

Madrid 360 Environmental Sustainability Strategy Summary

Executive summary

January 2023

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- Annual Limit Value (VLA)
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01. Introduction & context

Madrid 360 Environmental Sustainability Strategy

In **2019**, Madrid City Council designed and launched the **Madrid 360 Environmental Sustainability Strategy**. An **alive strategy**, that has evolved to account for new demands from its citizens and that as of today encompasses more than **200 initiatives**.



- In 2019, the Madrid 360 Environmental Sustainability Strategy is designed and launched
- Madrid 360 is an alive strategy, that encompasses more than 200 initiatives
- The Strategy has evolved to account for the new demands from its citizens

Madrid 360 transforming vectors



City

It has as an objective, among others, to **increase energy efficiency** and support **electrification**, improve **infrastructure** management and promote the development of **green areas**.



Mobility

This vector leads to the promotion of **micromobility**, **public transport** optimisation or the increase of the number of **environmentally friendly** vehicles in the city.



Administration

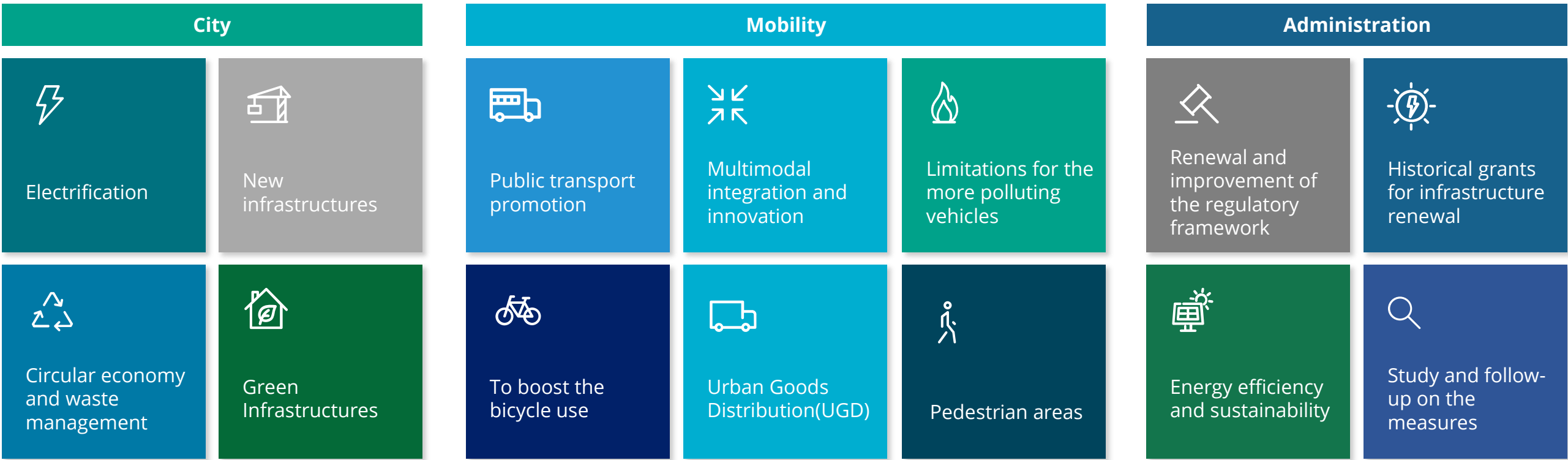
The aim is to transform the administration in an example and **leader in sustainability**, by adapting the **regulatory framework** to facilitate the Strategy implementation.

01. Introduction & context

Madrid 360 Environmental Sustainability Strategy

The three Madrid 360 **transformation vectors** (City, Mobility and Administration) aim to transform Madrid into a more sustainable from the **environmental, social, land and economic points** of view. Those vectors are developed within the following **strategic scopes**.

Madrid 360 Strategy vectors



01. Introduction & context

Madrid 360 Environmental Sustainability Strategy

Description of the 14 vectors of the strategy



90%

Of initiatives completed or running



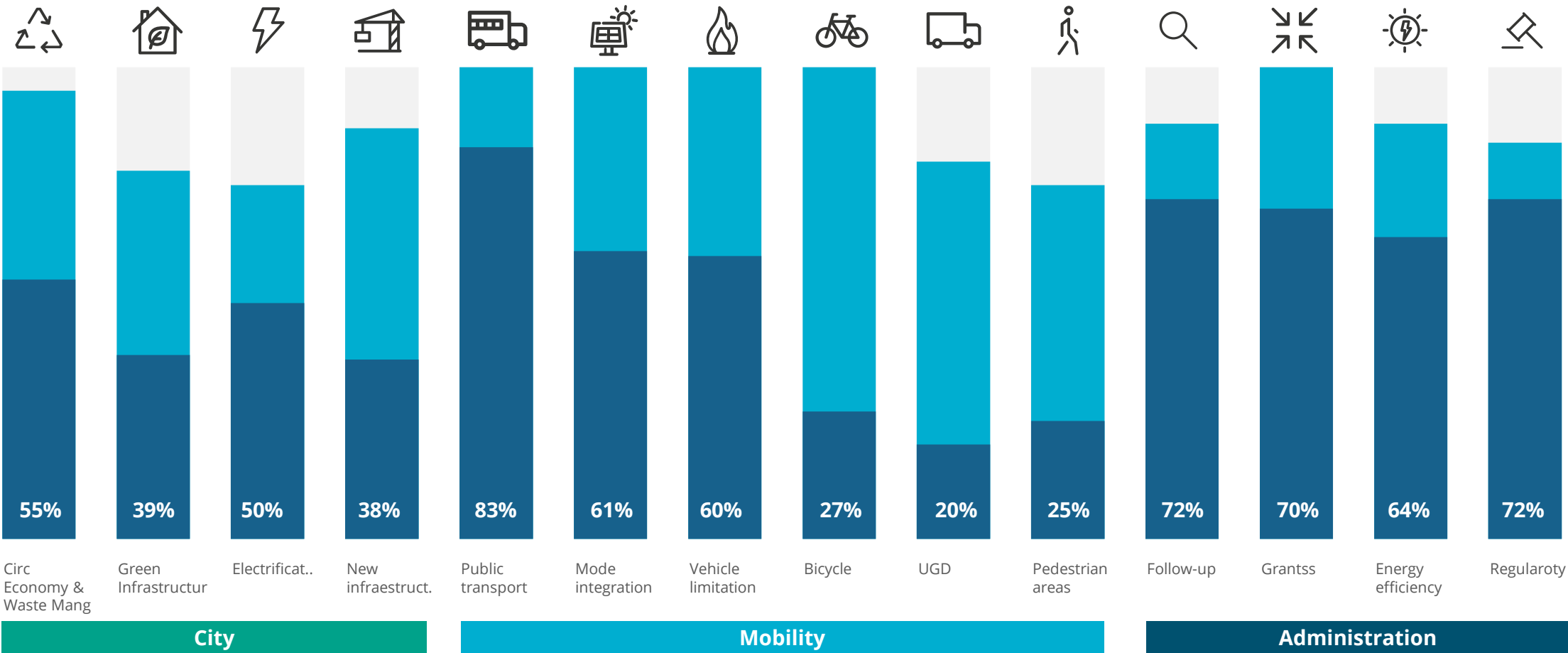
60%

Completed



30%

Running



Percentage of completed initiatives Percentage of running initiatives Percentage of remaining initiatives

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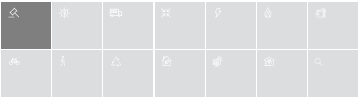
III

Air quality improvement

- Annual Limit Value (VLA)
- Hourly Limit Value (VLH)



02. Madrid 360 Strategy Summary



Main implemented actions: Renewal and improvement of the regulatory framework

It has been necessary to develop a new and exhaustive regulatory framework which could hold all the initiatives launched withing the Madrid 360 Strategy.

City Council ordinances of this term



Air Quality and Sustainability Municipal Ordinance

In force since March 2021



Taxi Municipal Ordinance

In force since June 2021



Sustainable Mobility Municipal Ordinance

In force since September 2021



Public Spaces Cleaning and Waste Management Municipal Ordinance

In force since December 2022

Other relevant documents



Road map for Climate Neutrality

In force since March 2021



Mission City of European Commission

In force since April 2022



Sustainable Mobility Plan 360

In force since July 2022



Urban distribution of Goods Strategy

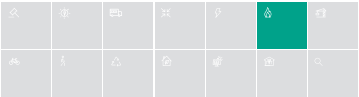
In force since October 2022



Especial Noise Protection Zone Trafalgar-Ríos Rosas

In force since November 2022

02. Madrid 360 Strategy Summary



Main implemented actions: Limitations for the more polluting vehicles

The September 2021 Sustainability Municipal Ordinance established the regulatory framework so the whole city could become a **Low Emissions Zone (LEZ)** and created the basis for the development of two **especial protection LEZ** in the **Central District** and **Plaza Elíptica**



Madrid Low Emissions Zones (LEZ)

- From the **1st of January 2022**: The **“A” vehicles registered outside Madrid** cannot circulate **within the boundaries of the M-30**
- From the **1st of January 2023**: The **“A” vehicles registered outside Madrid** cannot circulate **on the M-30**
- From the **1st of January 2024**: The **“A” vehicles registered outside Madrid** cannot circulate **within the city boundaries**.
- From the **1st of January 2025**: **All “A” vehicles** cannot circulate **within the city boundaries**
- In Madrid LEZ, the unauthorised accesses have been reduced by **59,4 %** from the prewarning period.



Especial Protection Low Emissions Zones (EPLEZ)

- **Central District Especial Protection Low Emissions Zones (EPLEZ)**: In force since September 2021

The unauthorised accesses to the Central District EPLEZ have been reduced by **40,6 %** from the prewarning period.
- **Plaza Elíptica Especial Protection Low Emissions Zones (EPLEZ)**: In force since December 2021

The unauthorised accesses to the Plaza Elíptica EPLEZ have been reduced by **66,5 %** from the prewarning period.

Note: The “A” vehicles are those petrol vehicles registered before 2000 and diesel vehicles registered before 2006

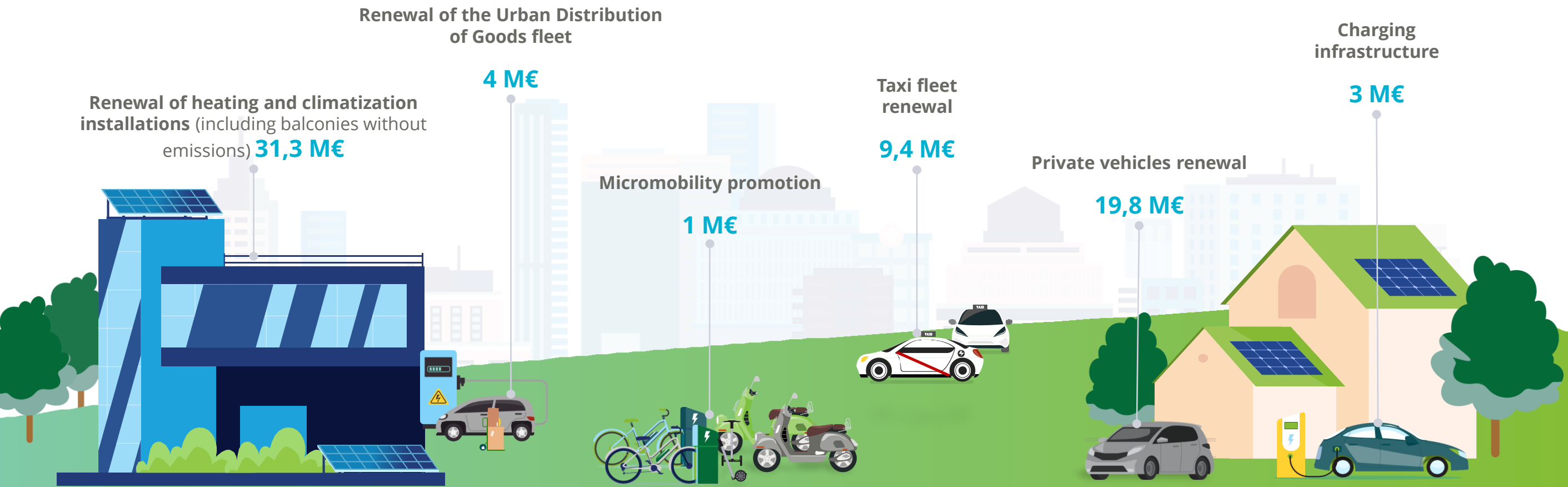
02. Madrid 360 Strategy Summary

1	2	3	4	5	6	7
8	9	10	11	12	13	14

Main implemented actions: Historical Grants for Energy Transition

Through the **Strategic Grants Plan**, the Madrid City Council wants to offer **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



02. Madrid 360 Strategy Summary



Main implemented actions: Public transport promotion

In its decisive promotion of the public transport, the Madrid City Council has approved a Strategic plan for the **Municipal transport Company (EMT)** that includes:

+1.000M€ investment

534 M€ for **fleet renewal** and **290 M€** for the construction of **sustainable infrastructures**



New Infrastructures

New Operation Centre **La Elipa**, New Operation Centre **Las Tablas**, **OC Carabanchel**

Electromobility Hub Canalejas 360:

Hub in the city centre with 12 charging points and mobility services such as carsharing, electric motosharing, BiciPARK, etc.



Innovation and digitalization

App Madrid Mobility 360: Allows for route calculation, tickets acquisition and public transport occupancy.

Full Redesign of the buses
Counting and security technology
Card payments in the whole net.

02. Madrid 360 Strategy Summary

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Main implemented actions: Public transport promotion

Further to the strategic plan and the fleet renewal, the EMT is developing **new routes**, new **bus exclusive lanes** and initiatives to cater for the citizens demand and promote public transport.



New routes

Development of **8 new routes**, among which **3 zero routes** (3 zero emissions routes, 2 of which are free)



New bus exclusive lanes

+66 km

An increase of over **50%** since 2019



EMT free rides

36 "free days" on the EMT buses
+30,7 million passengers in free zero routes and the free bus days



Demand recovery

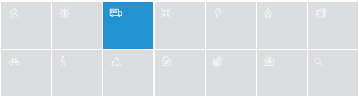
+99,5%

Demand recovery* (working days)

1,57 million passengers

On the 22nd of November 2022 (Black Friday): was the all-time record on the EMT since the start of the pandemic.

02. Madrid 360 Strategy Summary



Main implemented actions: EMT sustainability

With the decommissioning of the last diesel bus, Madrid becomes the **first European big city** with a **100 % environmental friendly bus fleet** In 2025, 25% of the EMT fleet will be electric and in 2027 at least a third of the city council buses.



 Madrid has **19 100 % electric routes**, which makes the capital city **the Spanish city with more electric routes and the second in Europe, after Berlin.**



 The EMT has **reduced by 45% the NOx emissions** 139,789 kg in 2021 against 76,352 kg in 2022



 The EMT invests 10,8 M€ in a **hydrogen factory**, and adds **ten buses propelled by green hydrogen.**



 From the beginning of the political term, the EMT has bought **1.291 buses**, what means a **62%** renewal of the fleet.

EMT electric fleet evolution

2022	2025	2027
8,6%	25%	35%
Of the buses are electric (Dec 2022)	Of the buses will be electric	Of the buses will be electric

02. Balance de la Estrategia de Sostenibilidad Ambiental Madrid 360

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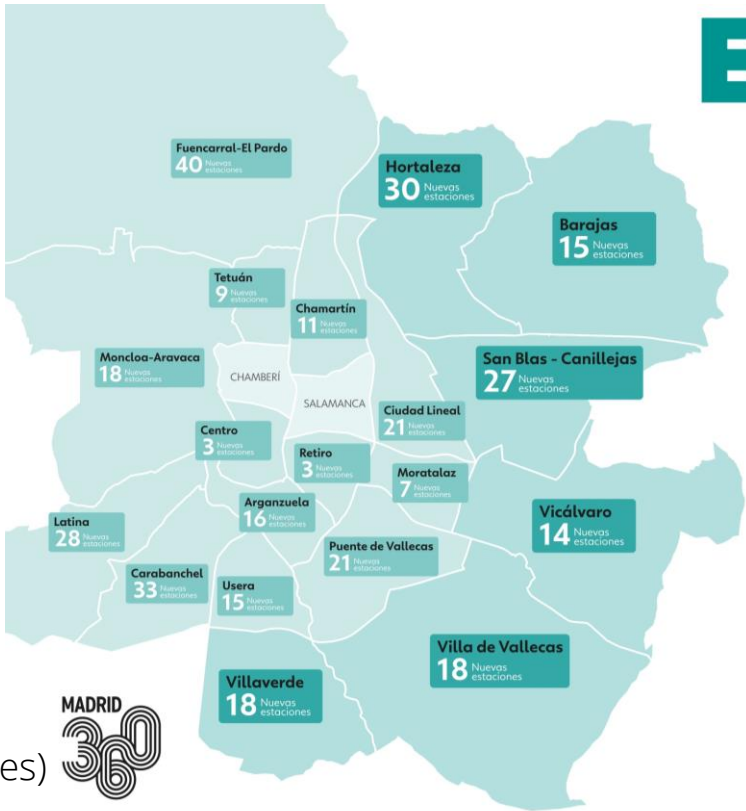
Main implemented actions: BiciMAD expansion

Between 2019 and 2020, BiciMAD had a historical expansion with 90 new stations. The **new expansion project** launched in 2022 aims to reach all districts by 2023, duplicating the existing system to reach **611 stations and 7,500 vehicles**.

21 districts (+6 new: reaches all districts)

611 stations (+347 new: more than doubling the existing ones)

7.500 bicycles (+4.536 new: more than doubling the existing ones)



BiciMAD
NUEVO PLAN DE EXPANSIÓN

347 Nuevas estaciones

225 Nuevas estaciones
En distritos con servicio ya implantado

122 Nuevas estaciones
En nuevos distritos

Financiado por la Unión Europea



02. Madrid 360 Strategy Summary

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Main implemented actions: Bicycle promotion and other PMV

The conscious promotion of the bicycle and other Personal Mobility Vehicles (PMV) by the city council has seen the biggest expansion of the **BiciMAD** service in its history, reaching all districts and the development and promotion of infrastructures such as bicycle lanes and parking spots for these vehicles.

6.000

Scooter authorisations

New model tidier, safer and integrated:
3 companies

13 km

Castellana bicycle lane

5 M€ for the first part with 4.25 km,
expected in March 2023

Regulations

Sustainable Mobility Ordinance

The new ordinance cover the bicycle, PMV and motorcycle parking, enhancing road safety in Madrid.

71 km

More of bicycle lanes

24,342

Municipal parking spots for bicycles + PMV + Motorbikes



02. Madrid 360 Strategy Summary

Main implemented actions: Pedestrian areas

One of the most singled out measures included in the Madrid 360 Strategy has been development of pedestrian only areas in the 21 city districts to turn 170,000 square metres in zero emissions zones. The **Puerta del Sol and its surroundings** were the first of this pedestrian areas.

Puerta del Sol pedestrian only area

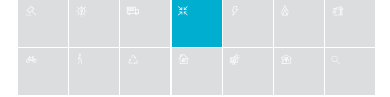
16.751 square metres for pedestrians

The principal **vectors of the refurbishment** have been:

- Elimination of almost **7.000 daily trips** in private vehicle
- **New signage** specific, vertical and on the road.



02. Madrid 360 Strategy Summary



Main implemented actions: Urban Distribution of Goods (UDG)

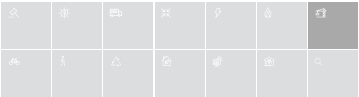
The City Council has implemented the first strategy for the **Urban Distribution of Goods (UDG) 360**. The strategy comprises ten measures to promote a more **efficient and sustainable logistics model** that allows a **greater agility** for the operators.

- 1** The development of an **App** to know in real time the **occupancy levels** of the cargo areas.
- 2** The installation of **reservation sensors** to obtain better usage information.
- 3** The increase in the **number of cargo areas** for the distribution of goods.
- 4** The **extension** of the cargo operations schedule
- 5** **New signage** implementation.
- 6** The formation of a **new incident management team** to support the industry and control the correct functioning of the system.
- 7** The **enhancement of micro-hubs** by public and private collaboration and the promotion of night time distribution of goods.
- 8** The **installation of new lockers** for e-commerce.
- 9** The promotion of an environmentally friendly transition of the UDG vehicles.
- 10** The creation of an **UDG forum** to implement further initiatives coming from stakeholders engagement.



The new **App DUM Madrid 360** has been launched as a key measure of the strategy. It is exclusively developed for **professional users**, it **digitalises** the whole delivery system and **automatizes** the usage control of the cargo bays. The App has three objectives: **Optimise de usage** of the reservations, allowing a greater availability of them, **reduce pollution** by reducing unnecessary lengthen trips and **put an end** to parking breaches.

02. Madrid 360 Strategy Summary



Main implemented actions: New Infrastructure

The **M-30 Nudo Norte** improvement works, one of the most congested spots of the city, is one of key measures to reduce emissions. The development allows for a daily reduction of 14 CO_{2eq} tons.



Nudo Norte



Plaza de España

Includes pedestrianisation of the axis Bailén-Ferraz, planting over **1,100 new trees** and implementation of three kilometres of **cycling lanes**.

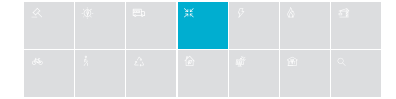
Mahou-Calderón

The completion of the covering of the M-30 (Mahou-Calderón area), will allow the environmental, pedestrian and landscape continuity of the Madrid Río park, finalising one of the most important urban transformation within the city of the century.

Bus Rapid

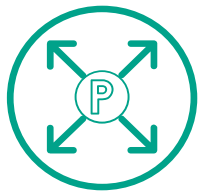
New infrastructure. A **bus-only lane with priority at the traffic lights** of 30.9 km that will connect Valdebebas and Sanchinarro with the Ramón y Cajal Hospital.

02. Madrid 360 Strategy Summary



Main implemented actions: Regulated parking service (SER)

Aiming to improve the **air quality**, the City Council has **expanded** the SER and implemented new fees that vary with the **air quality** within the city..



01/ EXTENSION OF SER ZONE

- In **May and June 2022**, **6,330 SER slots were activated** in **4 new districts**
- In **September 2022**, **12,413 SER slots** were activated in **5 districts**



02/ SER DYNAMIC TARIFFICATION

- Implementation of the **SER dynamic tariff** in **January 2022**
- The fee gets incremented by **60 %** up to a **100 %** in proportion to the NO_x emission levels and a **100 %** when the **Protocol for Pollution Episodes** is activated.



03/ HIGH ROTATION SPACES

- Implementation of the **first 491 high rotation slots** in **February 2022**
- The objective is to **reduce the traffic that happens while looking for a parking spot**, by reducing the allowable parking time to **45 minutes**.

02. Madrid 360 Strategy Summary



Main implemented actions: Electrification and energy efficiency

The city council, with the Madrid 360 objectives, promotes **solar power** and energy **self-consumption** as a key measure to facilitate the transition to more **efficient climatization systems** and **zero emissions**.



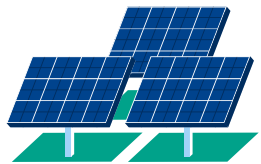
x3 fast charging points

in public access spaces since 2019

284 public access

points: 100 fast charging and 184 slow charging

Regulatory drive*: Charging stations in non residential buildings, Solar power systems in new construction.



+27% growth of **energy produced** in municipal buildings with **solar power installations** from 2019, with a **19%** output increase

Madrid 360 Solar, initiative to promote energy self-consumption and solar power installations.

50% council tax **bonification** for 3 years for buildings which install solar power systems.

95% ICIO deduction if a self-consumption system is installed.

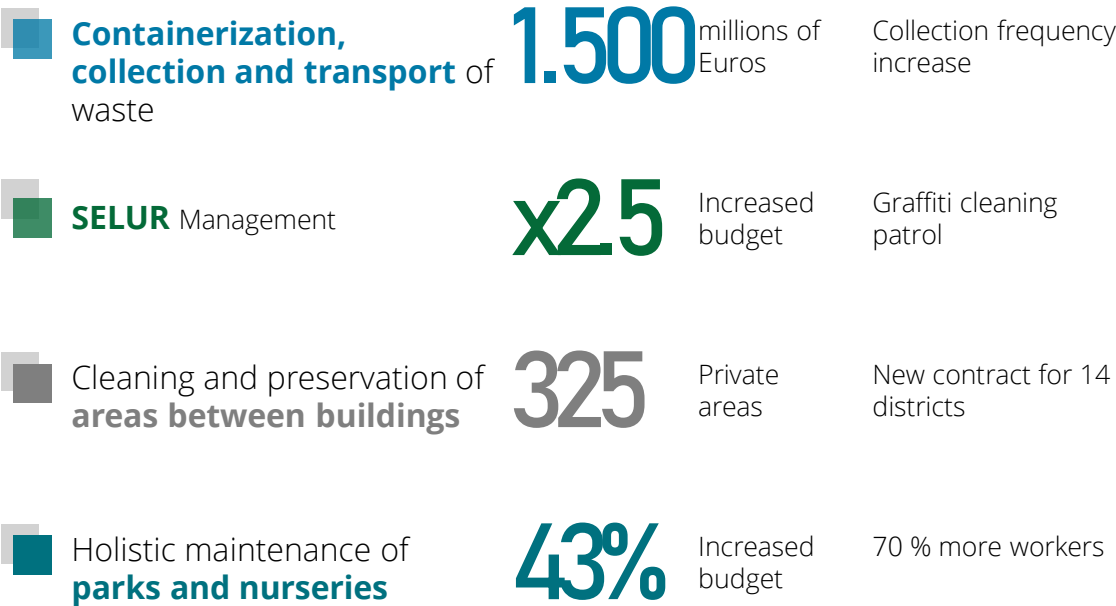
Note: buildings for non-residential use with parking with more than 20 spaces, must install at least one charging station for every 40 parking spaces; new buildings must allocate at least an area equivalent to 50% of the occupation of the plot for the installation of solar energy systems preferably located on the roof.

02. Madrid 360 Strategy Summary



Main implemented actions: Waste management and cleaning

Madrid City Council has made an **historical investment** to improve the cleanliness of the city. The budget of the new cleaning and waste collection contracts exceeds in over 200 million Euros previous contracts.



02. 02. Madrid 360 Strategy Summary



Main implemented actions: Circular economy and waste management

The city council promotes a circular economy and a proper waste management, as reflected in its efforts to improve and expand the capacity of the **Parque Tecnológico de Valdemingómez**, which in 2022 had a **123,55 M€ budget**.

Expansion of the **Biomethane treatment plant** (PTB), with a increase of

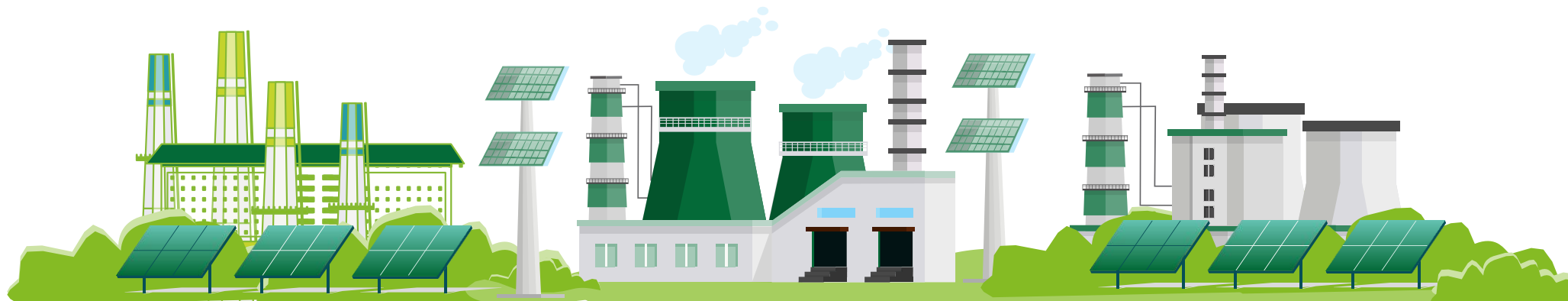
80 % Equivalent to the gas needed to power 750 buses or 20.000 homes.

Implementation of **organic waste** collection and construction of a new plant for the treatment of this waste, with an investment of

42 M€ And a total compost management capacity of 100.000 tons.

■ Use of the **biomethane** generated in the **Parque Tecnológico Valdemingómez** in one of the **CNG routes of the EMT**.

■ Launch of '**ValdeInnova Biomethane**', to **reduce the green house gases** (CO₂) produced in the **La Paloma Plant**.



02. 02. Madrid 360 Strategy Summary

01	02	03	04	05	06	07	08
09	10	11	12	13	14	15	16

Main implemented actions: trees and green areas

Madrid is one the cities with more trees in the world. Within our commitment with the environment and the green heritage, the City Council has undergone the biggest **tree planting campaign of its history** and has an annual budget of **218 M€** for the cleaning and preservation of parks and other green areas.



3.800

Parks and green areas
in the city



1,74

Million trees upkept by
city council



54%


Of the streets of the city have trees



3^{er}


Consecutive year being awarded the
'Ciudad arbórea del mundo'

01/ GREEN HERITAGE RECOVERY PLAN




100.000

Planted trees to recover those affected by the “Filomena” storm



61.000


Units to be planted within the wasteland recovery



11.216


Identified pits able to be used for tree planting

02/ WORKS TO IMPROVE AND PRESERVE GREEN AREAS




79 M€

Budget for works to improve and preserve green areas



85

Expected remodelling works



64

Finalised works (75% of total)

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Air quality improvement

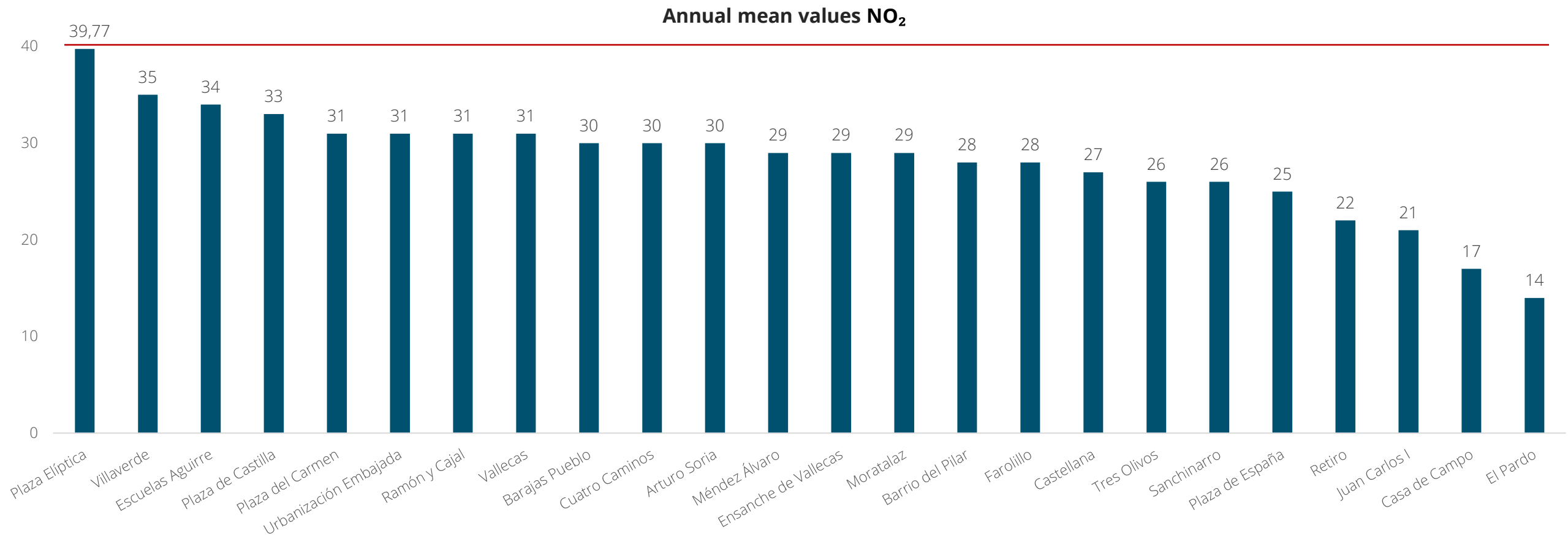
- Annual Limit Value (VLA)
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03. Air quality improvement in the city

General status

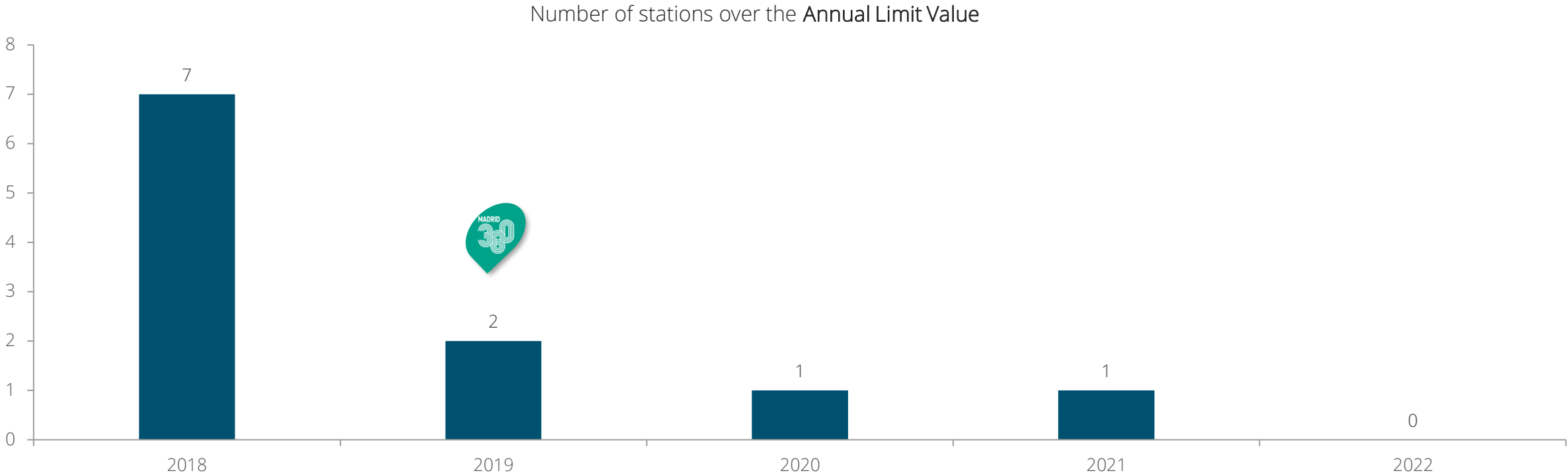
Madrid **complies for the first time** with the **Air Quality European Directive**



03. Mejora de la calidad del aire de la ciudad

Annual Limit Value (VLA)

In 2020 and 2021, only the Plaza Elíptica station went over the annual limit established by the European Directive. In 2022, it stayed under the limits with 39,77 $\mu\text{g}/\text{m}^3$, what has made possible to comply with the European regulations. The mean value of the 24 station was 28,29 $\mu\text{g}/\text{m}^3$, a **22,7 % less than 2018**

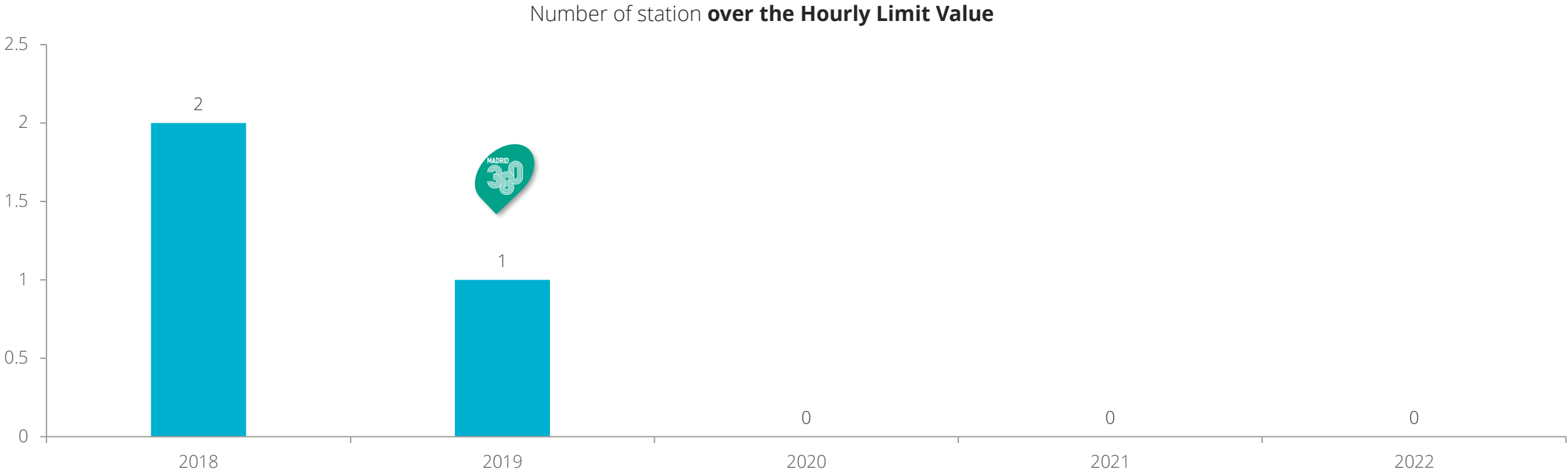


Note: According to Directive 2008/50/EC, the HLV may not exceed 200 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) more than 18 times a year for the same station in spot measurements, and the ALV is set at 40 $\mu\text{g}/\text{m}^3$ as the maximum allowed as the average value of the measurements per station. .

03. Air quality improvement in the city

Hourly Limit Value

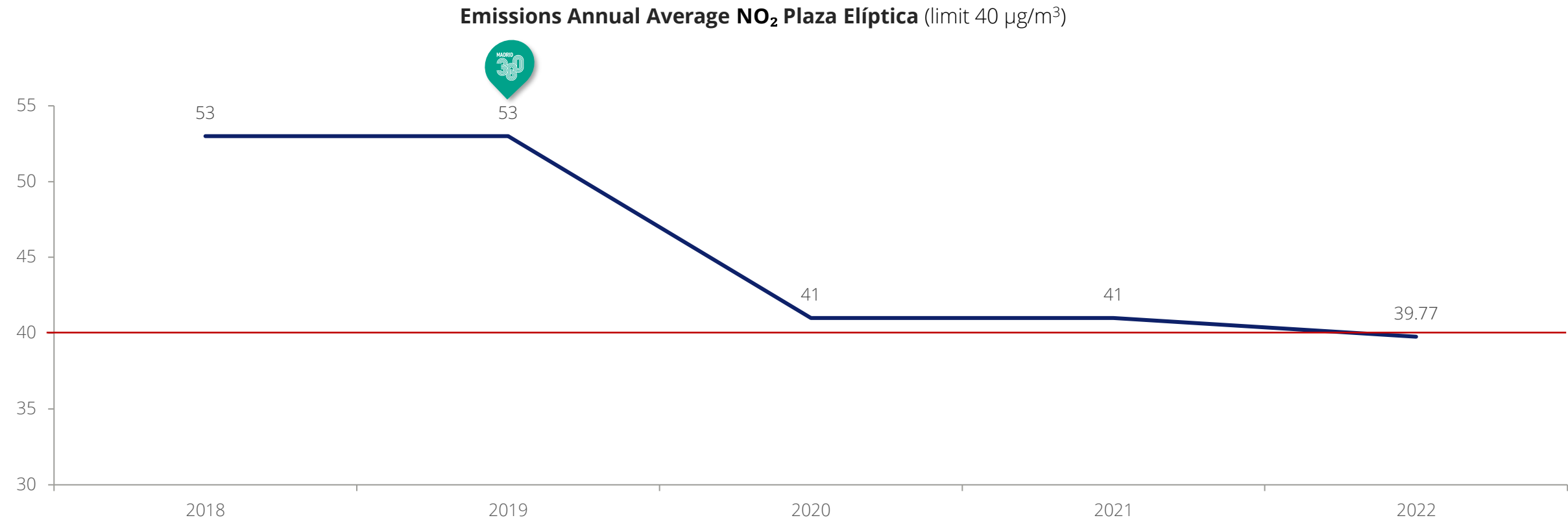
For the third year in a row, **all** stations are under the Hourly Limit Value (HLV) established by the 2008/50/CE Air Quality Directive, a limit that was continually breached between 2010 and 2019.



03. Air quality improvement in the city

Plaza Elíptica

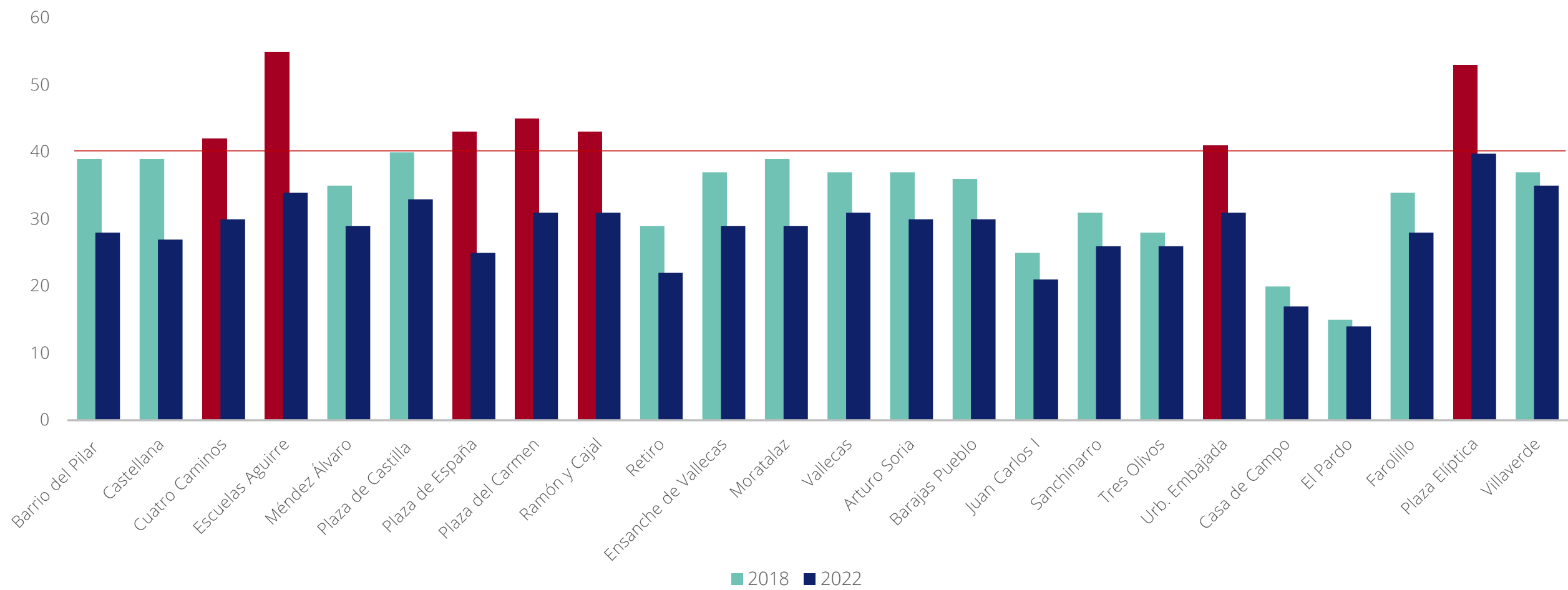
Below the detailed Plaza Elíptica station measurements, the only station the did not comply with the Annual Limit Value in 2020 and 2021, and that has finally gone under the EU Directive set limit values in 2022.



03. Air quality improvement in the city

Annual mean Values

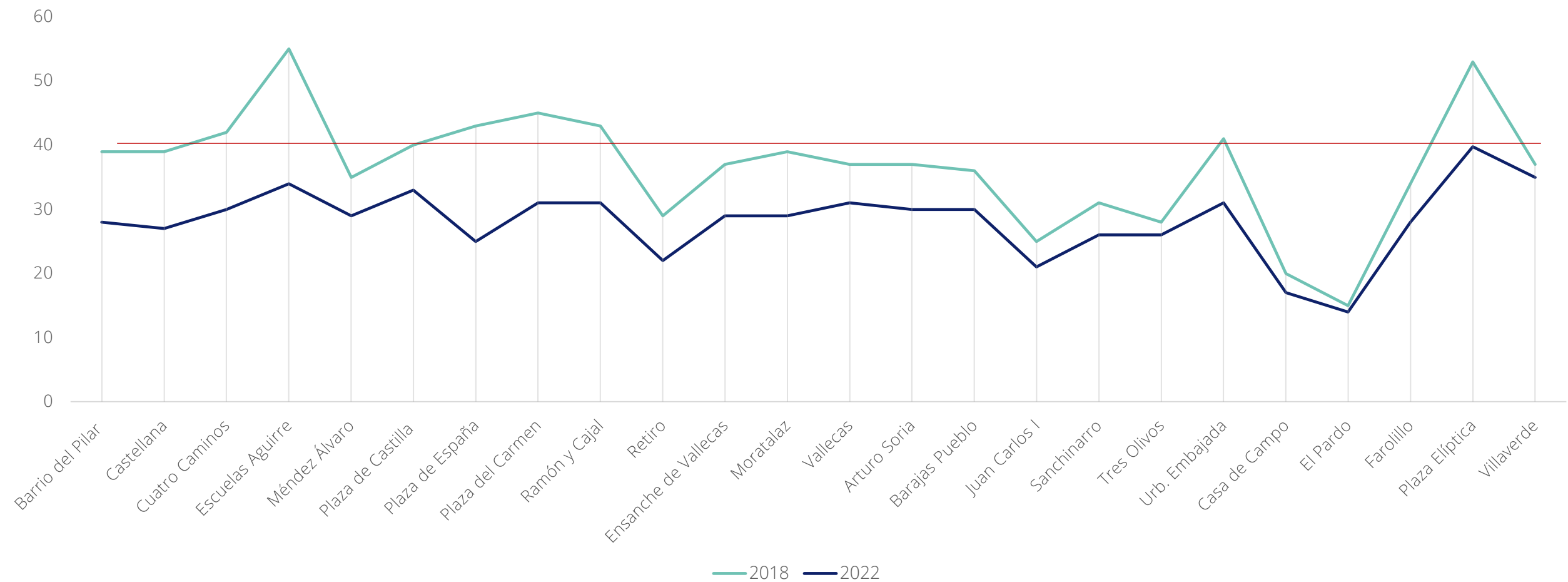
Evolution of the NO₂ Annual Mean Values (2022 vs 2018)



03. Air quality improvement in the city

Annual Mean Value

Evolution of the NO₂ Annual Mean Values (2022 vs 2018)



03. Air quality improvement in the city

Annual Mean Values

ZONE	STATIONS	2018	2022	EVOLUTION 2022 vs 2018
Zona 01 (Inside M-30)	Barrio del Pilar	39	28	↓ 28,21%
	Castellana	39	26	↓ 30,77%
	Cuatro Caminos	42	29	↓ 28,57%
	Escuelas Aguirre	55	34	↓ 38,18%
	Méndez Álvaro	35	29	↓ 17,14%
	Plaza de Castilla	40	32	↓ 17,50%
	Plaza de España	43	24	↓ 41,86%
	Plaza del Carmen	45	31	↓ 31,11%
	Ramón y Cajal	43	30	↓ 27,91%
	Retiro	29	22	↓ 24,14%
Zona 02 (Southeast)	Ensanche de Vallecas	37	29	↓ 21,62%
	Moratalaz	39	28	↓ 25,64%
	Vallecas	37	30	↓ 16,22%

ZONE	STATION	2018	2022	EVOLUTION 2022 vs 2018
Zona 03 (Northeast)	Arturo Soria	37	29	↓ 18,92%
	Barajas Pueblo	36	30	↓ 16,67%
	Juan Carlos I	25	21	↓ 16,00%
	Sanchinarro	31	25	↓ 16,13%
	Tres Olivos	28	26	↓ 7,14%
	Urb. Embajada	41	31	↓ 24,39%
Zona 04 (Northwest)	Casa de Campo	20	17	↓ 15,00%
	El Pardo	15	14	↓ 6,67%
Zona 05 (Southwest)	Farolillo	34	28	↓ 17,65%
	Plaza Elíptica	53	40	↓ 24,96%
	Villaverde	37	35	↓ 5,41%
Nº STATIONS > 40 µg/m³		7	0	

