

Existing Initiatives and Good Practices



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D 1.2 - MAPPING OF EXISTING INITIATIVES AND GOOD PRACTICES

D 1.2.1 FRANCE

Montpellier Méditerranée Métropole (3M), an intermunicipality of 491 417 inhabitants in 2019 (INSEE), has set up a subsidy of a maximum amount of €500 for all inhabitants of the Metropolis over the age of 18 who will acquire a new electrically assisted bicycle (VAE) purchased in a store located in 3M territory between November 1, 2020 and June 30, 2023. At the beginning of 2023, more than 30,000 people have already benefited from it. The inhabitants of the metropolis have also been able to benefit from financial aid (subject to financial resources) from the department of Hérault (up to 250 euros) and the Occitanie region (up to 200 euros).

In order to meet parking needs, 19 cycle parks have been located along the tramway lines and new secure shelters for professional, personal or occasional use are developed at the request of users after evaluation study. Moreover, since the French "Grenelle 2" law of 2010 and its implementing decree of 2011, all new buildings (permit filed after January 1, 2012) are obliged to provide a secure bicycle parking, whose surface area was specified by a decree of 2012. For those residing in older buildings, who are unable to park their bikes in the common areas or in the outdoor spaces, the possibility remains to use the metropolitan area's free-access bike service: VéloMagg.

VéloMagg self-service allows to rent a bike freely (for non-subscribers, the service costs €0.50/hour), 7 days a week and 24 hours a day, for up to 24 consecutive hours from 57 automatic velostations providing "intelligent" bicycles equipped with an electronic box. Data on availability by station is shared in real time via the metropolitan area's open data. VéloMagg adapts to the summer period to offer self-service bicycles near the beaches. The service is free of charge on presentation of a validated public transport system (TAM-*Transports de l'agglomération de Montpellier*).

Since 2016, Paul Valéry Montpellier University has undertaken studies and invested in the development of bicycle mobility to the campus but also to reach its various sites in the city. Three major surveys were conducted among lecturers and staff with a response rate of over 30%. The results show that the automobile remains the preferred mode of transportation, but also that it is decreasing considerably (72% in 2016 vs. 54% in 2022) in favor of the bicycle (11% in 2016 vs. 29% in 2022).

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D 1.2.2 ITALY

In 2018, the Framework Law n. 2/2018 on cycling was approved which, for the first time, lays the foundations for a consistent medium-long term national strategy of structural and urban facilitation of the use of bicycles for urban and tourist travel. The law requires Italy to equip itself with targeted planning tools: the general plan for cycling, the regional plans for cycling and urban plans for cycling (Biciplan). The Bicitalia National Cycle Network, made up of cycle routes of national interest with an overall development of at least 20,000 km and integrated into the EuroVelo trans-European cycle network, is considered an infrastructure of national strategic interest.

At the same time, projects are spreading to promote the bicycle as a solution for urban home- school/university and home-work commuting: i.e., several important cities such as Turin, Milan and Rome have joined the European project Bike2Work-Smart choice for commuters, with the involvement of municipal administrations, universities (the University of Turin was one of the promoters) and numerous companies.

It is important to notice that in cities where investments have been made in cycling for some time and cities have been adapted to bicycles, the modal share has grown a lot (i.e., in Ferrara, Bolzano and Pesaro 30% of the population regularly uses bicycles) in Italy as well.

D 1.2.3 PORTUGAL

In 2019, the Portuguese Government approved the National Strategy for Cycling Mobility 2020-2030 (ENMAC 2020-2030, through Council of Ministers Resolution n.º 131/2019). ENMAC is a 10-yearlong national strategy aimed at promoting bicycle usage and the adoption of healthier lifestyles. It comprises a total 51 measures pertaining to four general areas – a) Legislation and regulatory framework, b) research and development, c) monitoring and progress assessment, d) financing – and three axis of specific intervention – #1. Infrastructure and intermodality, #2. Training and support, #3. Culture and behaviors. ENMAC defines ambitious targets for 2030 such as 10% modal share of cycling in Portuguese cities, and a 50% reduction in cyclist fatalities.

Locally, University of Coimbra (UC) are involved in some initiatives and is member of the Sustainable Campus Committee and within the [EUROPEAN MOBILITY Week](#) framework. UC, promoted:

1. "Is Coimbra cyclable?". The activities started with the "Discover Coimbra by Bike" round trip between Polo II and Polo I, followed by the Round Table at 4:30 pm, "Roundtable: Is Coimbra cyclable?" at the

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- Interdisciplinary Research Institute, University of Coimbra (details can be found here: <https://www.uc.pt/en/efs/article?key=a-dc4c9aa16d>);
2. Workshop on Mobility Habits and Health. Survey on Mobility Habits and physical tests at FCDEF and comparison with the level of physical activity collected in the survey. Urban Mobility Policy by Professor Ana Bastos, Coimbra City Council (details can be found here: <https://www.uc.pt/en/efs/article?key=a-90a68c5aa7>).

D 1.2.4 SPAIN

Madrid 360 Environmental Sustainability Strategy as a key measure to promote cycling, pedestrian mobility and the promotion of public transport. In terms of cycling mobility, according to calculations made by the Environment and Mobility Department, it will allow an increase of up to 4,000 daily bicycle journeys on the axis. This is 3,000 more than the current number. In addition, it is estimated that there will be a transfer from private vehicles and motorbikes to bicycles of up to 1,400 trips per day. This infrastructure will improve environmental quality by reducing by up to 10% the number of journeys currently made by car or motorbike. The modal shift is calculated taking into account only those vehicles whose origin and destination is on the Castellana axis, which implies an accumulated reduction of more than 1 million kilometres per year by car and the reduction of 187 tonnes of CO₂ and 319,000 kilograms of NO_x.

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D1.3 – COMPILATION OF EXISTING MATERIAL AND INFORMATION

This document aims to provide answers to the following items regarding or the countries of the four universities in the project (France, Italy, Portugal and Spain):

1. BRIEF DESCRIPTION OF THE COUNTRY ENVIRONMENT REGARDING BICYCLE USE AS A MEANS OF TRANSPORT **2**

- a. modal split;
- b. general situation of infrastructures for cycling (availability, quality, etc.);
- c. possible policy initiatives/legislation that promote active mobility.

2. DESCRIPTION OF THE LOCAL (CITY WHERE UNIVERSITY IS LOCATED) ENVIRONMENT WITH REGARD TO BICYCLE USE AS A MEANS OF TRANSPORT **6**

- a. modal split (if known at the local level);
- b. assessment of the infrastructures for cycling;
- c. possible local policy initiatives/ local legislation that promote active mobility.

3. DESCRIPTION OF THE INSTITUTION (UNIVERSITY INVOLVED IN 3CS) SITUATION CONCERNING COMMUTING BY BICYCLE AND ACTIVE MODES IN GENERAL, BOTH BY STAFF AND STUDENTS **10**

- a. modal split (if made available by internal surveys on mobility);
- b. other possible and relevant information on the community travelling behavior collected by internal surveys;
- c. infrastructures (bicycle racks for parking and their safety from theft, possible bicycle routes inside the campus, etc.);
- d. policy initiatives, best practices, incentives, offered to the community;
- e. lectures, workshops, seminars organized by the institution on issues concerning active and sustainable mobility;
- f. collaborations and/or lobby with other relevant local institutions on active mobility topics.



1. BRIEF DESCRIPTION OF THE COUNTRY ENVIRONMENT REGARDING BICYCLE USE AS A MEANS OF TRANSPORT

FRANCE

In France, the general commission for sustainable development (CGDD) estimated that in 2018, 24% of trips were made by walking compared to 3% by bicycle. According to the French National institute for statistics (INSEE), the development potential of cycling is still considerable: 60% of home-work journeys of less than 5 km were made by car and 5% by bicycle in 2021. However, the trend in bicycle use is on the rise: the network of Cycling Departments and Regions (*Vélo et territoires*) estimates that bicycle trips raised by +28% in 2021 compared to 2019, while the sport and cycle union (which brings together companies in the sports, leisure, cycle and active mobility sectors), estimates that sales of electrically assisted bicycles increased by +29% between 2020 and 2019 in the country. Knowing that cycling with electrically assisted bicycles generally lead to longer and more frequent trips than conventional bicycles (see for eg Castro et al., 2019), these figures suggest that an increasing share of home-to-work journeys could be made by bicycle.

In 2018, the French Government launched the first national cycling and active mobility plan, as part of the mobility orientation law (LOM), renewed for the 2022-2027 period. Following the Prime Minister's announcement on September 20, 2022, the Active Mobility Fund has been endowed with 250 million euros for the year 2023 to extend the financial support of contracting authorities in their creation of safe cycle routes and the reduction of route discontinuities. Other key measures are part of the mobility plan: the French State has in particular set up a sustainable mobility package of a maximum amount of 600 euros per year for employees in the private sector and 200 euros per year for employees in the public sector and provides financial aids (subject to financial resources) for the purchase of a bicycle. This financial aid can be combined with regional, departmental or city funding, depending on the local context.

ITALY

The Italian modal share for cycling is particularly low if compared to average European levels: about 4% of Italians systematically use bicycles, while in northern European countries, which for decades have implemented strong



policies in favours of bicycles, the percentages stand at 41% in the most virtuous case of Holland, or 21% in Sweden¹.

In Italy, the attention to environmental sustainability in city mobility governance is still in its infancy, having spread only in recent years, and often in contexts where the physical structure of the road network is still mainly focused on cars. For a long period of time no strong initiative at the national level was undertaken. Despite the slowness and lack of systematic policies, however, things have been changing in recent years. Since 2015, the Environmental Related Law n. 221/2015 has placed the opportunity to encourage sustainable choices for daily commuting from home to school and work at the centre of the political-administrative debate, while introducing the figure of the school mobility manager.

In 2018, the Framework Law n. 2/2018 on cycling was approved which, for the first time, lays the foundations for a consistent medium-long term national strategy of structural and urban facilitation of the use of bicycles for urban and tourist travel. The law requires Italy to equip itself with targeted planning tools: the general plan for cycling, the regional plans for cycling and urban plans for cycling (Biciplan). The Bicitalia National Cycle Network, made up of cycle routes of national interest with an overall development of at least 20,000 km and integrated into the EuroVelo trans-European cycle network, is considered an infrastructure of national strategic interest. At the same time, projects are spreading to promote the bicycle as a solution for urban home-school/university and home-work commuting: i.e., several important cities such as Turin, Milan and Rome have joined the European project Bike2Work-Smart choice for commuters, with the involvement of municipal administrations, universities (the University of Turin was one of the promoters) and numerous companies. It is important to notice that in cities where investments have been made in cycling for some time and cities have been adapted to bicycles, the modal share has grown a lot (i.e., in Ferrara, Bolzano and Pesaro 30% of the population regularly uses bicycles) in Italy as well.

The Italian cycle network now extends for 2,341 km in 22 cities, but in 2020 with the emergency interventions for Covid-19, an additional 200 kms. were created. Government support for sustainable mobility was also seen in the funding of the 200 million mobility bonus launched in 2020, and with a new edition in 2022 of the bonus (worth 185 million) for municipalities suffering for high levels of air pollution. In addition, the Next Generation EU Plan foresees the use of 600 million to create 570 km of urban cycle paths and 1.250 km of tourist cycle paths. Furthermore, in 2020-2021 the figure of the Mobility Manager (established in 1998) was strengthened: every company with 100 employees is now required to appoint a Mobility Manager, while previously the limit was 300 employees per site. After years of limited commitment, national policy is now embarking on a path towards promoting sustainable mobility.

¹Source: Eurobarometer 2919 research on Mobility and transport and associated report, <https://europa.eu/eurobarometer/api/deliverable/download/file?deliverableId=73158> <https://europa.eu/eurobarometer/surveys/detail/2226>



PORTUGAL

The modal distribution of passenger transport in Portugal reveals the dominance of road transport². Also, the study on sustainable mobility promoted in 2022 by the Portuguese Sustainable Campus Network³ demonstrated that private cars is the dominant mode of transport with 52% share of commuting trips at Higher Education Institutions (HEI), while bicycle is used in 3% of trips. Health was highlighted as the most important reason for the modal choice by the users of active modes. Most of the daily trips (62%) to the HEIs takes less than 30 minutes and the distance is less than 15 km for 65% of trips. These data were obtained based on questionnaires implemented in 16 establishments involving Portuguese Universities and Polytechnical Institutes⁴.

In 2019, the Portuguese Government approved the National Strategy for Cycling Mobility 2020-2030 (ENMAC 2020-2030, through Resolução do Conselho de Ministros n.º131/2019). ENMAC is a 10-year long national strategy aimed at promoting bicycle usage and the adoption of healthier lifestyles. It comprises a total 51 measures pertaining to four general areas – a) Legislation and regulatory framework, b) research and development, c) monitoring and progress assessment, d) financing – and three axis of specific intervention – #1. Infrastructure and intermodality, #2. Training and support, #3. Culture and behaviors. ENMAC defines ambitious targets for 2030 such as 10% modal share of cycling in Portuguese cities, and a 50% reduction in cyclist fatalities.

SPAIN

The international context of public policies related to urban mobility can be established both in the United Nations 2030 Agenda, whose Sustainable Development Goal 11 seeks to "Make cities and human settlements inclusive, safe, resilient and sustainable"⁵, and in multiple European policies and directives related to decarbonization and sustainable mobility. Of particular note is the European Green Pact⁶, which is a roadmap for achieving the goal of a carbon neutral Europe by 2050. To achieve this goal, it proposes, among other sectors, to deploy cleaner, cheaper and healthier public and private transport systems. With the clear goal of decarbonizing our economy by 2050 at the latest, the Spanish Government has considered that in the current circumstances of the need to activate our economy, it is necessary to take advantage of the social and economic opportunity provided by the reduction in the cost of renewable generation technologies and to accelerate the energy

² Estatísticas dos Transportes e Comunicações: 2020. Instituto Nacional de Estatística, Lisboa, www.ine.pt/xurl/pub/280812477

³ www.redecampusustentavel.pt

⁴ Estudo de Mobilidade Sustentável no Ensino Superior Português. Análise dos resultados do inquérito promovido pela Rede Campus Sustentável e realizado pelo Grupo de Trabalho de Mobilidade Sustentável, <https://tinyurl.com/mobilidade-sustentavel-ebook>.

⁵ Sustainable Development Goals. United Nations, 2015. <https://www.un.org/sustainabledevelopment/es/>

⁶ A European Green Pact. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_es



transition in our country. In this sense, the Recovery, Transformation and Resilience Plan⁷ represents a unique opportunity to promote a green exit from the crisis caused by COVID-19 and, at the same time, to bring forward the achievement of the objectives set out in the Strategic Energy and Climate Framework. For its part, the Climate Change and Energy Transition Law, sent by the Council of Ministers to Parliament on 19 May 2020, sets targets for reducing greenhouse gas emissions and the penetration of renewable energies, and also includes a series of measures to facilitate the achievement of these targets. Law 7/2021 of 20 May on climate change and energy transition⁸. The aim of this regulation is to help Spain meet its international commitments in the fight against climate change in order to achieve "before 2050" the so-called "climate neutrality" (i.e. that the country can only emit greenhouse gases that can be absorbed by sinks, for example, forests).

- The main objective is to achieve by 2050 "a fleet of passenger cars and light commercial vehicles with no direct CO₂ (carbon dioxide) emissions". To this end, by 2040 at the latest, no new non-commercial passenger cars and light commercial vehicles emitting CO₂ may be sold;
- All municipalities with more than 50,000 inhabitants must adopt sustainable mobility plans that, among other things, include low-emission zones similar to those implemented in Madrid and Barcelona. And they can only be reversed with a favorable report from the regional government. In addition, municipalities with more than 20,000 inhabitants will also have to approve low-emission zones if their air quality is not good;
- The regulation also establishes obligations for petrol stations to place electric car charging points and to facilitate their installation in buildings and car parks. From 2023, all buildings that are not intended for residential use and with more than 20 parking spaces must have charging infrastructures. In addition, the Ministry for Ecological Transition will draw up a national public access catalogue of recharging points available to drivers. And European recovery funds will be channeled to incentivize the installation of recharging infrastructure;
- The government will also set targets for the integration of alternative fuels in transport, with "special emphasis on advanced biofuels and other renewable fuels of non-biological origin". And it opens the door to limiting first-generation biofuels (those made from food crops);
- The Government will draft a law on sustainable mobility and financing of public transport, which will also include targets for the penetration of the railway in freight transport over distances of more than 300 kilometers.

At present, the draft bill on Sustainable Mobility and Transport Financing is in the pipeline.

⁷ Recovery, Transformation and Resilience Plan, 2021. <https://portal.mineco.gob.es/es-es/ministerio/areas-prioritarias/Paginas/PlanRecuperacion.aspx>

⁸ (https://www.boe.es/diario_boe/txt.php?id=BOE-A-2021-8447)



2. DESCRIPTION OF THE LOCAL (CITY WHERE UNIVERSITY IS LOCATED) ENVIRONMENT WITH REGARD TO BICYCLE USE AS A MEANS OF TRANSPORT

MONTPELLIER

For instance, Montpellier Méditerranée Métropole (3M), an intermunicipality of 491 417 inhabitants in 2019 (INSEE), has set up a subsidy of a maximum amount of €500 for all inhabitants of the Metropolis over the age of 18 who will acquire a new electrically assisted bicycle (VAE) purchased in a store located in 3M territory between November 1, 2020 and June 30, 2023. At the beginning of 2023, more than 30,000 people have already benefited from it. The inhabitants of the metropolis have also been able to benefit from financial aid (subject to financial resources) from the department of Hérault (up to 250 euros) and the Occitanie region (up to 200 euros).

This financial aid by 3M is part of a broad active mobility plan amounting to 150 million euros (i.e. 40 euros per inhabitant per year, while the French average for inter-municipalities with less than 500,000 inhabitants is €7.5 per year and per inhabitant and €13.25 year/inhabitant for cities with more than 500,000 inhabitants) to increase from 4.1% of bicycle trips to 10% by 2026. The 3M active mobility plan aims, in addition to aid for the acquisition of an electric bike, to help workers to buy a cargo bike, to assist with bicycle repairs, to extent the current cycle network (160 km of cycle paths actually exist in the 31 municipalities of the Metropolis) and to create of an express cycle network: the « Vélolignes Montpelliéraines », which should connect each city of the metropolis to the core city and provides cycle ring roads to improve inter-cities connection (70% of a total of 235 km are planned by 2026). Recently, due to the pandemic crisis, 3M created 22 km of temporary infrastructures much of which has since been made permanent. Two-way four-lane motorized roads have been replaced by one-way two-lane motorized roads. The space gained has made it possible to introduce shared lanes for bicycles and buses. These developments were carried out primarily on the roads connecting the main traffic generation hubs (city core, hospitals, universities, etc.). This strategy made a big change in the metropolis with more congestion on rush hour for drivers and more efficiency for public transport and active mobilities. In this it appears as a strong political decision and message for car drivers and riders.

In order to meet parking needs, 19 cycle parks have been located along the tramway lines and new secure shelters for professional, personal or occasional



use are developed at the request of users after evaluation study. Moreover, since the French "Grenelle 2" law of 2010 and its implementing decree of 2011, all new buildings (permit filed after January 1, 2012) are obliged to provide a secure bicycle parking, whose surface area was specified by a decree of 2012. For those residing in older buildings, who are unable to park their bikes in the common areas or in the outdoor spaces, the possibility remains to use the metropolitan area's free-access bike service: VéloMagg. VéloMagg self-service allows to rent a bike freely (for non-subscribers, the service costs €0.50/hour), 7 days a week and 24 hours a day, for up to 24 consecutive hours from 57 automatic velostations providing "intelligent" bicycles equipped with an electronic box. Data on availability by station is shared in real time via the metropolitan area's open data. VéloMagg adapts to the summer period to offer self-service bicycles near the beaches. The service is free of charge on presentation of a validated public transport system (TAM-*Transports de l'agglomération de Montpellier*).

To measure the performance of the actions carried out on the territory and of societal developments towards cycling, 3M has installed 21 permanent bicycle counting stations ("éco-compteurs") located on the cycle routes, 3 of them with electronic displays. The cumulative counting of the day before is filled in by counter on the metropolitan opendata platform. The Vélocité association offers an interactive application for exploring the city bicycle counting data. Albert 1er station, located in the city centre and near one of the campus of university Paul Valéry Montpellier 3, is one of the busiest in the network, with more than 1,800 cyclists counted on average each day in February 2023. However, a study of the number of cyclists at the Albert 1er crossroads carried out by the VéloCité association between November 2020 and February 2021 established that 36% of bicycle crossings at this crossroads were not counted by the counter.

In addition, 3M has signed a partnership with Geovelo, a free online route calculator, to facilitate cycling travel and optimize future developments, which provides:

- a bike route engine adapted to users preferences (speed, safety, ...) and allowing to share itineraries,
- a dynamic map locating the cycling facilities in the 3M territory and beyond,
- a social network via the sharing of news feeds and challenges between users,
- a company component to facilitate cycling among employees.

The 3M community of users of the GéoVélo application includes 7,884 cyclists, who have accumulated more than a million kilometers. The community of users working at the University Paul Valéry Montpellier 3 counts 25 people and has covered more than 9,600 km since its creation in June 2022.



TURIN

Turin is the capital city of the Piedmont region and one of the most important economic centres in Italy. With regard to cycle mobility, in 2013 the city approved the ten-year strategic cycling masterplan (Biciplan) with the aim of increasing the cycling modal share from 3% to 15%. The Plan includes the construction of 10 main bicycle corridors from the city centre to the suburban area and 4 circular ways with a collector and distributor function for different origins/destinations.

On a population of 884,733 people, the daily number of cyclists travelling along the busiest routes is as high as 2,500⁹. In a city area of 130 km² the Municipality of Turin has created 230 km of cycle network. The City of Turin, with a network of fixed sensors along 5 main cycling axes, is also monitoring bicycle traffic: from 2019 the trend is growing and reached 10.348.014 bicycle trips in March 2023¹⁰. In Turin there are bike sharing services: from 2010 the city was mainly served by the [TO] Bike station-based bike sharing service of the City of Turin with over 140 stations where to pick up and drop off the bike, 24/7, as well as some additional stations in the neighbouring municipalities. In 2018 several free-floating bike sharing services were introduced, which did not provide fixed pick-up locations and allowed the final release of bicycles anywhere along city streets. Finally, at the end of 2019 electric scooters and e-bikes were added to normal bicycles. The pricing policies vary widely among providers, but always involve time or distance-based variable rates right from the start of the journey. The municipality has recently introduced some regulations to stabilize the market and avoid overcrowding of public spaces, given the large number of new service operators that were spreading their vehicles - particularly e-scooters - around the city. Nowadays the active operators are Bird, Dott, Helbiz, Link, and RideMovie/Mobike, some of which offer both e-scooters and bicycles.

The City of Turin and the Metropolitan City of Turin have also implemented B.U.NE.T - Bike's Urban Network in Turin, a bicycle-specific info mobility app (allowing for both private bikes or bike sharing service) in the territory of Turin and the Province. It was created by 5T - *Telematic Technologies for Transport Traffic Turin* with the collaboration of the bike sharing operator [TO] BIKE. The service, the first in Italy entirely promoted and supported by local authorities, was developed using Open-Source technologies and uses data on the availability of bicycles in real time.

The City of Turin has recently received significant funding to create new cycle infrastructures and is developing numerous interventions for cycling mobility. The new cycling infrastructure is designed in accordance with regional planning tools, the Sustainable Urban Mobility Plan and the Bicycle Plan approved in 2013. At the same time, the Metropolitan City of Turin carried out a participatory planning process to design a cycling network connecting

⁹Source: <https://handshakecycling.eu/turin>

¹⁰Source: <https://data.eco-counter.com/ParcPublic/?id=6771#>



Turin with the neighbouring municipalities. The main cycling thoroughfares are planned to promote active mobility for commuting to work or school.

In addition to the creation of new cycle paths, implementation of safe crossings and the completion of connecting sections between paths, the city has recently adopted other initiatives to promote cycling. The municipality set a speed limit of 20 km/h along the side streets of Torino's main avenues to encourage shared use of the road and facilitate cycling. Furthermore, it has introduced two new tools for street planning: advanced stop lines or bike box at major intersections (this is a type of road marking at junctions that allow bicycles to a head start when the traffic signal changes from red to green) and shared service lanes, roadway where bicycles and cars/scooter share the same travel lane without distinction between vehicle and bike lanes, with specific road signage on pavements to create a safer environment for cyclists. The expected results at the end of the current works in 2022 are: 50 Km of service lanes with a speed limit 20km/h, 30 Km of new protected bike lanes, 16 Km of redeveloped bike lanes.

The Metropolitan city administration has recently gone further in encouraging the switch to bicycle commuting, offering monetary incentives (e.g. the already classic 0.25€/km) to commuters that moved from car to bicycle in their daily travel for a significant period of time (8 months).

Another interesting project by a large group of towns belonging to the metropolitan area of Turin has offered their citizens the opportunity to try a folding bicycle for free for a period of two months, using it for the first and last mile - or the whole journey - in commuting to work or other endeavours. At the end of the trial period each individual could choose to finalize the purchase of the folding bike at a significantly reduced price or return it to the affiliated shops¹¹.

COIMBRA

In the city of Coimbra there were installed a network of parking stations distributed along the 20 kilometres of the cycling network, crossing the main tourist points, public transport interface, hospitals, schools, health or sports facilities, commerce, and service centres. The municipality also hopes to make progress this year with the construction of another 18 kilometres of cycle paths along the right peripheral riverbed of the Mondego, connecting the villages, which will now total 38 km of lanes for cyclists. In terms of sustainable mobility, the University of Coimbra uses the network of infrastructures provided by the municipality and through its Sports Services provide to the entire University community a bicycle loan programme call 'UCicletas'. The University of Coimbra¹², is member of the Sustainable Campus Committee and within the EUROPEAN MOBILITY Week framework. In academic terms the University of Coimbra also offers a Master Course in Urban Mobility Management that intends to create a training offer on urban mobility management. The proposed course

¹¹This is a part of the "ViVo" (an acronym that stands for "Let's get rid of cars in the western metropolitan area) project, see for example <https://www.comune.collegno.to.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/2085>

¹² <https://www.uc.pt/en/efs>



is designed to provide knowledge in the specific fields of spatial and transport planning and integrated mobility management of urban areas, supported by the concepts of innovation and sustainability. These themes are focused on Urban and Metropolitan problems, also giving attention to the inter-municipal mobility in areas of "low density" (at the scale of the Inter-municipal Communities). In summary, the institution and the city have good practices in the area of sustainability to share, however, there is still a great need to optimize resources and systems so that bicycling or sustainable means of transportation become a habit in the community. This is a challenge that cuts across the country.

MADRID

In recent years, the municipality of Madrid has been making progress in the mobility management process with the aim of reducing emissions related to this sector. In this regard, several actions stand out:

SUSTAINABLE MOBILITY EXECUTIVE ORDER MADRID 360

The new Sustainable Mobility Executive Order was approved on September 13, 2021.

Its articles focus on protecting the life, physical integrity, and health of people by improving air quality and road safety; integrating all modes of mobility by harmonizing and rationalizing the different uses of public space; and promoting efficiency and innovation.

<https://www.madrid360.es/movilidad-sostenible/ordenanza-de-movilidad-sostenible/>

The most impactful tool established by the Executive Order to reduce emissions in the city is the creation of Low Emission Zones.

Low emission zones

With the approval of the new Sustainable Mobility Executive Order on September 13, 2021, the entire city was declared a Low Emission Zone, although the traffic restrictions have been applied progressively from January 1, 2022, until 2025. In the ZBE area, access, and circulation of all vehicles with environmental classification A in the Registry of Vehicles of the General Directorate of Traffic is prohibited.

Likewise, Article 22 of the Sustainable Mobility Executive Order creates the figure of Low Emission Zones of Special Protection in the Downtown District and Plaza Elíptica, since these are territorial areas with aggravated environmental pollution problems.

The Downtown District ZBEDEP was launched on September 22, 2021, and the Plaza Elíptica ZBEDEP on December 22, 2021.

The measures applied in the ZBEDEPs affect the circulation and parking of vehicles, and are as follows:

- General prohibition of access for certain types of vehicles depending on the reason for access and their classification in the DGT Vehicle Register



- according to their polluting potential (marked by their environmental category or badge), construction, use and maximum authorized mass.
- Limitations on the circulation of vehicles depending on the reason for access and their classification in the DGT Vehicle Registry according to their polluting potential, construction, and maximum authorized mass.
 - In the case of the ZBEDEP "Downtown District", the distribution of a minimum percentage of green spaces of the SER of not less than eighty percent of the available regulated parking spaces to facilitate parking for residents in that area.
 - Speed limits in the entire ZBEDEP or in those parts of it that are delimited.

The ZBEDEPs are equipped with automatic control systems with cameras equipped with OCR readers installed at their perimeters, and other instruments for detecting infractions.

Madrid 360 Executive Order and active mobility

The Executive Order reinforces road safety on urban roads, especially on sidewalks and pedestrian areas, and for the most vulnerable groups such as minors, dependent persons, people with reduced mobility, etc.

- It is committed to the protection of pedestrians, raising from one to one and a half meters, the distance that a cyclist must keep from a pedestrian and also from the facades, thus avoiding running over any pedestrian coming out of an establishment or doorway, for example.
- The speed of bicycles is reduced from 20 km/h to 15 km/h on bike paths, where the walker has priority.
- Bicycles may circulate in both directions of travel in bicycle lanes, residential streets and single-platform streets limited to 20 km/h, and where in these cases, bicycles will have priority of way; they may also circulate in parks and urban public gardens on roads of more than 3 meters wide.
- The circulation of multitandem bicycles or multiple pedaling bicycles for parties and events is prohibited throughout the municipality.
- Vehicle speeds in school environments are reduced to 20 km/h for all vehicles.
- The speed for motor vehicles is limited from 20 km/h to 15 km/h on urban roads with a single platform of roadway and sidewalk when there are no separating elements between them (bollards).
- Children under 15 years of age may ride Personal Mobility Vehicles, provided they are accompanied on another scooter by an adult and under the responsibility of their parents or guardians.
- Persons under 18 years of age, whether they are drivers of bicycles or VMPs, must wear an approved or certified helmet; riders who carry out the economic activity of distribution of goods or transport of persons are obliged to wear it, regardless of age (art. 167.2 and 172.2.).



- Motor vehicles have to keep 5 meters distance with VMPs if driving behind them, and to change lanes to overtake them and VMPs are allowed to use the lane of the traffic circle they need to make themselves more predictable and visible without other vehicles cutting their path.
- Bicycles may circulate through tunnels unless expressly prohibited, always with the corresponding approved lighting.
- VMPs may circulate in multimodal vehicles, lanes with a speed limit of 30 km/h or less, with the obligation to circulate with an approved helmet and be illuminated as provided for in the General Traffic Regulations.

The Mobility Executive Order and bicycle transportation in Madrid

The main guidelines of the Sustainable Mobility Executive Order regarding bicycles are as follows:

- Consideration of bicycles:

The regulation of bicycles also applies to all other cycles and to pedal bicycles with pedal assisted by an electric motor with a maximum power of 250 watts and a maximum speed of 25 kilometers per hour.

- Road safety:

Persons under eighteen years of age must protect their heads by wearing an approved or certified helmet when riding bicycles.

- General conditions of circulation:

Bicycles may choose to circulate on the roadway, in specific lanes or areas designated for this purpose. On streets with more than one lane in each direction, bicycles shall ride preferably in the rightmost lane adjacent to the reserved lane (bus lane), unless the signage expressly permits bicycles to ride in that lane.

For reasons of road safety, bicycles shall circulate on the roadway occupying the central part of the lane, without prejudice to the possibility of using the rest of the lane to adapt to traffic and road conditions.

Two cyclists are allowed to ride side by side in the same traffic lane, unless it is a reserved lane or poses a risk to other cyclists or road users.

Bicycles have free access to the Low Emission Special Protection Zones (ZBEDEP) of Distrito Centro and Plaza Elíptica.

Bicycles are prohibited from circulating on the M-30 and its accesses, but may circulate with extreme caution in the tunnels of the city of Madrid, unless otherwise indicated, provided that they use front and rear lighting in accordance with the General Traffic Regulations.

- Advanced stop lines at crossings with traffic lights (avanzabicis):

In order to promote the circulation and road safety of bicycles, advanced stop lines (avanza bicis) may be signaled to ensure the priority of these vehicles at traffic light exits, provided that the technical conditions of the road allow it.



- General prohibition of circulation on sidewalks, except for sidewalks-bicycles and children under twelve years of age:

The circulation of bicycles on sidewalks, streets and pedestrian areas is expressly prohibited, except on sidewalk-bikes with a maximum speed of 10 km/h.

Children under 12 years of age may ride bicycles at a speed not exceeding 5 km/h and respecting pedestrian priority: on sidewalks, pedestrian zones and pedestrian streets that have not been declared of special protection for pedestrians provided they are accompanied by an adult person on foot and on walks in public parks and gardens.

- Bicycles may circulate in both directions on single-platform residential streets with a maximum speed limit of 20 km/h; on bicycle lanes; and on streets with a speed limit of 30 km/h where expressly marked:

Bicycles, without putting pedestrians at risk, may circulate in both directions of travel in bicycle lanes, single-platform residential streets limited to 20 km/h, except when there is specific signage prohibiting it and in those streets that, although limited to 30 km/h, are so marked.

- Bicycles may circulate at a maximum speed of fifteen kilometers per hour inside parks and gardens when there are bicycle paths:

Within urban public parks and gardens, bicycles may circulate on paths of more than 3 meters wide, which will be considered as a cycle path, whereby the cyclist must circulate at a maximum speed of 15 km/h, respecting at all times the pedestrian priority, which will be reduced to 5 km/h when there is no differentiated space for pedestrians on the days and times of greater intensity of pedestrian traffic.

- The driver of bicycles linked to an economic activity of transporting other persons or goods must wear a helmet:

The driver of a bicycle that circulates in the development of an economic activity of transporting people, cargo or pets must use an approved or certified helmet while driving, have contracted civil liability insurance and submit the vehicle to preventive and corrective maintenance.

- Cycles with more than five occupants (including 'bici-beers' and similar) are prohibited:

For reasons of road safety in a specifically urban context, the circulation of cycles configured for occupancy by more than five occupants is prohibited, including multiple cycles sometimes used for the celebration of festivals or tourist or recreational itineraries. However, the use of cycles with more than five occupants for school transport by bicycle (bicycle bus) or other purposes may be authorized from time to time.

The circulation of multi-tandem or multi-pedal bicycles used for parties and special events will also be generally prohibited, unless authorized by the



municipality, and subject to itineraries, zones and schedules for their circulation.

- Voluntary bike registration (mandatory for rentals):

The operating regime of the municipal bicycle registry (Bici-register) is regulated, in which registration would continue to be voluntary except for bicycles or cycles for rent, distribution of goods or other economic activities.

- Parking in municipal parking lots with specific tariffs. On public roads, forks will be placed preferably on parking strips:

Both subway or closed municipal parking lots managed directly by the City Council (through the EMT) for rotation (by minutes or hours), as well as those for residents will offer bicycle parking spaces at a specific rate.

On-street bicycle parking would be located in priority on the parking strips of the roadway (therefore, not on the sidewalk except in exceptional cases) and preferably in those configured in line and may also be used by personal mobility vehicles (electric scooters and 'segways'). Bicycles may also use parking reserves for motorcycles.

- Removal of bicycles for reasons of road safety, pedestrian traffic, or damage to municipal property:

Those bicycles that are not in a condition for circulation and safe use by users shall be removed by their owner, who may not place them in the public space or lease their use until they have been repaired or replaced by others that are safe and fully operational.

Failure to comply with these obligations would entitle the Madrid City Council to remove the bicycles at the owner's expense.

BICIMAD is regulated:

The Sustainable Mobility Executive Order establishes the conditions for the regulation of the municipal bicycle rental service 'BiciMAD', designed to promote cycling exclusively on the urban roads of the city of Madrid.

General rules for the operation of the service, user obligations and prohibitions are defined. The economic use of BiciMAD bicycles (e.g., for transporting goods) will be permitted, although no cargo transported will be insured.

- It provides for bicycle parking next to the intermodal areas:

In order to promote multimodal transport and sustainable mobility, bicycle parking reserves are to be set up in the vicinity of intermodal areas.

- Bicycles for rent and shared use: insurance, registration, redistribution, maintenance and technical controls. Concession for city-wide coverage and responsible use of public space:

Bicycle rental and shared use services are expressly regulated. The company owning the bicycles must register the bicycles in the municipal bicycle registry (Bici-register) and must have an insurance policy covering civil liability for damages that may be caused to the user, other persons and property, as well as to the municipal assets.



They shall be subject to the schedule of controls and preventive and corrective maintenance activities required by the technical service of the owner, manufacturer, distributor or authorized third party.

Bicycle sharing services are subject to the authorization for the special use of the local public domain consisting of parking on municipal roads and public spaces for lease without a fixed base.

CYCLING ROUTES NETWORK OF MADRID

In 2008, the Madrid City Council designed a Cycling Mobility Master Plan that defines and configures the municipal policy regarding cycling, both in terms of infrastructure, regulations, promotion and municipal management. In 2016, a review and update of said Cycling Mobility Master Plan was carried out, with which the new intervention strategies in cycling matters by the Madrid City Council are defined.

https://geoportal.madrid.es/IDEAM_WBGEOPORTAL/visor_ide.iam?ArcGIS=htps://sigma.madrid.es/hosted/rest/services/OBRAS/INFRAESTRUCTURA_CICLISTA/MapServer

The map of the cycling network of the municipality of Madrid, provided by the Madrid City Council includes:

- The layout and definition of the different types of cycling infrastructure in the city, both for exclusive and preferential use, as well as those roads or streets conditioned for cycling use in shared sections.
- The Basic Network defined by the Review and Update of the Bicycle Mobility Master Plan with an execution horizon of 2025.
- New projects under execution.

The map shows several types of bicycle paths:

1. Green Cycle Ring: Cycle lane with a circular route around the urban area of Madrid, mostly paved and segregated from vehicular traffic. Although much of its route runs through green areas, it sometimes has to make its way into the purely urban fabric. The crossings of streets and avenues are properly signposted and conditioned for cyclists to cross. Radial infrastructures such as highways or railways are crossed by footbridges (orange color).
2. Exclusive bicycle lane: lane specifically prepared for bicycle traffic, with the corresponding horizontal and/or vertical signage (green color).
 - Bicycle lane: Roadway lane for the exclusive use of bicycles marked with the corresponding road markings. It may have separating strips as road markings.
 - Cycle lane: Cycle Lane on its own platform, independent of the roadway and sidewalks. The differentiation from the sidewalk and/or the roadway can be by means of a difference in elevation (greater than 3 cm, in the case of the sidewalk) and/or a continuous segregation.



- Bicycle sidewalk: Bicycle Lane at the level of the sidewalk without continuous physical segregation elements. That is, the bikeway is accessible to pedestrians. This occurs when there is no segregation or when it is discontinuous (e.g., strip of trees) or when it is at a level of less than 3 cm.
 - Cycle path: Paths for pedestrians and cycles that run through open spaces, parks, gardens, or forests independently of the layout of motorized roads.
 - Bicycle shoulder: Specially prepared shoulder for bicycle traffic.
 - Routing: Itinerary within a sidewalk where cycling is allowed in order to provide continuity.
 - Bicycle crossings: Cycle paths that provide continuity and facilitate the circulation of bicycles.
 - Leisure circuits: Exclusive bicycle circuits, generally located in parks and green areas.
3. Preferential use for bicycles: Specifically designated and preferential use for bicycles (magenta color).
- Recommended band: Band of the roadway reserved preferably for bicycle traffic. It is not for exclusive use, but motor vehicles should only tread on it or invade it in exceptional cases and as long as it does not cause discomfort or road insecurity for the cyclist.
 - Mixed roadway: Roadway restricted to general traffic on which cyclists are allowed to circulate in coexistence with certain types of vehicles.
 - Cycle-street: Exclusive or preferential street for the circulation of bicycles in both directions. If motor vehicle traffic is foreseen, a corresponding vertical sign must be placed to authorize this use. By default, the only vehicles that can circulate on the Ciclocalle are bicycles (there is none at present).
4. Shared use road for bicycle use: Road adapted to improve bicycle circulation, but without reserving exclusive or preferential spaces, they have elements by means of which the public road is adapted for bicycle use in shared sections. The bicycle will not have an exclusive or preferential use in them (blue color).
- Cycle lane: Lane specially prepared for bicycle use where circulation is shared with other vehicles, the cyclist does not enjoy exclusive or preferential use. In these lanes, motorized vehicles must circulate at a maximum speed of 30 km/h, or less if specifically marked.
 - Counter-current circulation: Local streets where counter-current cycling by bicyclists is authorized. These are usually streets in traffic calming areas marked as Zone 30 or "S-28" and where the intensities and speeds are so low that the circulation in the opposite direction to motorized traffic does not affect road safety. (not currently marked)
 - Authorized bus lane: Lanes or platforms reserved for the circulation of buses and bicycles (none currently exist).



5. Turns and directions allowed for bicycles: Turns and directions allowed for bicycles (yellow color)
 - Bicycles allowed to circulate: direction of circulation allowed for bicycles.
 - Bicycle turns allowed: Bicycle turns allowed.

As mentioned above, the **Green Cycle Ring** is a cycling path with a circular route around the urban center of Madrid, with a length of almost 65 kilometers, most of which is a well-paved lane segregated from vehicular traffic, as can be seen in the following illustration.

The first phase of the Castellana bike lane project, which began in April 2022, is currently under construction.

This is a commitment made by all the groups of the Madrid City Council in the Agreements of the City and is included in the Madrid 360 Environmental Sustainability Strategy as a key measure to promote cycling, pedestrian mobility and the promotion of public transport. With regard to cycling mobility, according to calculations made by the Environment and Mobility Area, it will allow an increase of up to 4,000 daily bicycle trips in the axis. This is 3,000 more than the current number. In addition, it is estimated that there will be a transfer from private vehicles and motorcycles to bicycles of up to 1,400 daily trips. This infrastructure will improve environmental quality by reducing by up to 10% the number of trips now made by car or motorcycle. The modal shift is calculated taking into account only those vehicles whose origin and destination is in the Castellana axis, which implies an accumulated reduction of more than 1 million kilometers per year by car and the reduction of 187 tons of CO₂ and 319,000 kilograms of NO_x.

Source: Madrid City Council: <https://diario.madrid.es/blog/notas-de-prensa/comienzo-la-construccion-del-primer-tramo-del-carril-bici-de-castellana/>

BICIMAD - Madrid's public bicycle sharing service.

In an attempt to rethink the use of bicycles as a means of daily transport, at the beginning of the 21st century, different governments of developed European countries created public bicycle rental services to encourage the easy use of bicycles. This has also been the case of BiciMAD, the public bicycle service of the Madrid City Council, which is managed by the Environment and Mobility Area.

It was born in 2014, seven years later than the public bicycle service in Paris - Vélib', or in Barcelona - Bicing. A great challenge for the Madrid geography and the rail infrastructure of the Spanish capital. In 2016 takes possession of BiciMAD the Municipal Transport Company of Madrid (EMT), with the aim of making this service a benchmark as a means of urban transport in Madrid. (Mirea, Emilia N. (2017). "Towards a sustainable mobility in Madrid: A communicative strategy to improve the BiciMAD service", in Mediaciones Sociales).

It currently (March 2023) has 7,500 bikes and 611 stations, which are spread



throughout the city's 21 districts.

Starting this March 2023, 'bicimad' users will ride a bicycle equipped with GPS, a display to know the battery status and speed, anti-puncture tires or brake light, and will offer up to 70 kilometers of autonomy. And when they arrive at their destination, they will be able to park on a base that is full, simply by locking the vandal-proof padlock incorporated in the new model. This is Madrid City Council's revamped public bike system, which will expand to all 21 districts of the capital by June, expanding the supply of bicycles from the current 2,964 to 7,500 by the end of June 2023.

The new user experience will be accompanied by a new application: 'MPass'. A single account system that will be associated with all the services of the Empresa Municipal de Transportes (EMT) -bus, parking, bicimad and bicycle parking-, as historically demanded by the people of Madrid. It will no longer be necessary to pre-load the wallet. It will be enough to open an MPass profile as a means of payment on which the trips made or the subscriptions contracted will be charged. And you will be able to access the bicycle with your cell phone.

The renovation of Madrid's new public bicycle system, 'BiciMAD', will be accompanied by almost five months free of charge. From next Tuesday, March 7 at 00:00 hours and until July 31, all citizens will be able to ride the electric bikes at zero cost and unlimited.

SHARED MOBILITY VEHICLES

Shared mobility is another major commitment to promoting more sustainable mobility in the municipality of Madrid.

<https://www.madrid.es/portales/munimadrid/es/Inicio/Movilidad-y-transportes/Servicios-de-movilidad-compartida-sin-base-fija/?vgnnextfmt=default&vgnnextoid=65bd97f7dec76610VgnVCM1000001d4a900aRCRD&vgnnextchannel=220e31d3b28fe410VgnVCM1000000b205a0aRCRD>

Cars (carsharing)

Carsharing is a car sharing service in which the user rents the vehicle for short periods of time (in most cases minutes, although it can also be hours or full days).

Madrid is one of the European cities with more car sharing companies. Currently, 6 companies provide this service. The first of them was implemented in November 2015 and the last one in December 2022, achieving a total of more than 1,300,000 users in the city, with a fleet of around 3,500 vehicles.

The Sustainable Mobility Executive Order regulates the circulation and parking of vehicles for short term rental without a driver, billable by time and through a technological platform that allows hiring and accessing the service autonomously, locating the location of the vehicle parked on public roads and concluding with the parking of the same also on public roads, without restrictions in Low Emission Zones.



Motorcycles (motosharing)

Motosharing is a motorcycle sharing service in which the user can rent a motorcycle for as long as needed so that it can then be used by other people. In Madrid, 6 companies currently provide services.

In order to enjoy this service, you only have to download the app of one of them and look for the nearest motorcycle to the applicant's location.

In addition to the above, it is a very flexible, affordable, easy to use and efficient transport solution. The companies are responsible for insurance and for providing the helmet in accordance with current regulations. As with other shared mobility vehicles, users benefit from an alternative to private vehicles, eliminating the costs associated with ownership, taxes, insurance, maintenance, cleaning, etcetera.

The new Sustainable Mobility Executive Order regulates the circulation and parking of vehicles (including motorcycles) for short-term rental without a driver, billable by time and through a technological platform that allows hiring and accessing the service autonomously, locating the location of the vehicle parked on public roads and concluding with the parking of the vehicle also on public roads.

Bicycles (bike sharing)

Bike sharing is a bicycle sharing service in which the user can rent an electric bicycle with pedals for as long as needed so that it can then be used by other people.

Shared electric scooters and VMPs

Electric scooters and shared-use personal mobility vehicles can be rented by users for as long as needed and can then be used by others.

The operation is similar to that of other shared mobility services, you must register in an application, accept the conditions and rules of use. The personal mobility vehicles have a GPS location.

In Madrid, the Decree of September 28, 2022, of the Delegate of the Government Area of Environment and Mobility, which approves the call for the authorization procedure for the special use of the municipal public domain for the lease of electric scooters without a fixed base and determines its conditions, has been published in the BOAM No. 9240 of October 10, 2022.

Madrid's new Mobility Executive Order also establishes what is and is not allowed with shared electric scooters.

You can:

- riding on bike lanes and roadways in 30 zones
- riding in parks where the use of bicycles is permitted
- parking in motorcycle or bike zones and sometimes on the sidewalk, but always next to the curb

It is not possible:

- driving on sidewalks, bus lanes and streets with more than one lane in each direction



- driving on accesses and stretches of the M-30 without traffic lights

There are currently 3 shared electric scooter companies, with 6,000 scooters on the streets distributed by neighborhoods and districts, so that the companies must redistribute their fleet so that every day there are in each neighborhood the number of authorized scooters.

SUSTAINABLE MOBILITY PLAN MADRID 360

The Sustainable Mobility Plan, approved in July 2022, gives continuity to the Madrid 360 Environmental Strategy, which was presented in September 2019, specifying, completing and developing the mobility actions included in it. It is a key planning instrument that will backbone the capital's mobility policies until 2030.

The general objective of the Plan is to achieve safe, healthy, sustainable and efficient mobility (Smart). These purposes are mainly linked to road safety, air quality or reduction of greenhouse gas emissions and the strategic axes that are projected to achieve them are constituted by the prioritization of modes, being the pedestrian the universal and priority mode.

The plan sets five objectives for 2030: to reduce travel time on public transport by an average of 32.5%; to reduce traffic congestion by up to 10%; to reduce CO2 emissions by 65% compared to 1990; to achieve better air quality; and to reduce road fatalities and serious casualties by 50%.

The Climate Change and Sustainable Economy Law requires cities with more than 50,000 inhabitants to approve a document of this type, and it is mandatory for cities to have a mobility plan in order to receive European funds. The document is structured in ten strategic lines with more than 120 actions: The strategic axes are:

1. For better and more public transportation.
2. Improvement of transportation infrastructure.
3. The promotion of active mobility, on foot and by bicycle.
4. Parking lot management based on sustainability criteria.
5. Facilitate modal integration through micro-mobility and intermodality;
6. Stimulate the change of the vehicle fleet to less polluting vehicles;
7. Promote technological change and optimization of urban distribution of goods;
8. The application of innovative technological and logistical elements to optimize mobility services;
9. Moving towards safe mobility;
10. Encourage responsible mobility through education, information and governance.

Regarding Axis 3. Promotion of active mobility, on foot and by bicycle, the actions proposed by the Plan are:

- 35 kilometers of new bike lanes will be provided by 2025.
- 20,000 spaces will be reserved for bicycle and VMP parking.

The BiciMAD system will be expanded to 10,000 bicycles



3. DESCRIPTION OF THE INSTITUTION (UNIVERSITY INVOLVED IN 3CS) SITUATION CONCERNING COMMUTING BY BICYCLE AND ACTIVE MODES IN GENERAL, BOTH BY STAFF AND STUDENTS

PAUL VALÉRY MONTPELLIER 3 UNIVERSITY

As a company hiring more than 100 workers on a site located within a territory on which an urban transport plan (PDU- *Plan de déplacements urbains*) is deployed, Paul Valéry Montpellier 3 University is required to set up a mobility plan by article 51 of the energy transition law for green growth (LTECV) dating from 2015. According to the university's latest carbon footprint assessment study (published in 2020 for the year 2019), approximately 61.2% of CO² emissions, i.e. 8,156 tCO²e come from home-work and international travel. Daily trips to go to university represent 23% of CO² emissions, i.e. 1,890 tCO²e. The international travel represents 73% of emissions, or 5,990 tCO²e. The university's mobility plan must therefore make it possible to meet the objectives set in the framework of its Carbon Assessment action plan and promote soft mobility, by developing cycling infrastructures on campus, by implementing various initiatives and by rethinking the organization of the working environment (involving in particular the promotion of teleworking).

To meet its commitments, the University, as part of Operation Campus, has led the Aménagements Coeur de Campus project, which is an operation of landscaping, and has already enabled the installation of 573 bicycle parking lots, 6 charging points for electric bicycles, 1 inflation station for bicycles, as well as new paths promoting gentle travel within the campus. The university has set up a fleet of 8 electric bicycles to connect the different campus and favor inter-site journeys. Difficulties in managing the service (reservation, parking, etc.) however did not allow its full use. The service, which at first remained very confidential, was then gradually abandoned. These bikes are now used as part of electric bike learning sessions, carried out on a voluntary basis. Another emblematic and particularly successful action implemented by the university is the bimonthly organization of bicycle repair workshops from September to June of each year, in partnership with a local association (Atelier 34). In addition, the Sustainable Mobility Package allows agents declaring to make 100 round trips by bicycle or by car pooling per year to benefit from financial aid of 200 euros. It should be pointed out that the university and the metropolis have reduced the number of parking for motorized vehicles in and around the university.

Finally, since 2016, Paul Valéry Montpellier University has undertaken studies and invested in the development of bicycle mobility to the campus but also to



reach its various sites in the city. Three major surveys were conducted among lecturers and staff with a response rate of over 30%. The results show that the automobile remains the preferred mode of transportation, but also that it is decreasing considerably (72% in 2016 vs. 54% in 2022) in favour of the bicycle (11% in 2016 vs. 29% in 2022). The modal share for public transportation and walking is low and stable. The trends observed will probably be called into question following the "mobility shock" that should be created by the introduction of free transport policy throughout the Montpellier metropolitan area's public transport network, all the more so when the future line 5 of the tram that will serve the main campus of the university will be operational (its commissioning is planned for 2025).

UNIVERSITY OF TURIN

The University of Turin (UniTO) is one of the oldest, largest and most prestigious Italian public universities, with about 85,000 students, 4,000 employees, and 1,800 research fellows. A large mega-atheneum with a sparse structure, it has about 120 branches in different locations around the city and the suburbs. Its daily activities induce a significant part of the Turin metropolitan area mobility. Research and teaching activities are carried out by its 27 Departments, encompassing all fields of study. UniTO offers a wide range of both bachelor and master courses, plus a significant number of PhDs and other teaching and training activities. A significant number of teaching courses dealing with sustainability issues, as well as some degrees fully focusing on them allows to educate and train a large number of students with the ability to tackle environmental sustainability problems in all areas: industry, public service, administration, research.

The Athenaeum in 2016 launched the Green Office (UniToGO), dedicated to the development of sustainable initiatives in six areas (climate change, energy, food, green public procurement, mobility, and waste management) collected in an Action Plan and in an annual Sustainability Report. The Working Group on mobility, including the University Mobility Manager, aims to strongly increase the modal share of sustainable transport modes and active mobility in home-university trips. The modal share for active mobility (walking and cycling) as well as regional and local public transport (road and rail) and standard - or emerging - form of sharing mobility regarding home-to-work and home-to-study transfers should increase. To reach this goal the mobility working group, as well as the whole Green Office, adopted a 3-step approach:

- Learn: acquire data and information on the present status of mobility choices and on the accessibility of all university buildings;
- Engage and motivate: increase the community awareness on the potential for cleaner, more efficient mobility, create a wide network with other education institutions, local authorities, firms and associations to



develop and share a joint approach to sustainability combining scientific, technical and administrative know-how;

- Change: elaborate incentive policies with economic bonuses and tariffs, regulation of car parking spaces, creation of bike parking; promote the creation of cycle paths reaching the university locations; develop proposals to improve the local transport network that serve university locations.

In the global GreenMetric ranking, which annually measures the performance of universities on environmental sustainability, the University of Turin in 2022 is fourth in Italy (among 34 institutions) and twenty-second among the more than a thousand participating universities from all over the world.

UniTO has a leading role in the main university networks on sustainable mobility at national level RUS (Network of Universities for Sustainable Development - Mobility) and at European level (U- MOB Life Project - Green in motion).

Since 2019, the University of Turin has joined the *European Network for Sustainable Mobility at University U-MOB LIFE*, which groups 85 universities committed to promoting sustainable mobility in their communities. U-MOB primary objective is to create a university network to facilitate the sharing of good practices in the field, as well as to raise awareness of the need to reduce CO2 emissions in European universities.

Aiming at acquiring an in-depth knowledge of its community mobility behaviour, UniTO conducted two large surveys on mobility choices in 2016 and 2020 that are today the basis for the strategy of intervention to change its modal share. Both survey were conducted in coordination with the RUS network at the national level, and collected data from very large samples of around twenty thousand respondents for Turin alone.

In 2016, 76% of the community of the University of Turin made fully sustainable journeys on foot, by bicycle and by public transport, 14% of the community made totally unsustainable journeys using a private car for the entire journey, while the remaining 9% made moderately sustainable journeys by combining private cars with other, more sustainable, means of transport.

Regarding cycling mobility, the 2016 survey shows that in the summer 8.98% of the community chose the bicycle for the home-to-university commuting, while in winter the amount dropped to 3.9%. The 2020 survey shows some improvement, moving from 3,9 to 5,8% 5% of the whole community cycling to university: the figure is now 4,9% for students, 12,9% for teachers and 8,38% for the administrative staff. The fact that young students cycle less than teachers may be quite striking, but it shows that things can certainly improve further.

To encourage the use of bicycles in the home-university commuting, about 700 bike parking spaces have been installed in university areas in different locations. The University's bicycle racks are added to those installed by the Municipality on public land and used by students and workers. The University has also built a secure bicycle park in the underground garage of one of the main campuses. It is hoped that the possibility to park the bicycle in an easy



and safe way, reducing the risk of theft or damage, will encourage the adoption of bicycles as a means of daily travel.

UniTO organises numerous events and seminars to raise awareness on the use of bicycles as a means of transport. Every year it joins the European Week for Sustainable Mobility and World Bicycle Day with engagement events, in collaboration with students and environmental associations.

In 2021 UniTO won the first tournament between European universities for sustainable mobility, organised as part of the U-Mob Life project. The challenge between 16 universities involved tracking their sustainable travel (active, sharing of public transport mobility) through the MUV (a partner of the 3Cs project as well) app. A large team - 1,098 members strong - was formed to cover a total of 164,783 km. 81% of the players from Turin preferred public transport, 11% walked, 6% chose a bicycle or e-scooter, and only 2% shared a car with another team player.

In addition to initiatives to support cycling, the University is active in various areas of sustainable mobility: support for sharing mobility (agreements with discounts for the university community for sharing services like bicycles, electric scooters, electric moped and cars); support for electric mobility (installation of 16 charging points at two of the largest campuses with energy from renewable sources); support to mobility with public transport and to inter-modality (discounts rates on urban and suburban public transport passes for employees and students and can park for free in some interchange parking lots in the city, activation of shuttles and/or bus lines for the connection of some decentralized seats); communication (communication activity to promoting a friendly environmental travel from home to university with official websites and social network).

UNIVERTY OF COIMBRA

In 2022, the Portuguese Sustainable Campus Network (RCS) promoted a survey about Sustainable Mobility in Higher Education in Portugal developed by the RCS working group on Mobility. The survey results show that the modal share for the University of Coimbra users: car (69%), car passenger (4%), walking (13%), bus (13%) and train (1%), with no relevance for the bicycle. A similar situation can be observed at the Coimbra Polytechnic Institute users: car (55%), car passenger (5%), walking (26%), bus (10%), train (3%) and motorcycle (1%). However, concerning the possibility of a modal change to the bicycle, 11% of the respondents at the University of Coimbra and 8% at the Coimbra Polytechnic Institute are willing to use it.

A previous report concerning the city of Coimbra and based on a mobility survey done in 2006 - for the planned system of Coimbra Light Rail - contains similar information for university students (including Polytechnic and University of Coimbra): car (20%), walking (54%), bus + train (25%) and taxi (1%). However, the global modal share for the City of Coimbra presented in this 2006 study is car (69%), walking (12%), bus + train (18%) and taxi (1%). Therefore, there



was no significant evolution in sustainable mobility at the University of Coimbra during these last 15 years.

Several initiatives have been developed at the University of Coimbra focusing on sustainable mobility, including activities within the EUROPEAN MOBILITY Week framework:

- "Is Coimbra cyclable?"¹³ (September 2021);
- Workshop on Mobility Habits and Health¹⁴ (September 2022): Survey on Mobility Habits and physical tests.

CAMILO JOSÉ CELA UNIVERSITY

Camilo José Cela University has six campuses, with very different locations and environments:

1. VILLAFRANCA CAMPUS

Located at C/Castillo de Alarcón, 49 28692, Villanueva de la Cañada, Madrid, Spain. It is the Central Campus of the Camilo José Cela University. It is a non-urban campus, located in the northeast of the metropolitan area of Madrid.

2. MADRID-ALMAGRO CAMPUS

Located at C/ Almagro, 5, 28010 Madrid. The Almagro Campus serves as a link between the university and the professional world. Located in a historic building dating back to 1920, it is very close to the socioeconomic, business and cultural center of Madrid. It is an urban campus, located in a very central area of the city with great accessibility by public transportation.

3. MADRID-CASTELLANA CAMPUS

The new Castellana Campus of the Camilo José Cela University is located on Juan Hurtado de Mendoza Street, next to Paseo de la Castellana, between Cuzco and Plaza de Castilla. The building has four floors and a surface area of 11,319 square meters, 3,226 of which are green outdoor work areas. The Castellana Campus, committed to sustainability from its architectural conception, has bicycle parking facilities (as well as showers for cyclists) and parking spaces for carsharing vehicles and eco-vehicles. It also has parking spaces with plugs for electric vehicles in its parking lot.

4. CAMPUS DE MADRID-ESPACIO ALAMEDA

5. CAMPUS DE LA SALUD-MONTEPRÍNCIPE

Opening next academic year 2023-2024. Located in Boadilla del Monte, specifically in the facilities of the HM Montepíncipe Hospital.

6. CAMPUS GOLETA CERVANTES SAAVEDRA

Since 2007, the schooner Cervantes Saavedra houses the Center for Maritime Studies (CEM) of the Camilo José Cela University, aimed at marine research and professional training related to the sea, such as courses for the IMO Convention "STCW 95" competence certifications for seafarers. The Campus is located in the Marina of the Port of Valencia.

¹³ www.uc.pt/en/efs/article?key=a-dc4c9aa16d

¹⁴ <https://www.uc.pt/en/efs/article?key=a-dc4c9aa16d>



Since the beginning of the 2022-2023 academic year, a shuttle service managed by the University has been in operation, linking the Villafranca Campus with two points: the HM Puerta del Sur Hospital in Móstoles, and the Plaza de Moncloa.

Promotion of Sustainable Mobility

The UCJC has been holding the UCJC Sustainable Mobility Day for several years, which promotes accessibility to the Campus by sustainable modes, mainly carpooling and carsharing¹⁵.

The UCJC and the bicycle

A mountain biking group¹⁶ has been in existence at UCJC since 2017.

¹⁵ <https://blogs.ucjc.edu/ucjc-life/2020/01/23/dia-de-la-movilidad-sostenible-en-la-ucjc/>

¹⁶ <https://blogs.ucjc.edu/ucjc-life/2017/02/10/arranca-el-club-de-mtb-de-la-ucjc/>