



CONSEJERÍA DE HACIENDA Y FUNCIÓN PÚBLICA

Comunidad de Madrid

2022 GREEN BOND ALLOCATION & IMPACT REPORTING



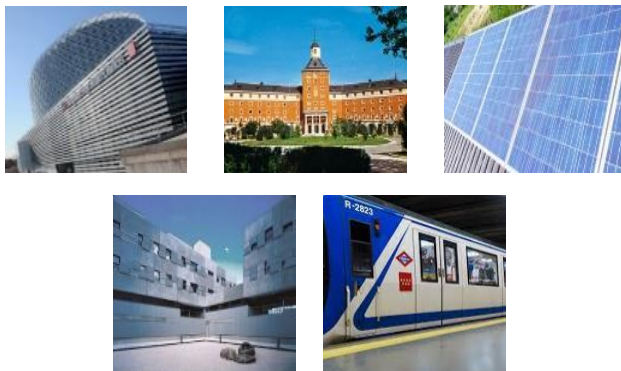
Sustainability Mandate of the Community of Madrid

Comunidad de Madrid has an important **environmental mandate**. Almost 50% of the region area of the region is protected due to its environmental protection and conservation value. The geo-economic situation in Madrid creates the need to implement policies for pollution management and waste treatment in densely populated urban areas.

Guided by this purpose, the region set out its **Strategy for Sustainable Waste Management** for the 2017-2024 period. In relation with climate change and air quality, the **Plan Azul+ 2013-2020** has been the backbone for eight years, particularly focusing in tackling pollution and promoting energy efficiency.

Among the measures set out in the Plan Azul+, which is expected to be followed by a new Plan, we find the following objectives by sector, which are representative of the regions' general sustainable strategy:

- **Transportation:** Metro de Madrid is Spain's largest and Europe's third largest (third to London and Moscow) metro system with 302 stations spread over 294 Km. Comunidad de Madrid aims to modernise taxi and bus fleets with greener vehicles, improvement of bicycle infrastructure, fiscal incentives for the transition towards greener technologies in private transportation
- **Industry:** reduction of emissions from industrial activities, like NOX produced by cogeneration plants
- **Residential/commercial/institutional:** use of clean fuels for domestic heating, improvements in energy efficiency, smart grids
- **Agriculture:** sustainable management of forests, promotion and development of biomass energy



2022
Emissions
Avoided by
Green Public
Transportation

600,825
tCO₂

Source: Comunidad de Madrid



Green Expenditures for the 2022 Green Bond issuance

Clean Transportation



- Comunidad de Madrid supports the **decarbonization of the Region's public transport**
- In 2022, EMT Madrid has approved a **€35m investment** for the purchase of **50 new electric buses and 6 electric micro-buses**
- This is in line with the **company' strategy** of gradually reducing the fleet's carbon emissions



- Comunidad de Madrid supports the maintenance and development of the fully-electrified Madrid's metro
- Thanks to the Energy Saving Plan 2012-2017 and the current Energy Efficiency Plan, **Metro de Madrid** – the public enterprise of the Madrid underground – **has reduced electricity consumption in daily operations by 25%**

Comunidad de Madrid was the first Public Sector issuer in Spain to align its Green bonds with the EU taxonomy and standards

Source: Comunidad de Madrid



Other Environmental initiatives encouraged by CAM

Project and supply works and turnkey assembly for a plant of green hydrogen production or distribution network modernization among others

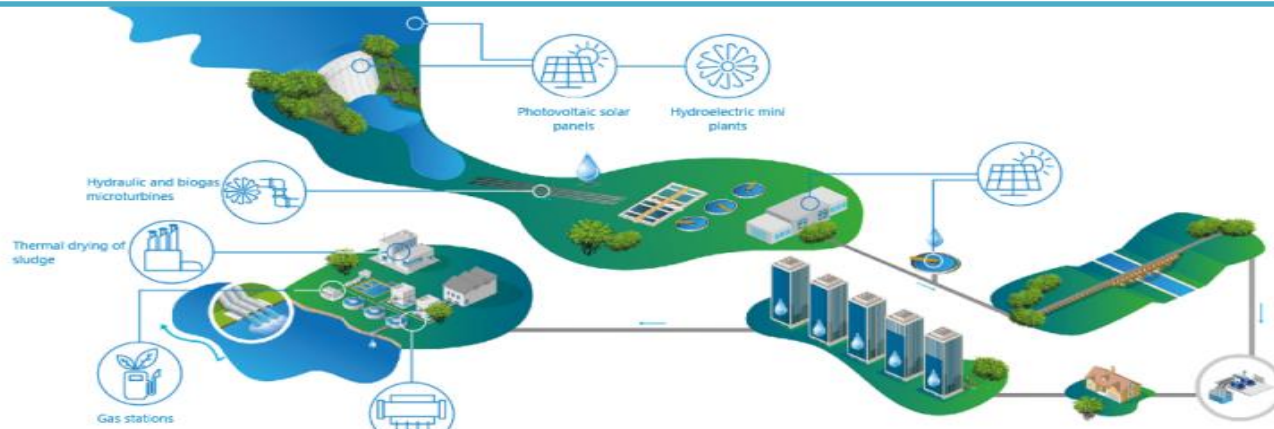


- Comunidad de Madrid is **supporting economically several projects outside their green bond offerings.**
- Through Canal de Isabel II (CYII), for instance, Comunidad de Madrid is carrying out the **assembly of a plant for green hydrogen production.** Including the operation of the facility for two years and the commercialization of H₂ produced.
- In 2022, a **1MW photovoltaic power plant has been built** in the same wastewater station, being the first phase of the project. With a **production capacity of 200Nm³/h green hydrogen.**

- Canal de Isabel II is a fully publicly managed water company, **the shareholding is made up of the Community of Madrid (82.4%)** and 111 municipalities of the Community (17.6%).
- Through CYII, **main competence is to supply and purify the water of most of the municipalities** in the region.
- For the next year **Comunidad de Madrid will support finance of over Eur 300M to CYII for RED Plan: Distribution Network Modernization** with the aim to improve resiliency and modernization actions in the water distribution network of Madrid region.
- **Canal de Isabel II** are managers of a natural resource and **is entrusted with the mission to protect the quality of bodies of water in the Madrid region.** The preservation of the environment and the sustainable management of all their activities are part of their DNA.
- Its main objective is to **promote the circular economy and sustainable development,** addressing the challenges associated with climate change through the corresponding adaptation and mitigation plans of Comunidad de Madrid.

Other Environmental initiatives encouraged by CAM

Biofactories: Obtaining raw material from wastewater treatment



Canal Isabel II annually produces more than 120 hm³ of reclaimed water, using it to irrigate green areas, wash streets and industrial uses. In addition, **They understand wastewater treatment plants as biofactories** in which Canal de Isabel II takes advantage of biogas to produce electricity and vehicle fuel, **they sanitize sludge for reuse as fertilizers and recover phosphorus from wastewater to produce 1,5 tons of struvite daily**. Facilities under Canal de Isabel II:

- 9 Hydroelectric power plants
- 13 Treatment plants equipped with motor generators that work from the biogas generated in the treatment
- 2 Cogeneration plants associated with thermal drying of sludge
- 3 Small wastewater jumps that take advantage of the difference in elevation at the discharge point
- 9 Microturbines installed at different points of the supply network
- 2 Purification stations that have several photovoltaic panels

Thanks to the joint performance of these facilities, last year **Canal de Isabel II broke their historical record for electricity generated. In total 420 million kilowatts hour, equivalent to 87 % of their total consumption**. Moreover they broke their historical record for the percentage of energy production over consumption (125 %).

Other Environmental initiatives encouraged by CAM

Ambitious investments in subway line extensions and bus interchanges & terminals

GRANDES ACTUACIONES 2019/2030

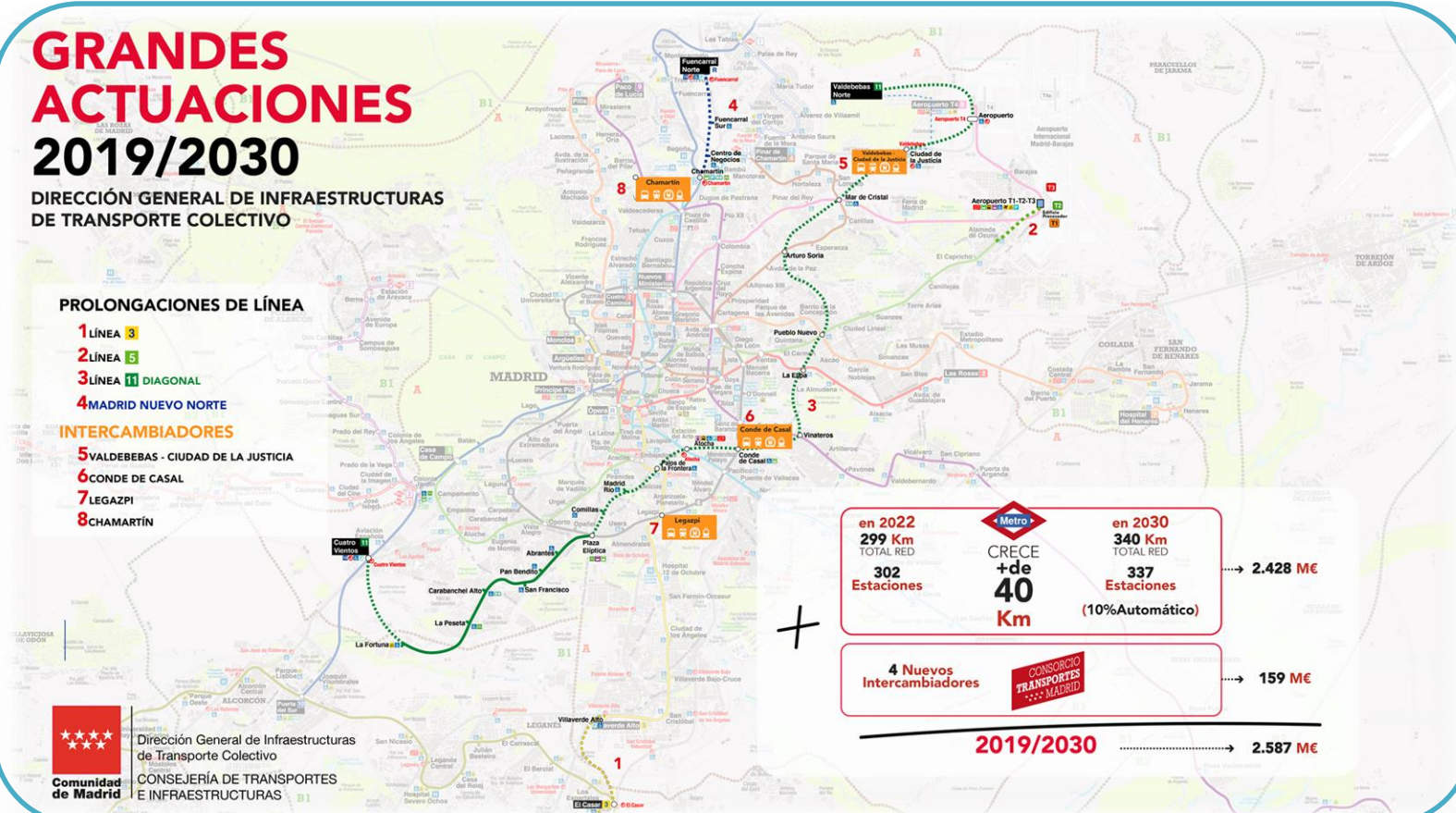
DIRECCIÓN GENERAL DE INFRAESTRUCTURAS DE TRANSPORTE COLECTIVO

PROLONGACIONES DE LÍNEA

- 1 LÍNEA 3
 - 2 LÍNEA 5
 - 3 LÍNEA 11 DIAGONAL
 - 4 MADRID NUEVO NORTE
- ### INTERCAMBIADORES
- 5 VALDEBEBAS - CIUDAD DE LA JUSTICIA
 - 6 CONDE DE CASAL
 - 7 LEGAZPI
 - 8 CHAMARTÍN



Dirección General de Infraestructuras de Transporte Colectivo
CONSEJERÍA DE TRANSPORTES E INFRAESTRUCTURAS



en 2022 299 Km TOTAL RED	 CRECE +de 40 Km	en 2030 340 Km TOTAL RED	→ 2.428 M€
302 Estaciones		337 Estaciones (10% Automático)	

4 Nuevos Intercambiadores	 CONSORCIO TRANSPORTES MADRID	→ 159 M€
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2019/2030 → 2.587 M€

4 new bus interchanges and more than 40 new Km in metro lines by 2030

Overview Green Bond Funding Strategy Comunidad de Madrid

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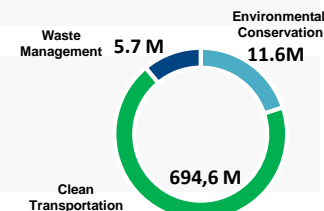
Green bonds issued up to date totaling a size of 1,700M EUR

2021 & 2022 Green Bonds allocated to clean transportation projects fully aligned with EU Taxonomy



Continued assessment towards implementing alignment on EU Taxonomy regarding other green categories, such as Waste Management and Environmental Conservation

Annual Green Bond eligible portfolio over 700M EUR



Annual impact report published on Comunidad de Madrid Website*

Committed to at least one Green Bond issuance per year



Comunidad de Madrid is a relevant Green Bond Issuer

Source: Comunidad de Madrid

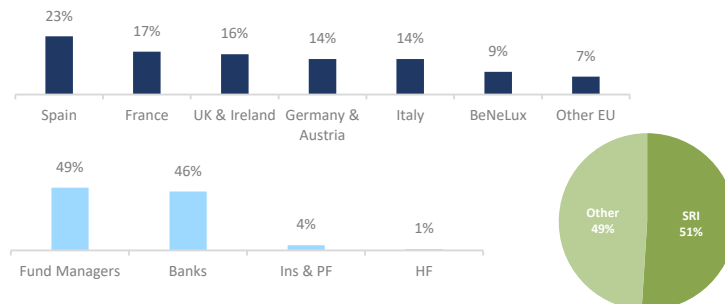
*<https://www.comunidad.madrid/en/inversion/relacion-inversores/deuda-sostenible>

Comunidad de Madrid 2022 Green Bond review

Final Terms and Conditions

Issuer	The Autonomus Community of Madrid
Issuer Ratings	A-/Baa1/A-/BBB (S&P/Moody's/DBRS/Fitch)
Format	RegS, Bearer Dematerialised
Ranking	Senior, Unsecured
Risk Weighting	0%
Size	EUR 500m
Maturity	31-October-2029
Settlement	14-October-2022 (T+8)
Coupon	2.822% Fixed, Annual, Act/Act - Long first
Reoffer Price	100% / 2.822% / SPGB + 23 bps
Benchmark	SPGB 0.6 10/31/29 @ 87.282% HR 107%
Listing	AIAF
Min Denoms	€1k + €1k
Bookrunners	BBVA, CaixaBank, Crédit Agricole CIB, ING and Santander
ISIN	ES00001010J0

Investor Type and Geographic Distribution



Transaction Highlights

- On Tuesday, October 4th, 2022, the Autonomous Community of Madrid successfully launched and priced its third Green bond deal and second public transaction in 2022.
- The bond issued under Autonomous Community of Madrid's existing Sustainable Finance Framework, becomes the first public sector issue in Spain – and one of the few in Europe – to be fully aligned with the EU Green Taxonomy.
- The transaction was preceded by a week-long marketing exercise with European investors:
 - On October 3rd, the Autonomous Community of Madrid formally mandated the banks for a new 7yr Green Bond with the objective to launch the transaction in the near future subject to market conditions.
 - On October 4th, the order book was officially open with a price guidance of SPGB+23 bps.
 - Books closed with a total demand of EUR 500M and final spread of SPGB+23bps allowing Comunidad de Madrid to print a successful deal in a very challenging and volatile market and consolidating its leading position as ESG bond issuer, being the first Spanish public sector issuer to launch 3 green bond deals.
- In terms of metrics the orderbook was well supported by international investors accounting for 77% of the total demand. The quality of the orders also allowed to allocate 53% of the notes to Real Money accounts.



Highlights of the 2022 Comunidad de Madrid's Third Green Bond



- **The 2022 Green bond issued in October 2022** represented the third Green bond offering of Comunidad de Madrid.
- **Comunidad de Madrid is the only region in Spain** issuing Green Bonds.



- **Comunidad de Madrid is committed to keep on promoting** the ESG bond market and sustainable investments with a Framework that allows the Region to issue Green, Social and Sustainable Bonds.



- **The proceeds of the bond** have been allocated to expenditures in **Clean Transportation**.
- 2022 Green Bond **use of proceeds** is fully aligned with the **EU Taxonomy (100% of the use of proceeds allocated)**.
- **The projects will contribute to one environmental objective as defined the EU Taxonomy, Climate Mitigation.**



- **Avoided a total of 240,458 CO2eq** atmospheric emissions.



- Comunidad de Madrid engaged with a **third party to assess compliance with the EU Taxonomy***.







- **Strong demand** from dedicated ESG investors.

Source: Comunidad de Madrid

*https://www.comunidad.madrid/sites/default/files/img/profesiones/cam_eu_taxonomy_alignment_spo_-_dnv_eligibility_assesment-vfinal.pdf





Green Bons Eligible Expenditures portfolio for 2022

Overview of the Green Eligible Expenditures 2022

Eligible Category	Main eligible expenditures	Budgetary Programme	Budget code	UN SDGs	EU Environmental Objectives
Climate change and environmental management	Waste Management: <ul style="list-style-type: none"> Measures to implement the Waste Strategy of Comunidad de Madrid 	16: Environment, Local administration and territorial planning	456N 456B		EU Objective 4: Circular economy
	Clean transportation: <ul style="list-style-type: none"> Promote the manufacture and use of the electric vehicles and points of recharge Promote public transport services and modal shift towards public transportation (e.g. railway, metro de Madrid, bus system) and soft mobility, support multimodal transport solutions and promote the use of bicycles 	14: Transport, Social Housing & Infrastructure	453N 456B	 	EU Objective 1: Climate Change Mitigation
	Environmental conservation: <ul style="list-style-type: none"> Management and restoration of Protected Natural Parks and other unique spaces with important conservation value 	16: Environment, Local administration and territorial planning	456A		EU Objective 6: protection and restoration of biodiversity and ecosystems

Source: Comunidad de Madrid




Green Bond Eligible Expenditures portfolio for 2022 (II)

Overview of the Green Eligible Expenditures Portfolio 2022				
Green categories	UN SDGs	Amount (EUR m)	Subcategories	Amount (EUR m)
Waste Management		5.7	Domestic Waste Management	4.7
			Maintenance of the Air Quality Network	1.1
Clean Transportation	 	694.6	EMT Bus	86
			Intercity Bus	85.2
			Metro	388.0
			Measures for the Promotion of Sustainable Mobility	2.0
			Light Train	133.3
Environmental Conservation		11.6	Environmental Education	1.6
			Conservation of Protected Natural Areas	5.3
			Connectivity through Green Infrastructure	2.6
			Protection of Wetlands	0.2
			Recovery and improvement of private forest areas	1.5
			Grants to NPOs with Environmental Purposes	0.5
			711.9	711.9

Source: Comunidad de Madrid





Impact indicators Green Bond Eligible Expenditures portfolio for 2022 (I)

Overview of the Green Use of Proceeds					Impact Indicators							
Main Eligible expenditures	UN SDGs	Amount (EUR m)	Subcategories	Amount (EUR m)	Managed Waste (tn)	Data Samples Collected	Emissions Avoided (tCO2)	Vehicles Subsidized	Number of Programs	Intervened Surface (ha)	Projects Selected	
Waste Management		5.7	Domestic Waste Management	4.7	73,560							
			Maintenance of the Air Quality Network	1.1		1,464,484						
Clean Transportation		694.6	EMT Bus	86.0			10,503	-				
			Intercity Bus	85.2			55,847	-				
			Metro	388.0			228,336	-				
			Measures for the Promotion of Sustainable Mobility	2.0			-	4,898				
			Light Train	133.3			8,299	-				
Environmental Conservation		9.0	Environmental Education	1.6					15			
			Conservation of Protected Natural Areas	5.3							118,527	
			Connectivity through Green Infrastructure	2.6								581
			Protection of Wetlands	0.2								117
			Recovery and improvement of private forest areas	1.5								339
			Grants to NPOs with Environmental Purposes	0.5								
		711.9		711.9	73,559.9	1,464,484.0	302,985.8	4,898.0	15.0	119,564.0	13.0	

Source: Comunidad de Madrid





Clean Transportation Eligible Expenditures portfolio for 2022

Overview of the allocation of bond proceeds				Impact Indicators	EU Taxonomy (6.3 Urban and suburban transport, road passenger transport)			
Green category	UN SDGs	Subcategories	Allocation Amount (EUR m)	Emissions Avoided (tCO2)	Primary EU Environmental Objective	EU Technical Screening Criteria	DNSH Criteria	Minimum Safeguards
Clean Transportation		EMT Bus	86	10,503	EU Objective 1: Climate Mitigation	✓	✓	✓
		Intercity Bus	85.2	55,847		✓	✓	✓
		Metro	388.0	228,336		✓	✓	✓
		Light Train	133.3	8,299		✓	✓	✓
			692.5	302,986				



Source: Comunidad de Madrid

2022 Green Bond: Allocation and Impact reporting

Overview of the allocation of bond proceeds				Impact Indicators	EU Taxonomy (6.3 Urban and suburban transport, road passenger transport)			
Green category	UN SDGs	Subcategories	Allocation Amount (EUR m)	Emissions Avoided (tCO2)	Primary EU Environmental Objective	EU Technical Screening Criteria	DNSH Criteria	Minimum Safeguards
Clean Transportation		EMT Bus	86	10,503	EU Objective 1: Climate Mitigation	✓	✓	✓
		Metro	388	228,336		✓	✓	✓
		Light Train	26	1,619		✓	✓	✓
			500	240,458				

Emissions avoided by Clean Transportation initiatives funded by the 2022 Green Bond proceeds are equivalent to in excess of those of 53,503 gasoline-powered passenger vehicles driven for one year

Comunidad de Madrid Green Bond 2022: Impacts in the Region's Public Transport



- **Metro:** the equivalent distance travelled by car would have caused 525,820.86 tCO₂ emissions



- **EMT bus:** the equivalent distance travelled by car would have caused 13,139.35 tCO₂ emissions.



- **Intercity bus:** the equivalent distance travelled by car would have caused 89,631.14 tCO₂ emissions.



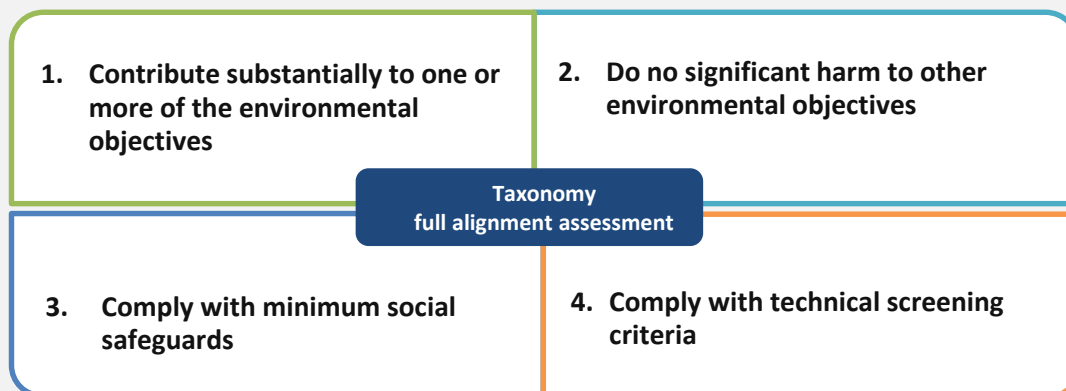
- **Light trains:** the equivalent distance travelled by car would have caused 11,824.63 tCO₂ emissions

**2022 Emissions Avoided by Green Public Transportation means in
the Region (tCO₂): 600,825**



EU Taxonomy alignment process 2022 Green Bond Comunidad de Madrid

- **In 2022, Comunidad de Madrid carried out an exercise to assess** which proportion of its Green bonds use of proceeds were aligned with **the EU taxonomy**.
- In this regard, **Comunidad de Madrid engaged with a third party, DNV** to assess Comunidad de Madrid's 2021 Green Bond Use of Proceeds (fully allocated into the Clean Transportation category) compliance with the EU Taxonomy **and has received a positive assessment**.
- **Comunidad de Madrid, based on that assessment has replicated the allocation process for its Green Bond** issued in October 2022 **and therefore confirms that the 2022 green bond is fully aligned with the taxonomy**.
- **Comunidad de Madrid has reviewed the Clean Transportation expenditures towards the EU Green Taxonomy**



**Comunidad de Madrid
Green Bond is fully
aligned with the EU
Taxonomy**



DNV opinion on Taxonomy alignment assessment



WHEN TRUST MATTERS

GREEN BOND ALLOCATION AND IMPACT REPORTING

EU Taxonomy Alignment

Comunidad Autónoma de Madrid



Report No.: 1, Rev. 1
Document No.: PRJN-446392
Date: 23/09/2022

“On the basis of the information provided by Comunidad de Madrid and the work undertaken, it is DNV’s opinion that proceeds have been used on Clean Transport projects that are aligned with the criteria established in the EU Taxonomy for Sustainable Activities– ANNEX 1 to Regulation (EU) 2021/2139 Section 6.3 (i). for DNV GL Business Assurance España S.L.U.”



Finding and DNV’s Opinion Alignment to EU Taxonomy dated September 2022

Table 1: Compliance with the technical screening criteria

EU Taxonomy Technical Screening Criteria	Project EU Taxonomy Alignment- Comunidad de Madrid
The activity provides urban or suburban passenger transport, and its direct (tailpipe) CO ₂ emissions are zero	Use of proceeds for Metro (EUR 387.8 million) and electric buses (EUR 105.375 million) are zero emissions and hence considered aligned with substantial contribution criteria set by the EU Taxonomy.
Until 31 December 2025, the activity provides interurban passenger road transport using vehicles designated as categories M2 and M3 that have a type of bodywork classified as ‘CA’ (single-deck vehicle), ‘CB’ (double-deck vehicle), ‘CC’ (single-deck articulated vehicle) or ‘CD’ (double-deck articulated vehicle), and comply with the latest EURO VI standard, i.e. both with the requirements of Regulation (EC) No 595/2009 and, from the time of the entry into force of amendments to that Regulation, in those amending acts, even before they become applicable, and with the latest step of the Euro VI standard set out in Table 1 of Appendix 9 to Annex 1 to Regulation (EU) No 582/2011 where the provisions governing that step have entered into force but have not yet become applicable for this type of vehicle. Where such standard is not available, the direct CO ₂ emissions of the vehicles are zero.	Use of proceeds for Hybrid buses (EUR 11.125 million) fit in as a transitional activity as referred to in Article 10 of Regulation 2020/852 and are aligned with the technical screening criteria. Comunidad de Madrid has provided type approvals and technical specification of the buses showing compliance with EURO VI standard.
N.A.	Emissions avoided with this UoP have been calculated by Comunidad de Madrid as 137,895 tCO ₂ for Metro, and 6,280 tCO ₂ for buses (EMT).

Table 3: Compliance with the minimum social safeguards

Minimum social safeguards	Project EU Taxonomy Alignment – Comunidad de Madrid
As per article 18 of Regulation (EU) 2020/852: The minimum safeguards referred to in point (c) of Article 3 shall be procedures implemented by an undertaking that is carrying out an economic activity to ensure the alignment with the OECD Guidelines for Multinational Enterprises and the UN Guiding Principles on Business and Human Rights, including the principles and rights set out in the eight fundamental conventions identified in the Declaration of the International Labour Organisation on Fundamental Principles and Rights at Work and the International Bill of Human Rights.	<p>CSR Policy and Code of Conduct is in place for both Metro and EMT, aligned with the principles and rights set in the UN Guiding Principles on Business and Human Rights and the principles and rights set out in the fundamental conventions identified in the Declaration of the International Labour Organisation on Fundamental Principles and Rights at Work and the International Bill of Human Rights.</p> <p>As part of public administration, procurement is regulated by the Public Sector Contracts Act and subject to principles and requirements of responsible procurement, including compliance with ethical standards and respect for the human rights, integrity, transparency and protection of the environment.</p> <p>DNV has reviewed the information provided and concludes that Comunidad de Madrid complies with the minimum social safeguards in Article 18 of Regulation (EU) 2020/852.</p>

Table 2: Compliance with the “Do no significant harm” (“DNSH”) criteria.

DNSH Criteria	Project EU Taxonomy Alignment – Comunidad de Madrid
(2) Climate change adaptation The activity complies with the criteria set out in Appendix A to Annex 1 (EU) 2021/2139.	Following climate change vulnerability and risk analysis, Comunidad de Madrid issued Plan Azul + 2019-2020, a strategic program of measures for mitigation and adaptation to climate change, to be implemented in Comunidad de Madrid. Furthermore, a new strategy is under development that will set out the broad lines of action up to 2030 to make progress in terms of climate action (mitigation and adaptation) and improvement of air quality, in line with recent international and national guidelines and requirements. The UoP in Metro and Buses is deemed not to interfere with the adaptation measures contained in Plan Azul, measures for water resources, other vulnerable systems and industries, indicators for climate change adaptation, reforestation.

	increase of carbon sequestration in agricultural soils in the region. DNV considers this is in line with the criteria established for Climate Change Adaptation in Commission Delegated Regulation (EU) 2021/2139, Annex 1, 6.3 Urban and suburban transport, road passenger transport.
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(3) Sustainable use and protection of water and marine resources NA	Not applicable as per Commission Delegated Regulation (EU) 2021/2139, Annex 1, 6.3 Urban and suburban transport, road passenger transport. However, Metro has provided evidence of extensive water use and management plans for each underground station showing plans and measures to mitigate effects on water resources.
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(4) Transition to a circular economy Measures are in place to manage waste, in accordance with the waste hierarchy, both in the use phase (maintenance) and the end-of-life of the fleet, including through reuse and recycling of batteries and electronics (in particular critical raw materials therein).	Metro de Madrid and EMT operate under an Environmental Management Systems certified according to ISO 14001. Responding to a new organisational model in Metro, actions and initiatives are implemented based on integral sustainability, using and optimising stocks and flows of resources (water and energy), materials and waste. Among others recovery of more than 95% of the waste generated, including batteries and electronic products, through improved waste segregation and management. A strategic plan in place in EMT for circular economy includes projects like the design and construction of a Hydrogen Fueling Station and purchasing of biogas for the supply of CNG.
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	DNV considers this is in line with the criteria established for circular economy in Commission Delegated Regulation (EU) 2021/2139, Annex 1, 6.3 Urban and suburban transport, road passenger transport.
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(5) Pollution prevention and control For road vehicles of categories M, tyres comply with external rolling noise requirements in the highest populated class and with Rolling Resistance Coefficient (influencing the vehicle energy efficiency) in the two highest populated classes as set out in Regulation (EU) 2020/740 of the European Parliament and of the Council and as can be verified from the European Product Registry for Energy Labelling (EPREL). Where applicable, vehicles comply with the requirements of the most recent applicable stage of the Euro VI heavy duty emission type- approval set out in accordance with Regulation (EC) No 595/2009.	Comunidad de Madrid has provided type approvals and technical specification of the buses showing compliance with EURO VI standard and external noise requirements. DNV considers this is in line with the criteria established for pollution and prevention control in Commission Delegated Regulation (EU) 2021/2139, Annex 1, 6.3 Urban and suburban transport, road passenger transport.
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(6) Protection and restoration of biodiversity and ecosystems NA	Not applicable as per Commission Delegated Regulation (EU) 2021/2139, Annex 1, 6.3 Urban and suburban transport, road passenger transport
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Clean Transportation Impact Calculation Methodology

1.- METHODOLOGICAL BASES

To quantify the emissions avoided by the use of regular public passenger transport in relation to hybrid or electric buses and rail modes (metro and rail concessions), it is assumed that if these trips had not been made by public transport, they would have been made by using private vehicles.

In this way:

Emissions Avoided = Emissions generated by the private vehicle - Emissions generated by public transport

To calculate the emissions that would have been produced by the travel of passengers in private vehicles, the number of passenger-km⁽¹⁾ that have used public transport in electric or hybrid modes will be multiplied by an emission factor based on the circulating fleet of passenger cars in the Community of Madrid, according to data from the DGT for 2020 (latest available). To calculate the emissions generated by trips made by public transport users in electric or hybrid modes, the energy consumed in these trips is multiplied by the emission factors mentioned in section 5.

2.- YEAR OF CALCULATION: 2022

3.- SCOPE:

Road modes:

- EMT of Madrid (hybrid and pure electric vehicles)
- Road concessions in the rest of the Community of Madrid (hybrid and pure electric vehicles)

Railway modes:

- Metro de Madrid (Subway)
- Railway concessions (TFM, MLM, MLO, Parla Tramway)

4.- ACTIVITY DATA

Road modes:

- Vehicle characteristics (Euro standard, fuel type)
- Fuel/electrical energy consumption of vehicle fleets or, alternatively, kilometers traveled per year

Railway modes:

- Electricity consumption

5.- EMISSION FACTORS

- CO2 emission factors for fossil fuels published by the Spanish Office of Climate Change (OECC), year 2022
 - Diesel fuel B7: 2.519 gr CO2eq/liter
 - CNG: 2.783 gr CO2eq/kg
- Electricity emission factors year 2022. (Published by the CNMC):
 - marketer without REC 2022: 273 gr CO2eq/kWh
 - marketer with REC: 0 gr CO2eq/kWh
- Average private vehicle emissions: Prepared by the authors based on the number of cars in circulation in the Community of Madrid, according to Dirección General de Tráfico data for 2020 (latest available).
 - Average private vehicle (occupancy 1.2 passengers): 146 g CO2eq/km

⁽¹⁾ Travelers-km = No. of trips x Average trip length

