

**USER-CHI**  
CHARGING YOUR E-MOBILITY FUTURE



# Integrating electric mobility into SUMP

 This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No [875187]



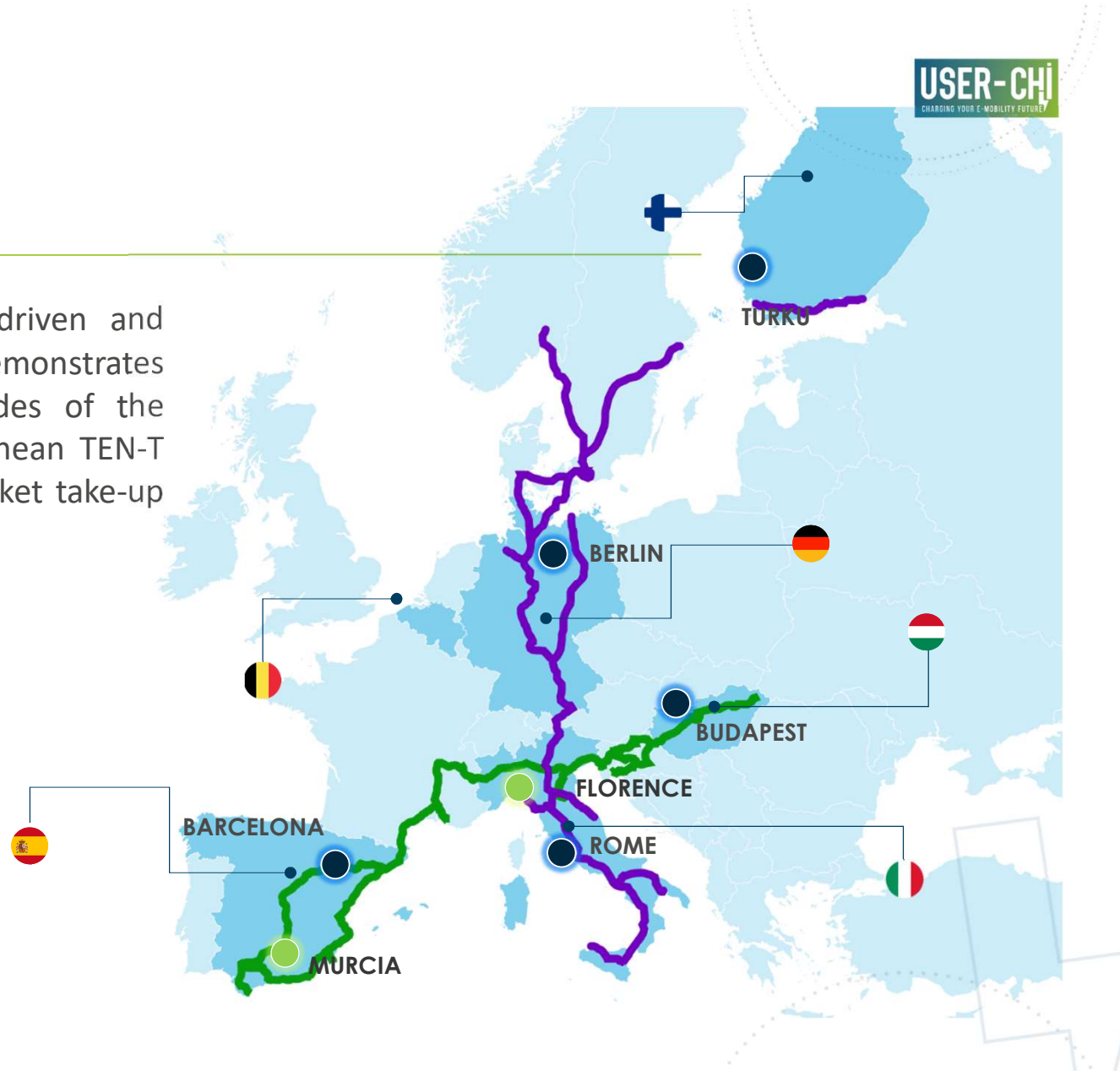
USER-CHI webinar  
23 May 2024  
15:00 – 16:30



# The Project

**USER-CHI** is an industry-powered, city-driven and user-centric project which co-creates and demonstrates smart solutions around 7 connecting nodes of the Mediterranean and Scandinavian-Mediterranean TEN-T corridors to boost a massive e-mobility market take-up in Europe.

- ✓ Duration: 2020-2024
- ✓ 24 partners
- ✓ Coordinator: **etra** | +D



# AGENDA



Welcome and introduction  
*Kateřina Kůhrová, Eurocities*



Electromobility masterplan in Turku  
*Jussi Saari, City of Turku*



Electric mobility strategy in Rome  
*Marco Surace and Andrea Pasotto, Roma Mobilita*



SUMP and electric mobility in Gdansk  
*Magdalena Szymańska and Dorota Gajda-Kutowińska, City of Gdansk*



Madrid's 360 Environmental Sustainability Strategy & electric mobility  
*Sergio Fernández Balaguer, EMT Madrid*



Q&A



# Integrating electric mobility in Sustainable Urban Mobility Plans

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ROMA SERVIZI PER LA MOBILITÀ  
Andrea Pasotto

Maggio 2024

ROMA





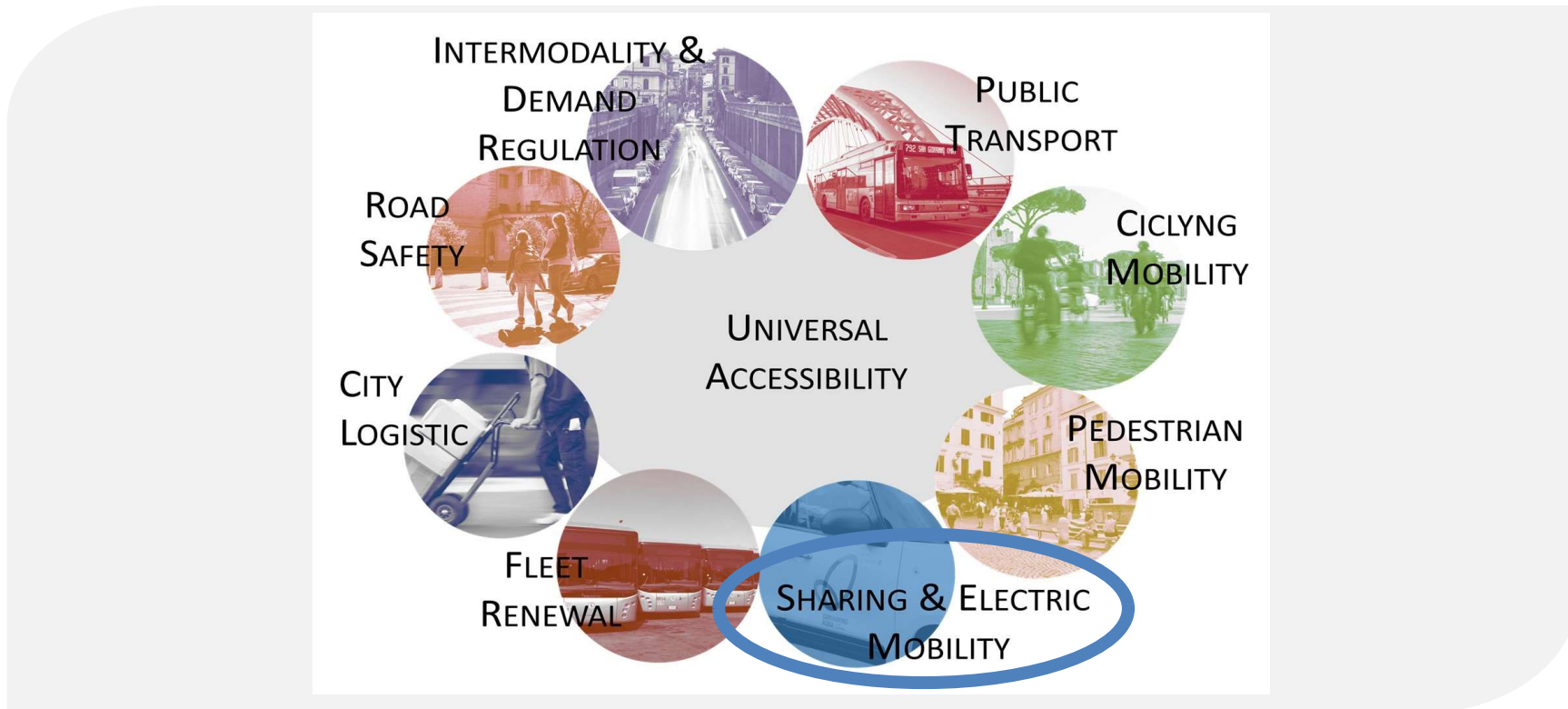


- **SUMP and Electric Mobility Plan**
- **The rules and technical features of the electric mobility plan**
- **Public Transport fleets (Tram and Buses)**





SUMP (approved in 2022)



ROMA





## SUMP TARGETS

- **Adapting the development** of public charging infrastructures in relation to the structure of energy distribution network
- Evaluating **solutions for automatic monitoring** of parking spaces reserved for electric recharging
- **Equipping** multi-modal hubs with low-power recharging facilities and **Promoting** the creation of smart service stations
- Specific solutions for **two-wheel vehicles recharging and electric sharing mobility**





## SUMP: THE SCENARIO

- **4.000 infrastructures** on public areas to support the objective of increasing to 35% of the share of electric cars (BEVs) and plug-in hybrids (PHEVs) in the Metropolitan City of Rome
- Promote use of ZEVs for **urban freight distribution** such as cargo bikes, pedal-assisted tricycles and quadri-cycles



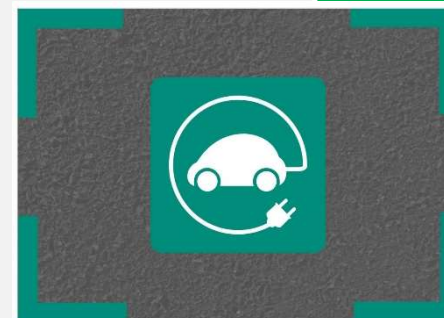


## FIRTS PLAN AND REGULATION DATED 2018

**The plan defined** charging point needs in the public areas and supported the private investments in the sector defining its rules

**It included a technical and administrative regulation to rule:**

- How to submit applications
- The technical specifications of charging points
- Road signs of the parking lots



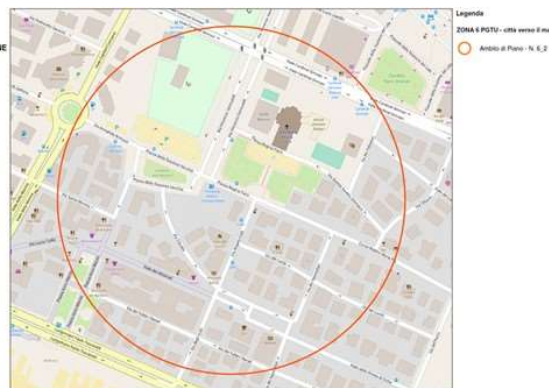
ROMA







## THE RULES FOR INSTALLING CHARGING INFRASTRUCTURE



Fascia PGTU	Sup. Totale (kmq)	Sup. area urban. (Kmq)	Pop. (ab)	Densità popolazione (ab/kmq urbanizz.)	Addetti 2016	Densità addetti (addetti/sup. urbaniz.)	Indicatori piano 2020	
							Colonnine	Ambiti
	1	2	3	4 = (3/2)	5	6 = (5/2)	7	8
Mura Aureliane	14,3	7	107.247	15.321	198.309	28330	112	50
Anello ferroviario	33,7	15	346.215	23.081	259.928	17329	147	76
Fascia Verde	109,4	40	823.882	20.597	267.285	6682	151	79
GRA	186,8	78	805.892	10.332	287.950	3692	163	68
Confine comunale	850,7	121	634.446	5.243	188.369	1557	107	34
Ostia e Acilia	88,8	29	273.879	9.444	36.223	1249	20	15
<b>TOTALE</b>	<b>1283,7</b>	<b>290</b>	<b>2.991.561</b>	<b>10.316</b>	<b>1.238.064</b>	<b>4269</b>	<b>700</b>	<b>322</b>



## NEW REGULATION 2023: MAIN TECHNICAL FEATURES

### Definitions

- Charging corridors: 3-10 standard power devices
- Charging islands: 5-30 high-power devices near Multimodal hubs, parking and points of interest

### Steps

- Identification of charging needs
- Agreement with electricity distributor Areti
- Services Conference (participation process with stakeholders) for acquisition of consent documents within 30 days of the closure of the SC, the Mobility and Transport Department issues the concession for the implementation of the interventions to be concluded within 90 days
- The concession has a duration of 10 years



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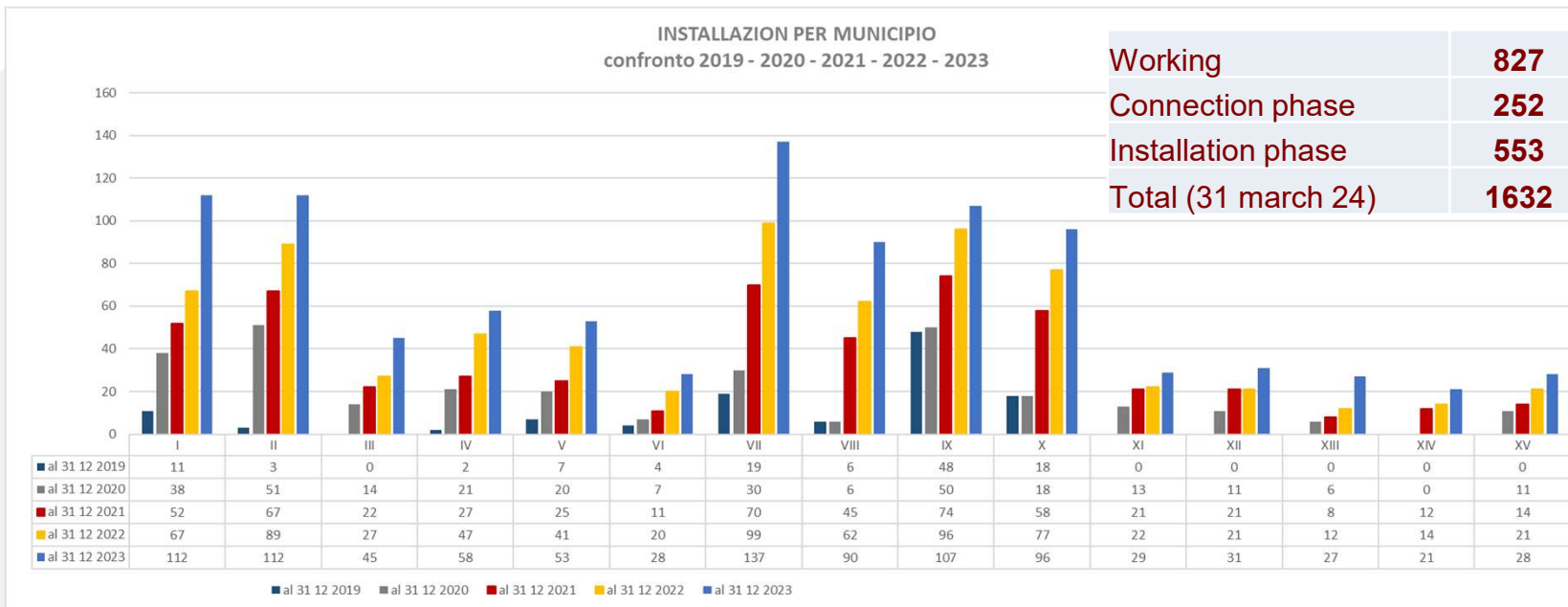








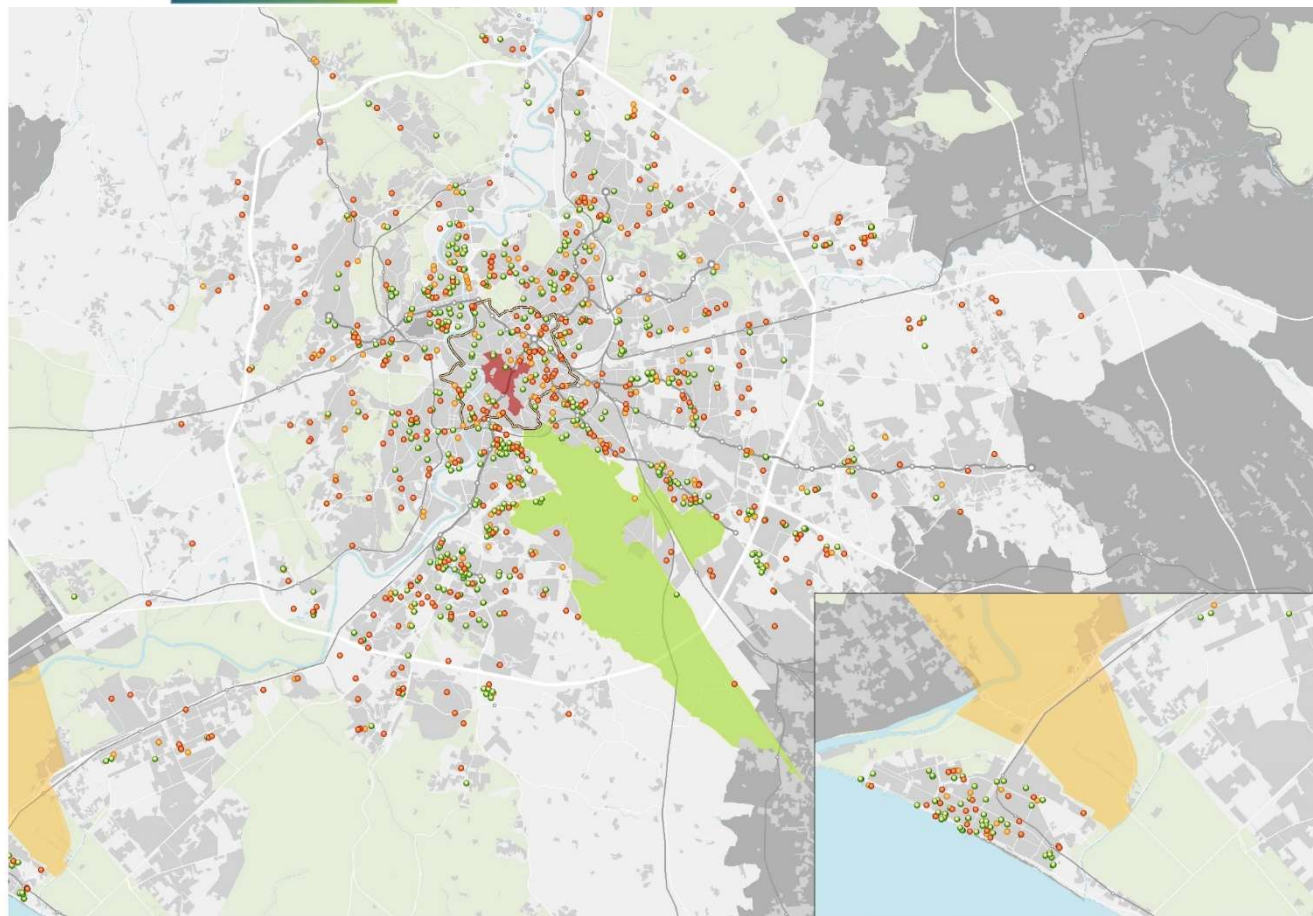
## THE DEVELOPMENT OF CHARGING POINTS





## ELECTRIC CHARGING POINTS: A VIEW

- Punti di Ricarica Elettrica**
- In lavorazione
  - Installati
  - Operativi
- Il Sistema del Trasporto pubblico**
- Rete metropolitana esistente
  - Rete ferroviaria esistente
- Il Sistema storico-naturalistico**
- Parchi Istituzionali, Riserve Naturali e Ville Storiche
  - Centro Archeologico Monumentale
  - Parco Appia Antica
  - Parco Ostia Antica
  - Mura Aureliane

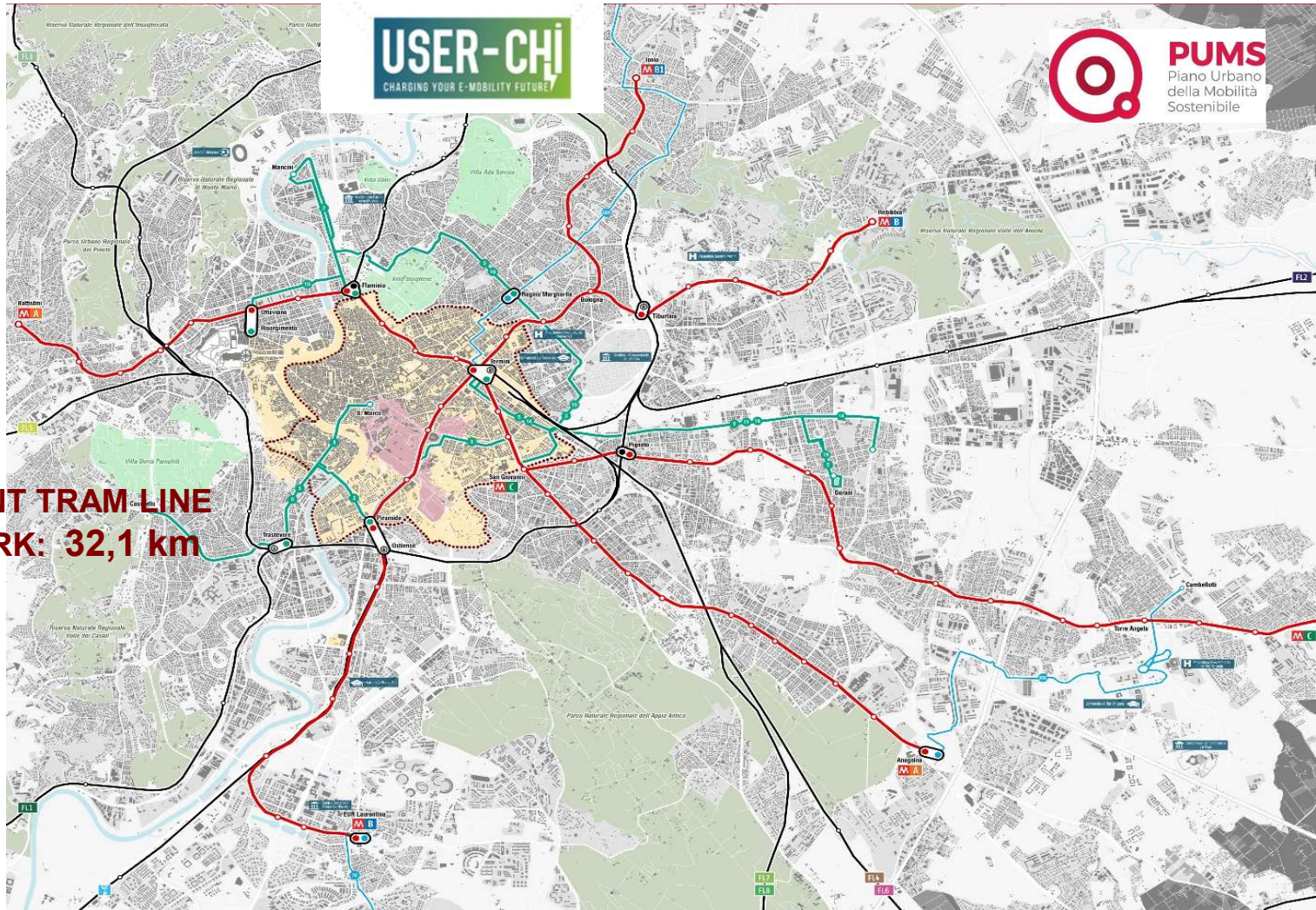




**USER-CHI**  
CHARGING YOUR E-MOBILITY FUTURE!

**PUMS**  
Piano Urbano  
della Mobilità  
Sostenibile

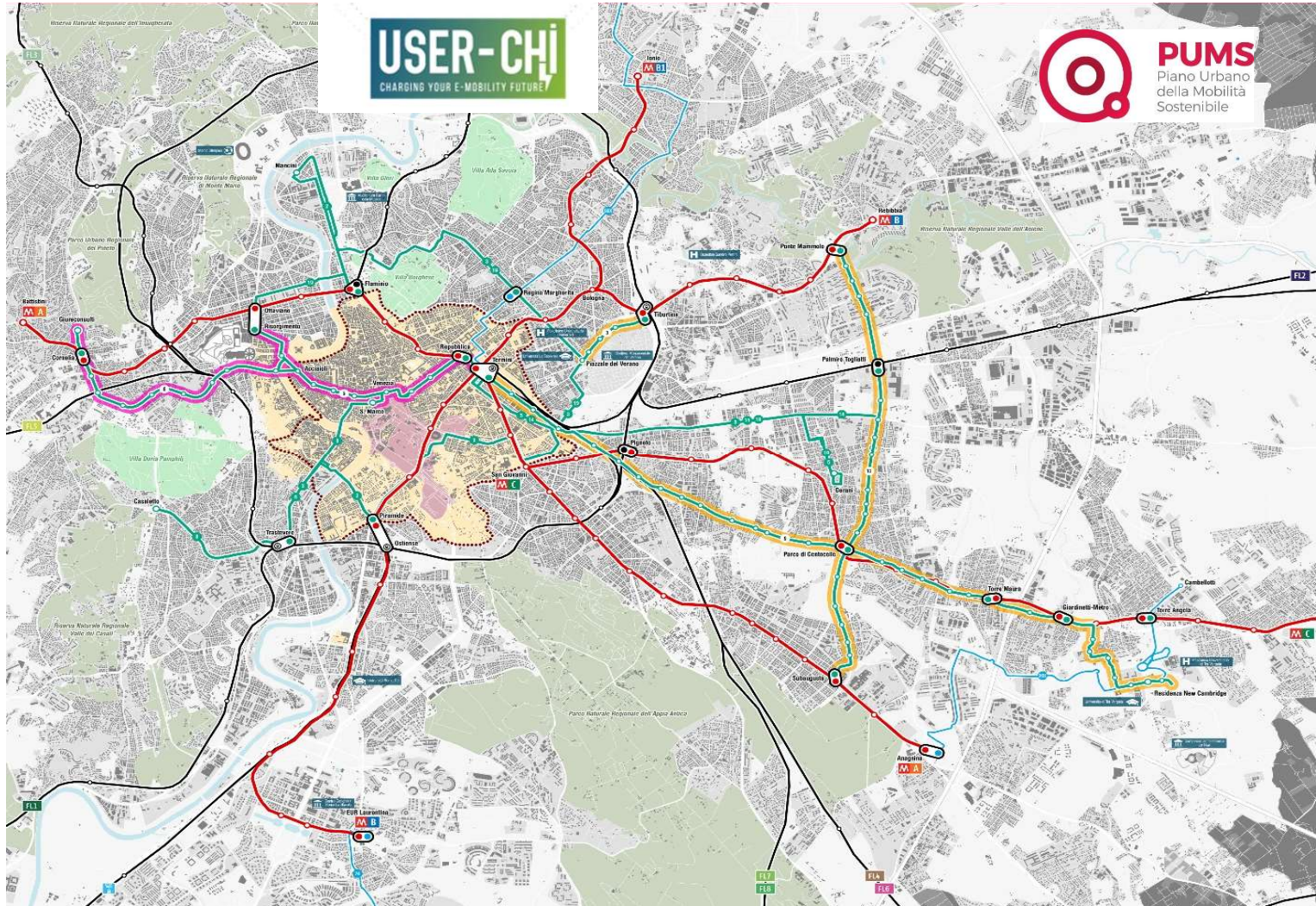
**CURRENT TRAM LINE  
NETWORK: 32,1 km**





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**PUMS**  
Piano Urbano  
della Mobilità  
Sostenibile



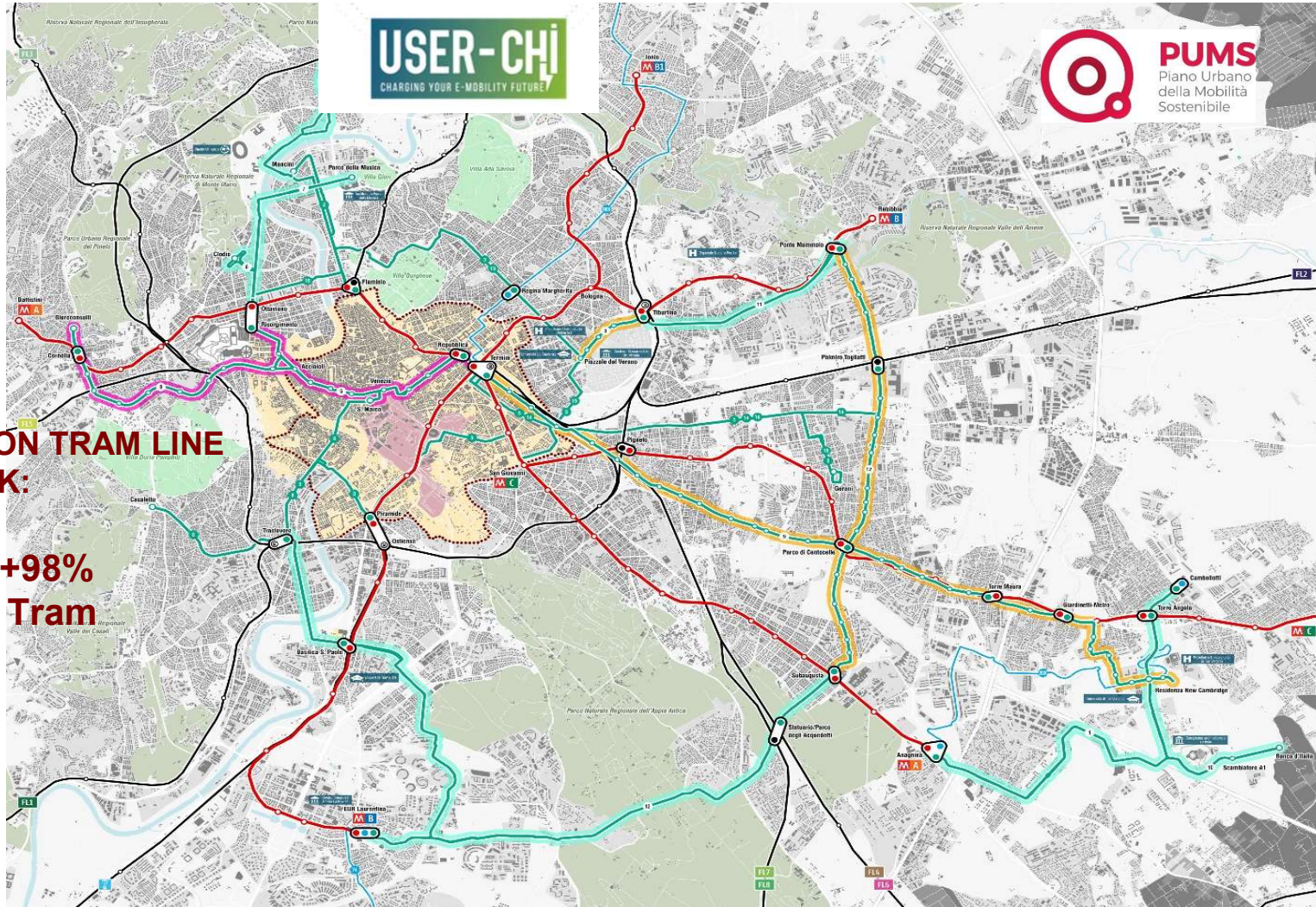


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CHARGING YOUR E-MOBILITY FUTURE!

**PUMS**  
Piano Urbano  
della Mobilità  
Sostenibile

**EXTENSION TRAM LINE  
NETWORK:**

**63,7 km +98%  
121 new Tram**



**USER-CHI**  
CHARGING YOUR E-MOBILITY FUTURE

**PUMS**  
Piano Urbano  
della Mobilità  
Sostenibile



**121 new Tram**





## FORTHCOMING TRAM LINE

### TERMINI – VATICANO – AURELIO

TOTAL LENGTH: 8,3 km



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## FORTHCOMING TRAM LINE



**TERMINI TOR VERGATA**  
**TOTAL LENGHT: 12,8 km**



**TOGLIATTI**  
**TOTAL LENGHT: 8 km**



ROMA







## NEW ELECTRIC BUS FLEET AND DEPOTS



### Purchase of electric-powered buses:

- 411 for ATAC, to be put in service by 30/06/2026 (110 in 2024)
- 514 for new operators, with a gradual entry in operation in 5 years

New bus depots adapted for the introduction of the new electric bus fleet

New charging stations at the end of the main lines



[FINE]



**GDAŃSK**

# **Integration of electric mobility in SUMP The City of Gdansk**

Magdalena Szumańska

Dorota Gajda-Kutowińska



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NEC TEMERE NEC TIMIDE

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# Timeline

## 2018

- ✓ Sustainable Urban Mobility Plan (SUMP) – Gdansk.
- ✓ Act on electromobility and alternative fuels - imposes obligations on local authorities.

## 2019

- ✓ Work on a Electromobility Strategy and criteria for the location of public charging stations.
- ✓ A broad view - not just automotive and charging stations.
- ✓ A shift in modal split towards active mobility and public transport.

## 2020

- ✓ Animation activities - media relations and social media.
- ✓ Public consultation on the Public charging station plan and Electromobility Strategy.
- ✓ Research - survey among residents and district councils, in-depth interviews with electric car users and representatives of businesses.
- ✓ Public charging station plan.
- ✓ Electromobility Strategy - looking ahead to 2035.

# SUMP Gdansk 2030

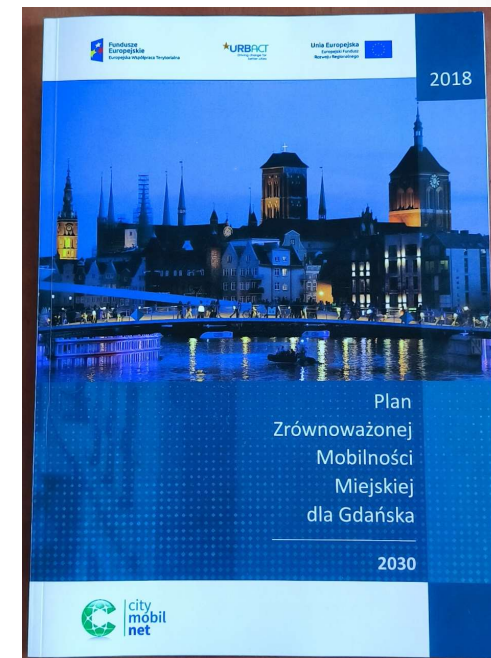
Adopted by City Council of Gdansk in 2018

**Not cover** electromobility in complex approach

- ✓ Autonomous vehicles
- ✓ Low-emission PT vehicles
- Nothing about private e-vehicles and development of charging stations
- Lack of low-emission city's fleet, logistics, etc.
- Active mobility: bike-sharing, e-scooters, etc.

Process of **update of SUMP** Gdansk 2030 has just started

- ✓ Electromobility will be one of crucial section with dedicated workshops and activities to do with different stakeholders





## Social participation in Gdansk

- ✓ Involving Residents in the management of the City (decision-making processes),
- ✓ gaining public understanding,
- ✓ collecting opinions and proposals.
  
- ✓ At the earliest possible stage of development of projects.
- ✓ Not shorter than 14 days.

The initiative of:

- ✓ the Council,
- ✓ the Mayor,
- ✓ Residents (1 000),
- ✓ non-governmental organisations (25)

At least 2 forms:

- 1) open meetings
- 2) workshops leading to development of solutions,
- 3) collection of opinions in writing,
- 4) questionnaires,
- 5) voting for submitted proposals,
- 6) citizen panels,
- 7) public hearings,
- 8) formalised discussions.



## Public consultation and research

Carried out for both:

- ✓ Public charging stations plan
- ✓ Electromobility Strategy 2035

**Animation:** press releases, newsletters, sponsored article, promotion in social media, mailing to stakeholders.

### Research:

- ✓ Quantitative survey: **residents** - CAWI (Computer Assisted Web Interviews) **n= 967** and **District Councils n=12**.
- ✓ Qualitative research: **electric cars users (n=5)** and **businesses (n=5)**; in-depth interviews by phone.

## Research results

**40%** see the need to expand the network of charging points (particularly youngest residents).

### **Electric car users:**

- ✓ electromobility primarily about development of charging infrastructure
- ✓ need to promote sustainable transport and develop alternative means of travel (bicycles and scooters).

**Companies** related to the development of electromobility lobby for development of charging infrastructure and encouraging employees to travel by electric cars.

### **Other companies:**

- ✓ reducing car traffic in the centre,
- ✓ caring for the environment (clean air)
- ✓ strengthening the importance of public mass transport.

The vision of Gdansk Electromobility Strategy 2035 coincide with the way of thinking and operation of both electric car users and representatives of Gdansk companies.

## Research results – Gdansk residents

- ✓ **70%** - efforts should be made to reduce the share of internal combustion cars in daily journeys.
- ✓ **65%** - support increasing the share of electric cars in daily travel. The opposite view held by **19%**.
- ✓ **92%** of residents and **83%** of representatives of the District Councils agreed that low- and zero-emission buses should appear in Gdansk.
- ✓ **80%** - sustainable transport should be promoted, i.e. fewer journeys by private cars and more journeys by public transport, bicycle, city bike, electric scooter, carsharing.

## Public consultation

Combined consultation on the:

- ✓ Public charging stations plan
- ✓ The Electromobility Strategy

The pandemic determined the form (spring of 2020):

- ✓ Duration: **21 days**
- ✓ Two **webinars** broadcast live on [www.gdansk.pl](http://www.gdansk.pl).
- ✓ Residents were able to ask questions in the chat room.
- ✓ Comments also in writing by post or by e-mail

# Charging infrastructure

- ✓ By the end of **2020 – 210** vehicle charging points required (Act on Electromobility and Alternative Fuels).
- ✓ **50** points, with a further **21** under construction – according to the inventory



**Shortage** > Public charging station plan to be built by the distribution system operator (DSO)

DSO helped with the inventory, participated in the work on the plan and built the medium-power charging stations. Out of the **81 locations** proposed, **68 selected**.



# Electromobility Strategy 2035

- ✓ Air cleanliness,
- ✓ shift in transport habits,
- ✓ impact on the environment and the health of residents,
- ✓ tourist attractiveness,
- ✓ zero-emission bus fleet,
- ✓ encouraging and enabling sustainable mobility (public transport, cycling, carsharing and low-emission cars),
- ✓ the expansion of the city bicycle system,
- ✓ zero-emission cars in the fleet of the City Council in Gdansk.





## SUMP Metropolitan Area Gdansk-Gdynia-Sopot 2040

- ✓ Development of zero-emission PT vehicles and priority on intersections
- ✓ New charging stations for PT buses
- ✓ Development of tram network
- ✓ Allow and facilitate the carriage of bicycles, e-scooters in PT vehicles
- ✓ Development of seasonal water transport based on low-emission boats/ships
- ✓ Complex research on transport emissions
- ✓ Low (Zero)-emissions zones
- ✓ Development the network of charging station for private users
- ✓ Cargo bikes in logistics and daily routines
- ✓ Set at least one refuelling station for hydrogen and other alternative fuels



**Thank you!**

Questions?



EMT MADRID



EMT Madrid  
*Madrid electrification strategy*  
*USER CHI project webinar. 23<sup>rd</sup> May 2024*

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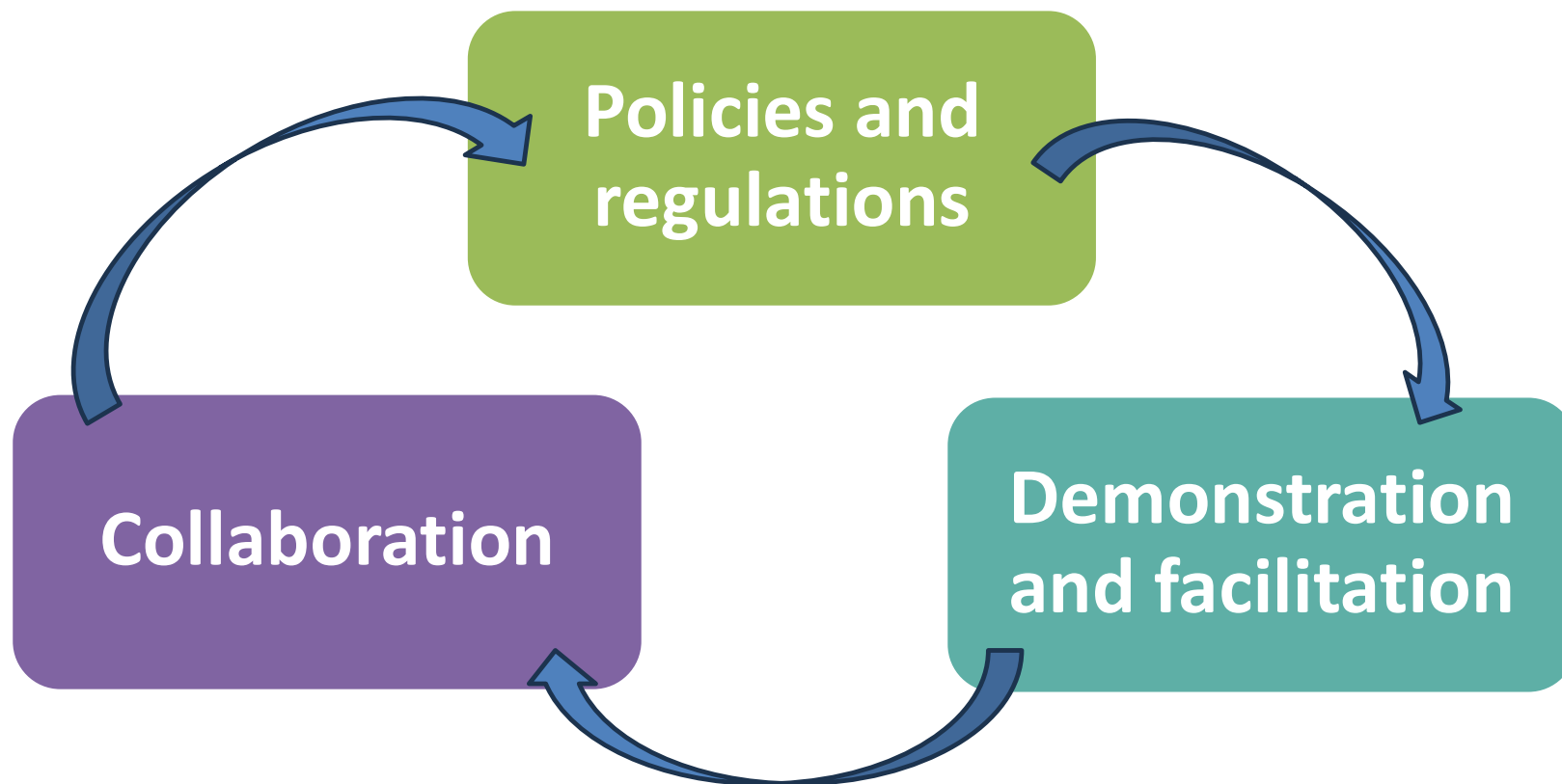


- Capital and largest city in Spain (3.3 million inhabitants)
- Second most populated Functional Urban Area in the European Union: 7% of Spain's total population, 7 million at regional level
- Key role in the country's economy (12,7% of the country's total GDP, up to almost 20% at metropolitan level)
- 605.77 km<sup>2</sup>
- 15.8 million daily trips at the regional level, 13 million at the city level
- 21 districts (131 neighborhoods)
- 1st airport in Spain and 5th in Europe (60,2 million passengers in 2023)
- Belongs to 2 TEN-T corridors: Mediterranean and Atlantic
- Important logistic and transport hub (i.e. Mercamadrid: food for more than 12 M People)
- 7.84 million tourists in 2023 (Region)





# Tools for delivering climate policies



# Policies and regulations

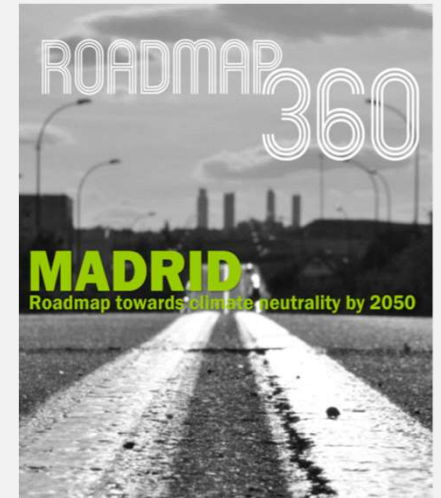


 MADRID

Active: Madrid 360 Environmental Sustainability Strategy

Regulations adopted within the Madrid 360 Strategy in the fight against climate change

- Roadmap towards Climate Neutrality (2021)
- Ordinance in Air Quality and Sustainability (2021)
- Ordinance on Sustainable Mobility (2021)
- 2<sup>nd</sup> SUMP 2022 – 2030 (2022)



## Policies and regulations

MADRID

### Madrid 360 Environmental Sustainability Strategy

It is the **most ambitious strategy** that the city of Madrid has attempted, both in terms of its **content** (200 initiatives that include mitigation and adaptation measures), its **scope** (it is completely comprehensive, including all districts and sources of emissions) and its execution (it involves the transformation of the city, mobility and the Administration)



#### City

It aims to increase energy efficiency and support electrification, improve infrastructure management and promote the development of green areas.



#### Mobility

It promotes the use of micromobility, public transport optimisation and the shift to environmentally friendly vehicles in the city.



#### Administration

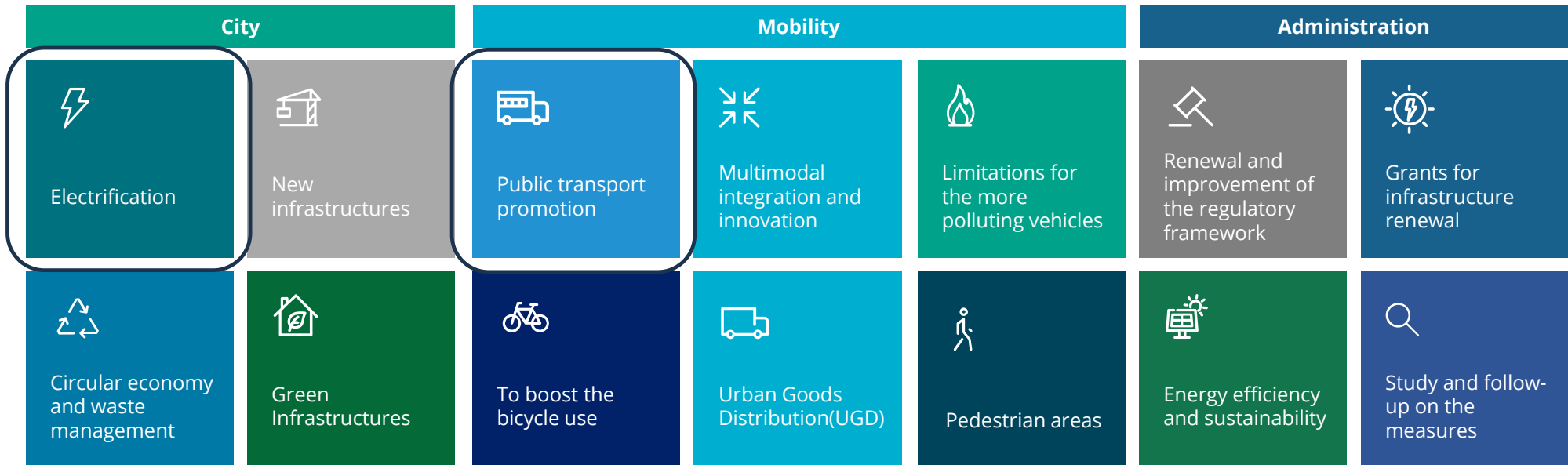
It encourages the transformation of the administration as an exemplary leader in sustainability, by adapting the regulatory framework to facilitate the Strategy implementation.

## Policies and regulations

MADRID

### Madrid 360 Environmental Sustainability Strategy

Madrid 360 Strategy vectors and their principal components

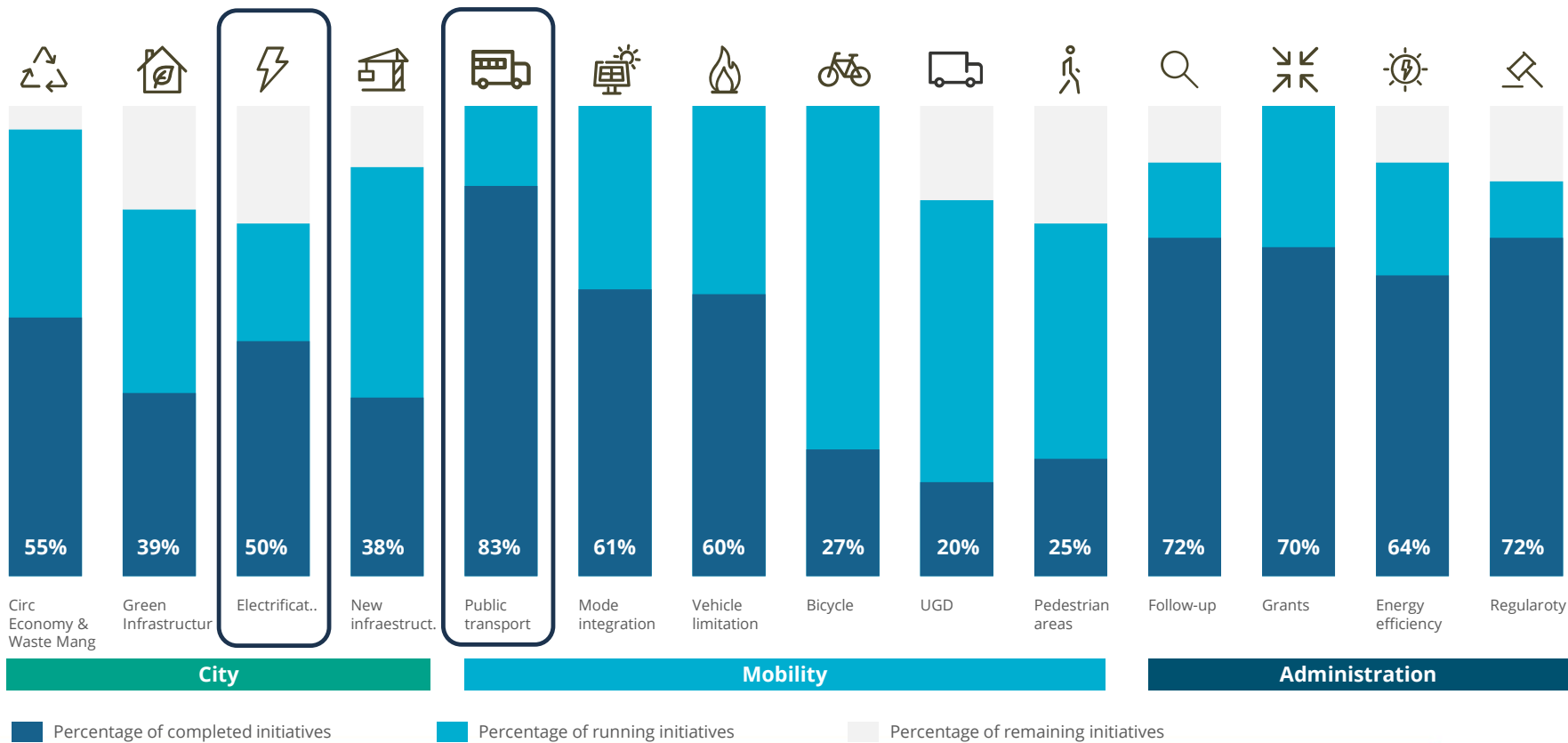




# Policies and regulations

MADRID

## Madrid 360 Environmental Sustainability Strategy



**90%**  
Of initiatives completed or ongoing

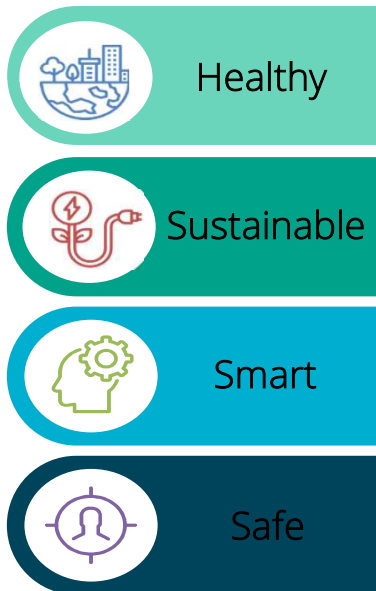
**60%**  
Completed

**30%**  
Running

## Policies and regulations

 MADRID

Madrid 360: SUMP 2022 - 2030



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Objectives:

- Reduction of traffic by 20% - 25% which translates to a significant decrease in **traffic congestion** in the city.
- Reduction of **CO<sub>2</sub> emissions** by 65% in 2030 with respect to 1990, according to what is established by the COP25 agreement.
- Reduction of deaths and victims in **traffic accidents** according to the objectives established by the European Union.

Projected evolution (Madrid 360)

- Decrease in car dependency falling to 28% of modal distribution in 2030
- Increase in public transport reaching 41% of modal distribution in 2030

## Policies and regulations

 MADRID

### Madrid 360: SUMP 2022 - 2030

Madrid second SUMP (july'22) is aligned with the Madrid 360 strategy and includes **10 strategic axes**, **32 measures** and **121 actions** to be implemented before 2025. It pursues the transformation of the mobility system towards a **more sustainable, smart and safe mobility**.

**1** More and better public transport

**2** Improving transport infrastructure

**3** Promoting active mobility

**4** Managing parking with sustainable criteria

**5** Facilitating modal integration through innovation and intermodality

**6** Stimulating the shift to cleaner vehicles

**7** Optimising urban freight distribution

**8** Promoting technological change, innovation and organisational reformation

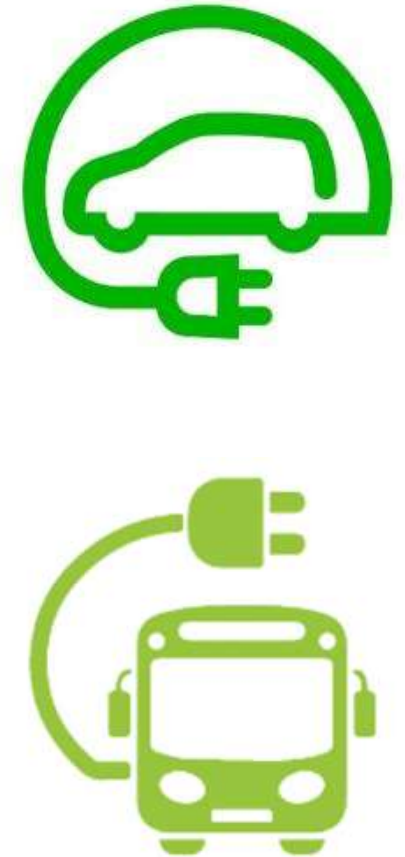
**9** Moving towards safe mobility

**10** Encouraging responsible mobility through information and communication

# Demonstration and facilitation

Wide array of initiatives. Three examples:

1. **Subsidies** for fleet renewal and charging infrastructure
2. Deploying **fast charging** infrastructure by **promoting PPP and mobility hubs**
3. **Electrification of public transport**





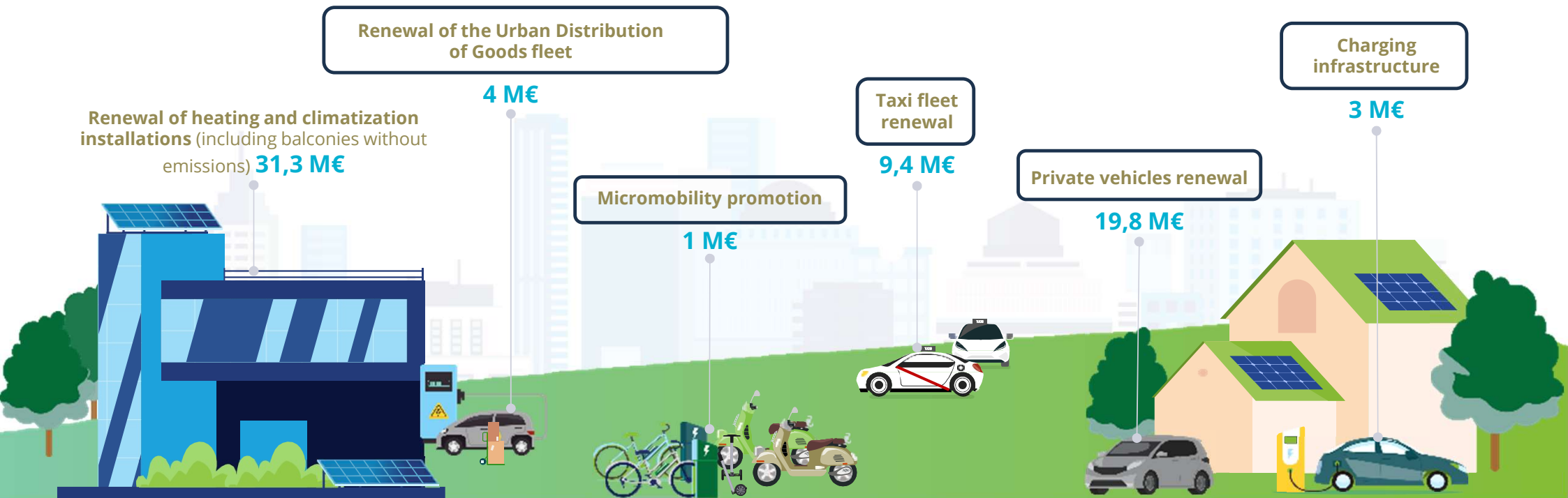
## Demonstration and facilitation

MADRID

### Madrid 360: Grants for Energy Transition

Through the **Strategic Grants Plan**, the Madrid City Council has offered **111,5 millions of euros** from 2020 to 2023 by **Ayudas Cambia 360**. This Plan divides the grants in two main lines: One to encourage sustainable mobility and another one for **urban regeneration and energy efficiency**.

*Until now, a total of 68,5 M€ in grants have been offered within the Madrid 360 scope*





Demonstration  
and facilitation

MADRID

## DEPLOYMENT OF MADRID FAST CHARGING INFRASTRUCTURE

### PUBLIC AND PRIVATE PARTNERSHIPS

Public realm :

- fast charging stations (50 kW) open across the city (curbside)
- public parking areas (EMT)
- charging hubs in public plots

Private realm

- supplying fast chargers for deployment in free access private land  
(petrol stations, commercial areas...)
- municipal grants for electric infrastructure





Miércoles,  
**11 de octubre**  
**1.832.912**  
**récord viajeros**



EMT MADRID  
 Tow truck



bici mad

17 de noviembre

récord  
 de viajes  
**57.116**







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## NEWS

### Madrid becomes first major European city with 100 per cent clean bus fleet

In line with the city council's Madrid 360 Environmental Sustainability Strategy, EMT Madrid's 100 per cent clean fleet will be made up of a combination of compressed natural gas, electric and hydrogen buses.



Credit: EMT Madrid

The Empresa Municipal de Transportes de Madrid (EMT Madrid) has announced that its last diesel bus had turned off its engine forever in December 2022, making Madrid the first major European capital -

## Demonstration Facilitation

## GOAL: PUBLIC BUS



13/10/2022

### EMT Madrid able to verify and certify its carbon footprint

For the first time, POLIS member, Madrid Municipal Transport Company (EMT Madrid) has been able to verify and certify its carbon footprint in direct and indirect emissions, providing key information to establish strategies to reduce consumption and emissions, as well as to address the offsetting of these.

The capacity to measure and monitor carbon emissions from transport is critical to Europe's race towards climate neutrality. Cities and regions - many of whom are part of the European Commission's Climate Neutral and Smart Cities Mission - are implementing cutting-edge measures to reduce dependency on polluting vehicles, yet, calibrating the impacts of these is frequently complex, and burdensome.

As a result, EMT Madrid's new ability to calculate, verify and certify the direct and indirect emissions of its carbon footprint, comes at a critical time in the city's drive for more sustainable urban mobility.

Today EMT reaches another milestone on its path towards decarbonisation, an objective in line with the Madrid 360 Environmental Sustainability Strategy and with the Strategic Plan that sets the course of the organisation until 2025, says the delegate for Urban Planning, Environment and Mobility, Borja Carabante.

AENOR has favourably certified, and without any 'non-conformity', the municipal company's calculation of its greenhouse gas emissions. This calculation has taken into account Scope 1 emissions (direct emissions from the company's own and controlled sources), Scope 2 emissions (indirect emissions from the production of energy that the organization purchases) and Scope 3 emissions (indirect emissions from sources that are not owned by the company as customers, suppliers, commuting, or waste disposal).

#### Basic data to implement strategies and achieve objectives

The calculation and its verification provide key information for establishing strategies to reduce consumption and emissions, with the analysis allowing reflection on the points of action and the preparation of a Reduction Plan with the measures and the estimation of the reduction that it entails. This step involves obtaining the carbon footprint calculation seal from the Ministry for Ecological Transition and the Demographic Challenge. The next steps for the municipal company will be to comply with the established reduction targets



The delegate for Urban Planning, Environment and Mobility, collecting the AENOR award. Credit: Ayuntamiento de Madrid





## Demonstration and facilitation

# Energy transition. Evolution of EMT Madrid fleet

Forecast by fuel type

Fuel	2020	2021	2022	2023	2024	2025	2026	2027
Diesel	388	278						
CNG	1.552	1.643	1.896	1.837	1.661	1.561	1.451	1.351
Hybrid	47	44	14					
Hydrogen					10	10	20	20
Electric	81	130	180	265	429	529	629	729
Total	2.066	2.095	2.090	2.102	2.100	2.100	2.100	2.100
<b>% fleet electrification</b>	<b>3,9%</b>	<b>6,21%</b>	<b>8,61%</b>	<b>12,61%</b>	<b>20,4%</b>	<b>25,2%</b>	<b>30,0%</b>	<b>34,7%</b>

Evolution of the composition of the EMT bus fleet at the end of the year (units). Source: EMT Madrid.

# Electrification Strategy: Current e-bus fleet

(276 units - 15 March 2024)

## E-microbuses



- Model: Tecnobus Gulliver (already removed from service, except one unit for research purposes-SHOW project)
- 2007-2020

- Model: Wolta-Rampini
- 24 units



## Standard e-buses

- Tempus Castrosua (5 units)
- Retrofit of 5 hybrid-CNG buses for full electrification with induction charging (line 76).
- Pilot project developed by EMT (already out of service)



- Model i2e (2017): 35 units (charging 5 hours) (currently upgraded)
- ieBus model (2019): 79 charge 3.5h



- Irizar ietram
- 12 units
- For the BRT service



- BYD (65 units)
- Model K9UB: first 15 units in 2020, charged in 3h



- Solaris Urbino
- 60 units





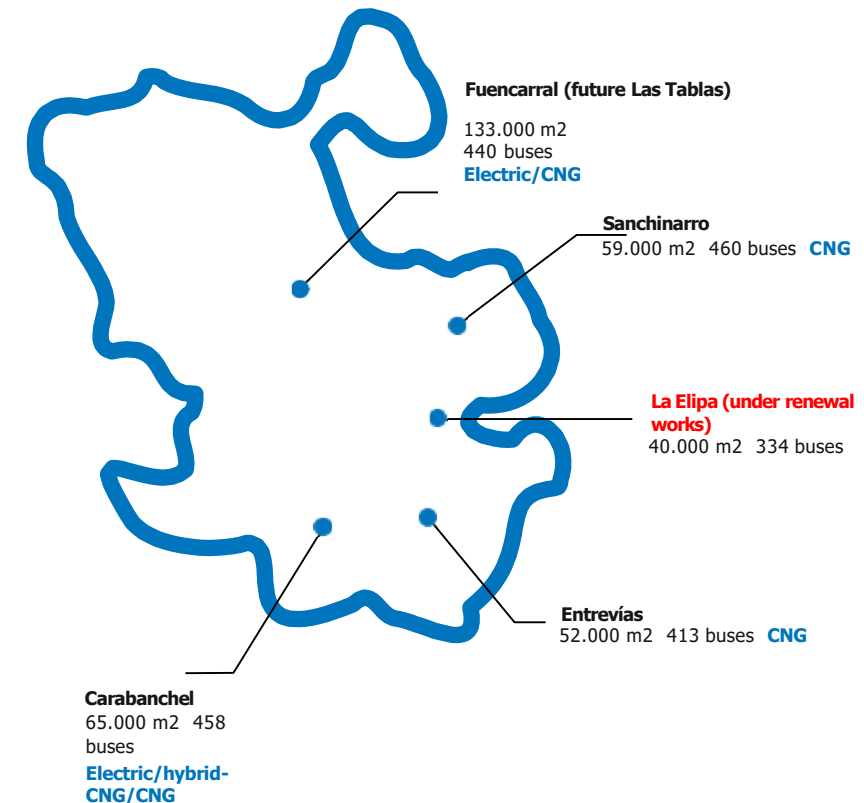
## Bus depot adaptations

### EMT Madrid Depots (5)

- Carabanchel: Testing bench/Pioneer
- La Elipa: First 100% electric bus depot (same location)
- Entrevías: GNC->Hydrogen+ Electric
- Sanchinarro: GNC -> Electric
- Fuencarral -> Las Tablas (new depot 100% electric, new location)

We have already talked about e-buses, but...

How are we charging them?







# Funding

## EMT Strategic Framework. Investment Plan

Strategic Plan EMT 2025

Investment planned: € 1.000M for the next 5 years



**535M €**  
Buses Acquisition



**290M €**  
Infrastructure



**177M €**  
Other investments

€	2021	2022	2023	2024	2025	TOTAL
Buses acquisition	112.132.900	108.584.200	81.403.900	116.284.200	116.284.200	534.689.400
Infrastructure	4.324.744	47.216.088	95.831.600	107.911.600	34.700.000	289.984.032
Other investments	25.362.310	59.719.861	45.038.420	23.000.495	24.064.208	177.185.292
<b>TOTAL INVESTMENT</b>	<b>141.819.954</b>	<b>215.520.148</b>	<b>222.273.920</b>	<b>247.196.295</b>	<b>175.048.408</b>	<b>1.001.858.724</b>



## European Funds

**EMT Madrid**

2021-2023

**175 M€**

(314 million investment)

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**NextGEN**  
150 M€

(78 M€ Electric  
Infrastructure)

B

**ERDF**  
8 M€

(2 M€ Electric  
Infrastructure)

D

**CEF - AFIF**

(15 M€ Electric  
Infrastructure)

C

**H2020 &  
Horizon Europe**  
2 M€

(1 M€ Electric  
Infrastructure)



# Collaboration

**F** FORO  
**POR**  
**MADRID**

**M**adrid **G**reen **U**rban  
**o**bility **L**ab







**75 años**  
EMT MADRID  
1947 - 2022



**THANK YOU!**