to criteria of greater social, environmental and economic responsibility for the protection of the planet. Everyone can play their part, starting with governments.

According to a study of World Cycling Alliance (WCA) and European Cyclists' Federation (ECF), the widespread use of the bicycle would favour the achievement of 11 of the 17 goals of the Agenda 2030 [1]:

- Goal 1 Defeat poverty – helping the neediest people to travel, as it is an economically convenient means, as well as allowing them to have more alternatives to find work thanks to longer-range journeys;
- Goal 2 Defeat hunger – allowing people to move around the various rural or urban areas to reach markets or other livelihood activities that would be more difficult to reach by walking;
- Goal 3 Health and wellness – pedalling helps people stay fitter and have a lifestyle based on well-being;
- Goal 5 Gender equality – allowing women and girls in developing countries to reach places otherwise inaccessible by means of transport or by walking alone, thus contributing to the reduction of gender discrimination;
- Goal 7 Clean and affordable energy – using human energy to move people and goods;



- Goal 8 Decent work and economic growth – increasing the bicycle industry sector, including services and cycle tourism, and creating more jobs;
- Goal 9 Business, innovation and infrastructure – building resilient infrastructure and promoting sustainable industrialization (compared to the construction of a motorway, a bicycle infrastructure takes up much less land);
- Goal 11 Sustainable cities and communities – reducing smog emissions and increasing road safety (in fact, fewer cars would give the city back to people);
- Goal 12 Responsible consumption and production – allowing you to get around by bike as commuters, consumers and tourists, and delivery of goods in a sustainable way crossing different economies;
- Goal 13 Fight against climate change – allowing the possibility for immediate climate change considering that the bicycle is the symbol of decarbonisation;
- Goal 17 Partnership for goals – promoting collaboration between cycling movements and organizations around the world for the use of the bicycle and the support of the global partnership for sustainable development.

In Italy, Law 2/2018 provides for the development of bicycle mobility and the creation of the national cycling network [1]. This law aims to promote the use of the bicycle as a means of transport, both for daily and recreational needs, and for the development of tourism. These objectives must be pursued at all administrative levels, from central to local, in order to make the development of cycling and related network infrastructures a fundamental component of mobility policies. The law introduces the regulatory definition of cycle paths and cycle route networks and their classification into the legal system.

The cycle path network is defined as the set of different cycle paths or segments of cycle paths connected to each other, which can be covered by the cyclist without interruption.

The law also provides for the adoption of a plan for cycling, lasting three years, divided into two specific sectors of intervention:

- the development of cycling in urban and metropolitan areas;
- the development of cycling on distances defined at regional, national and European level.

In the implementation of Law 2/2018, the General Plan for Cycling Mobility 2022–2024 (GPCM) was approved as a tool that represents, from an administrative point of view, the framework of national policy for cycling mobility aimed at the creation of the National Cycling Mobility System. The aim of the plan is ‘to make mobility, at every level cycle path, a fundamental component of the sustainable modal system for transport, with characteristics of accessibility, transport efficiency and economic, positive environmental impact, widely accessible tool social and low cost’ [1].

The measures of the GPCM intend to promote the idea that the use of the bicycle is a sustainable choice in environmental, economic and social terms. In particular, the creation and upgrading of cycle paths has the aim of increasing the number of journeys by bicycle and tourist cycle paths to encourage cycle tourism. Furthermore, we want to increase the safety of cyclists, improve signage and create a shared space between the various road users.

The GPCM therefore intends to promote interventions to make roads safer, such as, for example, the redesign of public space, the improvement of lighting and the visibility of cyclists, the infrastructural improvement of at-grade intersections and the introduction of new regulations for the safety of cyclists. Among the planned actions there is also the adoption of the ‘City at 30 km/h’ model, with the aim of reducing the maximum speed allowed in urban centres to 30 km/h. These measures, combined with an increase in cycling, can also contribute to the reduction of road accidents.

The GPCM will have to identify the cycle routes of national interest which will form the national cycle network, named Bicaltia, as a national infrastructure network which will have to be integrated into the system of the trans-European cycle network EuroVelo.

EuroVelo is an initiative of the European Cyclists' Federation (ECF) in cooperation with national and regional partners to realize the European cycle route network. EuroVelo incorporates existing and planned national and regional cycle routes into a single European network [2].

EuroVelo includes 17 long-distance cycle routes; it currently consists of over 45,000 km of developed cycle routes as shown in Fig. 1. When completed, it will total over 90,000 km of developed and signed cycle routes [2].

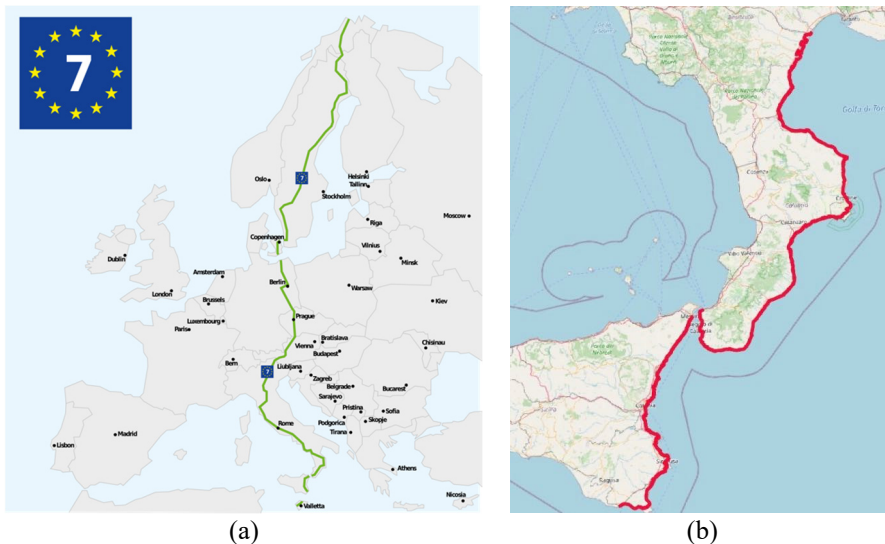


Figure 1: (a) EuroVelo map; and (b) EuroVelo 7 in Calabria (right). (Source: <https://en.eurovelo.com/>.)

EuroVelo is an initiative that helps reduce the negative impacts of travel with the potential to generate positive effects in destinations themselves by restoring life and ecosystems, supporting the creation of vibrant communities and stimulating local economies. It is also a fun and unforgettable way to discover new places in a sustainable way. Italy and Calabria, in particular, is crossed by EuroVelo 7, named Sun Route, that explores Europe from the far north to the sunny south.

About 7,700 km connect the North Cape in Norway with La Valletta in the island of Malta, passing through Finland, Sweden, Denmark, Germany, the Czech Republic, Austria and Italy. Along the way you will find culture, sea, mountains and many things to visit (including stops in the cycling paradises of Malmö, Copenhagen, Berlin and Bolzano).

In Calabria EuroVelo 7 has an overall development of over 800 km (of which about 460 km on the Ionian side and 310 km on the Tyrrhenian side and 30 km on the Catanzaro-Lamezia Terme isthmus transversal axis). EuroVelo 7 goes from the Pollino National Park to Reggio Calabria, passing through the Sila and the Ionian coast.

Fig. 1 shows the EuroVelo 17 long-distance cycle routes and EuroVelo 7 cycle routes in Calabria.

In Italy, Bicitalia is an initiative of the Italian Federation for the Environment and Bicycles (FIAB), which is a national environmental organization whose main purpose is the diffusion of the bicycle as an ecological means of transport, in a framework of environmental redevelopment (urban and extra-urban) [3].

Bicitalia is an initiative that gives tourism, environmental, transportation and even healthy benefits for physical exercise. Furthermore, as can be seen in the experience of European countries where cycling tourism is more developed, the planning and implementation of a national network also supports and invigorates lower-ranking networks and local itineraries [4].

Bicitalia includes 20 long-distance cycle routes, one for each region. In the south Italy, Bicitalia has an overall development of over 600 km on Ciclovía of Magna Graecia from Taranto to Reggio Calabria crossing three regions (Puglia, Basilicata and Calabria). In Calabria Bicitalia goes from Sibari to Reggio Calabria approximately along the state road SS 106.

Moreover, the National System of Tourist Cycle Routes includes 6,000 km by bicycle with 10 national cycle routes. The project was proposed by the Ministry of Infrastructure and Transport and the Ministry of Artistic, Cultural and Tourist Heritage, between 2015 and 2018 to encourage a sustainable way of traveling [5]. The aim is to create 10 safe and quality national cycle routes for sustainable tourism that enhances historical, cultural and environmental itineraries. The cycle routes were identified on proposals from the territories and sector associations on the basis of the EuroVelo project as cycling corridors that cross Europe.

The routes are partly existing and passable: the project envisages their completion or entire construction, as high quality gentle routes, reserved exclusively for non-motorised journeys, respectful of the environment and the landscape, user friendly, with specific signage and services, not for professional cycling but for users of all abilities.

Calabria, in particular, crossed by project 6, named Ciclovía of Magna Graecia, that explores south Italy from Metaponto in Basilicata to Pozzallo in Sicily.

In Calabria, the European EuroVelo 7 is partly overlapped to Bicitalia and totally to Ciclovía of Magna Graecia of National System of Tourist Cycle Routes (Fig. 2).

This study illustrates how a regional government contributes to the implementation of international and national policies for sustainable mobility starting from the reference framework of national government and adopting the indications from above, incorporating them into planning tools on a regional scale.

The contribution of the study is on Calabria Region technical-administrative path for the construction of the Magna Graecia cycle route, as a part of the European EuroVelo and national Bicitalia cycle networks. The technical-economic feasibility project was approved in July 2022.

Section 2 reports the methodology according to the Regional Transport Plan related to measures for non-motorized transport systems interventions. Section 3 describes the technical-administrative path to realize the Ciclovía of Magna Graecia project with respect to various funding programs available, including National Recovery and Resilience Plan (NRRP), and the current state of progress of the infrastructure design.

2 METHODOLOGY

An Ipsos survey reports that out of 28 large countries by population, those with the greatest use of bicycles in Europe are in the north including the Netherlands and Belgium where the major users, on short journeys, show constant and daily use of the bicycle by 45% of adult inhabitants. In Italy only 13% of the adult population uses the bike on a daily basis [6].





Figure 2: Cycle route planning in the Calabria Region.

Eurobarometer research also highlights that, in 2019, the modal share of cycling in Italy is lower than that of countries such as Belgium (12%), Denmark (12%), Finland (13%), Hungary (14%), Germany (15%), Sweden (21%) and the Netherlands (41%), which have usage rates above 10% [7].

In Italy, there are differences in cycling between the North, where some areas have values at the European average, and the centre-south where the use of bicycles is limited. However, it is noted that in recent years there has been an increase in cycling infrastructure and bike sharing services. In particular, starting from 2020, cycling mobility has increased both due to the restrictions of the COVID-19 pandemic and the measures aimed at introducing temporary cycle paths, which are becoming permanent.

The north-east has the highest rate of bicycle use both for work at 6.2% and for study at 6.0%. The north-west has a cycling modal share of 3.2% for work and 1.5% for study. Lower bike usage for work/study motivation is found in the centre and south with a modal share of 1.2% for work and 0.5% for study [8].

According to RFI data, pedestrianism is the first access system to railway stations, followed by TPL and Kiss&Ride (car with companion). Regarding the topic of cycling, this appears today to be one of the areas with the greatest need for improvement. At a national level, access to stations by bike is 1.1%, much lower than the European average. As of March 2022 only around 500 stations (25%) are directly connected to cycling infrastructure [9].

The Regional Transport Plan (RTP) of Calabria Region defines a vision divided into four goals:

- economic development;
- internal accessibility;
- external accessibility;
- sustainability.

To achieve the four goals, the RTP indicates 10 objectives/actions and 100 operational measures, 10 for each objective/action [10].

Objectives are related to *passenger mobility services on a regional scale* and Action 3 to *measures for the planning, efficiency, effectiveness and increase in the competitiveness of regional services of various types*.

Measure 3.4 is *non-motorized transport systems* and indicates the planned interventions for the regional network considering that the non-motorized transport systems have role as:

- system of access/egress to the local public transport system;
- autonomous transport system, above all with reference to the tourist value and the accessibility to protected areas of the regional territory.

In the first case, these systems must be strengthened through the connection of the network of pedestrian and cycle paths with the stops of the collective transport system and above all with the main nodes. The possibility of transporting bicycles on public transport, where possible, and bike sharing must be promoted.

In the second case, these routes must be systemised, as well as strengthened, with the aim of establishing a single regional network of non-motorized mobility, in line with the other existing planning tools [11].

The regional system of non-motorized mobility must be fully integrated with the regional transport network, including the network of ports, intended as gateways to the nearby territory for the use of cultural and environmental assets.

The regional non-motorized mobility system includes the regional cycle network which, in turn, must be fully integrated with the European network and with the national network in the parts involving Calabria.

The reference base for the development of the regional cycle network (Section 2.1) is represented by the Magna Graecia cycle route, which was born as the first cycle path in Southern Italy, to be carried out in compliance with the regulatory framework for the design of cycle paths (Section 2.2).

2.1 Regional cycle network

The system of invariant infrastructures for the RTP concerning the regional cycle network is to be considered as a system connected to the main road infrastructures such as motorways and four-lane state roads, as they cannot be travelled by cyclists [10].

The system of cycling infrastructures includes:

- Ionian itinerary;
- Tyrrhenian itinerary;
- transversal roads itineraries;
- disused railway infrastructures itineraries;
- cycling tours itineraries;
- urban itineraries.

Ionian itinerary includes paths that develop along the Calabrian Ionian coast in correspondence with the state road SS106. In the most congested points, they develop on their own site.

Tyrrhenian itinerary includes paths that develop along the Calabrian Tyrrhenian coast in correspondence with the state road SS18 or A3 motorway; in the most congested points, they develop on their own site.

Transversal roads itineraries include path that develop along the main Calabrian transversal connections at the

- state road SS534 Firmo-Sibari until joining the Tyrrhenian itinerary along the state road SS18; in the most congested points, they develop on their own site;
- state road SS280 Catanzaro-Lamezia Terme until it joins the Tyrrhenian itinerary along the state road SS18; in the most congested points, they develop on their own site;
- state roads SS533 and SS283 from Sibari up to Guardia Piemontese;
- state road SS107 Silana Crotone;
- state road SS182 Transversal of the Serre;
- state road SS682 and SS281 Ionian Tyrrhenian.

Disused railway infrastructures itineraries include paths aimed at recovering and enhancing abandoned or decommissioned railway tracks, or possibly alongside the historic Calabrian railway tracks in their own headquarter.

Cycling tours itineraries include paths aimed at enhancing the Calabrian territory, connecting the nodes of environmental, historical, religious, cultural value, enhancing the river and lake branches, parks and dams.

Urban itineraries include municipal cycle paths that connect directly to the network of regional itineraries crossing urban areas.

In 2017, the regional government of Calabria approved the Cycle Paths Implementation program as a product of the RTP in implementation of Measure 3.4, on the basis of system of invariant infrastructures for the RTP [12].

The implementation program defines a way of executive nature with respect to the decision-making of the region, consistent with the RTP, to have the resources for the realization of interventions envisaged, in an overall framework of attention to both the supply and demand for transport.

The implementation program proposes the creation of the Regional Cycle Road Network, to be achieved through the integration of the main long-distance itineraries involving the regional territory (promoted at an international and national level), with routes of infra-regional, local and urban interest.

The regional network is made up of:

- linear elements, itineraries or routes;
- punctual elements, nodes.

The routes are divided into:

- First level network – itineraries of supra-regional interest (EU and national) included in the long-distance corridors promoted at EU or national level (EuroVelo 7, Cyronmed, Ciclovia del Sole, Ciclovia della Magna Graecia, Ciclovia degli Appennini):
 - Magna Graecia cycle route (Ionian itinerary, Tyrrhenian itinerary),
 - Apennine itinerary (Cycle Path of the Parks of Calabria),
 - Cycle paths in urban areas,
 - Itineraries of the main transversal roads;
- Second level network – itineraries of regional/local interest, itineraries that connect the main areas of the naturalistic, historical-cultural and settlement system of the region with itineraries of supra-regional interest:
 - Itineraries concerning the reuse of disused railway infrastructures,
 - Secondary transversal itineraries,
 - Itineraries with historical, naturalistic and landscape value.

The nodes coincide with the punctual elements of the regional cycleway intermodal system (cycle stations), and for this reason located at railway stations, subways, ports,

junctions or public transport stops, etc., or with the main service poles or of historical-cultural, environmental interest, etc.

Fig. 3 shows a schematization of the first level graph of the Regional Cycle Route Network.

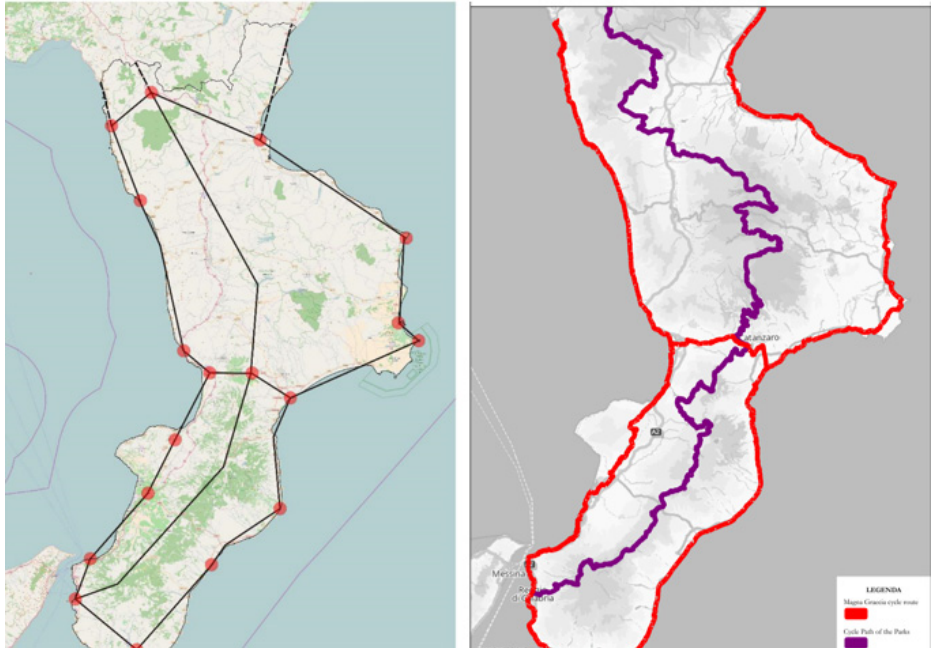


Figure 3: Scheme of first level graph of the Regional Cycle Route Network: Magna Graecia cycle route (red), cycle path of the parks (purple).

The Regional Cycleway Network, as described in the program and outlined in Fig. 3, does not identify a network made up exclusively of cycle paths, but a set of cycle paths involving various types of road infrastructure such as:

- own cycle paths,
- reserved cycle paths;
- mixed pedestrian and cycle paths;
- mixed cycle and vehicular routes.

For the realization of the Regional Cycle Route Network, the program envisages two implementation phases:

- First level network by
 - A. Cycle path of Magna Graecia,
 - B. Cycle path of the Parks of Calabria,
 - C. Cycling in urban areas (safety);
- Second level network by
 - D. Preparatory phase for the identification of the second level network to be defined on the basis of the analytical recognition of the real municipal situations.



2.2 Executive rules

The Implementation program indicates the technical and economic specifications for the construction of the regional network according to current regulatory framework for the design of cycle paths.

The geometric and plano-altimetric characteristics of the cycle paths can be inferred from the C.N.R. and by the aforementioned Law no. 208/91 which distinguishes between:

- route in their own area, physically separated from those for motor vehicles and pedestrians by means of suitable longitudinal raised traffic dividers;
- route in a reserved area if the separation element is passable and consists of a longitudinal demarcation strip.

The first type can also include tracks that are completely independent from the normal road layout. The former can be both one-way and two-way traffic, while the latter can be exclusively one-way in accordance with that of the contiguous lane for vehicles.

The standard width of a cycle lane is 1.50 m for one direction of travel (to take into account both the dimensions of the cyclist and the bicycle and the space for balance and an acceptable free clearance) which can be reduced to 1.25 m in the case of two contiguous lanes. Exceptionally and for very limited stretches, the width can be reduced to 1.00 m for slopes in their own area or for those in reserved areas located on pedestrian streets or sidewalks.

The width of the impassable central reservation between a runway and a roadway must not be less than 70 cm to also allow the affixing of the appropriate road signs. For runways on reserved lanes, the side markings, possibly increased, take on the meaning of an impassable traffic island.

The design speed, to which the stopping distances and therefore the unobstructed lengths of vision are to be correlated in particular, must be defined section by section taking into account that cyclists travel on the plain at an average speed of 20–25 km/h and that they can reach 40 km/h downhill with a 5% gradient.

The longitudinal slope is generally that of the adjacent road. In the case of runways with independent routes from other roads, this gradient must not generally exceed 5% with an average gradient of the entire runway not exceeding 2%. These indications also serve to verify the feasibility of slopes adjacent to existing road routes. These slopes do not have to be verified in the paths inside the parks.

For the design of the cycle stations, some simple models have been identified that are easily realizable, economically manageable and with modular characters in order to be attractive, efficient, replicable and possible for expansion.

The Cyclostation is a closed, supervised, illuminated and equipped room for parking bicycles, with an access control system that can guarantee the opening of the Cyclostation service for 24 hours/7 days per week.

The region believes that it is efficient for the project proposals to guarantee the standards set by the UNI ISO 21500 technical standard.

2.3 Corruption prevention rules

It should also be highlighted that the project took into adequate consideration the matter of preventing corruption and combating mafia-type organized crime, in the delicate sector of public contracts, through the introduction of specific preventive tools: white list, anti-mafia documentation, legality protocols up to the recent collaborative prevention, introduced by the Legislative Decree n. 152/2021 [13].



The matter of corruption prevention, which is regulated by Law no. 190/2012 (so-called anti-corruption law), is closely linked to the administrative system of anti-mafia prevention, regulated by Legislative Decree no. 159/2011 (so-called anti-mafia code) [14].

This emerges clearly from the analysis of public procurement regulations, in which the needs of preventing corruption and combating organized crime require a system that allows the public administration to exclude companies linked to criminal organizations from the public procurement market. Indeed, the mafias, through the thriving and profitable public procurement market, attempt to infiltrate the economic fabric and institutions, distorting competition and damaging rival companies and the entire economic system and often slowing down the completion of the works.

It seems appropriate to underline how the system of administrative tools in the field of public contracting is aimed at allowing the public administrations to verify that the activity carried out by the company interested in the public contract is carried out according to the rules and is not linked to organized crime.

One used tool is that of *white lists*. In particular, this is a list of suppliers, prepared and kept in each Prefecture and accessible through a national database, in which the companies considered virtuous and, consequently, reliable, are registered (for a period of 12 months), as they are not exposed to the risk of mafia infiltration attempts. Furthermore, since 2014, there has been an obligation for public administrations who intend to award public contracts in the sectors considered most at risk, to carry out preventive screening of economic operators and use white lists to acquire the anti-mafia release documentation, necessary for the purposes of awarding contracts public to businesses.

The anti-mafia communication (*interdictory or release*) is a mandatory assessment, through which the existence or otherwise of causes of forfeiture, suspension or prohibition pursuant to art. 67 Anti-mafia code [15].

The anti-mafia information (interdictory or liberating), on the other hand, adds to this first restricted profile a discretionary assessment, always within the competence of the Prefect, on the existence or otherwise of attempts at mafia infiltration in the company.

Therefore, for the purposes of adopting such interdictory measures, it is not necessary to provide proof of mafia infiltration, but rather only the *presence of symptomatic-presumptive elements* from which a danger of interference by organized crime can be deduced. Furthermore, it is common practice to use *legality protocols*. Specifically, these are commitments undertaken on a voluntary basis by the subjects involved in the management of the public work, with the aim of reinforcing the constraints already imposed by the anti-mafia legislation.

Finally, with the Legislative Decree n. 152/2021 (containing ‘urgent provisions for the implementation of the National Recovery and Resilience Plan (NRRP) and for the prevention of mafia infiltration’), some changes have been made to the Anti-Mafia Code in order to strengthen the anti-mafia prevention system.

3 MAGNA GRAECIA CYCLE ROUTE PROJECT

Following the approval of the technical-economic feasibility project for the entire Magna Grecia cycle route, the Calabria Region has chosen two priority lots to be completed by 2026.

The ‘I Functional Lot of the Calabria Region from Villa San Giovanni to Reggio Calabria’ is financed with funds from the Minister of Infrastructure and Transport for an amount of €8,523,802.25.

The ‘II Functional Lot of the Calabria Region – from Locri to Soverato’ is financed with funds from the National Recovery and Resilience Plan – measure M2C2-23 – 4.1



‘Strengthening of cycling mobility’ sub-investment ‘Tourist cycle routes’ for an amount of €33,331,021.44.

For these two lots, a design tender was carried out and the final designs are in progress.

The Magna Graecia cycle route focuses on intra-regional green mobility, to create a sustainable route away from built environments and close to nature. The new bicycle owners/users will be those who, also driven by the new post-COVID culture that demands efficiency and sustainability, have discovered the bicycle as a means of transport, and those who, traveling by train, will ask for an easy connection with other modes of transport, but also the possibility of bringing a bicycle on board and using renovated stations.

The financing programs demonstrate that it is a feasible project within the general framework of the cycle infrastructures envisaged for the promotion of sustainable mobility in Europe, as a measure to be implemented in Calabria to achieve real impacts expected on the increase in the three components of sustainability: economic (reduction costs), social (increase in traffic safety) and environmental (reduction of pollution and protection of health). The impacts estimated in quantitative terms are the subject of ongoing design, and will be verified ongoing and ex post with an appropriate monitoring system after the realization.

4 TRAIN-BIKE CYCLING TOURISM: A PROJECT TO IMPLEMENT THE MAGNA GRAECIA CYCLE ROAD IN INTEGRATION WITH THE RAILWAY SERVICE

The progressive creation of the itinerary of the Magna Graecia cycle path will make it possible to enjoy the natural archaeological beauties of Calabria in a sustainable way for the environment. To improve the accessibility of the areas touched by the cycle path, the Calabria Region intends to activate, in collaboration with Trenitalia and RFI (respectively, the service provider and railway network manager), an integrated train-bike service for the enhancement of sustainable cycle tourism with a strong cultural vocation and naturalistic.

In particular, from the railway stations it will be possible to access the itineraries that will develop along the Magna Graecia cycle path, thus reaching the main archaeological sites, protected natural areas and a rich network of paths with a strong naturalistic, historical and religious value. The service offered to tourists will consist in proposing a multifaceted experience which includes traveling by train on regional services to reach the access points to the new Magna Graecia cycle route (Fig. 4).

Already on the train, bike sharing services will be offered with means suitable for the routes to be taken. The sharing service will also be integrated at the main railway stations and at stations that are strategically located in the area.

The railway stations will play a central role in the project both because the velostations will be located there and because they will represent the gateways to the internal areas. The service will be carried out on the new Blue trains, with electric-diesel hybrid traction, which can circulate both on non-electrified lines with Diesel traction and on electrified lines. These trains allow for the reduction of emissions of climate-changing substances, noise and consumption, guaranteeing sustainable accessibility to the Magna Graecia cycle route.

5 CONCLUSION

Calabria Region supported the creation of the regional cycle network for the achievement of the international sustainability objectives of Agenda 2030 and in line with the national guidelines for the promotion of cycling mobility.

Calabria Region, starting RTP, approved an implementation program for the construction of the regional cycle network which defines the way to build it as a set of routes and nodes also taking into consideration the existing infrastructure for cycling.



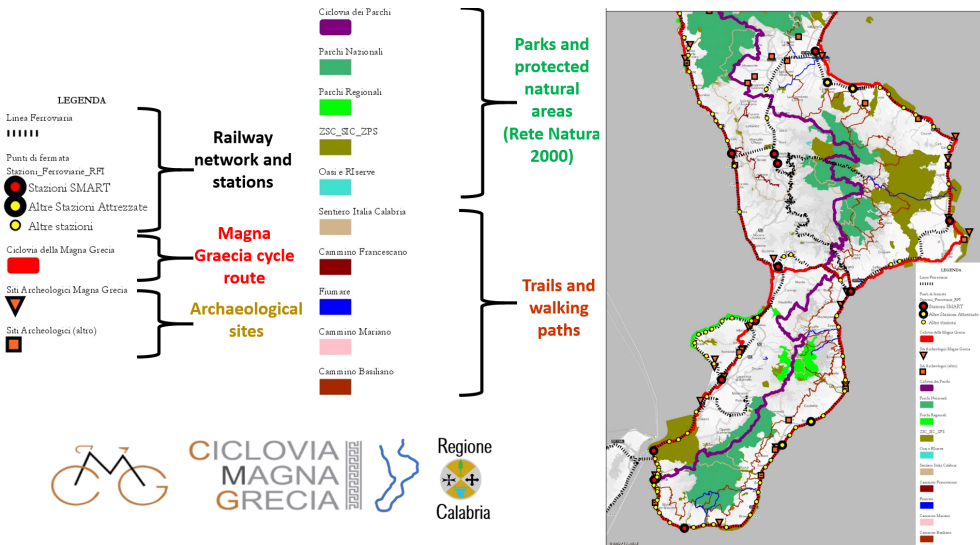


Figure 4: Representation of the Train-Bike Cycle Tourism project.

The reference base of the regional cycle network is the Magna Graecia cycle route which was born as the first cycle path in Southern Italy, whose itinerary is consistent with the European corridor EuroVelo 7 and Italian Bicalitalia.

For the realization of the Regional Cycle Route Network, the program envisages two implementation phases, before first level network starting Magna Graecia cycle route.

Calabria Region has published a design tender and the final designs of the two priority lots are underway.

The Bike-Train Cycle Tourism project will allow sustainable accessibility, on a hybrid traction train, to the Magna Grecia cycle path, so that citizens and tourists will be able to reach the main archaeological sites, protected natural areas and the rich network of highly valued paths naturalistic, historical and religious that characterizes the inland areas of Calabria.

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REFERENCES

- [1] Cycling delivers on the global goals. https://ecf.com/sites/ecf.com/files/The%20Global%20Goals_internet.pdf. Accessed on: 23 Jun. 2023.
- [2] EuroVelo for professionals. <https://pro.eurovelo.com/organisation/about>. Accessed on: 23 Jun. 2023.
- [3] Bicalitalia. <https://www.bicalitalia.org/it/>. Accessed on: 23 Jun. 2023.
- [4] The National System of Tourist Cycle Routes in Italy. <https://www.mit.gov.it/connettere-litalia/ciclovie-turistiche-nazionali>. Accessed on: 23 Jun. 2023.



- [5] Law n. 2/2018 – Mobilità in bicicletta. <https://www.gazzettaufficiale.it/eli/id/2018/01/31/18G00013/sg>. Accessed on: 23 Jun. 2023.
- [6] Ipsos Global, Advisor cycling across the world, 2022. https://www.ipsos.com/sites/default/files/202205/IPSOS_Global%20AdvisorCycling%20Across%20the%20World-2022-Graphic%20Report_0.pdf.
- [7] Eurobarometer. <https://europa.eu/eurobarometer/surveys/detail/1102>.
- [8] Istat, Censimento permanente della popolazione 2019, 2021.
- [9] General Plan for Cycling Mobility. <https://www.mit.gov.it/nfsmitgov/files/media/notizia/2022-08/PG%20Mobilit%C3%A0%20Ciclista%20e%20allegati.pdf>. Accessed on: 23 Jun. 2023.
- [10] Regional Transport Plan of Calabria Region. <https://www.regione.calabria.it/website/portaltemplates/view/view.cfm?4582&4582>. Accessed on: 23 Jun. 2023.
- [11] Territorial Regional Landscape Framework of Calabria Region. <https://www.regione.calabria.it/website/organizzazione/dipartimento11/subsite/settori/qtrp/>. Accessed on: 23 Jun. 2023.
- [12] Regione Calabria, Deliberation of the Calabria Regional Council n. 466 on 12 Oct. 2017 Piano Regionale dei Trasporti. Attuazione. Programma di attuazione Piste Ciclabili. Misure 2.4, 3.4, 4.8, 7.9 del PRT, 2017.
- [13] Italy, Legislative Decree n. 152/2021, Disposizioni urgenti per l'attuazione del Piano nazionale di ripresa e resilienza (PNRR) e per la prevenzione delle infiltrazioni mafiose, 2021.
- [14] Italy, Law no. 190/2012, Disposizioni per la prevenzione e la repressione della corruzione e dell'illegalità nella pubblica amministrazione, 2012.
- [15] Italy, Legislative Decree n. 159/2011 (Antimafia code), Codice delle leggi antimafia e delle misure di prevenzione, nonché nuove disposizioni in materia di documentazione antimafia, 2011.

