

Barcelona Global Challenge[®]

Mobility, Barcelona's tool for achieving sustainable development

Executive Summary

Mobility is essential for guaranteeing Barcelona's competitiveness and sustainability, but it must be planned and managed for the entire Greater Barcelona metropolitan area as a whole, with all local administrations and public and private transport companies working together. Ease of movement and the environmental and financial sustainability of the system must be guiding principles, while investments and infrastructures must be implemented rapidly and with complete transparency. Technology and digitalization are well set to play an important role in the development of Barcelona and suitable timescales, infrastructures, and incentives must be put in place in order to achieve decarbonization.

Introduction

Barcelona Global and Mobility

In October 2020, Barcelona Global presented a report entitled "Barcelona Global Challenge: the challenge of metropolitan and sustainable mobility." The report included nine broad agreements and fifteen specific proposals on how to improve mobility in the Greater Barcelona Metropolitan Area. Following the work carried out by more than 60 members and experts in mobility, Barcelona Global organized a series of meetings with a range of public and private decision-makers to convey the proposals contained in the report.

Two years on, most of the disruptions caused by the pandemic are now behind us, and Barcelona Global has updated its proposals. In a few months, the city and the rest of the metropolitan municipalities will be holding municipal elections, for which the essential debate on mobility must be approached with the necessary rigor.

The mission of Barcelona Global, a private, independent, non-profit association with more than 1000 members, is to make Barcelona one of the best cities in the world for talent. We understand that ease of movement is essential for achieving a higher quality of life and greater competitiveness. Currently in the midst of changes of great magnitude, the mobility sector needs to ensure it achieves the appropriate mix of transport options to cover the entire metropolitan area. Mobility must be completely sustainable, accessible to all stakeholders, efficient, fluid, and it must ensure that the entire metropolitan area is competitive.

Barcelona must be a benchmark for urban mobility.

Barcelona is in a position to become a global benchmark in urban mobility, a sector that is undergoing major change. Barcelona must be able to offer world-leading, sustainable, and efficient mobility solutions. According to the Deloitte Mobility Index, which evaluates mobility in 100 major global cities, most cities are moving away from car-centric mobility. Examples include Amsterdam, which has introduced limitations to car use in narrow streets, and London, New York, and Copenhagen, which all apply various forms of congestion charge. Experience has also been gained in regulations to encourage shared mobility. In many cities, the initial enthusiasm for technology and individual e-vehicles has led on to regulated data-driven solutions. Lastly, there is a global trend towards the intensive use of technology and digitization, with an increase in technological solutions in a range of areas: traffic signal regulation, vehicle connectivity, and MaaS (mobility as a service), which puts customers at the center by allowing them to plan trips, book the means of transport, use only one ticket, and base their payment on their own personal profile and needs for the specific journey.

Barcelona is the only Spanish city analyzed in the study and ranks high in many of the indicators. It is a 'global leader' in vision/strategy and accessibility, and is a 'top performer' in modal diversity, air quality, customer satisfaction, and congestion. Nevertheless, it has a long way to go in matters relating to pollution, regulation, and digitization.

The necessary metropolitan perspective

We need a metropolitan approach to mobility in Barcelona that is more than just the sum of local views, with local administrations listening better and working together on the major long-term issues, and increasing public-private collaboration. We need to get away from tactical solutions, and ensure more rigorous planning and execution, and more agile investment. Barcelona needs to take advantage of the opportunity to become a benchmark for new solutions for urban mobility, which needs to be planned and managed with the entire metropolitan area in mind.

In order to work effectively, the metropolitan approach must include all the local administrations and public and private mobility operators, as is already the case in the main metropolises around the world.

The characteristics and competitive advantages of Barcelona in urban mobility

In the field of mobility, Barcelona has a number of competitive advantages that could make it a benchmark of the new urban mobility. These are: (1) an **exemplary city design**, the most famous example being the world-famous Eixample; (2) an enviable **mix of mobility** in the city center that includes walking, public transport, car use, cycling, and the new e-vehicles; (3) an **urban density** that is among the highest in the world, making it possible to deploy sustainable and efficient public transport networks; (4) an exceptional and, in some cases pioneering, **public transport network** in the central metropolitan area, including international benchmarks such as the TMB and FGC, and a fleet of buses with a large number of electric, hydrogen, gas, and hybrid vehicles, and one of the best automatic subways in the world; (5) an **extensive network of public and private underground car parks**; (6) an increasingly extensive network of **bicycle lanes** in the city of Barcelona; (7) a leading project in the transition to **electromobility** in large cities, with the 'Endolla Barcelona' network; (8) **a track record in innovation by its entrepreneurs** and public and private operators; (9) the presence in Barcelona of **international institutions and events** such as the EIT Urban Mobility, the Smart City Expo World Congress, and Tomorrow Mobility. Together with the Barcelona brand, our approach to mobility could provide us with the necessary international projection to become a global benchmark in urban mobility solutions.

Change and disruption to the urban mobility sector

Urban mobility is currently undergoing rapid change for a range of reasons: climate change, changes in values (especially amongst the younger generations), the progressive aging of the population, digitalization and its impact on people's quality of life, and the need for mobility to access affordable housing, work, leisure, and culture in an effortless, efficient and sustainable manner.

There are five major challenges to urban mobility, which have become even more pressing following the pandemic.

- a) **Climate change:** We need to decarbonize fast, especially in the mobility sector. Rather than simply demonizing cars, however, we need to accelerate the electrification of cars and other means of transport.

- b) **Changing values:** People now want more time for personal and health-related activities, which are seen as essential for quality of life. Experience is now seen as more important than property.
- c) **The metropolitan area:** In recent years there has been a major expansion of activity from the urban to the metropolitan area. In terms of mobility policies, Barcelona has gone from being a municipality with a peripheral metropolitan area to being a metropolitan area at the center of a powerful metropolitan region. This territorial spread is not yet reflected in the way mobility is administered.
- d) **Digital transformation:** We now have access to an enormous amount of data on people's mobility that is still not fully exploited. It needs to be taken advantage of in order to make major improvements in planning and management. The MaaS approach is an essential way of placing the citizen at the center of the entire strategy. Digital transformation involves the need for clear governance to take advantage of the large amount of data available, while the emergence of 5G could bring a paradigm shift in the way mobility is planned and managed.
- e) **An ageing population:** 19% of the inhabitants of the metropolitan area (and 21% of the inhabitants of the city of Barcelona) are over 65 years of age, while 10% of inhabitants are over 75.¹ Moreover, the fact that older inhabitants are no longer in active employment means they are not represented in the decision-making groups on mobility, despite being seriously affected by decisions on mobility.

A commitment to efficient, sustainable mobility in Barcelona is needed in order to reduce negative impacts on health

Barcelona needs to make a commitment to efficient and sustainable mobility. We move when we go to work or for a stroll, when we socialize or go shopping, when we go to our places of study or to cultural events. For the city to function properly we need to get about. Ease of movement is crucial for our quality of life, our health, and our companies' competitiveness, just as it is for access to affordable housing, jobs, culture, and leisure.

The ISGlobal research center asserts that premature deaths and childhood asthma are directly related to air pollution, noise, and a lack of green spaces and physical activity.² It recommends promoting the transition to non-polluting vehicles; physically active mobility (whenever possible); the creation of more green areas; the extension of the 30 km per hour speed limit; the protection of school areas; and more street lighting.

We need to start a conversation about how mobility affects health and to build a consensus on what to do about it (as has been done in the past). We should also promote decision-making based on data and modeling, and develop communication policies based on evidence-based decisions.

Mobility helps to redistribute opportunities, and has a major impact on the quality of life of the people who live in and travel through the Barcelona Metropolitan Area. It also affects the competitiveness of the region and its capacity to attract talent and investment. Mobility must be environmentally and economically sustainable, affordable, accessible, inclusive, fluid, and efficient.

The importance of involving public-private partnerships in strategic planning.

All the local administrations and the most important private and public operators must be involved in the strategic planning and management of metropolitan mobility if we are to achieve the sustainable, efficient, fluid mobility that we desire. Mobility policies must be coordinated with urban planning and the promotion of the economy, and investment must be in line with objectives.

Furthermore, strategic planning must be based on the use of the data and projections and must always be backed up by suitable communication aimed at explaining to the general public the value and importance of the measures taken.

1. IDESCAT 2021

2. <https://www.isglobal.org/-/la-zona-de-bajas-emisiones-zbe-es-una-medida-necesaria-para-reducir-la-contaminacion-del-aire-y-proteger-nuestra-salud>

The Barcelona Global Mobility Challenge

The proposals set out below originated in working groups and discussions with a wide range of actors and experts in urban mobility from numerous different backgrounds. They build on the proposals that were included in the October 2020 document 'Barcelona Global Challenge: the challenge of metropolitan and sustainable mobility.'

The aim of this update is to take on board developments since 2020, including the effects of the pandemic and post-pandemic era. It should be pointed out that this is a series of proposals that have been agreed on by a very wide range of actors and so they should be useful when drawing up city initiatives to be carried out in the coming months.

Changes since 2020

1. The major challenge to be solved is mobility between the metropolitan area and the city of Barcelona. This includes mobility within **the first metropolitan ring**, with a very high number of vehicles entering and leaving (approximately 900,000 trips in private vehicles (not including goods distribution) on working days, and approximately 500,000 passengers in public transport), and within **the second metropolitan ring** (approximately 950,000 private vehicle trips (not including goods distribution), and approximately 500,000 passengers in public transport).³ It is clear that mobility in the Metropolitan Area is not even close to being covered by public transport and that huge investments are required to meet existing commitments. This is a challenge that needs to be urgently addressed by implementing existing public transport commitments (almost €500M by FGC in metropolitan lines and acquisition of trains to the airport, around €3.6 billion by the Catalan Government, of which more than €1.2 billion are for Metro L9). These have been increased recently but still need to be implemented (85% of the budget execution by the Generalitat and 70% by the Spanish Government).

Progress has been made in the following areas, however: investment in rolling stock for Rodalies trains and railways (1,170M€ in 2021) and for improvement of the Rodalies network (with almost 300M€ of the budget implemented in 2020 and more than 250M€ in 2021); in the accesses to Sagrera and in all the subway works around it: in the FGC project to connect FGC Plaça Espanya and

Gràcia by passing through Clínic and Francesc Macià (due to be completed between 2026 and 2027); in the new line to the airport (which FGC expects to put into service at the beginning of 2025 if the construction schedule by ADIF is completed); in the beginning of the Tram connection; in the gradual opening of new L9 stations by the Generalitat de Catalunya; and in the completion of the central section of L9 (planned for 2027 for Campus Nord, Sarrià, Mandri, Putxet, Guinardó, Maragall, La Sagrera and Sagrera TAV, 2028 for Camp Nou, Lesseps, Sanllehy and Manuel Girona, and 2029 for Motors).

2. There has been an excess of **political controversy**, and even judicial intervention, in key aspects, such as mobility in the center of Barcelona, the Low Emission Zone and, above all, the role of private vehicles, whose space is continually being reduced without taking into account the resulting congestion and the need for mobility. These controversies would be avoided if administrations, public and private transport companies, and local businesses in the affected areas all worked together on strategic planning and established clear and measurable objectives. Public space is a scarce commodity that needs much greater consensus and public communication to avoid the current levels of tension and legal action in Barcelona.

With regard to **urban mobility**, the **T-Mobilitat** ticket is finally being implemented this year. There have been long delays, but important innovations in user experience and fare policy are expected. The Barcelona metro network also faces the challenge of increasing frequencies with the necessary investment that this implies. The L9 is due to be finished, along with the new stations and connections to the Sagrera station and the central section.

Now the controversies surrounding **the Tram connection** between Glòries and Francesc Macià are behind us, the project seems to be gaining pace, although the fact that it will only reach Plaça Verdguer provides a partial solution, leaving the two major tramway lines unconnected.

The new horizontal and vertical routes on **the Barcelona bus network** have been rolled out and TMB has also introduced innovative solutions for neighborhood mobility, such as the on-demand service and special services for the elderly. It still needs to increase its commercial speed.

3. Survey on working day mobility (EMEF) 2019 (2020 i 2021 are not good indicators due to the Covid-19 pandemic) https://observatorimobilitat.atm.cat/docs-observatori/enquestes-de-mobilitat/Enquestes_ambit_ATM/EMEF/2019/EMEF_2019_Informe_Resum_Executiu.pdf

4. <http://economia.gencat.cat/ca/ambits-actuacio/analisi-finances-publiques/inversio-publica-catalunya/>

The explosion of new **personal mobility** vehicles, such as e-scooters and bicycles, has created a truly complementary system to public transport in the city, but there is still a need for clearer regulation and management of public space, greater civic-mindedness by users, and public-private collaboration. The **Bicing** system has proven to be a successful way of providing bicycle transport, and is in the process of being electrified. The creation of a public bicycle system for the rest of the Metropolitan Area has also been announced, but the challenge will be to ensure that it is linked to the Barcelona system and public transport. The next step for this form of personal mobility involves clearer rules (use of helmets, safety, and compliance with regulations), coverage throughout the metropolitan area, and improvements in relations with pedestrians, who are vulnerable when these forms of transport are abused.

3. The **gradually ageing population** means there is a need for accessibility and security measures for the most vulnerable and those with fewer mobility options. The aim is to ensure that older people don't become isolated.
4. With the **gradual recovery of mobility** following the final waves of the pandemic, **mobility has become much less fluid**, both in the center of Barcelona and the entrances to the city. This is the result of the so-called "tactical urban planning" that has resulted in a reduction of traffic lanes. There is an urgent need to distinguish between "local measures" and "city measures." City measures have an impact on the overall metropolitan area and affect city axes like Aragó, Via Laietana, Diagonal, Pau Claris, Roger de Llúria, and others. There is also ongoing construction in Via Laietana and the "Green Axes" that seem to have been planned as neighborhood projects, when in reality they should be seen as town planning projects because they affect mobility in the entire Metropolitan area, which feels excluded from debate and the measures that impact them directly. Many different sectors have highlighted how there must be an analysis of the impact on mobility and the effects on local commerce in the affected areas, as well as an overall metropolitan vision, which has been found to be lacking here
5. Under normal conditions, **tourism**, which is recovering rapidly, involves a large number of users and specific mobility patterns. Solutions are needed to make tourist mobility sustainable and efficient, especially with respect to discretionary bus parking. The Estació del Nord may be able to play an important role in this respect. Likewise, the new

line between the airport and the city is expected to bring the airport-city connection up to international standards. The service will be managed by FGC.

6. **Urban goods distribution**, which before the pandemic was mainly B2B, with a small amount of B2C, has now seen massive expansion of B2C. This is a sector that has come to stay and represents a real logistical challenge on which it is necessary to act with determination, consensus and speed, with new sustainable and efficient solutions. It must be said that there are a number of synergies that are already being exploited in existing infrastructures such as the parking network that can be used for logistics and other uses. In terms of logistics, moreover, the Barcelona City Council has agreed with businesses and logistics operators on a number of new bases. This is good news, but the decisions must be accompanied by clear schedules and financing plans. Likewise, there are discussions on a so-called 'Amazon tax' on e-commerce and home service platforms, which, if implemented, must be legally sound and dedicated to improving mobility in the city. In this respect, it is necessary to differentiate between business models that involve repeated home visits due to customers' absences and those that have high delivery rates (and therefore occupy less public space), and the tax must be applied in a way that does not imply a slowdown in the digital evolution of small and medium-sized companies.
7. Most of the tolls in the metropolitan region have been removed, without rigorous alternatives being devised, either for financing road maintenance (which has been transferred to public budgets) or for managing access to Barcelona. The available data on the impact on mobility indicates that there has been a redistribution of traffic, with an increase in congestion in the northern part of the metropolitan ring compared to before the pandemic and an increase of 50% in truck traffic on the C-33 (around 30% on the southern part of the AP-75). There has been no serious debate on the role of tolls, either in the management of metropolitan mobility or the financing of public transport.
8. **Regulations on motorcycle sharing** have been a failure in a city that was a pioneer in this field. This has resulted in services that are insufficient, unsustainable, and cause conflicts between operators. Regulation of motorbike sharing across the metropolitan area needs to be implemented urgently, but is not yet on the official agenda. Likewise, Barcelona has no e-scooter sharing, although they are already common and have

been fully incorporated in traffic, civic and urban space regulations elsewhere. Furthermore, Barcelona also still lacks a carsharing service and the necessary regulations. Examples such as those in Seville or Paris may provide guidance on the necessary updating of metropolitan shared mobility regulations.

9. The Barcelona **Low Emission Zone**, which had just been launched at the time we carried out the first challenge, has been implemented, largely as a way of encouraging people in the metropolitan area to buy more environmentally-friendly cars. The opportunity to recondition vehicles has not been explored, however, and those who have suffered most are people with the lowest incomes. Nevertheless, the reduction in pollution has been limited: between 5% and 7% of particulate matter, and 11% and 17% of NO₂ and Black Carbon respectively between 2016 and 2020. These are worrying levels according to institutions such as ISGlobal. The ZBE is also now subject to incomprehensible litigation in the courts that should cause one to reflect on the quality of the regulations and on the role of the judiciary in these types of issues.

10. Technology and the use of data can do much to improvement mobility. There is an increasing amount of data provided by telecommunication operators and infrastructure operators, but the challenge is to ensure it is used correctly. Urban mobility managers still have much to learn about harnessing the potential of data in their decision-making and network design. The solutions proposed in the taxi sector, for example, are not yet practical as they do not include payment systems. The rapid evolution of technology and the availability of best practices from other cities and global solutions could help to establish solid foundations.

11. The **European NextGen** funds have not yet been fully used to electrify and digitize mobility in the metropolitan area; in fact, the tardy and limited use of NextGen and FEDER funds for improving metropolitan public transport is surprising, a lost opportunity in an area that suffers from a high level of pollution. Furthermore, MaaS systems, which put the customer first, are still far from having been fully rolled out in Barcelona. Lastly, public and private vehicle recharging networks continue to be developed in the city of Barcelona, but there is considerable room for improvement in the metropolitan area as a whole.

12. The **taxi and VTC sector** still need to be modernized, pacified, and decarbonized. No progress has been made in modernizing the sector, which should explore how to use technology to improve its service (and to avoid the circulation of empty cabs, which pollute and cause congestion). The fleet needs to be modernized and decarbonized. New VTC regulations have just been approved and the transport law, which the Generalitat is committed to, is currently pending.

13. Although it is surprising that it was not connected to the Barcelona network at the outset, the **Metropolitan Bicing** network is now being rolled out. Bicing is a pioneer and global benchmark in the field, but up to now it has not been well-connected to surrounding municipalities.

14. **Teleworking**, which has soared as a result of the pandemic, is here to stay, although some of the forecasts about the future of offices and large business districts are gradually proving to be inaccurate. The mobility plans of companies and concentrations of office buildings are an opportunity to improve planning and promote new patterns of shared mobility among people who live and work in similar areas, as well as a new way of approaching rush hours.

15. Some progress has been made in the use of **renewable energies** for public transport, with projects for the electrification of the TMB bus fleet, the introduction of the use of hydrogen as a fuel for buses, and the optimization of electric energy in the subway, although there is still little progress in the taxi sector.

BSM's **Endolla Barcelona** electro-mobility network has brought electric recharging points to the city of Barcelona. The network has more than 600 points around the city that share the infrastructure with private operators in an example of public-private collaboration. There are also charging points in the SABA and BAMSA car parks. By contrast, the rest of the Metropolitan Region is moving at a slower pace, as is the taxi sector...

There are many advances, but we are still far from having achieved the world-leading, efficient, sustainable, affordable, accessible, fluid and competitive mobility that Metropolitan Barcelona needs and deserves.

5. <https://www.elpuntavui.cat/societat/article/12-infraestructures/2082176-el-transit-recupera-el-volum-i-les-cues.html>

6. Zona de Baixes Emissions Rondes de Barcelona – Informe d'implantació i seguiment. Ajuntament de Barcelona. <https://ajuntament.barcelona.cat/premsa/wp-content/uploads/2022/03/Informe-implantacio-ZBE-VFFFdef.pdf>

Broad agreements for a new mobility deal

Mobility in the metropolitan area should be **safe, sustainable, fluid, connected, and user-centered**. There is still a long way to go until that is achieved.

Mobility policies in the Barcelona Metropolitan area involve many different approaches, many of which work well, but they are not part of an agreed overall strategy to maintain and strengthen the city's position as a leisure and business destination and to ensure citizens' quality of life.

The general perception that it is difficult to move around the metropolitan region and that it is difficult to "get to and from the city center" is currently harming economic activity in the city. The center of Barcelona is currently perceived as difficult to access by private vehicles. This creates difficulties for essential business and cultural facilities. The center, moreover, has an exemplary parking network and the Eixample has one of the best systems for keeping traffic moving.

In order to lay the foundations for an overall agreement on metropolitan mobility, Barcelona Global proposes the following approach:

- **Listen actively:** We need to ensure that all metropolitan mobility authorities listen to all the agents involved in mobility (public and private metropolitan transport companies in the mobility sector) so that they can play an active role. Data-driven technology now also provides essential information for decision-making.
- **Agree more:** We need to revive almost moribund agreements on mobility, such as the Barcelona Mobility Agreement, and we need to reach major new metropolitan mobility agreements. These agreements need to specify the objectives to be achieved, the measures to be adopted, and the resources to be allocated. All the administrations involved should be obliged to participate in the met-

ropolitan agreement, with each of them assuming their respective responsibilities. There needs to be clear and transparent governance to enable citizens to monitor developments, while all the actors linked to the world of mobility need to be involved.

- **Abandon tactical solutions:** We need to discard the provisional solutions that may have made sense in the context of the pandemic, but are now making it difficult for the city to reduce congestion. In order to promote fluidity and reduce pollution in the center of Barcelona, we need to reverse temporary measures that, with the recovery of economic and social activity, have been shown in technical studies to be of little value. Likewise, it is important to publicize the necessary economic, pollution and mobility impact studies that every measure may mean. As we have seen, failure to do so causes a high degree of legal uncertainty.
- **Implement rigorously:** We need to respond to some of the challenges that Barcelona Global posed in October 2020 and that have not yet been addressed. We refer to (1) the implementation of a working Park & Ride system; (2) the management of vehicle access to the Barcelona Metropolitan Area; (3) the transformation of train and subway stations and parking lots into local logistics centers and mobility service hubs for people and goods; (4) the T-Mobilitat metro system; (5) regulations on motorcycle-, bicycle-, and scooter-sharing in the Metropolitan Area; (6) the implementation of an efficient "last mile" logistics system; (7) the decarbonization of the taxi fleet and local distribution vehicles; (8) the introduction of global mobility applications to Barcelona; (9) the sharing of mobility big data in order to develop new MaaS solutions in Barcelona. Governance needs to be clarified and commitments, responsibilities and accountability mechanisms need to be clearly established.

- **Placing the citizen at the center of mobility solutions.** We need to provide intermodal solutions, improve the overall experience of mobility, and offer greater choice.
- **Accelerate implementation:** We need to increase the speed of decision-making and project implementation to ensure that all committed investments are executed rapidly, particularly those associated with metropolitan public transport by road, metro and rail.
- **Become a benchmark:** We need to take advantage of Barcelona's opportunity to become a benchmark in the mobility sector, a pioneering sector in the world today. This is at risk unless the city and its metropolitan area innovate, plan, share, and rigorously execute commitments, a situation that is unfortunately still far off. Once again, Barcelona Global seeks to promote medium and long-term measures that could enable Barcelona to become a benchmark in global mobility. In order to take advantage of the lessons learned by other cities, it is also necessary to identify good practices from around the world and select those that should be applied in the metropolitan area.

In short, planning should be based on the following broad approaches

1. **Metropolitan area: we need an agreement on mobility that covers the entire metropolitan region**
2. **Intermodality and convenience to suit citizens' needs**
3. **Financing of mobility and execution of commitments**
4. **Digitalization**
5. **Sustainability.**

14 proposals that embody the commitment to sustainable metropolitan mobility

Barcelona Global has put forward a number of specific proposals that are in line with the broad lines mentioned above:

Metropolitan in scope

1.

In view of the lack of strategic planning on metropolitan mobility, we believe it is important to create a metropolitan body that has the authority to plan, design, execute and evaluate mobility policies across the metropolitan area, a body that incorporates all the administrations involved (Spanish and Catalan governments, Metropolitan Area, and Barcelona City Council) and the public and private mobility operators.

One way of doing this would be to create a **Metropolitan Mobility Agency** that would encourage alliances and promote synergies amongst the different administrations, as well as with the operators, and amongst the operators themselves. This agency would need to create an ecosystem that is genuinely public-public, public-private, and private-private in order to harmonize economic, mobility, and urban development policies. Focusing on quality, it must develop an overall vision of the metropolitan region with long-term agreements on strategic issues.

This metropolitan authority would require administration to be simplified so it can govern mobility in the entire metropolitan region.

It would be responsible for the planning, design and execution of public transport, the impact of urban planning measures, pricing and financing policies, and the alignment of the different economic and urban development policies with mobility. This governing body is legally possible, but requires generosity and leadership by the various different metropolitan administrations.

The main objectives must be to make mobility **citizen-centered, safe, sustainable, convenient, intermodal, and fluid**. The basis of the whole system must be to **optimize travelers' experience**.

Intermodality and convenience

2.

Promote Intermodality. Modes of transport need to be joined together, and special emphasis needs to be placed on connecting traditional non-polluting multimodal transport (trains, subway, trams) with shared ones (electric cars, motorcycles, bicycles, and scooters). This would be an integrated approach to mobility that uses data, public transport design, intelligent timetables, connection hubs, parking areas, payment, and information and incident management systems within an intermodal network that puts citizens first.

Intermodality must be prioritized in the design of infrastructures and public transport networks.

Connections between public transport and new forms of individual mobility must be facilitated by integrating electric connectivity points, Park & Rides with parking for cars, bicycles and scooters, and signaling systems. In order to alleviate congestion, new technologies can be used to improve traffic flow and to roll out **dynamic signaling that indicates where public parking spaces are available**, both on the street and via mobility apps. **The Park & Ride model** in the Metropolitan Region requires a funding model that attracts the necessary investment. All possible available locations that are suitably connected to the public transport network must be considered (land belonging to transport operators, public or private municipal car parks, shopping centers, and other sports or leisure facilities, etc. and even above ground parking structures given the lack of available land).

3.

It is necessary to **start a serious debate** about **measures to limit the entry of vehicles to the city**. Any system must be based on data, modeling, and, where necessary, pilot tests. Sterile controversies that only generate tension without offering solutions should be avoided.

4.

Following bad experiences over the concession of licenses for motorcycles and bike sharing

in the city of Barcelona, it is now necessary to make a commitment to high quality services that involve the coordination of operators and the extension of services to the metropolitan area. This would be a good opportunity to introduce regulations on car and scooter sharing. **Involving vehicle-sharing operators** in the creation of regulations should help to avoid undesirable situations that can be difficult to put right. Shared mobility faces very similar challenges in all European cities, and operators often know how to solve problems and can transfer best international practices to the institutions. Furthermore, it is necessary to harmonize regulations in different municipalities and different parts of Spain.

5.

Ensure that the Bicing services in the city of Barcelona and in the metropolitan area are compatible and connected.

6.

In marked contrast to the changes made on the Via Laietana and on the so-called “green axes”, we need to **ensure that the major changes implemented in the principal axes in Barcelona take into account flows from the metropolitan area**. This can be achieved by publicizing the necessary studies on mobility and economic impact, involving the affected operators, and undertaking the necessary urban planning.

7.

Improve mobility flows in the center and along the accesses to Barcelona. Firstly, the main arteries must be identified and **movement restored to roads where mobility has been “tactically” reduced** during the pandemic. Secondly, the bicycle lane network in the rest of the city must be extended in order to reduce congestion and pollution. There needs to be a rigorous and selective review of all the bike lanes in order to ensure that, where possible, they don't run along high-capacity roads or use the same space as buses and pedestrians.

It is essential to ensure compliance with regulations to prevent **parking in bus or other lanes, double parking, and loading and unloading in forbidden areas**. Surface public transport should be prioritized in order to improve the speed of the bus network and to **ensure punctuality**, with a special focus on neighborhoods and municipalities that have few lines and

few alternatives to public transport. The impact of temporary and structural measures on public transport also need to be taken into account.

It is also necessary to vary street use according to the day and time, as has been done in the past with the drop-off and pick-up lanes in several points in the Eixample, and with the night parking lanes in streets like Balmes.

Financing of mobility and execution

8.

The financing of mobility policies for public transport and new mobility infrastructures (park & ride, parking areas, charging points, intermodal links with individual mobility vehicles) needs to be addressed. This involves analysis and the development of an **economic model** and rationalized **means of financing** that makes it possible for operators to provide sustainable public services.

In this respect, advantage needs to be taken of the T-mobilitat system to **improve pricing, which must be equitable and accessible** and must cover all kinds of use. This should include the new pricing possibilities offered by digitization, such as time bands, which can be used to influence and manage demand.

9.

Implementation of all investment commitments in public transport: the almost 500M€ by FGC for metropolitan lines and the acquisition of trains to the airport, as well as the 3,600M€ by TMB (1,200M€ for L9), and the more than 2,000M€ already tendered or awarded by Renfe for the improvement of the Rodalies local train network.

10.

Create **transparency website** on the status of the investments in mobility in the Metropolitan Region of Barcelona, enabling citizens to see the status of the commitments made, the level of investment committed, and the extent to which they have been implemented. This website should also include information on the economic impact of the investments and the effects on mobility and decarbonization.

Digitalization of mobility

11.

It is essential to move decisively towards complete digitalization of mobility in the metropolitan region in order to improve citizen experience and enable mobility planning through the use of data.

Comprehensive **MaaS mobility** technologies should be deployed throughout the metropolitan area in order to meet citizens' needs. To encourage the use of public transport and shared mobility, the system must include all public and private actors and enable intermodal movement, better information, and the creation of itineraries and integrated payment systems adapted to new work situations, such as teleworking. Citizens' intermodal mobility experiences must be digital and cover journey planning, payment, and incident management.

In order to improve the planning of mobility services and infrastructures, it is important to **ensure that data is collected** by the various public and private operators involved, and to establish a clear governance model that allows the data to be exploited to optimize decision making on mobility infrastructures of all types. This includes both optimizing frequencies (to adapt to time of day and occupancy levels) and providing information to citizens so they can improve their travel experience in the metropolitan region.

It is necessary to evaluate the possibility of making data on mobility, air quality, air pollution, etc. available to all stakeholders through a mobility data platform and to the general public in the form of open data. This would enable the development of apps and new mobility products or services that would result in improvements in user experience.

Environmental sustainability

The need to decarbonize transport in order to improve environmental health in Barcelona is a priority for all and requires structural measures designed to reduce emissions and noise. While all the measures already set out (metropolitan governance, intermodality, infrastructure and financing, and digitalization) should go towards improving the environment and quality of life in the city, the following proposals should be added.

12.

There needs to be a commitment to decarbonize 100% of the public transport fleet, all VTCs, and all goods delivery vehicles in Barcelona. Advantage should be taken of the potential of NextGen funds and new technology to limit empty or partially empty vehicles and to **promote new forms of private mobility**. Existing vehicles need to be renewed or **reconditioned** when possible; the circular economy should be encouraged; and people of all income levels should play their part in the ecological transition, so laying the foundations for a new mobility that is electric, joined up, shared, connected, and autonomous.

13.

It is necessary to fund and deploy electric charging facilities in public and private parking lots in the city (essential in a city as densely populated as Barcelona), and in other locations. And there should be positive discrimination to favor electric or hybrid vehicles, such as the use of VAO lanes.

14.

The agreement on **sustainable last-mile distribution** agreed between the Barcelona City Council, logistics operators, and city business associations should be implemented without delay. Lessons should be learnt from the initiatives already undertaken in some car parks and train and subway stations, while empty premises could also be used. This would help to make Barcelona a benchmark in last-mile distribution, which, as specified in this document, must be fully decarbonized.

There is a need to implement proposals to regulate, monitor, and control urban goods delivery, which is responsible for 40% of emissions in the city of Barcelona; this may mean overhauling delivery schedules.

The effect of the "Amazon tax" on business models needs to be considered. If applied, the proceeds should be put toward mobility, while account should be taken of the possible impact of the tax on the digital evolution of small and medium-sized companies.

Barcelona Global

Challenge[®]

Mobility, Barcelona's tool for achieving sustainable development

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Barcelona Global is a private, independent non-profit. It is made up of 223 of the most important companies, research centers, entrepreneurs, business schools, universities, and cultural institutions in the city and more than 850 professionals who are seeking to make Barcelona one of the best cities in the world for talent and economic activity.

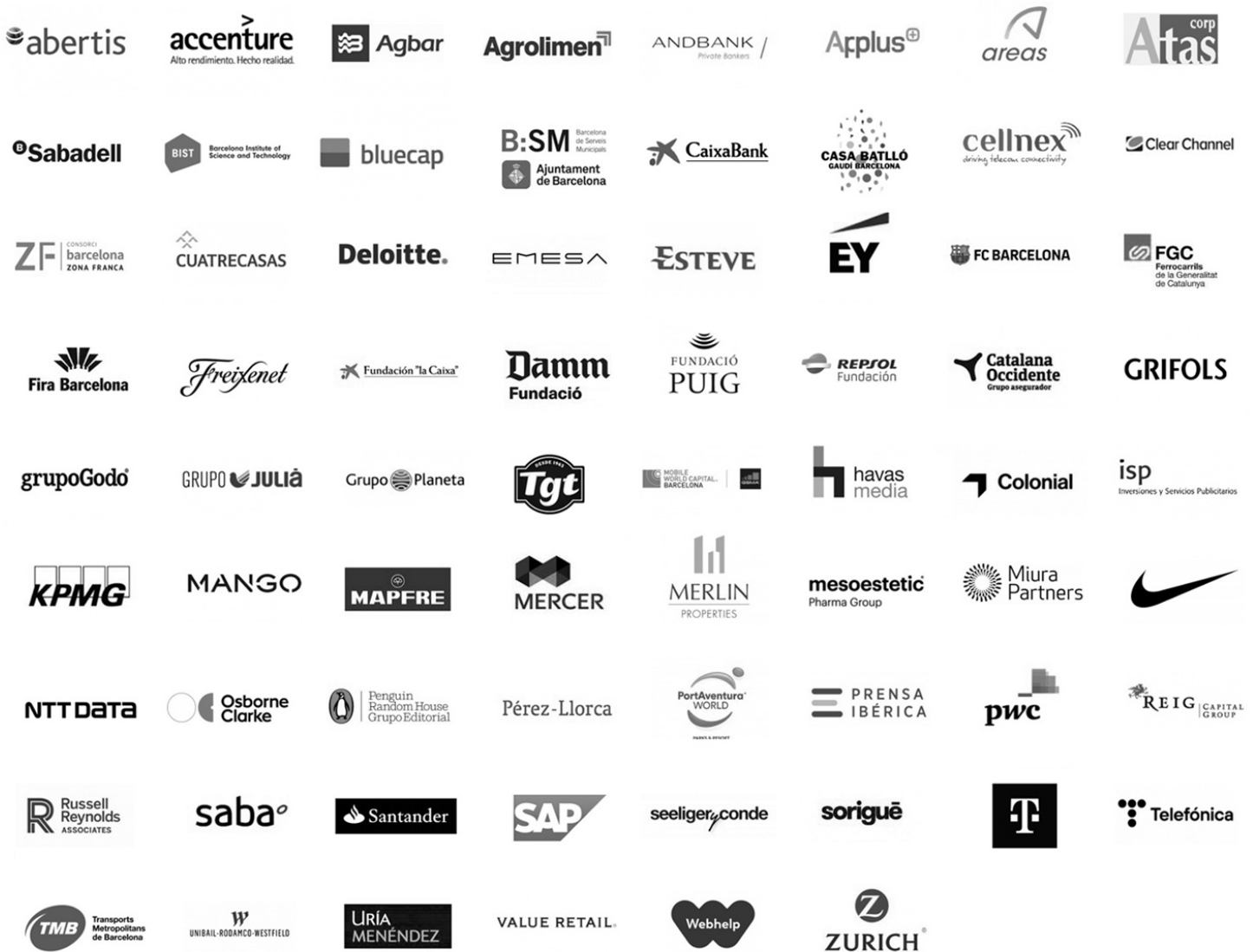
The association also has a network of more than 150 members who live and work outside Spain, while 15% of the members are expatriates who have chosen to live and work in Barcelona.

Barcelona Global promotes and heads up projects aimed to encourage talent and business; it is committed to supporting its members' initiatives; and it mobilizes its members to identify challenges and projects for the city in the areas of entrepreneurship and competitiveness, research and knowledge, culture, tourism and social impact.



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