

# Path to sustainability

*Decarbonisation and energy transition*



**Environmental Statement**  
**European EMAS Regulation**



**Port de Barcelona**

**2021**



# Port de Barcelona

## European EMAS Regulation



This document has been drawn up taking into consideration the reporting requirements set out by REGULATION (EC) No. 1221/2009 of the European Parliament and of the Council of November 25, 2009 concerning voluntary participation by organisations in a community eco-management and audit scheme (EMAS), and Regulation 2017/1505/EU, including the amendments to it as set forth in Decision 2017/2285/EU.

The requirements referred to in Commission Regulation (EU) 2018/2026 of December 19, 2018 amending Annex IV to Regulation (EC) No 1221/2009 of the European Parliament and the Council concerning voluntary participation by organisations in a community eco-management and audit scheme (EMAS) have also been included.

**Reporting period:** the year 2021, including environmental performance indicators for a minimum period of three years where data is available, in accordance with the regulation above

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# Introduction



**Damià Calvet**  
President of the Port of Barcelona

**The Port of Barcelona is fully committed to the decarbonization objectives set by Europe and incorporated in our IV Strategic Plan. ”**

The Port of Barcelona is fully committed to the decarbonisation objectives set by Europe, which have been incorporated into our IV Strategic Plan.

The main project to achieve this decarbonisation and improve air quality will be the deployment of the electrical network on the docks that will allow the connection of ships during their stay in the dock and the elimination of their emissions.

**By 2030 the goal is to have the electrical infrastructure for connecting vessels at cruise stations, at the Moll Prat container terminal and maritime ferry stations, which will reduce approximately 40% of CO2 and NOx emissions.**

Linked to this project, the Port of Barcelona is leading the energy transition in the port enclave to maximise electricity generation from photovoltaic panels on the roofs of buildings and facilities through an energy community model.

This community must be able to meet the energy demand needs of each user at any given time and will integrate new demands such as electric vehicle recharging, ship supply and electricity storage in the form of hydrogen.

Finally, another project is the promotion of new fuels for the mobility of goods. In 2014 the Port of Barcelona committed to natural gas as a mobility fuel to reduce polluting emissions.

Today, the Port of Barcelona is committed to leading this transition to clean fuels to address the climate and energy emergency within the framework of EU policies.



## The Port of Barcelona's European EMAS Registration represents another year of external recognition of the transparent environmental management of our organisation. ”

**José Alberto Carbonell**

Director General of the Port of Barcelona

After a challenging year for all the agents operating in the Port of Barcelona due to the health situation, the Barcelona Port Authority continues to perform optimally in terms of its economic, social and environmental sustainability objectives.

As a significant player in the logistics chain of maritime transport of materials, goods and resources, this new context must not delay the significant commitments made in our Sustainability Plan. This is why we continue to work intensively on energy transition and emission reduction projects, among other objectives aligned with the European strategy.

As well as the environmental management of our facilities and assets, the Port of Barcelona also promotes and supports environmental investments by the terminals, whether to reduce greenhouse gas emissions, improve energy efficiency, generate renewable energy or advance with electrification of their mobility options.

With this new edition of the Environmental Statement, the aim is to give our **stakeholders** an updated analysis of the environmental context and impact, as well as our progress and the action we have taken to reduce the environmental impacts associated with port activities.

A self-imposed demand for transparency, voluntarily implemented and honoured with European EMAS Registration, clearly reflects the virtues of the Barcelona Port Authority team, who have continued their exemplary work throughout the pandemic.

We want to extend our gratitude to the entire Port Community and all the port's workers for their invaluable contributions. Today, I invite you to learn more about the Port of Barcelona's environmental management results.





MSC SIXIN  
PANAMA

ZPMC 10

ZPMC 11

11

09

MAERSK

APL

EVERGREEN

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The Port of Barcelona's vision is to be Europe's port solution in the Mediterranean.

## Activity and competencies of Barcelona Port Authority

The mission of the Barcelona Port Authority is to lead the development of the Port of Barcelona through the construction of facilities and management of the port's public areas, guaranteeing the efficiency of services and activities to contribute to its operators' competitiveness and create value for the community.

As public bodies, Port Authorities fall under the purview of the Ministry of Public Works, via Ports of the State, from a legal point of view.

We are governed by specific legislation, mainly by Royal Legislative Decree 2/2011 of September 5, which approved the Consolidated Text of the Law of State Ports and the Merchant Marine (the Ports Law).

Barcelona Port Authority is responsible for the administration, supervision, management and operation of the Port of Barcelona.

Under the "Landlord Port" model, the Port Authorities provide port space and facilities and regulate port

operations but do not provide port or commercial services such as technical-nautical services (pilotage, towing and mooring), cargo handling or passenger services.

These services are generally provided by private operators, with technical and human resources not belonging to the Port Authority.

**The essential functions of the Port Authority are as follows:** planning, projection, construction, conservation and operation of port works and services, collaboration with official bodies, coordination of private port companies and management of the port's public domain.





### Port Authority functions and competencies

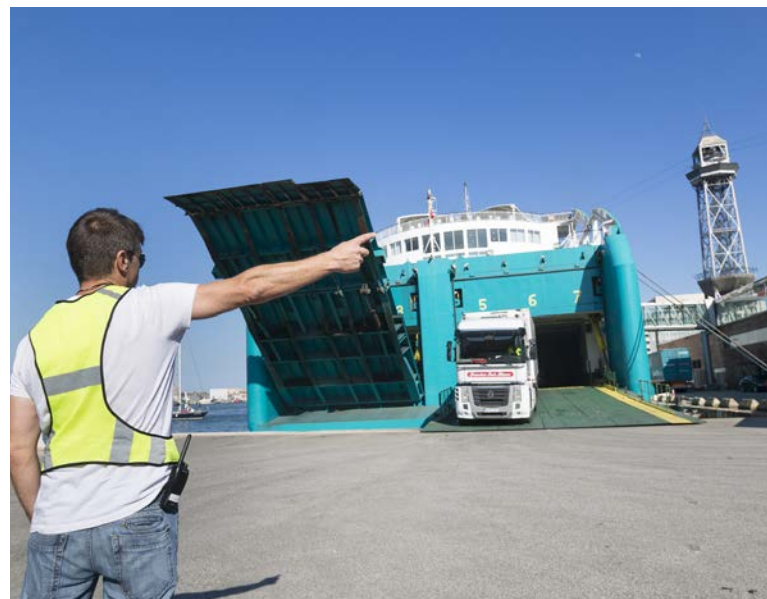
1. Manage and supervise port and commercial services
2. Provide general port services
3. Regulate the port service area and use of the port
4. Develop, maintain and operate port facilities
5. Manage the port's public domain
6. Optimise the economic management and profitability of its assets and resources
7. Promote commercial, logistical and, where appropriate, industrial activities related to maritime or port traffic
8. Coordinate the operations of the different modes of transport in the port
9. Organise and coordinate port traffic, both maritime and on land.

### 2021

#### Traffic type

	Transit units
TOTAL TONNES MOVED	58,395,232 t
TOTAL SHIP CALLS:	7,520
PASSENGERS:	1,498,817
CARS:	499,011
CONTAINERS (TEU):	3,531,314
RO-RO TRAFFIC (UTI):	396,730*

\* Trailers, flatbeds, trucks, vans...





# Commitment to sustainability

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## Environmental Policy

The Barcelona Port Authority (APB in the Spanish acronym) is conscious of the environmental impact of the Port of Barcelona's activities. It, therefore, contributes to sustainable development, environmental protection and pollution prevention, aiming to minimise all port operations' impact on air, water and soil quality, as well as optimising resource use.

The port's activities and services include management of the port's public domain, maritime transport activities, infrastructure projects and their maintenance, as well as management and supervision of port and commercial services related to the port's maritime, land and rail transport of goods.

To minimise the effects of environmental impacts, our commitment includes:

- 1.** Have a suitable environmental management programme that guides and improves our environmental performance, driving decarbonisation in order to address climate change, energy transition, circular economy and biodiversity protection.
- 2.** Stay informed about and in compliance with current environmental legislation and other environmental requirements we are signed up to.
- 3.** Work to prevent environmental accidents and maintain a high level of preparedness in order to reduce the effects of any incidents or accidents that may occur.
- 4.** Use resources as efficiently as possible by reducing non-renewable resources, energy consumption, CO2 emissions and other pollutants such as particulate matter.
- 5.** Influence, accept requests from and cooperate with clients, suppliers, authorities and other stakeholders to comply with our environmental policy and communicate effectively with the local community and relevant organisations regarding their environmental programmes.
- 6.** Purchase products and services that minimise negative environmental impacts during production, use and destruction.
- 7.** Provide all employees with training on environmental issues to consider themselves active agents of environmental protection and sustainability in their day-to-day work.
- 8.** Ensure that the necessary resources are dedicated to meet these objectives and maintain our environmental management system and its certification.
- 9.** Make validated information about these areas available to stakeholders by publishing an annual environmental statement.
- 10.** Ensure all our actions are carried out within the framework of the Port's Strategic Plan and the Sustainable Development Goals of Agenda 2030.

**Signed and dated**

April 2021 Revision

BARCELONA PORT AUTHORITY

José Alberto Carbonell  
Director General



# Background

The Port Authority has approved the new Strategic Plan for the 2021-2025. This plan analyses the business context and environment of the organisation and sets out specific lines of action that will serve as guidelines for all departments.

The Port Community also has a Sustainability Plan that analyses the business context and relationship with stakeholders. Based on these analyses, the Port has reviewed the business context to analyse its environmental impacts under the Port of Barcelona Management System.

# Stakeholders

The Port of Barcelona’s sustainable action considers the expectations and demands of its stakeholders.

These stakeholders have been grouped into five levels in order to facilitate a more detailed analysis of their needs and expectations.

In this way, we can forge the best possible relationships and determine the most appropriate communication channels in each case.

- 1** LEVEL ONE  
PORT AUTHORITY WORKERS AND EMPLOYEES
- 2** LEVEL TWO  
LEVEL TWO  
COMPANIES IN THE PORT COMMUNITY (CONCESSIONAIRES, SERVICE PROVIDERS, SHIPOWNERS AND SHIPPERS, ETC.)
- 3** LEVEL THREE  
FREIGHT TRANSPORT OPERATORS AND CLIENTS
- 4** LEVEL FOUR  
PUBLIC BODIES AND ADMINISTRATIONS
- 5** LEVEL FIVE  
BARCELONA CITY  
EL PRAT DE LLOBREGAT CITY





## Environmental management

The Port of Barcelona's commitment to sustainable development is shared by all the workers that make up the organisation. All areas and departments of the APB participate directly or indirectly in environmental management.

## Organisation and scope



### Team and functions

The Department of Environment is part of the General Sub-Directorate of Port Operations and Planning.

However, this system is transversal and interacts with the functions of various departments.

As an example, the following managers and operations are also involved in environmental action:

- Facility construction
- Dredging operations
- Maritime operations
- Terminals and concessions
- Cargo Handling
- Vehicle traffic management
- Wharf Operations
- Strategic planning
- Suppliers and subcontractors
- Quality management
- Emergency plan
- Waste management
- Human Resources
- Information technology
- Research and development
- Innovation
- Internal and external communication
- Port services



EMAS Catalonia 2021 Awards for the best Environmental Statement

## Scope of the EMS

The scope of the system includes all the facilities and activities undertaken by the Barcelona Port Authority. It consists of the performance of its functions related to facilitating and organising the passage of goods through the port by maritime, rail and road transport.

Specifically, the activities within the scope of the EMS include management of the port's public domain, construction and maintenance of infrastructure, and administration and supervision of port and commercial services related to the transport of goods.

The port-city area of Port Vell is not included in its scope. The sports area and other commercial facilities and logistics not directly related to the port activity are not included.

Barcelona and Girona coastal lighthouses, which fall under the purview of the APB, are not included within the scope of the system either.

**CNAE 52.22** Activities incidental to maritime and inland waterway transportation NACE Rev.2 (52.22)

The Port of Barcelona's environmental management complies with current legislation, with **ISO Standard 14.001:2015** and with **EMAS Regulation<sup>1</sup>**, as well as with the industry standard **Port Environmental Review System (PERS)** developed by the European Sea Ports Organisation (ESPO).

## Information and Monitoring

The EMS is documented using manuals, procedures, monitoring records, plans, and programmes.

- Environmental objectives programme
- Environmental training plan
- Internal and external environmental communication plan
- Environment emergency plan
- Environmental audit plan

Scope of certification/validation:

Management of the port's public domain, maritime transport activities, construction and maintenance of facilities, as well as the management and supervision of port and commercial services related to maritime, land and rail freight transport in the port.

<sup>1</sup> REGULATION (EC) No. 1221/2009 of the European Parliament and of the Council of November 25, 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS), Regulation (EU) 2017/1505, as well as its amendments as dictated by Decision 2017/2285/EU and Regulation 2018/2026/EU.



## Activities and procedures

### CONSTRUCTION OF FACILITIES

New building, maritime, land and dredging projects; the carrying out and environmental monitoring of construction works; soil decontamination projects..

### MAINTENANCE AND UPKEEP OF INFRASTRUCTURE AND FACILITIES

Infrastructure maintenance and upkeep; waste collection and street cleaning services for public and common areas; water surface cleaning; gardening and maintenance of green areas; workshop waste management; water, electricity and fuel consumption; consumption of office materials and other goods and services; vehicle fleet management; management of the port sanitation network.

### SHIPS AND MARITIME NAVIGATION

Regulation of maritime operations; regulation of nautical port services; atmospheric emissions; ballast water discharge; accidental spillages; vessel repairs.

### MANAGEMENT OF THE PORT'S PUBLIC DOMAIN: TERMINALS AND CONCESSIONS

Land use planning; third party occupancy authorisations; authorisation of cargo handling activities; regulation of port services; emergency plans for terminals.

### ADMINISTRATIVE MANAGEMENT

Waste generation; consumption of electricity, water and office consumables.

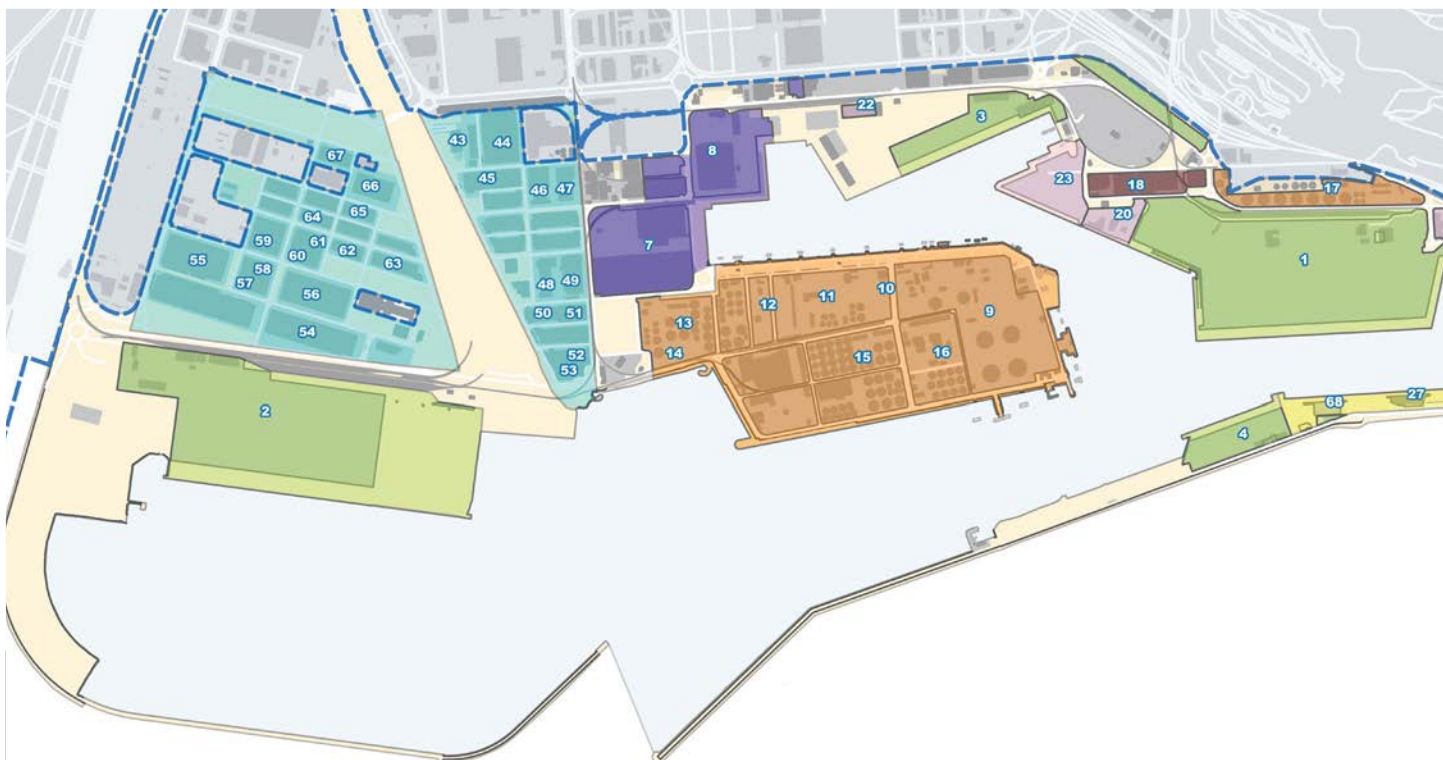
### LAND AND RAIL TRANSPORTATION

Activity regulation; atmospheric emissions; accident rate.

### ENVIRONMENTAL MANAGEMENT

Monitoring and improvement of the environmental management system of the Port of Barcelona: Monitoring of water and air quality in the port environment. Prevention and remediation of soil contamination. Prevention of accidental contamination due to spills of hydrocarbons or other chemical substances into port waters. Protection of the port environment from third-party actions.

## Schematic map of the Port of Barcelona

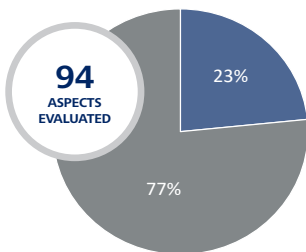


# Impact analysis and evolution

## Analysis methodology

Every year the Port of Barcelona identifies the direct and indirect aspects and impacts of port activity that fall within the scope of the system for standard, not-standard and emergency conditions.

### Environmental aspects



### Average impact:

■ Direct   ■ Indirect  
**UI: 4.5 ui**   **UI: 12.4 ui**

The significance rating of each direct and indirect aspect is determined by taking into account four analysis criteria:

- Frequency of occurrence (F)
- Magnitude or quantity (M)
- Level of impact on the environment and surroundings (G)
- The Port Authority's capacity to control or influence in the prevention or reduction of the environmental impact generated by aspect (C)

The final rating of each element (**UI: Units of Impact**) is calculated as the product of the score assigned for each criterion (F x M x G x C), and significant aspects are defined as those whose rating is higher than the average of all the aspects.

In 2021, the most significant direct environmental aspects were those associated with the APB's consumption. However, **the environmental aspects with the greatest impact are those which are indirectly associated with port activity** in terms of atmospheric pollution, port waste and wastewater generation and as well as materials and energy consumption.



- MULTIPURPOSE CONTAINER TERMINALS
- FERRY TERMINALS
- CAR TERMINALS
- BULK LIQUID TERMINALS
- BULK SOLIDS TERMINALS
- PASSENGER TERMINALS
- PORT VELL
- ZAL



Access the Guide map



## Significant direct environmental aspects under normal operating conditions.

### CONSUMPTION

Consumption of network water in communal areas

Consumption of non-renewable resources

Electricity consumption in offices and communal areas

Consumption of non-renewable resources

Fuel consumption by Port vehicles and vessels

Consumption of non-renewable resources

### ATMOSPHERIC EMISSIONS

Emissions of the Port's fleet of vehicles and ships

Atmospheric pollution

### CLIMATE CHANGE

GHG emissions from fuel and electricity consumption

Global warming

## Significant indirect environmental aspects under normal operating conditions.

### WASTE

Ships dumping solid waste (Marpol V)

Risk of soil and water contamination

Discharge of oily water from ships (Marpol I) and of contaminated water from tanks (Marpol II)

Risk of soil and water contamination

Waste production by terminal and concession workshops

Risk of soil and water contamination

### CONSUMPTION

Electricity consumption in terminals

Consumption of non-renewable resources

### ATMOSPHERIC EMISSIONS

Emission of suspended and settleable particulate matter due to earthmoving at construction sites

Damage to health and property

Emission of suspended and settleable particulate matter by vehicles and machinery

Damage to health and property

Gas and particulate emissions from ships and vessels during navigation

Damage to health and property

Gas and particulate emissions from ships during their stay in port

Damage to health and property

Gas and particulate emissions from land transportation

Damage to health and property

Emission of combustion gases from vehicles and machinery (concessions)

Damage to health and property

Emission of suspended and settleable particulate matter in operations with bulk solids (terminals and concessions)

Damage to health and property

### CLIMATE CHANGE

- GHG emissions from vessels
- GHG emissions from freight transport by land
- GHG emissions from fuel and electricity consumption (terminals and concessions)

- Climate Change
- Climate Change
- Climate Change

### BIODIVERSITY

- Deposit of hull fouling and ballast water discharge Risk of introduction of invasive species

## Significant indirect environmental aspects under emergency conditions.

### PORT WASTEWATER DISCHARGE

- Accidental spillages during bunkering operations
- Accidental spillages of liquid products from ships during operations
- Product or fuel spillages as a result of a maritime accident or fire on a boat
- Accidental spillages of liquids or solids on wharves (terminals and concessions)

- Risk of damage to ecosystems
- Risk of damage to ecosystems
- Risk of damage to ecosystems
- Risk of damage to ecosystems

### IMPACT ON SOIL

- Accidental spillages or tank leaks that contaminate the soil Risk of soil and water contamination

## Environmental incidents

Type	2019	2020	2021
Activation of the environmental emergency plan PIM (Internal Marine Plan)	3	7	3*
Deviations from environmental audits	9	2	2
Legislative non-compliance sanctions	0	0	0
<b>Environmental incidents by type</b>	<b>143</b>	<b>149</b>	<b>204</b>

#### \* ACTIVATIONS OF THE PIM (Internal Marine Plan) in the alert phase

- 15/03/2021 - Emergency phase 0 - Fall of a container with 14,000 liters of corn oil.
- 17/03/2021 - Alert Phase - Leakage of soybean acceptance through pluvial.
- 13/10/2021 - Alert phase - Presence of oil in San Beltran dock of unknown origin.

Environmental incidents are classified into different categories according to their nature and/or severity, as shown in the table above. The main incident types are:

Contaminating spillages in the maritime service area	27%
Large floating debris in docks	10%
Liquid spillages on roadways	23%
Spillage of solids on roadways	23%



# Environmental planning

The Port of Barcelona has a **2021 Environmental Programme** within the framework of its environmental management system. It establishes objectives and targets for significant aspects, both direct and indirect, as well as for certain important issues detected in the context analysis and in the analysis of risks and opportunities. Progress and degree of compliance is tracked by the Environment Committee.

## A decade of improvements in environmental matters

The graph below shows some of the main milestones reached by the APB in environmental and sustainability matters.

## Sustainability plans and programmes

It should be noted that the Port of Barcelona has other specific plans geared towards pollution control and improving the environment.

- Water quality monitoring programme
- Air Quality Improvement Plan
- Internal Marine Plan for spillage containment
- Emergency and Self-Protection Plans
- Ship waste reception plan
- Environmental Communication Plan

# Environmental milestones

## 1995 - 2000

- 1996. First meteorological station.
- 1997. Incorporation of equipment to combat marine pollution caused by accidental spillages.
- 1998. Initiation of monitoring of benthic populations as bio-indicators.
- 2000. Mobile automatic air quality control unit.

## 2001 - 2010

- 2001. Commissioning of the new port sewage system, with 36 km of collectors and sixteen pumping stations.
- 2001. As part of the introduction of the peregrine falcon to Barcelona, a reintroduction point was installed at the Contradique Wharf.
- 2003. Opening of the new entrance channel
- 2003. The Llobregat WWTP begins operation.
- 2004. Procedures for warnings and action to be taken by the control centre in the event of environmental incidents.
- 2005. Automatic atmospheric SO2 monitoring station at Section VI.
- 2005. First Internal Contingency Plan for marine pollution.
- 2008. First inventory of pollutant gas and particulate matter emissions.
- 2010. Start of port water quality monitoring in compliance with the Directive.

## 2011 - 2016

- 2011. Automatic atmospheric NO2 monitoring station at ZAL.
- 2012. Adherence to VOLUNTARY AGREEMENTS to reduce CO2 emissions.
- 2012. Implementation of bonuses to terminals for good environmental practices.
- 2014. Port of Barcelona commitment agreement to promote natural gas as a cleaner alternative fuel.
- 2014. Attainment of ISO 14.001 certification and EMAS registration.
- 2016. Completion of the Environmental Noise Map.
- 2016. Adouin's gull breeding colony at the Adosado wharf.
- 2016. Implementation of port monitoring of ship waste collection service (MARPOL).





## 2017

2017. First supply of gas in Spain to a passenger ferry for its auxiliary engine.

2017. Pilot test of electrical connection to a docked ship from a generator with a natural gas engine on the wharf.

2017. Attainment of PERS certification.

2018. First supply of gas to a Balearia ferry powered by natural gas.

2018. Inauguration of a gas station for the supply of natural gas to trucks and vehicles

2018. First environmental communication plan.

2018. Completion of soil remediation works at the Contradique wharf.

2019. First LNG supply by barge to the AIDA NOVA cruise ship in the Mediterranean, on a continuous fortnightly basis.

2019. APB agreement for the port wharf electrification project. The request of a high voltage electrical connection from Red Eléctrica de España to be able to supply electricity to ships.

2019. European EMAS Award in the Medium-Large Public Company category.

2019. First natural gas-powered ferry HYPATIA ALEJANDRIA (BALEARIA), and first to use batteries while in port (GRIMALDI)

## 2020

First experiences with the creation of shared energy consumption communities using photovoltaic generation.

Approval by the Government of Catalonia of its own methodology for the inventory of emissions from ships.

Creation of a database of contaminated soil in the port area.

## 2021

Approval of the Plan for the electrification of the port docks.

Completion of the European projects for the gasification of mobility in the port and start of a new project for the construction of an LNG port barge.



2030  
SDG



# Monitoring 2021

## Programme of objectives

\* Risk and opportunity management

### 1. THE PATH TOWARDS ENERGY TRANSITION

**Improve energy efficiency at APB by 30% by 2030 compared to 2008 and have 50MWp of photovoltaic energy installed at the port.\***

- **Improve energy efficiency by 5% in 2021.**

Remodelling of the ASTA building (2021-2024)

Adaptation and pending improvements in public lighting (2021-2024)

Improvements in electrical efficiency and installation of photovoltaic panels in the PIF building.

Reduce electricity consumption at PIF by 25%. (2021-2022)

- **Promote the installation of renewables on concession roofs.**

The obligation in concession contracts for self-consumption and pooling of roof use (2021)

Targeted environmental bonuses (2021)

- **Shared consumption model in the port area.**

Development of shared consumption model in the port area (2021-2022)

Implementation of a self-consumption energy system at Moll Pescadors. (2021-2022)

### 2. RESPONSE TO THE CLIMATE EMERGENCY

**Reduce GHG emissions by more than 50% by 2030 compared to 2008. \***

- **Promotion of new clean fuels.**

Development of a project aimed at stimulating demand for H<sub>2</sub> in port transport (2021)

- **Inventory of GHG emissions from port activity.**

Inventory of ship emissions (2021-2022)

Inventory of emissions from concessions and onshore activities (2021-2022)

### 3. IMPROVEMENT OF AIR QUALITY IN THE PORT ENVIRONS

**Reduce NOx emissions by more than 50% by 2030 compared to 2008. \***

- **Update Port Air Quality Improvement Plan in 2021.**

Replace vehicles with hybrid or gas/gasoline units (2021)

APB Staff Mobility Plan (2021)

- **Ship electrification plan.**

Develop pilot projects at Ferry Terminal and BEST (2021-2023)

- **Promotion of LNG as a mobility fuel.**

Completion of natural gas straddle carrier pilot project. (2021)

### 4. IMPROVEMENT OF PORT WATER QUALITY

**Create a high-quality 2025 monitoring plan. \***

- **Improve response to accidental spillages into the sea.**

Incorporation of new means of response in the Prat dock and external waters. (2021)

- **Water quality management system.**

Implementation of ROM 5.1 (2021-2022)

### 5. COMMUNICATE MORE \*

- **New initiatives to encourage internal participation. (2021)**

- **Updating of materials and content for external communication. (2021)**

# 2021- 2026

## Programme of objectives

### 1. THE PATH TOWARDS ENERGY TRANSITION

#### Improve energy efficiency at APB by 30% by 2030 compared to 2008. \*

- Improve energy efficiency by of own facilities.

Remodelling of the ASTA building (2022-2026)

Adaptation and pending improvements in public lighting (2022-2024)

Improvements in electrical efficiency and installation of photovoltaic panels in the PIF building. Reduce electricity consumption at PIF by 25% (2021-2022)

#### Renewable generation. In 2030, 50 MWp installed. \*

- Energy transition plan (2023)
- Shared consumption model in the port area.

Development of shared consumption model in the port area (2022)

Implementation of a self-consumption energy system at Moll Pescadors. (2022)

#### Alternative fuels. \*

- Industry trend and outlook (H2, methanol, ammonia, synthetics) (2022)
- Potential for biogas generation at the port

Study of plant typologies in the port and production capacity (2022)

### 2. RESPONSE TO THE CLIMATE EMERGENCY

#### Reduce GHG emissions by more than 50% by 2030 compared to 2017. \*

- Promotion of new clean fuels.

Development of a project aimed at stimulating demand for H<sub>2</sub> in port transport (2022)

- Inventory of GHG emissions from port activity.

Inventory of ship emissions (2022)

Inventory of emissions from concessions and onshore activities (2023)

### 3. IMPROVEMENT OF AIR QUALITY IN THE PORT ENVIRONS

#### Reduce NOx emissions by more than 50% by 2030 compared to 2017. \*

- Ship electrification plan.

Develop pilot projects at Ferry Terminal and BEST (2022-2024)

- Promotion of LNG as a mobility fuel.

Construction of a 5,000 m<sup>3</sup> capacity LNG supply vessel (LNGHIVE2) (2022)

### 4. IMPROVEMENT OF PORT WATER QUALITY

#### Create a high-quality 2025 monitoring plan.

- Marine litter.

A new characterisation of port marine litter (2022-2024)

- Biodiversity distribution plan in the port.

Report of the current status of the monitorable and comparable parameters over time (2022-2023)

### 5. INTERNAL AND EXTERNAL AWARENESS

#### Training in themes according to the 2022 vectors. \*

- New sustainability training initiatives for ABS.

Making the presentations. (2022)

- Updating of materials and content for external communication.

Participation in webinar and sector expos. (2022)



The 2030 Agenda for Sustainable Development represents a global commitment to address the social, economic and environmental challenges of globalisation, putting people, the planet, prosperity and peace at heart, under the motto: "leave no one behind".

The Agenda aims to advance toward a society with inclusive economic growth and greater social cohesion and justice, in peace and with a sustainable environment on the horizon. It sets out seventeen strategic objectives with specific targets to be achieved by 2030.

## Agenda 2030

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**Ports of the State and the state-owned port system as a whole are committed to contributing to the achievement of these objectives, within their scope of activities and competencies, through the initiatives outlined below.**

In this Environmental Statement, and the Sectoral Sustainability Plan, the Barcelona Port Authority identifies and details the Sustainable Development Goals it complies with and for which it is developing monitoring and improvement actions.



## Optimise the management and use of water in the ports.

Modernise and improve the level of monitoring of the port water distribution network to optimise the management thereof and minimise consumption.



## Improve energy efficiency and boost the use of renewable energies.

Reduce energy consumption in Port Authority facilities and consumption involved in port companies' activities, and provide incentives for renewable generation initiatives when technically and economically feasible.



## Promote rail transport to and from ports.

Optimise land transport to and from ports, enabling and promoting the use of railroads as a more efficient alternative to road transport.



## Improve the mobility of heavy vehicles in the port area.

Reduce PM10, NOx and SOx emissions related to truck traffic through urban areas and while waiting at port access points, caused by the trucks circulating and staying in the port and its environs.

## Monitor diffuse emissions in the handling of bulk solids and liquids.

Reduce atmospheric emissions generated by the handling and storing bulk solids and liquids in port facilities.

## Promote alternative energies in transport.

Reduce emissions of CO2, PM10, SOx and NOx from ships en route or at berth by opening a facility to provide alternative fuels, with special emphasis on the use of Liquefied Natural Gas in maritime transport and port services, as well as the use of electrical connections to ships in port.



## Recovery of construction waste from port landfills.

Encourage usage of construction and demolition waste from port landfills in those cases where it is technically feasible.

## Improve waste traceability and the extent of waste assessment.

Ensure proper waste management in ports and improve the percentage of waste that goes through a recovery process.



## Optimise the response to marine pollution emergencies.

Implement an early and effective response to potential marine pollution emergencies in the port's service area, minimising the impact of such events on the natural environment and port operations.

## Contribute to the improvement of water and sediment quality in the ports.

Reduce water and sediment pollution in the docks due to diffuse discharges from port operations and channelled discharges from facilities.

## Contribute to the prevention of waste dumping by ships at sea.

Contribute to reducing waste dumping by ships at sea by encouraging the delivery of MARPOL waste to port.



## Environmental performance and monitoring

The analysis of the performance and evolution of the Barcelona Port Authority's environmental behaviour considers the port's total surface area and the staff. However, as a whole, this environmental performance is directly related to the increase in port activity, whether due to an increase in goods traffic or to expansions and works in progress.



### Natural resources



The following sections show the basic environmental indicators related to resource consumption and their most significant direct and indirect environmental aspects.



Furthermore, the commitment of the Port of Barcelona also extends to knowledge, monitoring and tracking of the other impacts and aspects of port activity that may affect the environment and the port environs.

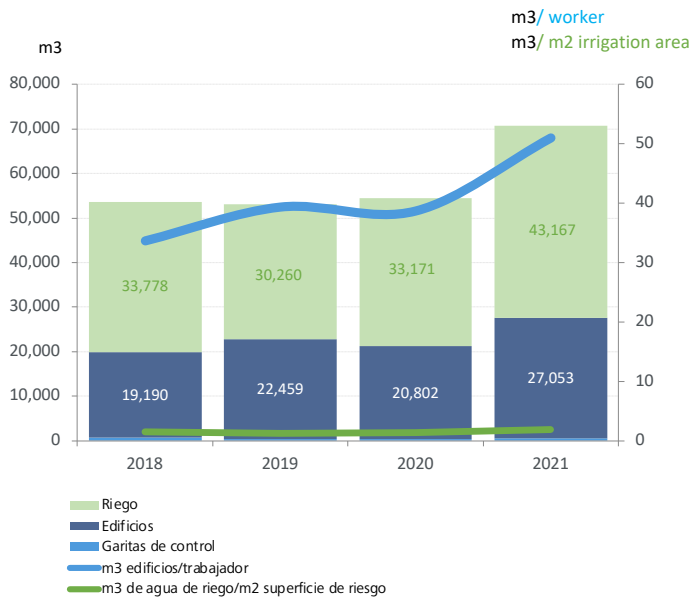
The important analysis of aspects associated with the circular economy in the Port's logistics chain means that subsequent statements will also consider information relating to tonnage and resources moved, thanks to data provided by maritime traffic control and the port's own terminals and concessions.

## Water consumption

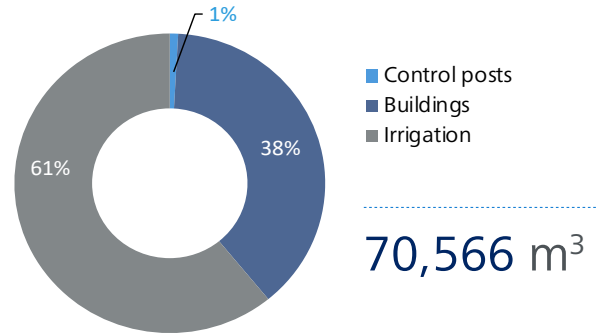
The Port of Barcelona's water supply comes from the public companies Aigües de Barcelona and Aigües del Prat.

**The highest recorded consumption\* was for gardening and irrigation of green areas, which used 46,167 m<sup>3</sup>, corresponding to 61% of total consumption in 2021.**

### Evolution of water consumption by use



Consumption rates	2018	2019	2020	2021
m <sup>3</sup> of water buildings/worker.	33.6	39.3	38.7	51.0
m <sup>3</sup> of irrigation water/m <sup>2</sup>	1.4	1.3	1.4	1.8



**In 2021, water consumption for irrigation increased compared to the previous year, mainly due to an arid summer with below-average rainfall. Increasing water consumption in offices is associated with the return of on-site activity.**

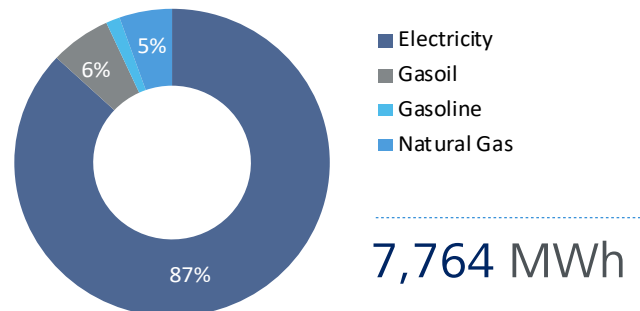
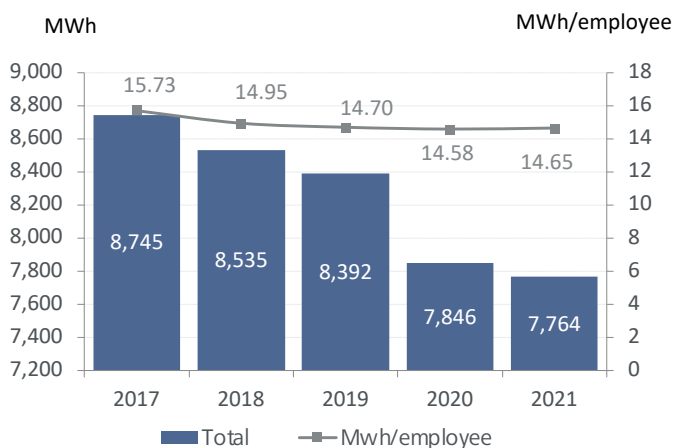
In order to reduce the use of water for irrigation, APB applies the following criteria:

- Prioritisation of native ornamental and xerophytic plant species, which take root easily and have low irrigation requirements.
- Drip irrigation systems for trees and shrubs.
- Drought-tolerant grass species with low irrigation requirements.
- Irrigation systems with partial meters and progressive implementation of remote control to detect leaks by setting maximum flow thresholds per time period.

## Energy consumption

The main energy consumption of the Barcelona Port Authority is the supply of electricity to buildings and lighting the roads and facilities, followed by the consumption of diesel fuel, natural gas and gasoline.

### Evolution of energy consumption



The following sections present detailed data for different energy sources, as well as some of the actions that have contributed to reducing the Port of Barcelona's energy consumption.

In 2021 CNG and LPG consumption was incorporated as new fuels for vans, although in a tiny volume compared to the total consumption of diesel and petrol.



## Electricity consumption

Electricity consumption for the lighting of public roads and common areas of the port area, as well as for lighting, equipment power supply and air conditioning for buildings, falls under the scope of the Port Authority's Environmental Management System.

**In 2021, total electricity consumption decreased slightly, while the consumption per employee indicator remained unchanged compared to the previous year.**

In order to meet the objective of progressively reducing electricity consumption, APB applies the following criteria:

- Modernisation of the public lighting network.
- Change luminaires with continuous consumption, or that are used for more than ten hours a day, to LED technology.
- Incorporation of measures and actions to increase the energy efficiency of air conditioning in buildings.

## Fuel consumption

**There is a single natural gas consumption for heating and DHW in the ASTA building, which has been reduced by 12% in 2021.** This reduction responds to the reduced need for consumption for a less rigorous winter.

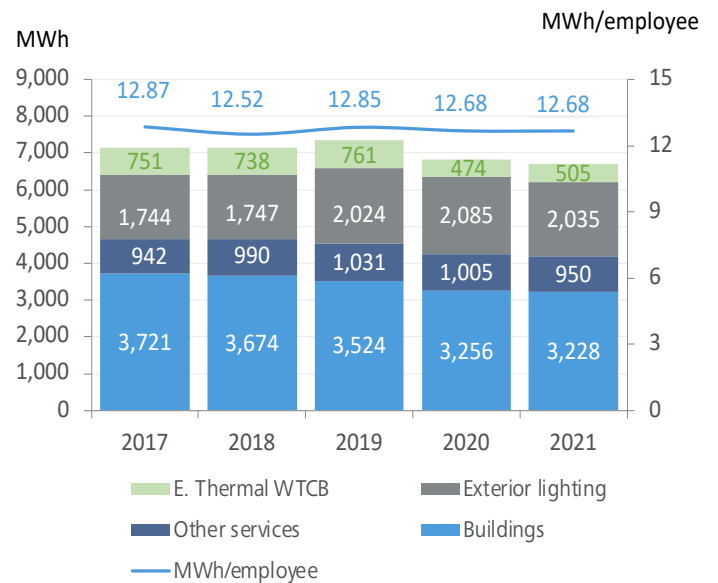
On the other hand, there is an increase in petrol consumption, partly due to the replacement of some diesel vehicles with petrol vehicles.

The APB's fuel consumption is mainly in its fleet of vehicles (port police cars and motorcycles, inspection vehicles, assigned vehicles, vans and maintenance trucks, and two of its vessels). Diesel consumption (not used in transport) is becoming increasingly less significant as it is used to run temporary electric generators, which are progressively being replaced by electrical connections.

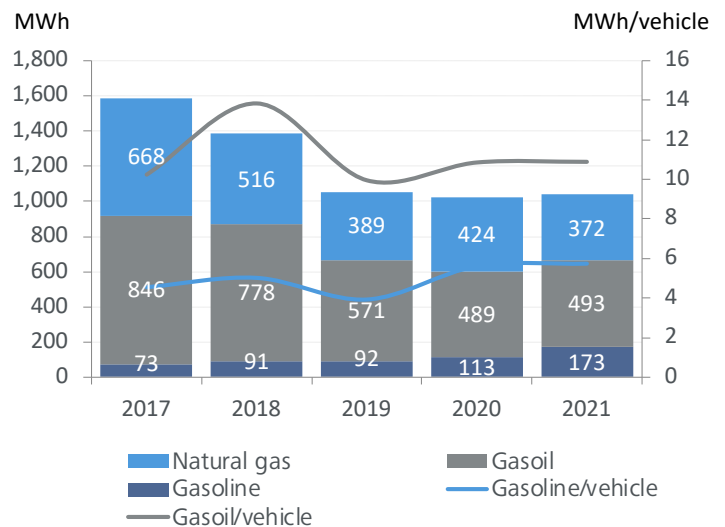
CNG and LPG consumption of vans is not shown in the graph as it is a minimal consumption.

Since January 2017, 100% of the electricity supplied to APB and its investees (WTCB, Cilsa, Port Vell) has been from renewable origin. By the end of 2021, the contract with the supplier will end, pending the start of a new renewable energy supply contract.

Evolution of electricity consumption according to use



Evolution of fuel consumption



Consumption rates	2016	2017	2018	2019	2020	2021
MWh diesel / vehicle	10.6	10.2	13.8*	10.0	10.8	10.9
MWh gasoline / vehicle	3.2	4.6	5.1	3.9	5.6	5.8

\* increase due to the replacement of diesel vehicles with electric vehicles



## Electric mobility

Of the Port Authority's total fleet of almost 100 vehicles, 41 are electric.

- 17 passenger cars for the shared vehicle pool
- 9 maintenance service vans
- 2 electric cars for specific services
- 2 assigned electric cars
- 3 assigned plug-in hybrid passenger cars
- 8 Port Police electric motorcycles

In 2021, 3 petrol passenger cars have been replaced by 3 micro-hybrid cars with ECO environmental label, 4 diesel light vans by 4 diesel-LPG hybrid light vans and 3 diesel vans by 3 dual engine Gas (CNG)-Diesel vans with ECO environmental label.

To supply energy to the new fleet of vehicles, the Port of Barcelona has installed 44 recharging points for its own use at various points and facilities. 28 of them are in the parking lot of the World Trade Center Barcelona building, where the Port's corporate headquarters are located, fourteen have been installed in the ASTA services building (Ronda del Port), and two additional chargers for Port Police motorcycles are at l'Estació Marítima de Drassanes (Moll de Barcelona).

In addition, three new charging points have been installed for public use: two slow charging points at the Moll de l'Energia and the other at the maritime station. These points are part of the **Charging points for electric vehicles installation plan**, which aims to have 27 points distributed throughout the port area by 2022.



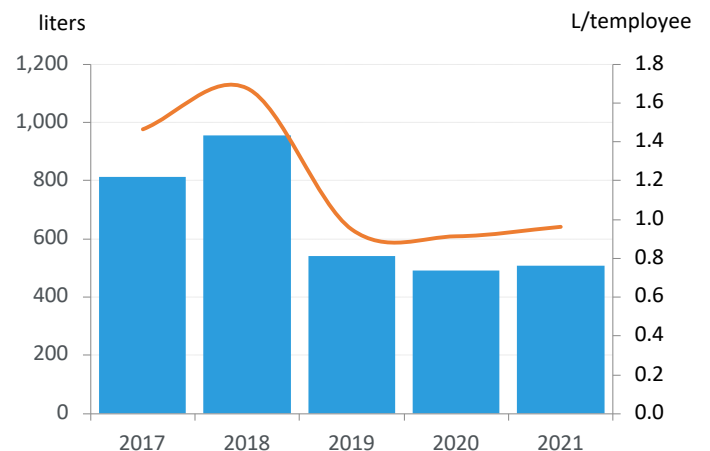
## Consumption of other materials

### Workshop products and materials

The empty containers of some of the products used in the workshop constitute hazardous waste, such as paint, enamel, turpentine, solvents, sprays, lubricant, grease, drill oil, degreaser and drain cleaner.

The use of these products and materials depends to a large extent on the number of necessary maintenance activities carried out, which means that their consumption varies depending on the maintenance and repair requirements of each year.

Consumption of hazardous materials





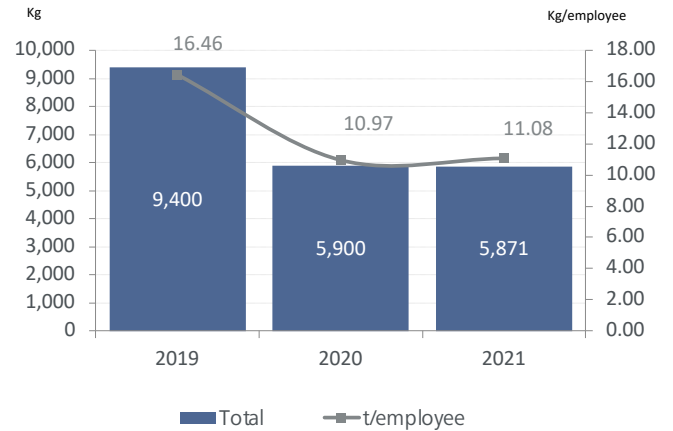
## Paper consumption

In 2009, the APB launched the “Green Office” initiative, a programme of actions to reduce environmental impacts caused by office activities.

The project consisted of preparing a **Guide to Best Practices** by a group of employees who voluntarily dedicated their time and effort to compile a set of initiatives, proposals and recommendations for reducing the use of office consumables and adopting a responsible consumption model.

In 2021, paper consumption (in tonnes of paper purchased) was 5.87 t, a reduction of 70% from 2011.

Consumption of paper



## Improvement of water quality



### Port Sanitation Network

Port water cleaning services

Water quality tracking

Sediment quality tracking

Monitoring of operations that represent a risk to water quality

**In terms of the environment, improving port water quality is one of the ports' main concerns.**

In general, port waters usually receive wastewater discharge from nearby urban and industrial areas and also discharge from the port's own facilities.

In Barcelona, the development of the city port (Port Vell) has led to increased demands to improve the appearance and water quality of the docks.

### Port Sanitation Network

One of the main actions aimed at improving port water quality was constructing the port's new sewage treatment network, with a total length of more than 30 km of collectors and sixteen pumping stations.

The network collects wastewater generated by activities within the port's service area. It connects through fourteen points to the metropolitan interceptor sewer, which carries it **to the Llobregat and Besós treatment stations.**

The network is remotely managed through thermal and hydrocarbon sensors, water level buoys in the pumping stations, and pump actuators.

### City Sanitation Network

Another factor in improving port water quality has been the progressive reduction of discharge from the city of Barcelona's unified sanitation system during rainy periods.

Organic matter going into the docks due to discharge from the city's sewage system has decreased by 75% since 1995, thanks to containment and flood control measures and the connections between sewage basins that the city has implemented over the years.

### Port water cleaning services

The Port of Barcelona uses specialised vessels to **collect and remove floating waste** from the water surface every day of the year during daylight hours.

The highest percentage of waste collected corresponds to that of plastics along with that of wood remains.

 Visit the explanatory summary page [Marine Environment](#)

### Monitoring of marine environment quality: water quality

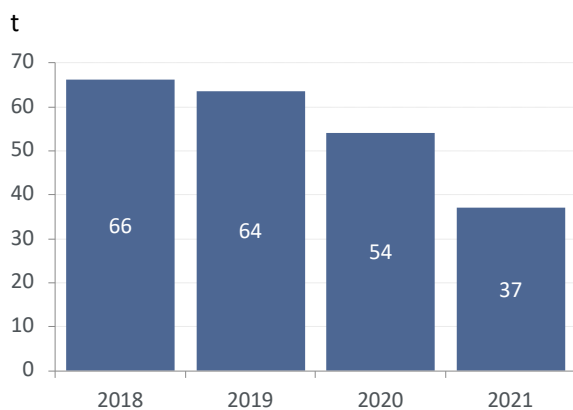
In 2021, the Port of Barcelona continued to monitor port water quality in collaboration with the Catalan Water Agency, in compliance with the Water Framework Directive. This monitoring is part of the Catalonia Monitoring Plan for Coastal Water Bodies.

**The Port of Barcelona is in charge of tracking the quality of the marine environment through periodic water and sediment** sampling campaigns inside and outside the port. Pollutants such as heavy metals, and organic compounds (PCBs, polyaromatic hydrocarbons, organochlorine, pesticides and others) are analysed during those campaigns.

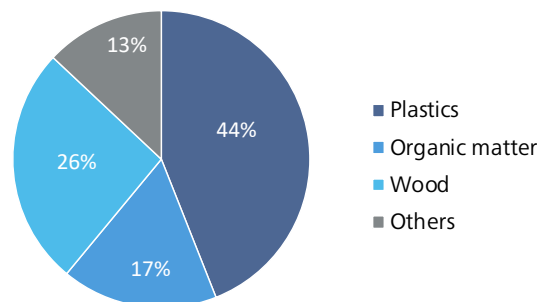
The table on the next page shows a summary of the measurement of physico-chemical parameters and the main pollutants in internal and external waters from 2018 to 2021.

The main pollutants found are those derived from the nautical-port activity and urban anthropic pressure, and some of these factors are outside the scope of port management. In general, stabilisation or improvement in water quality is evident despite the increase in port operations and ships in recent years.

Waste collected from water surface



Types of waste collected from the water surface





Physico-chemical parameters	2018		2019		2020		2021	
	External Waters Zone II	Internal Waters	External Waters Zone III	Internal Waters	External Waters Zone III	Internal Waters	External Waters Zone III	Internal Waters
Temperature (°C)	20.31	20.29	17.88	17.86	18.22	18.53	17.94	17.96
Salinity (PSU)	37.819	37.776	38.076	38.040	37.743	37.619	38.045	37.822
Turbidity (FTU)	1.08	6.45	0.65	2.74	1.30	4.02	1.06	3.79
Density (kg/m <sup>3</sup> )	1,026.765	1,025.473	1,027.762	1,027.764	1,027.243	1,027.090	1,027.53	1,027.35
Chlorophyll (µg/l)	0.68	1.08	1.00	2.13	1.21	2.01	0.87	1.51
SPM (mg/l)	-	-	2.08	7.12	0.83	3.6	0.83	3.39
Average Dissolved oxygen (mg/l)	6.4	5.9	5.6	5.6	4.8	4.6	6.18	5.68
Average OX saturation (% saturation)	87.9	81.3	80.4	78.5	82.4	80.9	81.21	74.34

Nutrient concentration	2018		2019		2020		2021	
Inorganic nitrogen NO <sub>3</sub> (µmol/litre)	1.92	2.34	1.00	2.06	0.80	1.56	0.53	1.34
Inorganic nitrogen NO <sub>2</sub> (µmol/litre)	-	-	0.19	0.30	0.16	0.27	0.21	0.27
Inorganic phosphorus (µmol/litre)	0.07	0.32	0.09	0.31	0.05	0.17	0.07	0.27
Inorganic silicon (µmol/litre)	1.23	2.11	0.61	1.32	0.88	1.82	0.65	0.95
Ammonium	-	-	0.66	2.67	0.34	1.47	1.15	2.27

Pollutants	2018		2019		2020		2021	
Benzo(a)pyrene (µg/l)	0.0001	0.0003	0.0001	0.0002	0.0006	0.0006	0,00003	0,00026
Sum of the sixteen PAHs (EPA) (µg/l)	0.0198	0.0146	0.0081	0.0164	0.0058	0.0147	0,00821	0,01747
Cybutryne (µg/l)	0.0005	0.0005	0.0005	0.0005	0.0005	0.0010	0,00050	0,00056
Zn (µg/l)	17.30	17.87	2.40	3.33	8.33	5.29	6,767	2,900
Cd (µg/l)	0.675	0.681	0.036	0.038	0.025	0.027	0,025	0,025
Ni (µg/l)	2.10	2.29	0.50	0.59	0.50	0.50	4,633	4,833
Hg (µg/l)	0.005	0.005	0.005	0.005	0.005	0.007	0.005	0.005

### Monitoring of marine environment quality: sediment quality

The port seabed receives and accumulates a part of the waste resulting from the port activity and nearby industrial and urban areas, in addition to being a reservoir of historical pollution from activities carried out in the past.

The mesotrophic conditions typical of the port, which limit the concentration of dissolved oxygen near the seabed, making it easier to reduce environments that cause the release of metals and organic pollutants from their sediments in dynamic equilibrium with the water column.



In general, the environmental conditions of the sediments have remained stable or have improved during the last few years, just like the water. However, the historical build-up in the oldest area of the port is still evident.

In the case of dredging of port bottoms to maintain or increase draughts or to carry out maritime works, great care is taken when characterising the sediments to be removed so that they are suitably relocated in accordance with the guidelines for the characterisation of dredging materials published by the Ministry of Public Works and Transport.

All works involving the dredging of the seabed are subject to strict, independent environmental oversight to ensure proper management of the dredged sediments in line with their degree of contamination.

### Monitoring of marine environment quality: Bioindicators

Benthic communities, or the groups of living beings that inhabit seabed sediment, are used as indicators of the health and environmental quality of the deposit, as these organisms accumulate a kind of history of what's happened in the sediment where they live.

The composition and structure of the communities present in Port waters are also affected by environmental pollution.

**Tracking of benthic communities has been conducted since 1998**, and the results show an improvement in water and sediment quality in the Port of Barcelona.

The attached table shows measurements of the main parameters that define the composition of the benthic communities at the port's internal and external stations over the last few years.



Benthic communities	2019		2020		2021	
	External Waters Zone III	Internal Waters	External Waters Zone III	Internal Waters	External Waters Zone III	Internal Waters
Richness (Taxons/800cm <sup>2</sup> )	43	46	59	39	75	50.2
Abundance (Individuals/800cm <sup>2</sup> )	170	302	210	222	749	525.2
Shannon Diversity (H')	3.1	2.754	3.5	2.78	2.54	2.864

### Monitoring of operations that represent a risk to water quality

The APB gives instructions that regulate the Application and Approval Procedure for minor painting works on external structures of ships, hull cleaning and other routine maintenance and upkeep operations. This procedure sets out the conditions necessary for the authorisation, in order to minimise the risk of accidental spillage of paints and other products into port docks. Such works are limited on wharves with higher vulnerability to pollution than others.

Adequate prevention and response measures, as well as immediate warning procedures to be complied with by operators in the event of an incident, have been introduced in the regulations for port services, relating to the reception of ship waste and the supply of bunker fuel to ships, which are activities with a high risk of accidental oil spills.



# Improvement of air quality



## The Port of Barcelona Air Quality Improvement Plan

Immission monitoring stations

Emissions from port activity

Actions to improve the atmospheric environment

Air quality indicators

**Monitoring, evaluation and actions to improve air quality in the port environment are priority activities for the Barcelona Port Authority.**

### The Port of Barcelona Air Quality Improvement Plan

Since 2016, the Port Authority has been implementing the Air Quality Improvement Plan in its environs, which includes various actions aimed at reducing emissions of polluting gases and suspended particulate matter.

This plan, which the Board approved of Directors at its July 2016 meeting, includes a total of 53 concrete and specific actions, grouped into nine lines of action:

- Ship emissions.
- Road traffic emissions.
- Terminal machinery emissions (off-road vehicles).
- Promotion of rail transport and Short Sea Shipping.
- Emissions from the handling of bulk solids.
- New road and rail access.
- Emissions from port works.
- Sustainable mobility for all companies located in the port.
- Adjustment and updating of the Port's air quality monitoring networks.

For each of these lines of action, concrete and feasible actions have been proposed, to be implemented in three phases: immediately, short term and medium term.



Visit the Port of Barcelona's webpage on Atmospheric Environment

The main action taken under the plan has been the electrification of the main docks so that ships can be connected during their stopover in Barcelona, thus avoiding the emissions from their auxiliary engines.

Work began in 2019 on a new version to be presented in 2022. The plan will be aligned with the action plans of the Generalitat and Barcelona City Council for the Special Atmospheric Environment Protection Zone for NOx and PM10.



## Immission monitoring stations

For air quality monitoring in the port environment, the APB has a network of meteorological stations and a network of pollution monitoring stations with PM<sub>10</sub> particulate matter samplers (suspended particles less than 10µm in diameter) and PM<sub>2.5</sub>, as well as automatic analysers to measure gaseous pollutants in the air.

The Port's meteorological network consists of seven stations equipped with wind speed and direction sensors; three are also equipped with rain, temperature and relative humidity, atmospheric pressure and solar radiation sensors.

The Port's network of sequential high volume samplers (HVS) consists of eight units: five samplers that collect samples of PM<sub>10</sub> suspended particles and three PM<sub>2.5</sub> samplers. The PM<sub>10</sub> particle sampler at the station located in Port Vell is part of the Government of Catalonia's Air Pollution Monitoring and Forecasting network, and its immission values are official. The rest of the stations give reference values for indicative measurements.



The Port of Barcelona also has three automatic stations that measure the concentration of gas pollutants in ambient air, such as nitrogen oxides and sulfur dioxide.

In the Mobile unit station, a BTX (Benzene, Toluene and Xylene) analyser and an ozone (O<sub>3</sub>) analyser have also been installed.



Source: Google

Port de Barcelona  
Imatge Satèl·lit  
de 05 de novembre del 2017

● Meteorological station ● Automatic analyser ● High volume sampler

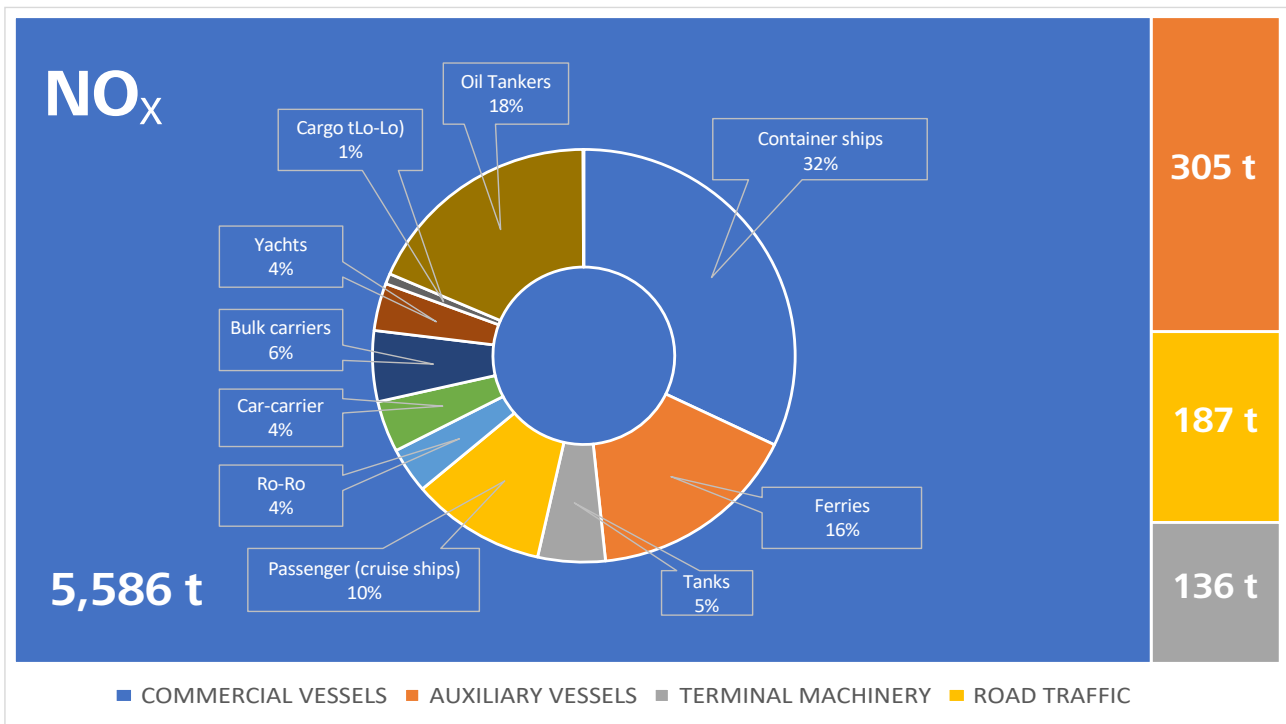


## 2020 Emissions from Port activity.

Estimates of atmospheric emissions of polluting gases from port activities indicate that emissions from ships are the most significant, accounting for more than 95% of total nitrogen oxide and particulate matter emissions.

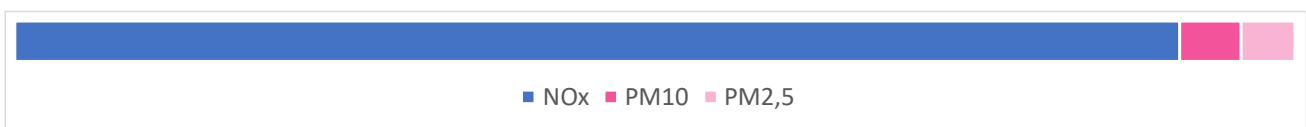
Every few years, the APB reviews these estimates and updates them using a calculation methodology that has been agreed with the Barcelona City Council and the Government of Catalonia. Port emissions represent 7.6% of the city's NO<sub>x</sub> air pollution and 1.5% of PM<sub>10</sub> pollution.

Taking as a reference the NO<sub>x</sub>, PM<sub>10</sub> and PM<sub>2.5</sub> parameters from the inventory of mass emissions in the port in 2020, we observed that the former is the most common (91%). For this reason, the distribution of the main emitting agents for this parameter is shown below.



6,212.91 t (91%)

611.57 t (9%)



	NOx (t)	PM <sub>10</sub> (t)	PM <sub>2.5</sub> (t)
<b>TOTAL EMISSIONS</b>	<b>6,212.91</b>	<b>322.74</b>	<b>288.73</b>





Commercial boats	NOx (t)	PM <sub>10</sub> (t)	PM <sub>2.5</sub> (t)
Container ships	1,793.22	101.03	90.17
Ferries	908.04	51.55	45.72
Tankers	287.89	15.93	14.27
Cruise ships	576.69	29.76	26.38
RoRo	199.55	12.49	11.14
Car-carrier	223.98	11.1	9.88
Bulk carriers	309.81	12.45	11.02
Yachts	207.85	7.06	6.13
Cargo ships (LoLo)	45.31	1.96	1.72
Oil tankers	1,030.56	56.92	51.39
Others	3.07	0.29	0.26
<b>TOTAL</b>	<b>5,585.97</b>	<b>300.54</b>	<b>268.08</b>

Auxiliary boats	NOx (t)	PM <sub>10</sub> (t)	PM <sub>2.5</sub> (t)
Tugboats	235.95	4.51	4.21
Practice vessels	25.51	0.49	0.45
Mooring vessels	3.69	0.07	0.07
Bunker barges	39.69	3.54	3.51
<b>TOTAL</b>	<b>304.84</b>	<b>8.61</b>	<b>8.24</b>

Terminal machinery	NOx (t)	PM <sub>10</sub> (t)	PM <sub>2.5</sub> (t)
Auxiliary earth machinery	135.52	8.62	8.62
<b>TOTAL</b>	<b>135.52</b>	<b>8.62</b>	<b>8.62</b>

Road traffic	NOx (t)	PM <sub>10</sub> (t)	PM <sub>2.5</sub> (t)
Passenger cars	8.67	0.56	0.38
Vans (LDV)	4.67	0.25	0.17
Trucks (MDV)	10.65	0.32	0.23
Lorries ( HDV)	153.71	3.53	2.75
Coaches	8.22	0.25	0.21
Motorcycles	0.66	0.06	0.05
<b>TOTAL</b>	<b>186.58</b>	<b>4.97</b>	<b>3.79</b>



## Actions to improve the atmospheric environment

### Intermodality

The promotion of maritime and rail transport of goods to and from the port is a way to reduce emissions of polluting gases and particles compared to road transport.

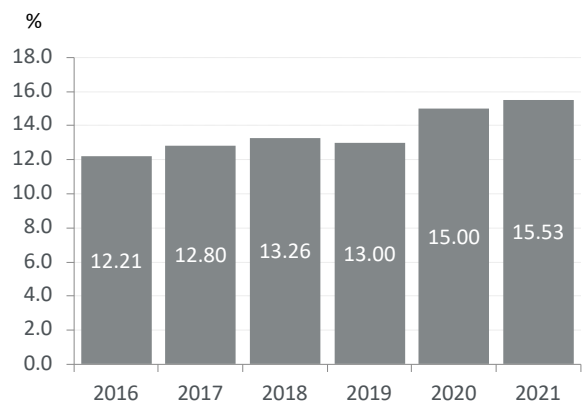
For years, the port has been committed to promoting the transport of cargo by rail, short-sea shipping (SSS) and on the Motorways of the Sea (MoS), as a strategy to build loyalty and expand its hinterland or area of influence. This, in turn, impacts on the reduction of pollutant gas and particle emissions compared to land transportation.

The cabotage unit is the ITU (Intermodal Transport Unit), which is the equivalent of a truck or a flatbed loaded on a ferry vessel. Every ITU moved by ship is therefore equivalent to taking a truck off the road.

The following graph shows the ITUs moved, replacing road transport, in the Port of Barcelona in recent years.

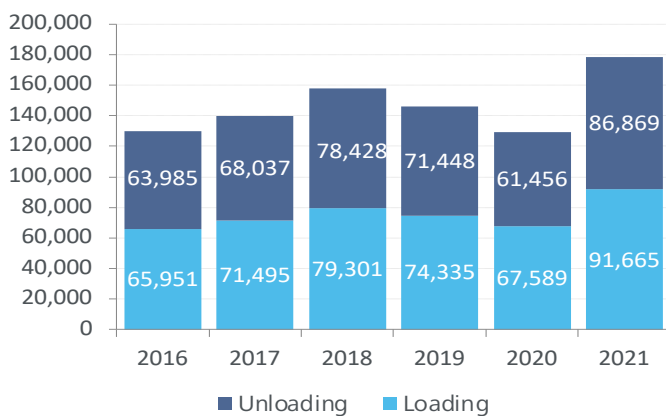
Most general cargo is handled in containers, the unit of which is the TEU, equivalent to a twenty-foot container. In general, it can be said that every TEU moved by train is equivalent to taking one truck off the road.

Percentage of TEU'S moved by FFCC

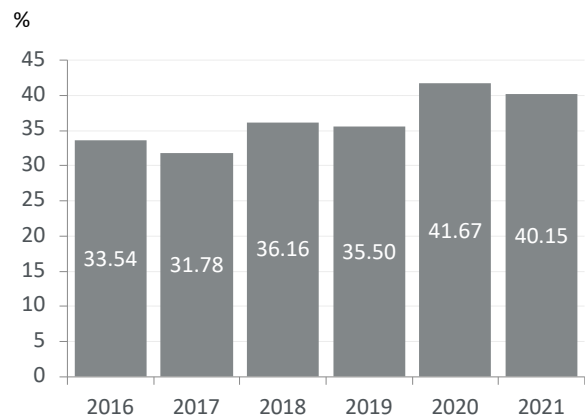


As seen in the graph above, the TEUs moved by train in the Port of Barcelona represent more than 15% of the total TEUs moved in the last year, an increase concerning to previous years.

UTI's Movement



Percentage of automobiles moved by FFCC



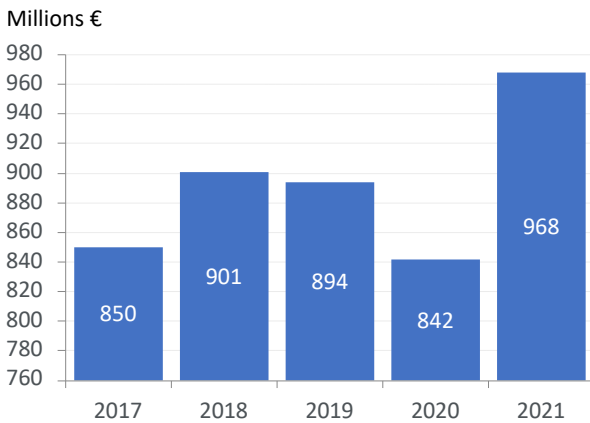
## Environmental monitoring of works

Moreover, all works developed by the Port Authority are subject to external environmental monitoring, independent of the contractor. This includes verifying that the contractor complies with the pollution prevention and minimisation criteria established for the project, as well as monitoring the impacts that the construction process has on the environment, especially particle emissions and noise. This environmental monitoring of port works is discussed in more detail later in this report.

## New road and rail access to the port

Progress has been made with the planning of the new road and rail access routes planned from the south to the Port of Barcelona. Once completed and in service, the new access routes will allow goods to be moved in and out of the port area farther away from the city centre, which will reduce congestion and, therefore, the effect of related emissions on the city's air quality.

Evolution of externalities savings. Use of Rail and SSS





## Promotion of Gas Use

Among the actions included in the **Air Quality Improvement Plan**, those aimed at promoting the use of natural gas as an alternative fuel for transporting goods by sea and land stand out.

This facilitates effective reduction of polluting emissions, an increase in the competitiveness of transport activity and, by extension, that of other transport and intensive distribution activities or the industry as a whole.

The availability of liquefied natural gas (LNG) at the ENAGAS terminal located in the port is an opportunity to promote this cleaner fuel. To encourage the adoption of LNG, the Port of Barcelona is working on four lines of action:

- Make natural gas supply infrastructures available for ships and trucks, i.e., have ENAGAS berths ready to supply barges and, in turn, have barges to provide the service in the port.
- Regulate operations which supply the new LNG fuel to ships, prioritising safety and alignment with other existing regulations in order to give operators legal certainty.

- Carry out pilot and demonstration projects that highlight the feasibility of using this fuel as an alternative to traditional fuels in all sectors of port transport operations.
- Give bonuses to ships that use these new fuels to incentivise their adoption during the first phase of implementation.

The natural gas introduction policy has allowed the promotion of the Port of Barcelona as a hub of LNG bunkering in the Mediterranean. In 2017, the first ferry with an auxiliary natural gas engine, the ABEL MATUTES of the BALEARIA company, called at the port and was supplied with LNG from a tanker truck (truck-to-ship or TTS).

**In 2019, the Port of Barcelona became the first port in the Mediterranean to supply LNG to a ship from a barge** to the Aida Nova cruise ship of the CARNIVAL group (ship-to-ship or STS mode).

**It should be noted that since 2020 LNG has been supplied in the multi-truck-to-ship modality**, that is, between 2 and 3 tank truck simultaneously. Through this modality, it is possible to supply the necessary LNG during the short stopovers of the BALEARIA ferries without interfering with the regular operation of the vessel.

At the end of 2021, 7 BALEARIA ferries were authorised to supply LNG to the Port of Barcelona in the truck-to-ship mode and 5 CARNIVAL cruise ships in the ship-to-ship mode. During 2021, LNG has been supplied to a total of 9 different vessels, in TTS and STS modality. It is worth mentioning the extraordinary supply of bioGNL to the superfast Eleanor Roosevelt ferry of BALEARIA during its inaugural trip in the port of Barcelona.

From 2017 to 2021, some 143,000 m<sup>3</sup> of LNG will be supplied to ships in the port of Barcelona, 54,000 m<sup>3</sup> from tankers (TTS mode) and 89,000 m<sup>3</sup> from barges (STS mode).

### Services and volume of LNG delivered to vessels at the Port of Barcelona since 2017.

From tanker trucks	2017	2018	2019	2020	2021	TOTAL
No. of operations	42	18	4	212	218	494
Tanker trucks involved	42	18	4	596	609	1,269
Ships	Abel Matutes, Aida Perla	Abel Matutes	Hypatia de Alejandría	Abel Matutes, Nápoles, Sicilia, Bahama Mama	Abel Matutes, Nápoles, Eleanor Roosvelt, Sicilia, Martín i Soler	
<b>M<sup>3</sup> supplied</b>	<b>886.11</b>	<b>344.61</b>	<b>322.93</b>	<b>25,437.82</b>	<b>27,079.59</b>	<b>54,071.06</b>

From Barges	2017	2018	2019	2020	2021	TOTAL
No. of operations	0	0	17	7	18	42
Ships			Aida Nova, Costa Smeralda	Costa Smeralda	Mardi Gras, Costa Smeralda, Iona, Costa Toscana	
<b>Suministro en m<sup>3</sup></b>	<b>0</b>	<b>0</b>	<b>37,222</b>	<b>13,711</b>	<b>37,971</b>	<b>88,904</b>

TOTAL OPERATIONS	2017	2018	2019	2020	2021	TOTAL
No. of operations	42	18	21	219	236	536
<b>Suministro en m<sup>3</sup></b>	<b>886.11</b>	<b>344.61</b>	<b>37,544.93</b>	<b>39,148.82</b>	<b>65,050.59</b>	<b>142,975.06</b>





As regards land transport, the Port has had an LNG (Liquefied Natural Gas) and CNG (Compressed Natural Gas) supply station for both trucks and light vehicles since 2018.

### Reduction of ship emissions

Reducing emissions from ships is a major challenge for ports as it represents the primary source of emissions from port activity.

However, port authorities have few tools to help them achieve the goal of reducing these emissions since ship emissions are regulated at the international level through conventions sponsored by the IMO (International Maritime Organization).

The main actions we are carrying out to reduce emissions from ships to reduce the impact on public health and contribute to the decarbonisation of port activity are:

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1. Promote natural gas as a cleaner mobility fuel, as discussed above.

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2. Incentivise better performance by ships using bonuses related to port fees.

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3. Technological developments in ships to reduce polluting emissions in port.

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Since 2019, 6 ferries of the GRIMALDI company have been calling regularly, all of which are equipped with storage batteries with a capacity of more than 5,000 KWh that are charged during the sailing trip and supply the stored electricity to the ship during its stay in port, replacing the auxiliary diesel engines.

In addition, vessels using natural gas during navigation or calls have been granted a bonus.

Since 2017, up to 23 vessels have been subsidised for using batteries during calls or for using natural gas, either in the main or auxiliary engines.







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#### 4. The promotion of new fuels with very low or zero pollutant and greenhouse gas emissions for ships, heavy vehicles and machinery used in the terminals.

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It is estimated that the electrical connection of ships (known as on-power supply or OPS) at the main docks will lead to a reduction of 60,000 tonnes of carbon dioxide (CO<sub>2</sub>) and 1,264 tonnes of nitrogen oxides (NOx). This is the equivalent of 38% of ships' annual emissions during their port stay and 25% of those produced including mooring and manoeuvring.

This decarbonisation represents 22% of the annual emissions resulting from port activity. It is in line with the objectives of the International Maritime Organisation (IMO) to reduce port emissions by 50% by 2030 in order to reach emission neutrality by 2050.

To this end, the Port of Barcelona will invest more than 110 million euros to progressively electrify the main docks until 2030. It is planned that by the end of 2023, it will be possible to provide electricity to container ships at the BEST terminal and, in 2024, to TRASMED ferries.

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#### 5. The promotion of new fuels with very low or zero pollutant and greenhouse gas emissions for ships, heavy vehicles and machinery used in the terminals.

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The Port of Barcelona is working on ways to promote alternative fuels with zero or almost zero emissions, including hydrogen, ammonia, methanol or synthetic hydrocarbons, and some biofuels or biomethane.

The promotion of these new fuels involves following guidelines similar to those for the introduction of natural gas, such as: giving information and promoting awareness of how necessary and feasible they are; pilots projects to demonstrate their feasibility in different



mobility sectors; the provision of adequate facilities to supply them to ships and, finally, the regulation of port activities related to these new fuels.

As part of this strategy, the Port of Barcelona is participating in the **European Pioneers Project to produce and supply clean energy, design sustainable ports, modal shift and optimisation of flows, and digital transformation, together with the ports of Antwerp, Venlo and Constance.**

### Sustainable mobility

In 2021, work was done on creating the Displacement Plan for the Port Authority of Barcelona workers. To this end, the Mobility Board was created, formed by workers from different departments of the APB and the works council.

The objective of this Bureau is to define the Displacement Plan, establishing a diagnosis of the present scenario through an analysis of the current situation and the preparation of surveys of working people to know their mobility habits. Once the information had been analysed, an action plan would be drawn up for the coming years.

To encourage the use of public transport, APB also provides **integrated public transport (T-usuals) cards** to people who choose this option to go to work. In 2021 a total of 226 people staff of the Harbour Authority benefited from this initiative.

APB employees that use public transport cards

Evolution	2017	2018	2019	2020	2021
No. of people	251	239	231	224	226

### Monitoring of bulk solids operations

Most of the traffic of bulk solids, which can release particulate emissions into the atmosphere at the Port of Barcelona, is handled in closed facilities equipped with wind protection systems and, in some cases, with suction and air filtering.

For this reason, problems caused by handling bulk cargo on open docks are very limited in our port, and are confined to the Contradique South wharf and the West Wharf.

The Port has had regulations in place for these activities since 2005, including best practices required of operators unloading/loading and handling bulk solids (Ordinance of operations and berthing at the Contradique South wharf and the West Wharf, approved by the Director General of the Port Authority on April 12, 2005). One of the stipulations of the regulation is that operations must cease when the wind exceeds a certain speed.

### Environmental monitoring of construction sites

On the other hand, all construction and building works promoted by the Port Authority are subject to external environmental monitoring.

This independent control is responsible for verifying that the contractor complies with the pollution prevention and minimisation conditions established in the project, as well as monitoring the impacts that the works have on the environment, especially the emission of particles and noise. Later in this report, this environmental control of port works is discussed in more detail.

### New road and rail access to the port

The new road and railway accesses planned from the South to the Port of Barcelona have experienced progress in their processing.

Una vez implantados y en servicio, estos nuevos accesos alejarán el tráfico de mercancías de entrada y salida del puerto del centro urbano, reduciendo la congestión y, por tanto, sus emisiones, mejorando la calidad del aire de la ciudad.



## Air quality indicators

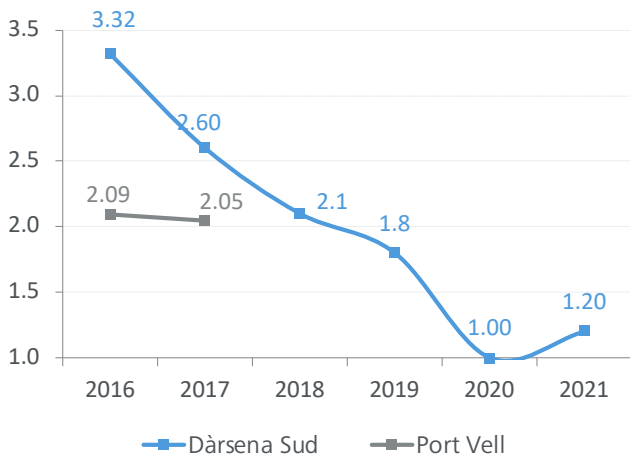
Air quality in the port area had improved since the beginning of the 2000s when monitoring of immission levels of the main polluting gases began.

The following graphs show air quality levels measured between 2015 and 2020 for the different pollutant gases in the port area.

Sulfur dioxide concentration levels are low. Current European regulations set a daily average of 125  $\mu\text{g}/\text{m}^3$  as a maximum threshold, which may not be exceeded more than three days a year.

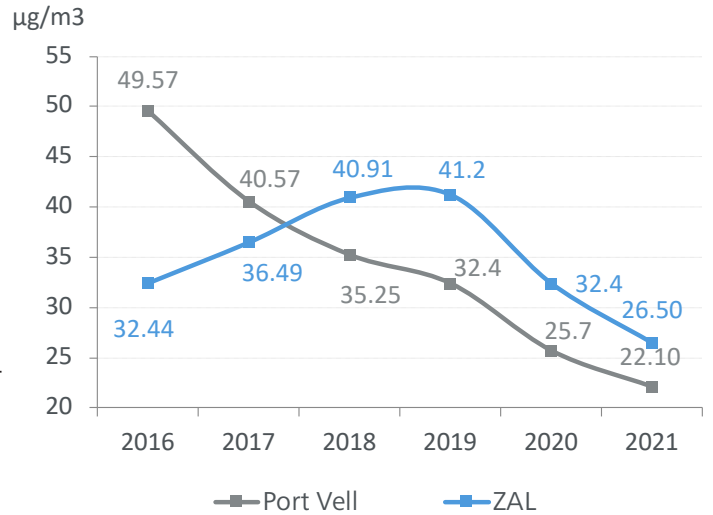
The immission values increase for this pollutant in 2021, was due to the recovery of ship traffic after the pandemic. However, the entry into force of the mandatory use by ships of fuels with lower sulphur content during navigation, from 3.5% to 0.5% sulphur content by mass, has contributed to the fact that the pre-pandemic immission levels have not been exceeded.

**Average concentration of  $\text{SO}_2$**



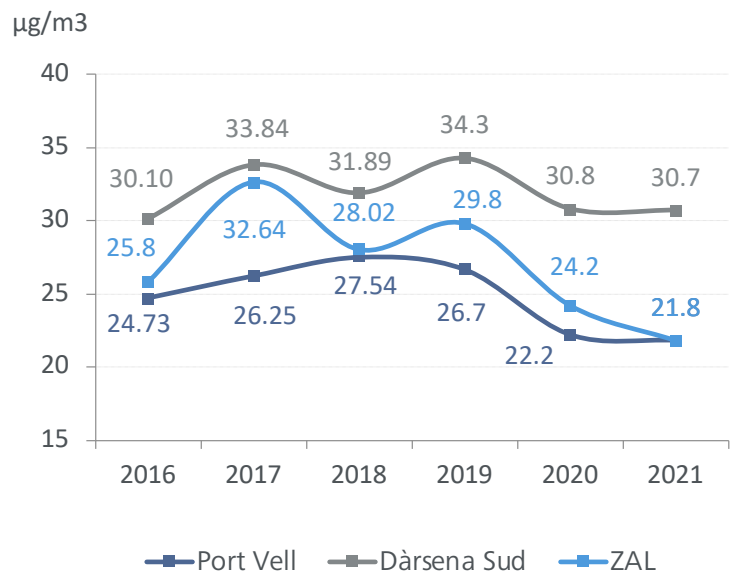
The levels of nitrogen oxides show values with a clear trend towards reduction in recent years. The reference value is 40  $\mu\text{g}/\text{m}^3$ .

**Average concentration of  $\text{NO}_x$**



The concentration values of suspended particulate matter ( $\text{PM}_{10}$ ) in the air, strongly associated with construction work and bulk solids operations, can generally be considered low. The highest values were at the Dàrsena Sud station, influenced by the traffic.

**Average concentration of  $\text{PM}_{10}$**







# Climate strategy



**Adherence to the OCCC's  
Voluntary Agreements**

**Renewable energy supply**

**BCN Zero Carbon Project**

**Eco-calculator**

**Short Sea Shipping  
promotion**

**Ports are being called on to play an important role as agents of change in the decarbonisation of maritime transport and of the activity itself as agents of change.**

According to preliminary calculations made by the Port Authority, the total of activity carried out in the port area emits some 315,000 tonnes of CO<sub>2</sub> a year, of which 215,000 tonnes come from ships (including emissions from anchoring, manoeuvring and during their stay in port); about 78,000 tonnes of CO<sub>2</sub> comes from electricity consumption by all the facilities within the port premises, and the remaining 20,000 tonnes of CO<sub>2</sub> comes from emissions from vehicles, both light and heavy, terminal machinery and industry.

Through the Strategic Plan, the Port of Barcelona sets a target to reduce CO<sub>2</sub> emissions to 50% by 2030 and 100% by 2040 in relation to 2017 emissions, a target that is in line with EU objectives, based on the Paris agreements, to reduce emissions by 55% by 2030 and by practically 100% by 2050, as compared with 1990 levels.

For its part, the IMO (International Maritime Organization) has set out an initial strategy for decarbonisation of the maritime sector, which sets the target of an emissions reduction of at least 50% by 2050 compared to 2017.



Visit the Port of Barcelona's webpage on Climate Strategy

The Port of Barcelona has made commitments to reduce its greenhouse gas emissions at three levels:

[Emissions from all port activity](#)

[Emissions of the Authority Port organisation](#)

[Emissions from concessionaires and Port Community operators](#)



# COMMITMENTS OF THE PORT AS A WHOLE

## Energy transition

The Port of Barcelona has undertaken its energy transition process, aiming to achieve an energy model based on three pillars: renewable energies, energy storage, and a smart electrical grid that permits optimal management responses to new consumption. The photovoltaic generation potential on roofs and surfaces in the port area is about 92 MW of peak power, with an annual production of about 120 GWh. Wind potential, however, is much lower due to the scarce wind resource and limitations on tower height due to the proximity of the airport.

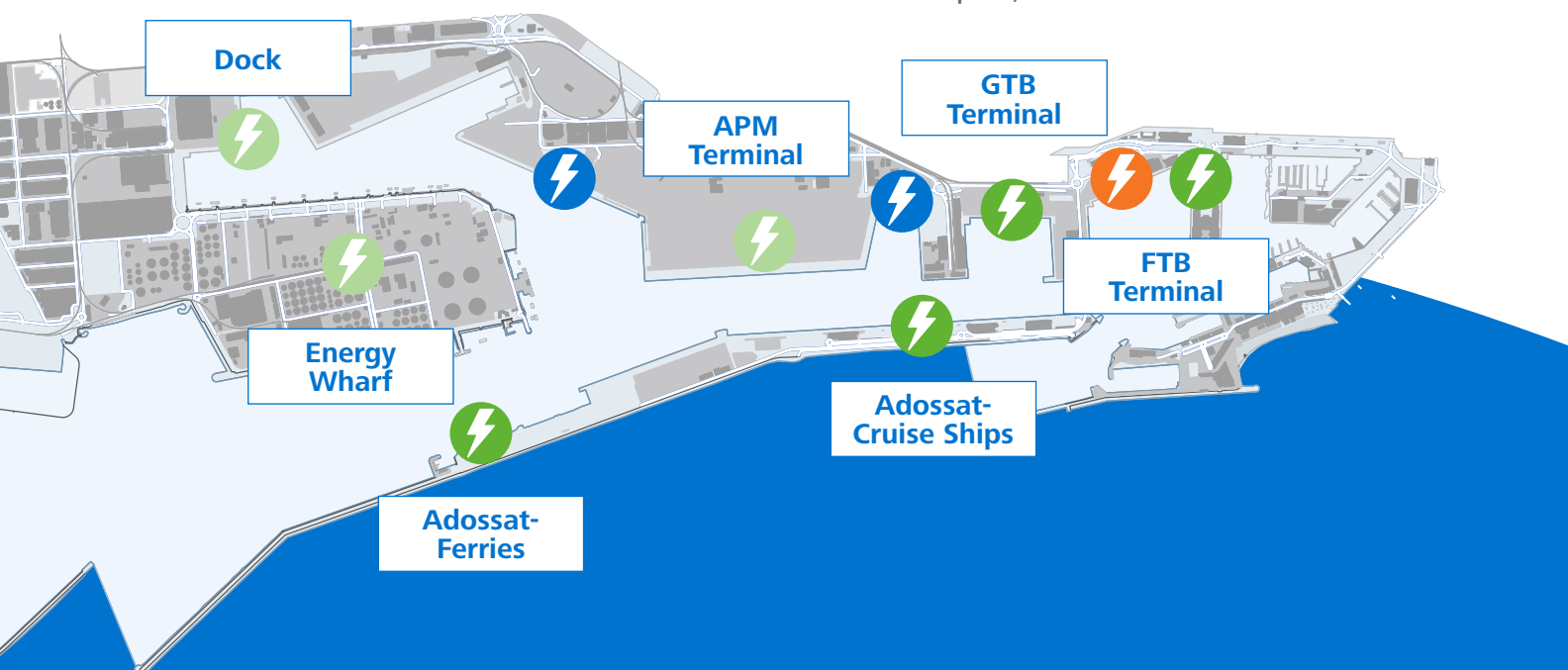
In the future, renewable photovoltaic generation could meet the electricity demands of ships connected to the grid and complement the power supply to port facilities.

In 2021, a number of pilot tests of shared consumption energy communities between various dealer facilities were initiated. The aim is to make the most of photovoltaic generation by ensuring that the surpluses produced at one facility can be used by neighbouring facilities. With the energy stored in batteries and sensorisation of the power grid, the system can intelligently decide on the best use of the electricity produced at any given moment.

One of the pilot programmes began in 2019 in the Moll de Pescadors fishing port with the collaboration of the Fishermen's Guild of Barcelona.

## ELECTRIFICATION OF WHARVES

- Electrification between 2021 - 2025 (pilot schemes)
- Electrification between 2025-2030
- Electrification from 2030
- Electrification plans in advanced stages (specific studies required)





## Promotion of new fuels

Promoting new zero-carbon fuels for ships, heavy vehicles and machinery used in terminals, will also be vital to making progress in the decarbonisation process and meeting the emissions reduction targets set by the European Union (EU) and the International Maritime Organization (IMO) for 2030 and 2050.

## World Ports Climate Action Program (WPCAP)

In 2018, the Port of Barcelona joined an initiative promoted by the world's leading ports aimed at laying the foundations to accelerate the decarbonisation of port activity and maritime transport, in line with the IMO (International Maritime Organisation) commitment to reduce greenhouse gas emissions by at least 50% by 2050 compared to 2008.

The initiative, which includes the ports of Vancouver, Los Angeles, Long Beach, New York, Hamburg, Antwerp, Rotterdam, Gothenburg and Buzan, is split into five working groups focused on concrete actions.

The Port of Barcelona leads the group focused on supplying ships with electricity from wharves and also participates as a partner in the group focused on sustainable fuels for ships.

In the area of innovation, the Port has joined the Catalonia Energy Research Institute to study the role of hydrogen, and other clean fuels derived from it, as possible fuels with zero emissions of pollutants and greenhouse gases for land and maritime transport of goods.

## Electrical connection of vessels

Along with the objective of reducing polluting emissions, in 2019, the Port of Barcelona made public its commitment to electrifying the wharves where cruise ships, container ships, vehicle ships and ferries make their port calls. This would mean they can be connected during their port stay, avoiding emissions from their auxiliary engines.

By 2030, the objective is to have the electrical infrastructure in place to connect ships at the cruise stations, the Moll Prat container terminal and at the ferry stations, which will mean a reduction of approximately 40% in CO<sub>2</sub> and NO<sub>x</sub> emissions.

According to the task schedule, this network will be deployed progressively, through transformer stations and command centres, in order to help it branch out to the wharves that will connect to ships.

# COMMITMENTS AT THE PORT AUTHORITY LEVEL

## Constructions and facilities

The Port Authority is taking action to ensure energy savings and maximum efficiency in its buildings and facilities, in addition of renewable energy generation. This action includes the following:

- Actions to improve the energy management of the APB offices in the WTC building, by replacing compact lamps with LEDs and switching lighting on and off by sectors.
- Installation of renewables at Fisherman's Wharf: the new fish market buildings, the old net shed and the net yard.
- Installation of renewables in the PIF building

## Street lighting

The Port Authority is progressively improving its public lighting network, installing LED lamps and improving lighting management by defining different brightness levels for different times.

## Own fleet

Of the approximately 100 units in the fleet (including motorcycles, light vehicles and trucks), 41 units are currently electric (mainly light vehicles and motorcycles). The remaining vehicles will be progressively replaced with new electric vehicles.

## Adherence to the OCCC's Voluntary Agreements

The Port of Barcelona adheres to the Voluntary Agreements to reduce greenhouse gas (GHG) emissions developed by the Government of Catalonia's Office of Climate Change (OCCC in the original acronym). By signing this agreement in 2012, the organisation committed to gradually reducing direct and indirect (Scope II) emissions from fuel consumption by its fleet of 120 vehicles, two vessels and some generators, as well as to reducing its electricity consumption.

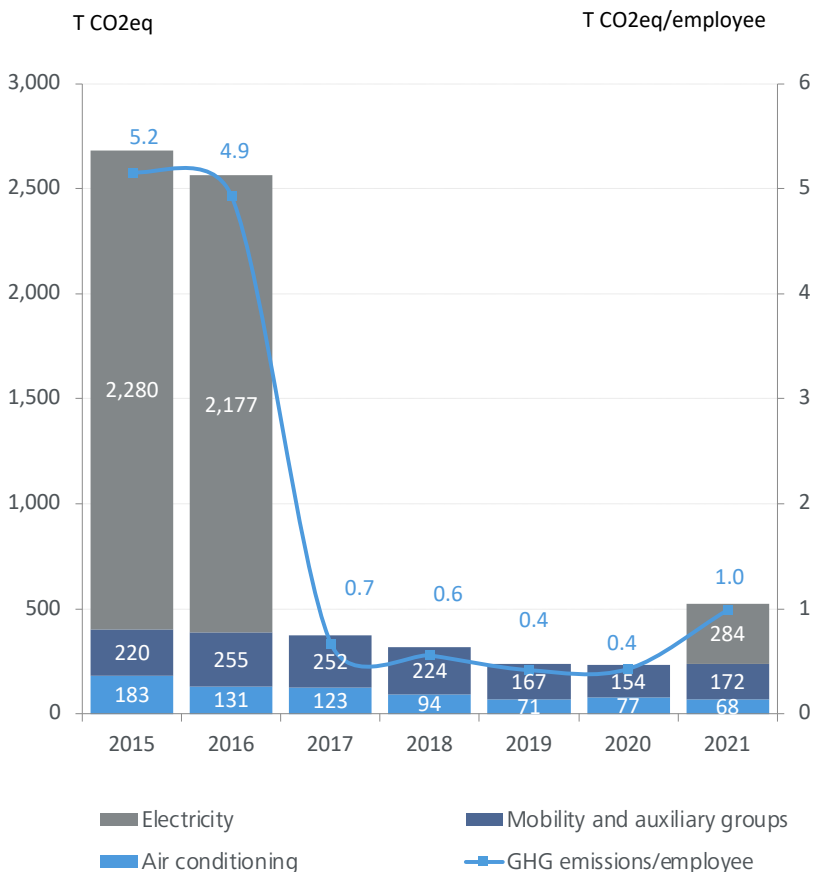
As seen in the adjoining graph, 524 tonnes of CO<sub>2</sub>eq emissions were attributable to the APB in 2021, of which 172 tonnes came from fuel consumption for mobility, 68 tonnes for heating and 284 tonnes to the consumption of electricity from non-renewable sources.

## Electricity with renewable generation certification

Since 2017, all electricity consumed by APB and its investee companies (Port 2000, WTC Barcelona and CILSA) has renewable energy guarantees of origin, so the associated emissions do not count as greenhouse gas emissions. At the end of 2021, the contract with the distribution company is terminated, so electricity is temporarily purchased without certification while awaiting the conclusion of a new contract to ensure supply from 100% renewable sources.

This leads to GHG emissions from electricity consumption being computed in 2021.

### GHG emissions



Emissions calculator  
Catalan Office  
of Climate Change





# COMMITMENTS AT THE PORT COMMUNITY LEVEL

## Extension of the electric vehicle recharging points plan to concession facilities.

The concession contracts foster the installation of electric recharging points at facilities, in order for staff to have access to recharging facilities for their electric vehicles.

## Promotion of OCCC voluntary agreements

The Port encourages concessionaires to adhere to the voluntary agreements of the Catalan Climate Change Office, to reduce GHG emissions.

## Promotion of clean fuels in terminal machinery

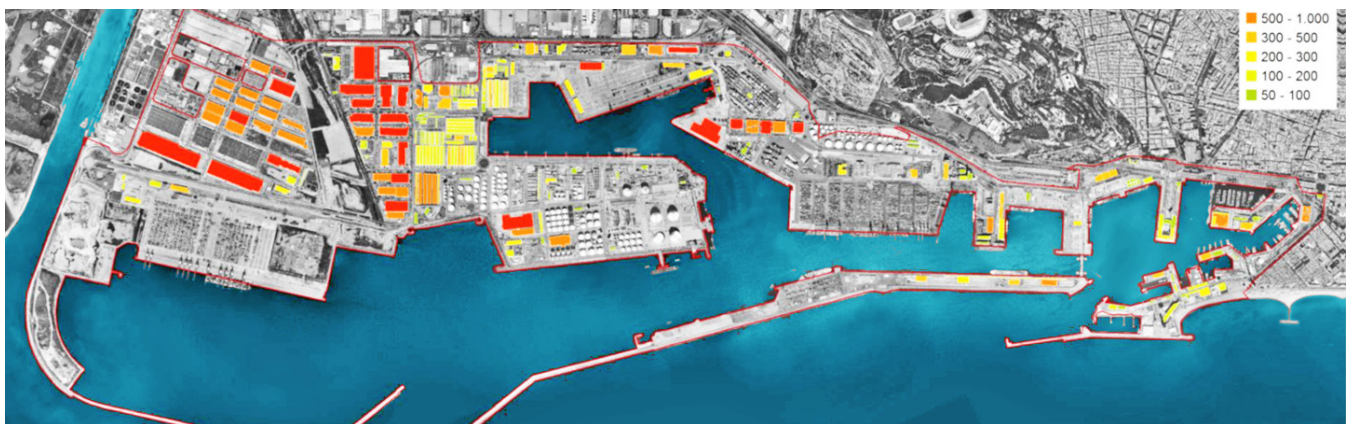
Environmental bonuses and concession clauses also encourage concessionaires to renew their machinery in order to incorporate units that run totally or partially on electricity (if possible) or other clean fuels.

## Equipment and resources of port service companies

The license conditions oblige service companies to adapt to best practices progressively and to incorporate equipment that generates fewer emissions.

## Promoting energy efficiency and renewable generation in buildings and facilities

The environmental bonuses for concessionaires included in the Ports Law and in the new concession contracts promote efficient energy development and renewable energy generation on the roofs and flat surfaces of facilities and buildings.



Map of the photovoltaic potential on roofs in the port area (in kW peak).



## Eco-calculator

**Customers of freight companies and other links in the logistics chain are increasingly interested in knowing about environmental externalities so that they can integrate them into their decision-making processes regarding transport routes.**

In response to this concern, the Port of Barcelona has made a tool available to freight companies and logistics operators which calculates the CO<sub>2</sub> emissions of their transport routes and shows the most environmentally efficient alternative ways.

## Short Sea Shipping promotion

Escola Europea - Intermodal Transport is Europe's leading centre for logistics and intermodal transport training. Its objective is to promote intermodal transport as a basis for developing sustainable logistics in Europe.

The school began its activity in 2006 as a training centre for European professionals and students in the world of logistics, transport management and international trade. Years later, it has gained knowledge and experience in national and international project management, communication, content development in collaboration with recognised European institutions, and the promotion of logistics clusters.

Since its creation, the school has worked closely with the European Shortsea Network and, more specifically, with the Shortsea Promotion Centres, which along with promoting short-sea shipping, also promote the school's work in every EU country.



Article  
World Ports  
Sustainability Program



## Prevention of soil contamination



**The Port of Barcelona aims to prevent soil and groundwater contamination; as the owner, we are ultimately responsible for their environmental condition.** For this reason, we carry out continuous tracking of the state of the subsoil in the port areas under concession to terminals and operators, as well as in areas not under concession.

When necessary, contaminated soil remediation actions are carried out in the port area, either by the Port Authority itself or by the terminals and concessionaires.

There are a total of 35 sites in the Port of Barcelona where an assessment of soil or groundwater characterisation has been carried out. Of these, as of 2021, remediation has been carried out at thirteen.

The Port of Barcelona has a database of contaminated soils with information from more than 600 surveys carried out in the port area.

In 2020, a database of contaminated soil was created, and soil and groundwater contamination data from more than 600 survey points has been entered, creating more than 1,000 records (one survey point can have more than one record).

The database makes it possible to quickly connect soil contamination values with concession sites and thereby predict in time whether it is necessary to take action to characterise or remediate an area of soil.

The database also provides information on the background contamination level and values for some uncommon pollutants found at various sites.



Visit the Port of Barcelona's webpage on Soil





# Environmental monitoring of port works



All works developed by the Barcelona Port Authority are subject to environmental monitoring by independent technical advisors contracted directly by the APB. This ensures that the construction complies with provisions defined for the project at all times, thereby minimising any environmental impact.

## Dredging

All maritime works involving the dredging of marine sediment, or dredging works carried out to maintain or improve draughts, scrupulously follow guidelines for the characterisation of dredged material and the relocation thereof in the maritime, terrestrial public domain.

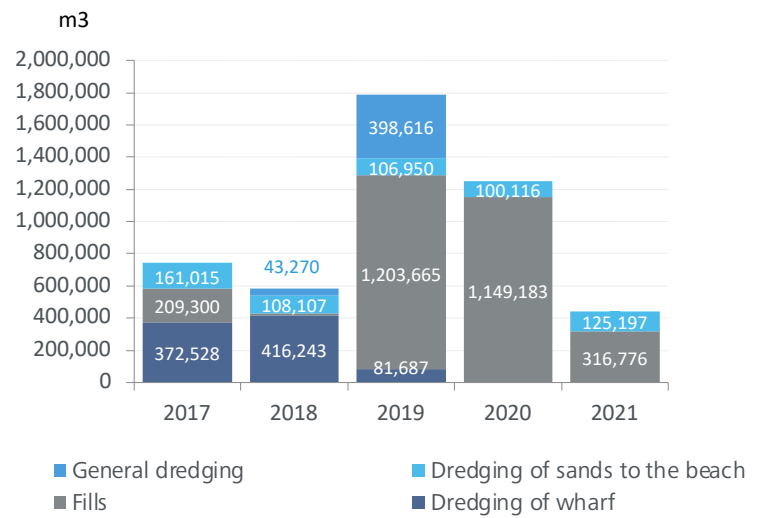
### Dredging

Consumption of materials, riprap and aggregates



Visit the Port of Barcelona's webpage on Works

### Dredging volumes in works



External waters next to the South Breakwater. Ocellate torpedo

### Evolution of dredging and backfilling

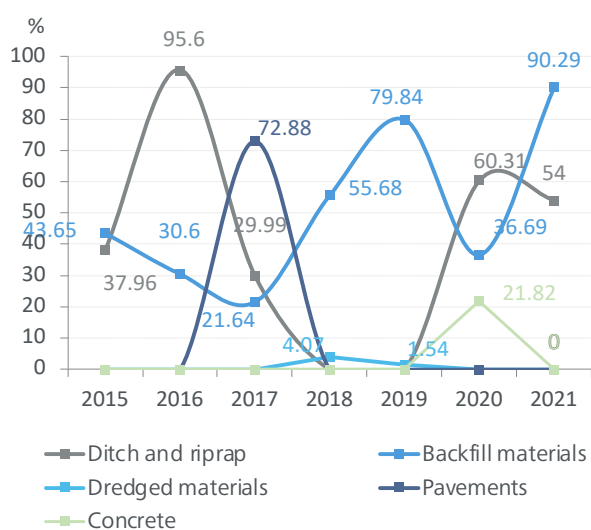
Total volumes	2018	2019	2020	2021
Dredged material in m <sup>3</sup>	567,620	587,253	100,116	125,197
Backfill in m <sup>3</sup>	14,170	1,203,665	1,149,183	316,776

## Consumption of materials, riprap and aggregates

The consumption of materials for port works is a significant environmental aspect to be considered. Below is a table of the materials used in recent years in development projects carried out by the Port Authority in the Port of Barcelona.

Recycled materials used in the works, and their % of the total for each type of material used, were as follows:

### Consumption of recycled materials



### Evolution of materials consumption

Material type	Units	2018	2019	2020	2021
Gravel and riprap	t	230,103.30	834,326.55	909,56.08	49,490.88
Concrete	m <sup>3</sup>	39,626.96	54,326.55	13,631.70	3,499.48
Steel	t	144,369.24	3,121.09	218.44	141,47
Dredged materials	m <sup>3</sup>	416,243.29	480,484.65	100,115.61	-
Backfill materials	m <sup>3</sup>	14,169.79	1,203,664.65	1,149,183.19	316,776.07
Screed	m <sup>3</sup>	9,038.04	6,940.36	2,204.97	962.16
Agglomerate	t	18,259.42	23,150.63	6,756.25	2,683.51



# Waste management



**The Port of Barcelona is responsible for the removal and management of different types of waste generated in its own buildings, port facilities and communal areas, as well as garbage from street cleaning.**

APB undertakes the selective collection of recoverable waste: paper, glass and packaging from outdoor bins, and paper, packaging, toner and used batteries from waste baskets and containers located inside APB buildings.

- Non-hazardous waste
- Hazardous Waste
- Management of concessionaire waste
- Management of ship waste

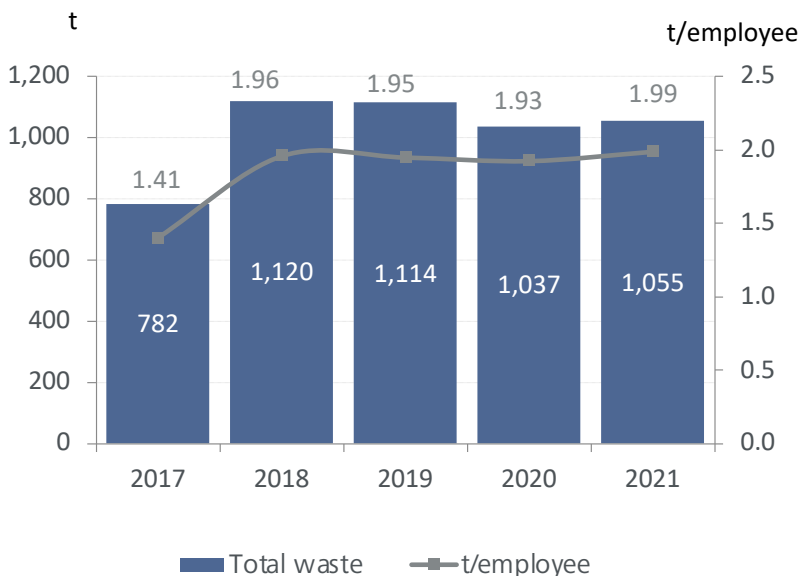
The scope of our rubbish collection responsibilities includes waste generated by bars and restaurants within the port.

Finally, APB also manages ordinary waste generated by our activities and waste from one-off cleaning operations.

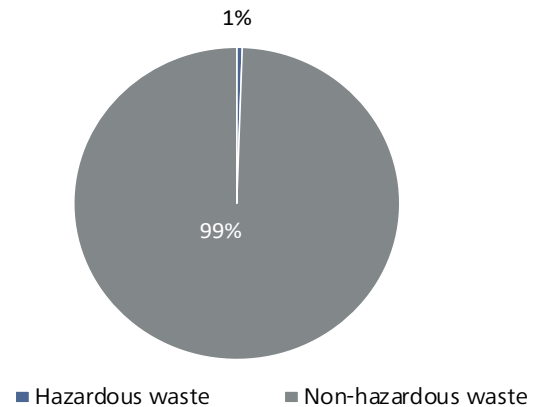
The only building area whose waste is not managed by APB is the offices and occupied floors of the WTC East building. In this case, interior and office cleaning waste management is taken care of directly by the service manager of the building that APB occupies.

 Visit the Port of Barcelona's webpage on Ship Waste

**Total waste generation**

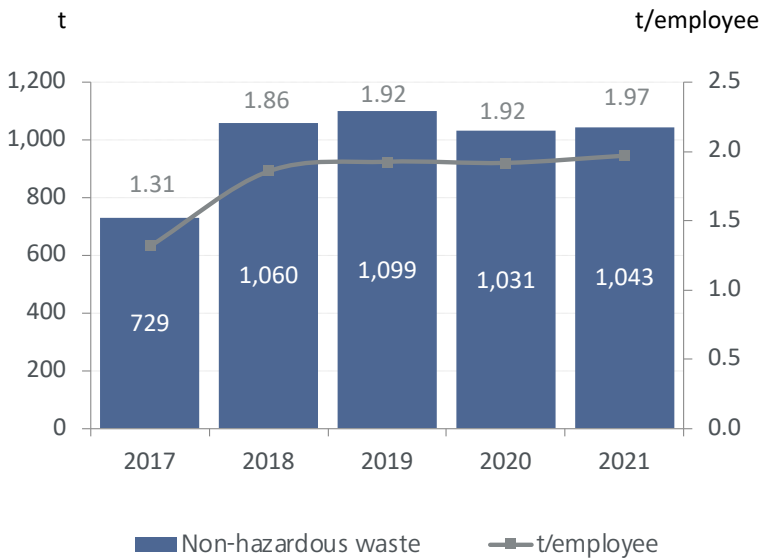


**Waste by type**



\* Including waste generated by the APB and third-party waste managed by the APB.

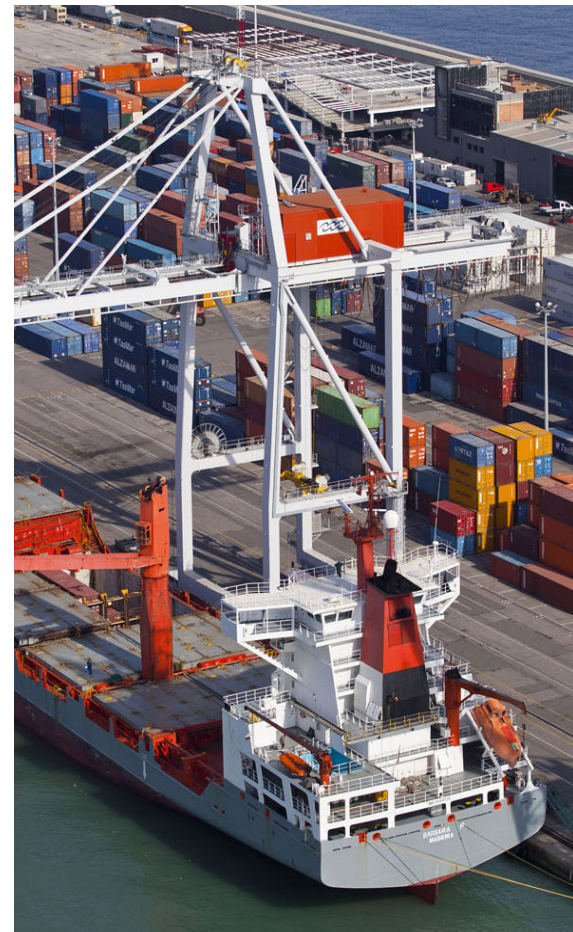
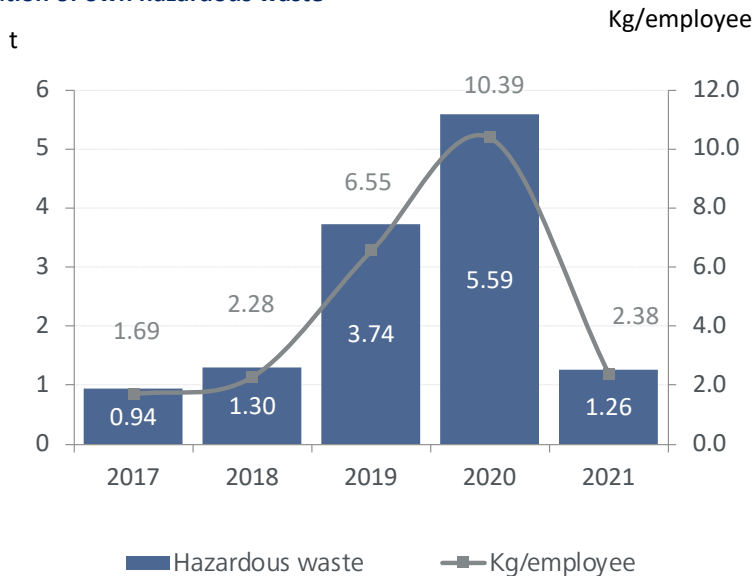
### Generation of non-hazardous waste



### Waste collection services

- General waste in common areas, bars and restaurants.
- Selective collection from buildings.
- Waste from warehouses and workshops.
- Removal of waste from one-off or accident clean-ups.

### Generation of own hazardous waste





### Hazardous waste generated by the APB

TYPE (tonnes)	CER	2017	2018	2019	2020	2021
Non-chlorinated mineral engine oils, transmission oils and lubricants	130205	0	0	0.04	0	0
Gases in pressurised containers (including halons) that contain hazardous substances	160504	0	0.27	0.166	0.01	0.18
Containers that contain traces of or are contaminated by hazardous substances	150110	0.223	0.87	1.085	0.26	0.115
Metal packaging	150111	0.237	0	0	0	0
Lead batteries	160601	0	0	0	0	0.6
Batteries	200133	0.01	0.05	0.109	0	0
Fluorescent bulbs/bulbs	200121	0.113	0.07	0.004	0.02	0.107
Halogen-free machining emulsions and solutions	120109	0	0.04	1.1	0.16	0
Laboratory chemicals containing hazardous substances	160506	0.354	0	0.875	0	0
Medical	180103	0	100 L*	0	0	200 L*
Other solvents and solvent mixtures	140603	0	0	0.052	0.76	0
Absorbents and filtration materials	150202	0	0	0.313	4.12	0.075
Bilge oil collected from docks	130402	0	0	0	0.25	0.18
Discarded equipment that contains dangerous components	160213	0	0	0	0.02	0
<b>TOTAL (t)</b>		<b>0.937</b>	<b>1.3</b>	<b>3.74</b>	<b>5.59</b>	<b>1.26</b>

\* Amount not included in the total

### External hazardous waste not generated by the APB

TYPE (tonnes)	CER	2017	2018	2019	2020	2021
Medical	180103	0	0	0	0	0.12
Bilge oils collected from wharves	130402	5.2	0	0.18	0	9.62
Oily water from water separators/oily substances	130507	45.3	51.42	11.08	0	0.74
Absorbents	150202	0.68	1.70	0	0	0
Other solvents	140603	0	0.22	0	0	0
Used packaging	150110	0.22	0	0	0	0
Used oils	130205	0.29	5.86	0	0	0
<b>TOTAL (t)</b>		<b>51.69</b>	<b>59.2</b>	<b>11.26</b>	<b>0</b>	<b>10.48</b>



## Concession waste management

The concessions and facilities that operate in the port area manage their own waste and, if applicable, sign up to the waste producer registry, thereby complying with their waste management obligations.

## Ship waste management

According to the 1973 International Convention for the Prevention of Marine Pollution from Ships (known as the Marpol 1973/78 Convention), ports must have adequate facilities to provide a port service to receive waste from ships.

The following table shows waste delivered to the port in recent years for the categories included in Convention Annexes Ic (oily liquid wastes from engine oil, bilge water or scrubber sludge), Annex Ib (cargo tank wash water containing oil) and Annex V (solid waste).

The reduction of this type of waste in the last two years is due to the decrease in ship transit occasioned by the COVID-19 pandemic. However, the trend is towards recovery.



MARPOL waste management



### MARPOL waste delivered by ships

TYPE (m <sup>3</sup> )	2016	2017	2018	2019	2020	2021
Oily bilge and engine fluids (Ic)	69,196	77,915	85,703	85,419	54,153	53,216
Oily fluids from tanker cleanings (Ib)	4,921	4,122	7,170	8,023	5,050	5,566
Solid waste (V)	81,579	101,240	96,646	104,370	39,923	52,702
<b>TOTAL (m<sup>3</sup>)</b>	<b>155,696</b>	<b>183,277</b>	<b>189,519</b>	<b>197,812</b>	<b>99,126</b>	<b>111,484</b>



# Ecology and Biodiversity



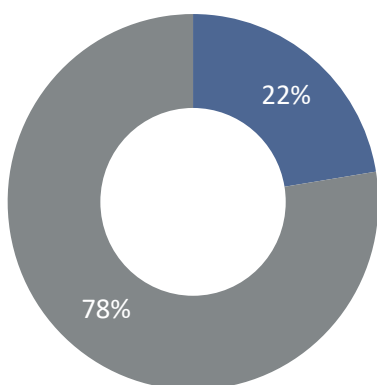
## Interaction with natural areas and protected species

### Monitoring the introduction of invasive species

#### Bird control

### EMAS indicator

<span style="display:inline-block; width:15px; height:15px; background-color:#4a7ebb; border:1px solid #4a7ebb; margin-right:5px;"></span> Unsealed surface area:	2,337,219 m <sup>2</sup>
<span style="display:inline-block; width:15px; height:15px; background-color:#808080; border:1px solid #808080; margin-right:5px;"></span> Sealed surface area:	8,084,042 m <sup>2</sup>



Total surface area of the nature-oriented area: 8000 m<sup>2</sup>

**The port occupies 1,042 ha of land near the Llobregat Delta Nature Reserves.**

## Interaction with natural areas and protected species

The presence of the Llobregat Delta Nature Reserve adjacent to the port area makes it necessary to take precautions so that port activity and works interfere as little as possible with ecosystems and populations of birds and other species. It is worth highlighting that an important Audouin's gull (*Larus audouinii*) breeding colony has developed at the East Breakwater since 2016. Since then, about 600 pairs have bred every year, making this colony one of the most important in the Western Mediterranean.

Another innovative and proactive means of aiding with the preservation of animal species over the last ten years has consisted of providing the cormorant population with new habitat.

As such, a total of 8,000 m<sup>2</sup> of land located within the port area can be said to be dedicated to conserving and promoting biodiversity.

## Monitoring the introduction of invasive species

Ports are risk points for introducing allochthonous species that can become invasive under certain circumstances.

There are numerous means of introduction in a port, from the discharge of ship ballast water or the detachment of fouling from vessel hulls to introduction via packaging (containers, for example) or inside goods themselves.

The Port of Barcelona has conducted studies and tracked animal and plant species in order to detect allochthonous species that may become invasive. So far, tracking has not detected any species recognised as intrusive.

Phytoplankton monitoring focused on the search for introduced allochthonous species, has been carried out for several years.

Among all the species and genera detected and identified, there is no evidence of the presence of introduced species. However, there is mention in the scientific literature of the existence of *Alexandrium catanella* in phytoplankton blooms in the 1990s.

The monitoring of benthic species, which live permanently in the substrate, as indicators of water quality has been extended, not only to the sedimentary bottoms of the port waters but has also covered the species identified in the vertical transects of the wharf. None of the studies mentions the presence of introduced invasive species.

In this regard, in 2003 and 2004 the University of Barcelona conducted a study on fouling organisms and their succession to colonise new substrates. The report mentions the sporadic and isolated presence of a single unidentified bryozoan that could represent an introduced species.

As regards ballast water, a taxonomic and viability study of organisms present in the ballast water of some ships berthed at the Port of Barcelona was carried out in 2004. The study identified up to 40 species of phytoplankton and 42 species of zooplankton in a single tank. The work concluded that the viability of these organisms depends mainly on the amount of time they were in the tank water.

Another study on terrestrial arthropods in the port area carried out in 2004 detected the presence of the Argentine ant *Linepithema humile* and of the *Bradysia* fly, two introduced species that had already been present in the area for many years.

## Bird control

The presence of seagulls in the Port's facilities and wharves is considered a problem due to potential annoyances, dirtiness and damage to the facilities. Since 2000, the Port of Barcelona has set up deterrents at the cruise ship terminals using loudspeakers that blare continuously.

In 2001 and 2002, the Port of Barcelona participated in reintroducing the peregrine falcon (*Falco peregrinus*) to the city of Barcelona, by rearing three chicks in an artificial nest set up in a grain silo. As a result of the initiative, the Peregrine population is consolidating, and in 2021 three of the nine pairs in Barcelona were raised in the port.

The continued presence of the falcons has a deterrent effect on the pigeon population that descends from the city daily to feed at the Contradique wharf and other port areas.



**Great Cormorant** (*Phalacrocorax carbo*)



**Hydrozoa** (*Pennaria disticha*)



**Mediterranean red sea star** (*Echinaster sepositus*)



# Environmental noise monitoring and management



## Port Vell Commercial port

**The port as a territory has to manage environmental noise pollution using a Noise Map; a management tool that allows graphic visualisation of the current noise situation.**

### Port Vell

In 2014, the Port of Barcelona created a Noise Map of the Port Vell sector. In this zone, the intersection between the Port's activities and residential areas can generate more areas with acoustic impacts.

The Noise Map considers the levels of noise coming from different sources (road traffic, maritime traffic, industrial activities and airborne noise (aircraft)).

The study's main conclusion was that the noise levels obtained are influenced by road traffic and, to a lesser extent, by the ferries moored to the wharves of Port Vell.

However, a noise impact study of the ferry operation on residential areas is planned for 2022 to assess the impact of the ferry operation on residential areas.

### Commercial port

In 2015 and 2016, Noise Map was completed, including the rest of the port territory (the commercial port).

Unlike in Port Vell, the study considered two sources of noise: land traffic and maritime traffic noise, and maps were made for the day, evening and night periods. The study defined the Acoustic Impact Zone as the area affected by the activity and development of port facilities.



# Environmental emergency plans



**Internal plans**  
**Self-Protection Plan**  
**Meteo-oceanographic alert system**  
**Control Centre action procedures**

**The Port of Barcelona has organised and systematised the response to environmental emergencies using four operational instruments.**

## Internal Marine Plans

The Port of Barcelona has an active policy to prevent incidents and accidents involving spills of hydrocarbons or other chemical products into port waters.

**The prevention and response tool for these incidents is the Port of Barcelona's Internal Marine Plan (PIM in the Spanish acronym),** developed by the APB and approved by the Directorate General of the Merchant Marine, which details how the response should be organised and the means to be used to carry it out.

The PIM, part of the National Marine Pollution Response System, aims to organise the response to accidents or incidents of harmful chemical or hydrocarbon spills into the marine environment, which may cause damage to the marine ecosystem, property or to people's health.

The port's PIM is coordinated with the PIMs of the port terminals that handle chemicals and hydrocarbons.

The Port Authority, duly coordinating with the Maritime Authority, is responsible for the direction of the PIM.

In 2021, there were 55 reports of oil and other substances spilling into port waters, of which only seven episodes required the PIM to be activated to the alert phase and 1 of the activation in Emergency Phase Zero.





## Self-Protection Plan

**Another tool for responding to environmental emergencies is the Port's Self-Protection Plan (PAU in the Spanish acronym),** which is activated in the event of accidents or incidents of any kind that may pose a risk to people.

The port's PAU is divided into eleven sectors and includes the PAUs of all the port's terminals and concessions. The PAU has three activation levels: an initial alert level, level 1 for an emergency in a terminal, level 2 for an emergency in the port sector and level 3 for an emergency in more than one port sector.

The intervention group defined in the PAU corresponds to the Barcelona fire brigade in accordance with the collaboration agreement between Barcelona City Council and the APB. They are specialised in port-related actions.

## Meteo-oceanographic alert system

**The Port of Barcelona has a procedure for dealing with Meteo-Oceanographic Alert Situation (SAM in the Spanish acronym) notifications,** which consists of a procedure for responding to wave overtopping and wind intensity forecasts provided by Puertos del Estado (Ports of the State).

In the event of storm or wind warnings, the response consists of giving the alarm to port areas which may be affected (Port Authority, Maritime Authority, terminals and their users), and activating prevention and activity restriction measures according to the expected risk threshold.

## Control Centre action procedures

**One of the Port Authority's main management tools for controlling environmental incidents is to trigger the procedures that the Port Police Control Centre follows when they receive a warning of an incident.**

These action procedures that the Control Centre uses for environmental incidents (PCC in the Spanish acronym) include nineteen response and warning procedures for the most common incidents, such as dust emissions, ship emissions, marine fauna at docks, terrestrial animals, water pollution, spillages on the roadway or esplanade, noises, smells and other similar incidents.

The procedures include a system for receiving alerts and making calls to affected parties and a Wharf Guard Control Centre action plan.

Each PCC is the responsibility of the relevant department, and the Department of the Environment is responsible for keeping them up to date.

## Environmental incidents

Incident	2021
Polluting spillage in maritime service area	55
Large floating debris at docks	21
Waste at docks	4
Marine animals at docks	6
Liquid spillages on roadways	46
Solid spillages on roadways	46
Risk of tree falling	1
Live Land Animals	12
Dead birds	1
Dust from bulk solids operations	2
Calls from people affected by soybean asthma	0
Black smoke from a ship's funnel	5
Noise from a ship	0
Complaints about unpleasant smells	1
PREVENTIVE warning or declaration of EPISODE of air pollution by NO <sub>2</sub> and/or particulate matter	0
Any incident detected in the port's sewage system	4
<b>Total general</b>	<b>204</b>

## Environmental cost ratio

### Environment budget in 2021\*

Contaminated soil: characterisation	€ 65,478
Water Framework Directive	€ 138,897
Air Quality Plan Studies	€ 63,330
ISO 14.001 Certification	€ 15,780
Certification PERS	€ 1,300
Core-Clean Port	€ 73,579
Automatic air quality network maintenance	€ 82,740
Maintenance of meteorological network	€ 49,031
Soybean Agreement - Air monitoring network maintenance	€ 47,615
Miscellaneous expenses. Department of the Environment	€ 679
Communication	€ 10,146
<b>Total</b>	<b>548,574 €</b>

\* Excluding staff items.



# Stakeholders



**Active participation**  
**Best environmental practices**  
**Agreements with concessionaire companies on best environmental practices**

**The Port of Barcelona is promoting a Sectoral Sustainability Plan, which began as an initiative of the Sustainability Working Group of the Steering Council for the Development of the Port of Barcelona, to respond to the demands and expectations of the stakeholders of the Port Community.**

This plan expresses the will to act collectively, beyond the individual responses of each organisation that make up the Port Community; that is, to collaborate as a port collective.

Since it was set out in 2016, actions have been defined as part of the Plan, which considers the expectations of the Port Community's stakeholders.

In this sense, the Sustainability Report is a crucial tool to meet the extent these expectations have been met, including those relating to the environment.

In 2021, new Port Community organisations and companies joined the Port Sustainability Plan, bringing the total number to 79.

Based on the data provided by the member organisations, environmental, social and economic performance indicators have been developed to explain more precisely how the Port Community responds to the needs of its stakeholders.

## RightSupply Sustainability Observatory

In a complementary way in 2022 the port has planned the establishment of a **Sustainability Observatory** that will allow the Port Community companies to elaborate their digital sustainability report through an online platform.



In this way, the APB expands the metrics and information that had already been evaluated since 2016 within the framework of its Sectoral Sustainability Plan, facilitating in the coming years the accompaniment of concessionaires and port suppliers in the digital reporting of ESG data in a way referenced to international norms and standard.

## Strategic lines of the Sectoral Sustainability Plan:

- Raise awareness of and distribute the Port of Barcelona's Sectoral Sustainability Plan.
- Create a community to develop the Port of Barcelona's Sector Sustainability Plan (ambassador role).
- Consider the expectations of the relevant groups.
- Promote environmental sustainability.
- Promote social sustainability.
- Promote economic sustainability.



## Environment Intranet Section

APB constantly updates the Environment section of the corporate intranet, posting news and videos of interest on its blog and direct access to internal operational procedures and documents related to the environment. This system allows micro-surveys to be carried out to consult staff on specific topics.

In 2021, on the occasion of World Environment Day, the "Eco Trivial", a quiz competition in the environmental field, was published to raise awareness among the port's employees.

## Sustainability Group

**The Port Community's participation tool for environmental issues is part of the Environmental Quality Working Group of the Port Community's Governing Council**, which also includes the Social Responsibility and Occupational Risk Prevention Groups.

The Environmental Quality Working Group was created in 2004 and is composed of members of the port community companies, including various port sector companies.

The Working Group has implemented two noteworthy initiatives (among others), which are:

- The creation of an electric power purchasing group exclusively for private companies in the port area that voluntarily join the group.

The auction to award its electricity supply contract is held annually, together with that of the Port Authority. The private companies that make up the purchasing group participate in the auction as different lots from the Port Authority. Once the best price has been obtained, they may or may not come to an agreement with the winning company.

A purchasing group has been formed for every auction since 2010, and about 20 companies join the group each year.

- The design and organisation of technical and awareness-raising seminars for members of the Port Community.

To raise awareness and keep the members of the Port Community informed, technical seminars are held every four months covering current or relevant issues to port activities.

These seminars aim to provide a support service to the companies that carry out their functions and activities in the port area. We choose topics with some shared interest for most of them, and every effort is made to illustrate them clearly and always from a practical point of view, as applicable to the port environs





The following were the seminars held in the 2018-2021 period:

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**14/11/2018** Seminar: "Tax deductions for environmental investments"

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**28/02/2019** Seminar: "Hydrogen in an emission-free Europe"

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**29/03/2019** Seminar: "Tools and requirements for communication about sustainability"

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**25/04/2019** Seminar: "Presentation of results of the CLEANPORT project (installation of a gas auxiliary engine on a ferry)"

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**30/10/2019** Seminar: "Sustainable mobility in the port"

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**06/03/2020** Seminar: "Water quality and sanitation"

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**17/06/2021** Seminar: "The decarbonisation of port activity"

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**06/10/2021** Seminar: "Towards energy transition"

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## Participation in international conferences

The Port of Barcelona actively participates in organising European conferences to communicate and present topics related to sustainability in the area of port activity.

Some noteworthy examples from 2019, 2020 and 2021 are the following:

- First National Congress on Air Quality. Various administrations. Sabadell
- Blue Eco Forum Workshop on coastlines. Barcelona
- LNG Bunkering. Spanish Energy Club. Madrid
- The benefits of creating EQS in the Mediterranean. Barcelona
- LNG Bunkering. Barcelona
- Green Port Congress. Oslo
- 3rd Workshop on marine litter. Catalonia Waste Agency. Barcelona.
- Congress on international cruise ship emissions project. IAPH. Hamburg
- Yokohama Maritime Forum. IAPH. Yokohama
- Seminar "Circular economy and collective action with a view to 2030", organised by Pacte Industrial of the Barcelona Metropolitan Region. Barcelona
- CE HOTSPOT 2020-2021: CIRCULARITY IS THE ANSWER. Barcelona
- COP 26. Workshop "Practical climate change, adaptation challenges and good practice solutions for ports". Glaslow
- Jornada "El hidrogeno, la energía imprescindible" IQS.
- Green Energy Ports 2021. Vigo
- AQUASEMINAR 2021 "Afrontar el futuro del agua". SUEZ
- SmartCity Expo World Congress. Focus session sobre "Descarbonització del port de Barcelona"

## European projects to promote natural gas as a fuel for cargo mobility

The port of Barcelona is located next to a large city, and there is growing concern about the impact of the port activity on the city's air quality, particularly in relation to the concentration of NO<sub>x</sub> and suspended particulate matter.

The most significant sources of air pollutant emissions are ships during their entry and manoeuvring operations and during their stay in port.

The port has few tools to effectively regulate these emissions as they are regulated by the IMO.

In the case of maritime transport, many shipowners are now beginning to opt for this change and are considering the option of natural gas propulsion when ordering new ships.

**Along with promoting natural gas as an alternative fuel for transporting goods by sea, it is also important to implement effective actions to promote its use in land transport.**

The Port of Barcelona is pursuing three goals:

- To develop facilities to supply of natural gas to ships and trucks.
- To demonstrate the use of natural gas in different modes of transport and vehicles, as a way to show the feasibility of its use as an alternative fuel.
- To safely regulate the supply operations of this new fuel, as well as the management of facilities.

APB participates in various projects, sometimes as a leader or coordinator and sometimes as a partner. We always try to ensure that our demonstrations cover the broadest possible range of sectors and the many ways natural gas can be used as an alternative fuel.

With a budget of €17.5 million, these projects directly involve 27 organisations collaborating in their development in the 2017-2020 period.



Many countries and regions of the world are already fostering the use of natural gas trucks for pollution reduction, fuel economy and security of supply.



**CORE LNGas hive project. Sub-Activity EPT1: Pilot test of mobile generator with a natural gas engine to supply RoRo ship from the wharf. 2014-2022**

The port is acting as coordinator, and the project consists of constructing a mobile gas generator on the wharf to supply electricity to the ship L'AUDACE (RoRo ship) during its stay in port.

**CORE LNGas hive project. EPM1 Sub-Activity: Construction of loading arm at regasification terminal. 2014-2022**

The port is a partner in this project, which consists of the construction of a flexible, cryogenic loading arm at one of the two LNG regasification terminal berths located in the port, to enable the loading of LNG to barges.

**CORE LNGas hive project. EPM2 Sub-Activity: Modification of fuel supply barge to also supply LNG. 2014-2022**

The port is acting as coordinator, and the project consists of modifying a barge to accommodate LNG tanks and other equipment required to supply LNG to ships.

**CORE LNGas hive project. Subactivity EV4: Design of a gas-powered tugboat. 2014-2022**

The port is acting as coordinator and the project consists of the design of a port tugboat powered by natural gas in compressed natural gas tanks.

**CLEANPORT Project: Installation of a natural gas auxiliary engine on a ferry for use during its stay in port. 2014-2020**

The port is a partner, and the project consists of replacing the auxiliary diesel engines of a ferry with a natural gas engine.

**Internal project: Expansion of a refuelling station to incorporate LNG and CNG supply for trucks and vehicles. 2018**

**CORE LNGas hive project. EPM3 Sub-Activity: Conversion of the diesel engines of two straddle carrier machines to run on natural gas. 2014-2022**

The port is acting as coordinator, and the project consists of replacing two diesel engines of two machines at the container terminal with natural gas engines.

**REPORT Project. RIS3CAT Programme: Transformation of 25 trucks to dual capacity. 2015-2021**

The port is leading this project, which consists of transforming 25 diesel truck engines into dual gas-diesel capacity with advanced technology.



## Best practice agreements with concessionaire companies

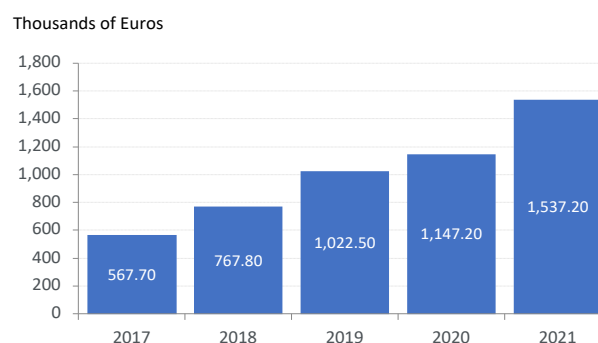
The State Ports and Merchant Marine Law establishes a tax credit based on the activity level of port facilities that have a concession, authorisation or licence for the handling of goods.

This bonus is intended to encourage best environmental practices. The facility must implement an environmental management system and sign an agreement with the Port Authority on best environmental practices. This follows the model in the Port of Barcelona's Guide to Best Environmental Practices, approved by the APB on November 20, 2011 and revised on November 28, 2012.

**In the agreement, the facilities commit to developing a programme of improvements involving economic investment in new equipment, systems and supplies.**

Since 2016, the companies that have signed this agreement with the APB have made investments that qualify for tax credits in the amounts shown in the graph below, in which we observe a clear upward trend over the last few years.

Evolution of subsidized environmental investment





# Environmental compliance



## Port Authority Competencies

### Basic applicable legal requirements

### Reference documents

## Port Authority Competencies

From an environmental point of view, the APB's competencies as laid out in the Ports Law are as follows:

- Fight pollution.
- Maintain and improve water quality.
- Ship waste collection service.
- Prevent soil contamination.
- Prevention and control of environmental risks (PAU and other instruments).
- Bonuses to ships and concessionaires for environmental performance.
- Environmental monitoring of concessions and activities through Ordinances, Instructions, contract specifications and concession specifications.

From a broad point of view, the Port Authority's environmental operations also include the following competencies and management areas:

- Monitor air quality and look to improve it.
- Monitor water quality and look to improve it.
- Manage wastewater generated by the facilities in the port service area.
- Manage environmental noise.
- Manage hazardous and non-hazardous waste.

**The Barcelona Port Authority complies with all applicable legal requirements.**



## Basic applicable legal requirements

**The main legislation that the Barcelona Port Authority must comply with is based on:**

1. International conventions for the protection of the sea
2. European Union sectoral environmental legislation
3. State and regional environmental legislation
4. Municipal ordinances and regulations

## International agreements

The 1973/78 International Convention for the Prevention of Pollution from Ships is one of the main international conventions that affect port activity. The convention makes it mandatory for ports to provide adequate and sufficient facilities for ships to leave their waste on land.

**The Port of Barcelona has been granted three licences to provide port services to receive oily liquid waste from ships, and two to receive solid waste.**

## Air quality

The main regulations that apply to the port are those related to air quality and atmospheric protection.

- Law 34/2007 of November 15, concerning air quality and atmospheric protection, defines and sets out air quality objectives and serves as the regulatory framework for preparing national, regional and local plans to improve air quality.
- Royal Decree 102/2011, of January 28, concerning air quality improvement, transposes the contents of Directive 2008/50/EC of May 21, 2008 and Directive 2004/107/EC of December 15, 2004 into Spanish law.
- This royal decree was amended by Royal Decree 39/2017, to transpose Directive 2015/1480 to our legal system. This directive sets out rules regarding reference methods, data validation and location of measurement points for assessing ambient air quality.

## Water quality

The main regulations that apply to the port are those related to the tracking and evaluation of surface water and environmental quality standards, and those related to discharges from unified sanitation systems into port waters.

- Royal Decree 817/2015, of September 11, establishes the criteria for tracking and evaluation of surface water status and environmental quality standards.

- Royal Decree 509/1996, of March 15, 1996, developing Royal Decree-Law 11/1995, of December 28, 1995, which set out standards to be applied to urban wastewater treatment, and subsequent amendments.

## Soil contamination

The main regulations that apply to the port are those relating to potentially contaminating activities and the criteria and thresholds for soil contamination levels.

- Law 22/2011, of July 28, concerning Waste and contaminated soil.
- Royal Decree 9/2005, of January 14, which sets out the list of activities which could potentially contaminate soil and the criteria and standards for the declaration of contaminated soil.

## Energy transition and climate change

The main regulations that apply to the port in terms of climate change are those that encourage the use of renewables and allow electricity grids to be opened to new uses. The future Climate Change and Energy Transition Law will set out a legal framework to enable this transition.

- Royal Decree-Law 17/2019, of November 22, which adopted urgent measures to adapt compensation parameters affecting the electricity system, and which addresses the procedures for thermal generation plants ceasing activity.
- Royal Decree 244/2019, of April 5, which regulates the administrative, technical and economic conditions for electricity self-consumption.
- Royal Decree-Law 15/2018, of October 5, concerning urgent energy transition and consumer protection measures.



## Most relevant legal provisions in 2021

**The main environmental legislation applicable to each specific activity is listed below:**

1. Royal Decree-Law 29/2021, of 21 December, adopting urgent measures in the energy field **to promote electric mobility**, self-consumption and the deployment of renewable energies

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2. DECREE LAW 24/2021, of 26 October, **on accelerating the deployment** of distributed and shared **renewable energies**

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3. Law 7/2021 of 20 May on **climate change and energy transition**

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4. Royal Decree 265/2021 of 13 April **on end-of-life vehicles** and amending the General Vehicle Regulation, approved by Royal Decree 2822/1998 of 23 December 1998

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5. Royal Decree 390/2021, of 1 June, approving the basic procedure for **the certification of the energy performance of buildings**

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6. Royal Decree 27/2021, of 19 January, amending Royal Decree 106/2008, of 1 February, **on batteries and accumulators and the environmental management of their waste**, and Royal Decree 110/2015, of 20 February, **on waste electrical and electronic equipment**

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7. Royal Decree 178/2021, of 23 March, amending Royal Decree 1027/2007, of 20 July, approving the **Regulation on Thermal Installations in Buildings**

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# Reference documents

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## Guides and EMAS sectoral reference documents

**On May 18, 2019, COMMISSION Decision (EU) 2019/61** of December 19, 2018, entered into force; it concerns the sectoral reference document on best environmental management practices, sectoral environmental performance indicators and benchmarks of excellence for the public administration sector, under the framework of Regulation (EC) No. 1221/2009 concerning voluntary participation by organisations in a Community eco-management and audit scheme (EMAS).

The APB, as an organisation within the public administration sector, takes into account this sectoral reference document (SRD) when implementing and maintaining its management system and assessing its performance through its environmental statement.

To this end, this SRD sets out a list of Best Environmental Management Practices (BEMP), performance indicators and benchmarks of excellence that must be considered when dealing with those environmental aspects assessed as being significant or high impact.

Given the characteristics of the activity carried out by the APB within the public administration sector, the following sections concerning its significant environmental aspects are applicable:

- [3.1. Best environmental management practices for sustainable offices,](#)
- [3.11. Best practices for environmental management in green public procurement and](#)
- [3.12. Best environmental management practices in environmental education and information dissemination.](#)

For this reason, the APB has considered the BEMP included in these sections when planning measures and actions to improve its environmental performance. In addition, others were identified that were already being implemented, and some have been considered even though they are not directly related to its significant environmental aspects. All actions undertaken, as well as those planned for the future, are described in the different sections of this environmental statement.

Likewise, the sector-specific indicators for significant environmental aspects have been included in the EMAS indicators table attached at the end of this document.



## Benchmarks of excellence

The benchmarks of excellence are intended to measure the level of environmental performance, taking as a reference the results obtained by the organisations in the sector with the highest levels of environmental performance.

The APB's performance relative to the benchmarks in the sections that apply to it, when results upon evaluation are favourable, are shown below.

### Office waste generation (3.1.3.)

- No waste generated in office buildings is sent to landfills.

All office waste is collected selectively for final appraisal by authorised waste managers.

- Total waste generated in office buildings is less than 200 kg/full-time equivalent employee/year.

In 2021 the office waste generation indicator was 29.84 kg/full-time equivalent employee/year, well below the benchmark value.

### Consumption of office supplies (3.1.4.)

- The office paper used is 100% recycled or certified with an ISO type I (2) eco-label (e.g., the EU eco-label).

Currently, all paper purchased is PEFC certified, which guarantees that the raw material is obtained from sustainable forests.

### Worker commutes (3.1.5.)

- Tools that encourage sustainable commuting for workers are developed and implemented.

The APB offers public transport tickets to its employees free of charge.

- Videoconferencing facilities are available to all staff, and their use is tracked and promoted.

All office and port police staff have access to online platforms for videoconferencing. Although in 2019 a low usage percentage was recorded, a large increase has already been perceived in 2020 and 2021 owing to the implementation of the state of emergency brought about by the COVID-19 pandemic, which will strengthen habits of using these platforms in the coming years.

In addition, the port has implemented "flexiwork" allows workers to telework from home one and two days a week.

## Reference documents

The information and data contained in this Environmental Statement have been obtained or calculated from our own sources, many of which are reported officially to different environmental agencies and authorities.

The images and graphics included in this Environmental Statement are either produced by the Company or acquired directly or indirectly from their authors for use in this Environmental Statement.

## Excerpts are taken from this Statement

The Barcelona Port Authority may edit and publish excerpts or summaries based on the information contained in this verified statement, with the goal of better dissemination and communication of information on environmental management.

To this end, it shall compile data and contents accurately without modifying those already verified. It may indicate or reference these in the event of using other units or equivalences that may be more comprehensible to the recipient of the information.

The digital version of these excerpts will be available to the public, grouped in one place on the APB website to be easier to locate.

Any modification to this Environmental Statement shall be communicated and transmitted to the certifying body for review and verification that such changes do not alter what has already been verified and established under the European EMAS Regulation.

## Basic environmental indicators

The following table shows the fundamental environmental indicators relative to the number of workers and the surface area of the APB.



# Indicators

Ratio R = Magnitude A / Magnitude B

INDICATOR	ENVIRONMENTAL MAGNITUDE VALUE				RATIOS R / WORKER				RATIOS R / SURFACE AREA			
	2019	2020	2021	Unit A	2019	2020	2021	Unit R	2019	2020	2021	Unit R
Magnitude B					571 workers	538 workers	530 workers		24,354 m <sup>2</sup>	24,354 m <sup>2</sup>	24,354 m <sup>2</sup>	
<b>CONSUMPTION OF MATERIALS</b>												
Paper	9	6	6	t	0.02	0.01	0.01	t/worker	0.00	0.0002	0.0002	t/m <sup>2</sup>
Auxiliary maintenance mat.	541	491	509	L	0.95	0.91	0.96	L/worker	0.02	0.02	0.02	L/m <sup>2</sup>
Gravel and riprap	834,327	90,956	49,491	t	1461.17	169.06	93.38	t/worker	34.26	3.73	2.03	t/m <sup>2</sup>
Concrete	54,327	13,632	3,499	m <sup>3</sup>	95.14	25.34	6.60	m <sup>3</sup> /worker	2.23	0.56	0.14	m <sup>3</sup> /m <sup>2</sup>
Steel	3,121	218	141	t	5.47	0.41	0.41	t/worker	0.13	0.01	0.01	t/m <sup>2</sup>
Dredged materials	480,485	100,116	0	m <sup>3</sup>	841.48	0.00	0.00	m <sup>3</sup> /worker	19.73	0.00	0.00	m <sup>3</sup> /m <sup>2</sup>
Backfill materials	1,203,665	1,149,183	316,776	m <sup>3</sup>	2107.99	2136.03	597.69	m <sup>3</sup> /worker	49.42	47.19	13.01	m <sup>3</sup> /m <sup>2</sup>
Screed	6,940	2,205	962	m <sup>3</sup>	12.15	4.10	1.82	m <sup>3</sup> /worker	0.28	0.09	0.04	m <sup>3</sup> /m <sup>2</sup>
Agglomerate	23,151	6,756	2,684	t	40.54	12.56	5.06	t/worker	0.95	0.28	0.11	t/m <sup>2</sup>
<b>ENERGY CONSUMPTION</b>												
Total energy consumption*	8392	7846	7764	Mwh	14.70	14.58	14.65	MWh/worker	0.0028	0.0026	0.0026	MWh/m <sup>2</sup>
Electricity consumption*	7339.36	6820.47	6719.05	Mwh	12.85	12.68	12.68	MWh/worker	0.0024	0.0022	0.0022	MWh/m <sup>2</sup>
Fossil fuels	1052.66	1052.72	1044.95	Mwh	1.84	1.91	1.97	MWh/worker	0.04	0.04	0.04	MWh/m <sup>2</sup>
Energy consumption for heating ****	389.49	424.22	372.31	Mwh	706.24	812.68	715.29	Kwh/FTE	15.99	17.42	15.29	KWh/m <sup>2</sup>
Electricity consumption in buildings ****	3523.87	3255.97	3228.35	Mwh	6389.61	6237.50	6202.40	Kwh/FTE	144.69	133.69	132.56	KWh/m <sup>2</sup>
Total energy consumption in buildings ****	3913.36	3680.19	3600.66	Mwh	7095.85	7050.18	6917.69	Kwh/FTE	160.69	151.11	147.85	KWh/m <sup>2</sup>
<b>WATER CONSUMPTION</b>												
Water for irrigation**	33,171	33,171	43,167	m <sup>3</sup>	52.99	61.66	81.45	m <sup>3</sup> /worker	1.29	1.41	1.84	m <sup>3</sup> /m <sup>2</sup>
Water in buildings	22,459	20,802	27,053	m <sup>3</sup>	39.33	38.67	51.04	m <sup>3</sup> /worker	0.92	0.85	1.11	m <sup>3</sup> /m <sup>2</sup>
Total water***	53,138	54,442	91,022	m <sup>3</sup>	93.06	101.19	171.74	m <sup>3</sup> /worker	1.11	1.14	1.90	m <sup>3</sup> /m <sup>2</sup>
<b>WASTE GENERATION</b>												
<b>Total waste</b>	<b>1114</b>	<b>1037</b>	<b>1055</b>	<b>t</b>	<b>1.95</b>	<b>1.93</b>	<b>1.99</b>	<b>t/worker</b>	<b>0.05</b>	<b>0.04</b>	<b>0.04</b>	<b>t/m<sup>2</sup></b>
<b>Total hazardous waste</b>	<b>15</b>	<b>6</b>	<b>12</b>	<b>t</b>	<b>0.03</b>	<b>0.01</b>	<b>0.02</b>	<b>t/worker</b>	<b>0.00062</b>	<b>0.00023</b>	<b>0.00048</b>	<b>t/m<sup>2</sup></b>
Gases in pressurised containers (including halons) containing hazardous substances	0.166	0.01	0.18	t	0.0003	0.00002	0.00034	t/worker	0.000007	0.0000004	0.0000007	t/m <sup>2</sup>
Containers that contain traces of or are contaminated by hazardous substances	1.085	0.26	0.115	t	0.0019	0.0005	0.0002	t/worker	0.000045	0.000011	0.000005	t/m <sup>2</sup>
Batteries	0.109	0.11	0.092	t	0.0002	0.0002	0.0002	t/worker	0.000004	0.000005	0.000004	t/m <sup>2</sup>
Fluorescent bulbs/bulbs	0.004	0.02	0.10666	t	0.00001	0.00004	0.00020	t/worker	0.000000	0.000001	0.000004	t/m <sup>2</sup>
Electrical/electronic waste	1.424	1.5	8.001	t	0.0025	0.0028	0.0151	t/worker	0.000058	0.000062	0.000029	t/m <sup>2</sup>
Toner	0.3515	0.28	0.2005	t	0.0006	0.0005	0.0004	t/worker	0.000014	0.000011	0.000008	t/m <sup>2</sup>
Fibrocement	0	0	0.6	t	0.0000	0.0000	0.0011	t/worker			0.000025	t/m <sup>2</sup>
Halogen-free machining emulsions and solutions	1.1	0.16	0	t	0.0019	0.0003	0.0000	t/worker	0.000045	0.000007	0.000000	t/m <sup>2</sup>
Laboratory chemicals containing hazardous substances	0.875	0	0	t	0.0015	0.0000	0.0000	t/worker	0.000036	0.000000	0.000000	t/m <sup>2</sup>
Medical	0	0	0.12	t	0.0000	0.0000	0.0002	t/worker	0.000000	0.000000	0.000005	t/m <sup>2</sup>
Bilge oil collected from wharves	0.18	0.25	9.8	t	0.0003	0.0005	0.0185	t/worker	0.000007	0.000010	0.000402	t/m <sup>2</sup>
Oily water from water separators/oily substances	0	0	0.74	t	0.0000	0.0000	0.0014	t/worker	0.000000	0.000000	0.000030	t/m <sup>2</sup>
Absorbents	0.313	4.12	0.075	t	0.0005	0.0077	0.0001	t/worker	0.000013	0.000169	0.000003	t/m <sup>2</sup>
Other solvents	0.052	0.76	0	t	0.0001	0.0014	0.0000	t/worker	0.000002	0.000031	0.000000	t/m <sup>2</sup>
Used oils	0.04	0	0	t	0.0001	0.0000	0.0000	t/worker	0.000002	0.000000	0.000000	t/m <sup>2</sup>
Paper and cardboard	27.797	28.25	26.4485	t	0.0487	0.0525	0.0499	t/worker	0.001141	0.001160	0.001086	t/m <sup>2</sup>
Light packaging	10.053	4.23	7.48	t	0.0176	0.0079	0.0141	t/worker	0.000413	0.000174	0.000307	t/m <sup>2</sup>
Glass	0	2.08	3.74	t	0.0000	0.0039	0.0071	t/worker	0.000000	0.000085	0.000154	t/m <sup>2</sup>
Scrap	3.42	15.88	4	t	0.0060	0.0295	0.0075	t/worker	0.000140	0.000652	0.000164	t/m <sup>2</sup>
Rubble from smaller works	550.46	343.92	396.02	t	0.9640	0.6393	0.7472	t/worker	0.022602	0.014122	0.016261	t/m <sup>2</sup>
Tyres and bumpers	27.28	6.35	5.26	t	0.0478	0.0118	0.0099	t/worker	0.001120	0.000261	0.000216	t/m <sup>2</sup>

INDICATOR	ENVIRONMENTAL MAGNITUDE VALUE				RATIOS R / WORKER				RATIOS R / SURFACE AREA			
	2019	2020	2021	Unit A	2019	2020	2021	Unit R	2019	2020	2021	Unit R
<b>Magnitude B</b>					571 workers	538 workers	530 workers		24,354 m <sup>2</sup>	24,354 m <sup>2</sup>	24,354 m <sup>2</sup>	
Ordinary	444.7	513.48	510.82	t	0.7788	0.9544	0.9638	t/worker	0.018260	0.021084	0.020975	t/m <sup>2</sup>
Plastic packaging	-	2.34	2.806	t	0.0000	0.0043	0.0053	t/worker	0.000000	0.000096	0.000115	t/m <sup>2</sup>
Sewer cleaning waste	44.48	63.26	73.08	t	0.0779	0.1176	0.1379	t/worker	0.001826	0.002598	0.003001	t/m <sup>2</sup>
Clothing	0.152	0.11	0.142	t	0.0003	0.0002	0.0003	t/worker	0.000006	0.000005	0.000006	t/m <sup>2</sup>
Hygiene	-	0.1	0.2946	t	-	0.0002	0.0006	t/worker	-	0.000004	0.000012	t/m <sup>2</sup>
Gardening	-	49.16	5	t	-	0.0914	0.0094	t/worker	-	0.002019	0.000205	t/m <sup>2</sup>
Discarded equipment with hazardous components	-	0.02	0	t	-	0.00004	0.00000	t/worker	-	0.000001	0.000000	t/m <sup>2</sup>
Medical waste	-	0.08	0	t	-	0.0001	0.0000	t/worker	-	0.000003	0.000000	t/m <sup>2</sup>
<b>BIODIVERSITY</b>												
Total soil use	11,089,000	11,099,000	10,421,261	m <sup>2</sup>	19,438	19,370	19,663	m <sup>2</sup> /worker	-	-	-	-
Total sealed surface area	9,399,000	8,084,042	8,084,042	m <sup>2</sup>	16,461	15,026	15,253	m <sup>2</sup> /worker	-	-	-	-
Total surface area of the nature-oriented area	8,000	8,000	8,000	m <sup>2</sup>	14	15	15	m <sup>2</sup> /worker	-	-	-	-
<b>EMISSIONS</b>												
CO <sub>2</sub> eq emissions	238	231	524	teq CO <sub>2</sub>	0.42	0.43	0.99	t CO <sub>2</sub> eq /worker	0.01	0.009	0.021	t CO <sub>2</sub> eq /m <sup>2</sup> .
CO <sub>2</sub> eq emissions buildings ****	71	77	200	teq CO <sub>2</sub>	128.75	148.15	384.58	Kg CO <sub>2</sub> eq /FTE.	2.92	3.175	8.219	Kg CO <sub>2</sub> eq /m <sup>2</sup> .

**Notes:**

- \* Surface area of facilities + lighted exteriors: 3,041,743 m<sup>2</sup>.
- \*\* Irrigated green areas: 23,512 m<sup>2</sup>.
- \*\*\* Irrigated green areas + facilities: 47,866 m<sup>2</sup>.
- \*\*\*\* Sectoral indicator for public administration associated with significant environmental aspects

**FTE: Full-time equivalent employee: 521**



# References · Agenda 2030

## Environmental management

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<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>16</b> PEACE, JUSTICE AND STRONG INSTITUTIONS 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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## Natural Resources

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## Water quality improvement

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<b>6</b> CLEAN WATER AND SANITATION 	<b>14</b> LIFE BELOW WATER 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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## Air quality improvement

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<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>11</b> SUSTAINABLE CITIES AND COMMUNITIES 	<b>15</b> LIFE ON LAND 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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## Climate Strategy

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<b>7</b> AFFORDABLE AND CLEAN ENERGY 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>13</b> CLIMATE ACTION 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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## Prevention of soil contamination

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<b>3</b> GOOD HEALTH AND WELL-BEING 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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## Environmental monitoring of port works

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<b>8</b> DECENT WORK AND ECONOMIC GROWTH 	<b>9</b> INDUSTRY, INNOVATION AND INFRASTRUCTURE 	<b>14</b> LIFE BELOW WATER 	<b>15</b> LIFE ON LAND 	<b>17</b> PARTNERSHIPS FOR THE GOALS 
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Stakeholders

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Environmental compliance, guidelines and references

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# SUSTAINABLE DEVELOPMENT GOALS



# Statement Validation

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**ENVIRONMENTAL STATEMENT VALIDATED BY:**

**ENVIRONMENTAL VERIFIER:** LLOYD'S REGISTER QUALITY ASSURANCE ESPAÑA, S.L.U.

**NUMBER:** ES-V-0015

**VERIFIER:** FERNANDO ADAM MATAMALA



# Certificates





## CERTIFICAT DE REGISTRE

El Departament de Territori i Sostenibilitat certifica que el centre de l'organització

### AUTORITAT PORTUÀRIA DE BARCELONA

ubicat al Moll de Barcelona, Edifici WTC Est s/n de Barcelona

ha estat registrat amb el número

**ES-CAT-000430**

Per a l'activitat de gestió de domini públic portuari, activitats de transport marítim i obres d'infraestructura i manteniment

D'acord amb la Resolució de 22 d'octubre de 2018 de la directora general de Qualitat Ambiental i Canvi Climàtic el que preveuen els articles 13 i 14 del Reglament 1221/2009, del Parlament Europeu i del Consell, de 25 de novembre de 2009, relatiu a la participació voluntària d'organitzacions en un sistema comunitari de gestió i auditoria ambiental (EMAS). Els requisits del sistema de gestió ambiental EMAS són els mateixos que estableix la norma EN ISO 14001:2015.

El conseller de Territori i Sostenibilitat

Data d'inscripció: 07/10/2014  
Data 1ª renovació: 22/10/2018  
Validesa del certificat: 17/08/2021

Damià Calvet i Valera

Barcelona, 23 d'octubre de 2018



Generalitat de Catalunya  
Departament de Territori  
i Sostenibilitat



Fecha de Emisión Actual: 23 Agosto 2021  
 Fecha de Caducidad: 22 Agosto 2024  
 Número de Certificado: 10389550

Aprobaciones Originales:  
 ISO 14001 - 23 Agosto 2018

# Certificado de Aprobación

Certificamos que el Sistema de Gestión de :

## AUTORITAT PORTUARIA DE BARCELONA

Wold Trade Center Barcelona, Edificio Este, Muelle de Barcelona s/n, 08039 Barcelona, España

ha sido aprobado por Lloyd's Register de acuerdo con las siguientes normas:

**ISO 14001:2015**

Números de Aprobación: ISO 14001 – 00015846

**El alcance de esta aprobación es aplicable a:**

Gestión de dominio público portuario y de las actividades asociadas al transporte marítimo y obras de infraestructura y mantenimiento, en las terminales de: contenedores y polivalentes, de ferries, de automóviles, de líquidos a granel, de café y cacao, sólidos a granel, pasajeros y la Zona de Actividades Logísticas del Puerto de Barcelona.

**Daniel Oliva Marcilio de Souza**

Area Operations Manager - South Europe

Emitido por: Lloyd's Register Quality Assurance España, S.L.U.

en nombre de: LR Quality Assurance Ltd (UK)



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Page 1 of 1



## Port de Barcelona

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# EMAS

# SUSTAINABLE DEVELOPMENT GOALS