

On course to sustainability



Port de Barcelona

Environmental Statement
EMAS European Regulation

2018



Sustainable Development Goals of the 2030 Agenda reflected in this Environmental Statement



The Port of Barcelona pursues environmental protection actions under the Sustainable Development Goals of the United Nations 2030 Agenda, stemming from its many areas of influence and activity. On 28 May 2018, Barcelona Port Authority presented its letter of commitment to the 10 principles of the Global Compact on human rights, labour, the environment and the fight against corruption.

The 10 priorities of EU ports (ESPO, 2018)



Building on a long tradition dating back to 1996, ESPO and EcoPorts regularly monitor the top environmental priorities of European port authorities. This data is important as it identifies the high priority environmental challenges on which the ports are working and established the guidance framework and initiatives to be implemented by ESPO.

EMAS European Regulation



This document was drawn up taking account of the validated contents established by REGULATION (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) and the amendment thereof by Regulation (EU) 2017/1505.

Some of the contents referred to in Commission Regulation (EU) 2018/2026 of 19 December 2018 amending Annex IV to Regulation (EC) No 1221/2009 of the European Parliament and of the Council on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) were also incorporated.

Period covered by Statement: 2018, including environmental performance indicators for a minimum period of 3 years in accordance with the previous regulation, subject to the availability of data.

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Contents

- Presentation..... 6
- The Port Authority 8
 - Activity and responsibilities 8
 - Commitment to sustainability 10
 - Context and stakeholders 11
- Environmental management 12
 - Organisation and scope 12
 - Analysis and impact assessment 15
 - Environmental planning 18
- environmental performance and monitoring 20
 - Natural resources..... 20
 - Water consumption 21
 - Energy consumption 21
 - Other materials..... 23
 - Improving water quality 24
 - City waste water disposal system 25
 - Port water cleaning services 25
 - Water quality monitoring 25
 - Monitoring sediment quality 26



- Improving air quality 28
 - Port of Barcelona Air Quality Improvement Plan 28
 - Immission monitoring stations 29
 - Emissions from port activity 30
 - Actions to improve the atmospheric environment 30
 - Intermodality 30
 - Promoting gasification 31
 - Reducing emissions from vessels 32
 - Sustainable mobility 33
 - Monitoring dry bulk operations 33
 - Environmental monitoring of works 33
 - New road and rail accesses to the port 33
 - Air quality indicators 34
- Climate strategy 35
 - Voluntary agreements to reduce CO2 emissions 35
 - Renewable energy supply 35
 - BCN Zero Carbon project 36
 - World Ports Climate Action Plan 37
 - Energy transition 37
 - Ecocalculator 38
 - Short sea shipping promotions 38
- Preventing soil pollution 39
- Environmental monitoring of port works 40
 - Dredging 40
 - Consumption of materials, riprap and aggregates 41
- Managing own and third-party waste 42
 - Generation of non-hazardous waste 43
 - Generation of hazardous waste 43
 - Managing waste from concessions 45
 - Managing ships' waste (MARPOL convention) 45

- Ecology and biodiversity 46
 - Interaction with natural spaces and protected species 46
 - Monitoring the introduction of invasive species 46
 - Bird control 47
- Monitoring and managing environmental noise 48
 - Port Vell 48
 - Commercial Port 48
- Environmental emergency plans 49
 - Internal plans 49
 - Emergency Response Plan 50
 - Metocean alert system 50
 - Control Centre procedures 50
- Environmental expenditure statement 51

Stakeholders 52

- Active participation 53
- Best practices and environmental protection projects 55
- Agreements with concession holders 57

Environmental compliance 58

- Responsibilities of the Port Authority
- Main applicable legal requirements 59
- Reference documents 60

Validation 63

Certificates 64



Presentation

The EMAS Register is a guarantee of the Port of Barcelona's environmental solvency and a guide to excellence for all the operators that form part of the port supply chain. ”

Values:

Innovation Ethical and professional
Valuing people
Commitment to people

Sustainability
Social responsibility
Customer orientation

Mercè Conesa
Presidency



At the Port of Barcelona we deliver on our values of commitment to people, stemming from the professional ethics of our whole team and a common responsibility towards our customers, users and surroundings.

The key infrastructure that provides Barcelona with one of the most important logistics ports in the world drives us to extend this commitment to **Sustainability** and **Environmental** protection, from both a local and a global perspective.

In this fifth Environmental Statement, I am delighted to present the most up-to-date report on environmental management associated with the activities and functions of Barcelona Port Authority. It also reveals the key projects and improvements we are working on to ensure the best possible environmental control, the best use of resources and energy efficiency in the fight against climate change.

We all share one environment which we must protect and we will dedicate all our best efforts and innovation to this endeavour in the years to come.

José Alberto Carbonell
General Manager of the Port of Barcelona



Sustainability has gone from being a utopia to a necessary requirement for the management of any public infrastructure. ”

This new edition of the Environmental Statement explains, in black and white, how Barcelona Port Authority analyses, monitors and minimises the range of impacts it has on the local and global environment from the perspective of environmental protection.

The water quality monitoring and air quality improvement plans are just some of the examples we provide in this environmental report.

As a leading player in the shipping supply chain for materials, goods and resources, our mission and strategic plan take account of the environmental context, the risks entailed in activities at the Port of Barcelona and the opportunities for the sustainable development of the port.

As such, **we have an obligation to our stakeholders**, taking account of their expectations and needs and making them compatible with the constant environmental upgrading of our own activities.

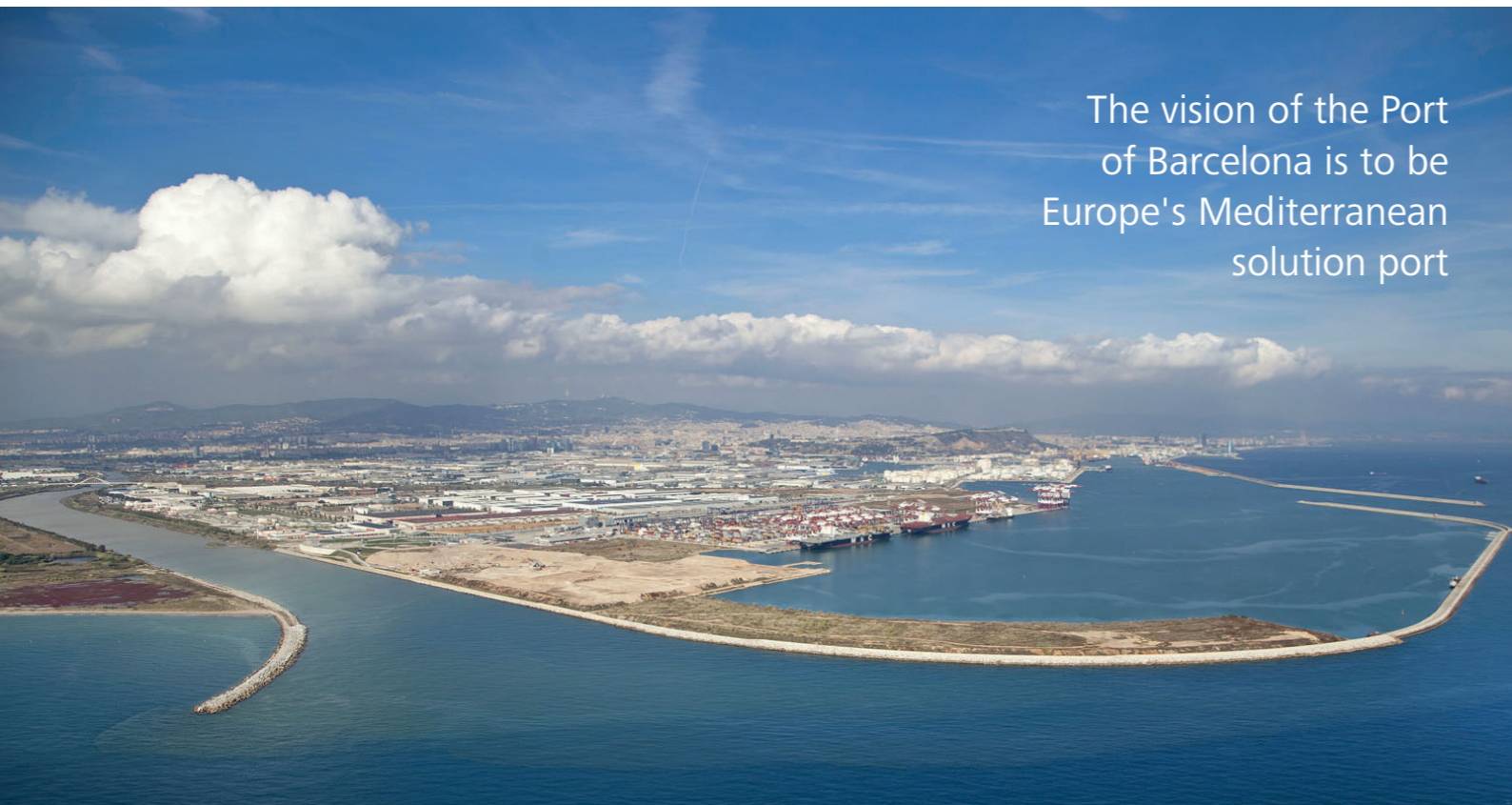
In addition, we are also committed to providing every port concession holder and terminal with the best possible opportunities to meet their environmental goals in the performance of their operations within our area of influence and responsibility.

I would like to use this platform to express my personal appreciation for the professional drive and vision of collective responsibility that is shared by the whole the APB (Barcelona Port Authority) team as well as the collaboration of the

port community in taking on the sustainable development challenges that the 2030 Agenda also presents in environmental terms.

Now we cordially invite you to learn more about the environmental management of the Port of Barcelona.

Kind regards.



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



Activity and responsibilities of Barcelona Port Authority

Barcelona Port Authority's mission is to spearhead the development of the Port of Barcelona through the construction and management of infrastructure, ensuring the reliability of services to help make its customers more competitive and creating value for the community.

As public bodies, Port Authorities are under the remit of the Ministry of Development, through Puertos del Estado (State Ports); and from a legal perspective, we are governed by specific legislation, fundamentally Royal Legislative Decree 2/2011 of 5 September 2011 approving the Consolidated Text of the Law on State Ports and the Merchant Navy (Ports Law).

Barcelona Port Authority is in charge of the administration, monitoring, management and operation of the Port of Barcelona.

Under the "Landlord Port" model, Port Authorities supply port space and infrastructure and regulate the operations performed in the port, but do not provide port or commercial services such as technical-nautical services (pilotage, towing

and mooring), goods handling or passenger services, inter alia.

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

The basic functions of the Port Authority are: planning, design, construction, conservation and operation of port works and services, collaboration with official bodies, coordination of private port companies and management of public port areas.

Functions and responsibilities of the Port Authority

1. Managing and monitoring port and commercial services
2. Providing general port services
3. Managing the port service area and port utilisation
4. Developing, maintaining and operating port infrastructure
5. Managing the public port areas
6. Optimising financial management and the profitability of port assets and resources
7. Fostering commercial, logistic and, where appropriate, industrial activities relating to maritime or port traffic.
8. Coordinating the operations of the various modes of transport in the port.
9. Managing and coordinating port traffic, both maritime and land-based.

2018

| Type of traffic | Transit units |
|---|---------------|
| 1. TRANSIT OF VESSELS: | 9,038 u |
| 2. STOPOVERS (Ferries and cruise ships) | 4,219 u |
| 3. PASSENGERS: | 4,493,646 u |
| 4. CARS: | 810,218 u |
| 5. CONTAINERS (TEU): | 3,422,978 u |
| 6. OTHER TRAFFIC (ITU): | 408,553 u* |

* Trailers, platforms, trucks, vans...





Commitment on sustainability

An Environmental Policy

BARCELONA Port Authority is aware of the environmental impact from commercial activities at the Port of Barcelona and, as such, it contributes to long-term sustainable development by minimising the impacts on air, water and soil quality in all its operations.

Port activities and services include management of public port areas, maritime transport activities, construction and maintenance of infrastructure projects, and management and supervision of port and commercial services in relation to maritime, inland and rail transport of goods at the port.

To minimise the effects of environmental impacts we must pursue:

1. Have a fit-for-purpose environmental management programme that directs and improves our environmental performance, focuses on the prevention of pollution and engages in the conservation of biodiversity.
2. Stay informed and comply with current environmental legislation and other environmental requirements to which we are bound.
3. Work to prevent environmental accidents and maintain a high level of preparedness to reduce the effects of any incident or accident that may occur.
4. Use our resources in the most efficient way possible and strive to reduce our consumption of non-renewable resources, while working to achieve the following specific goals: reducing energy consumption, reducing CO₂ emissions, reducing emissions of harmful gases and particles and, in general terms, reducing all the impacts on the environment from our activity.
5. Influence, receive 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 in their environmental programmes.
6. Purchase products and services whose production, use and disposal cause the minimum negative environmental impact.
7. Provide all employees with environmental training to empower them as active agents in the protection of the Environment in their daily work.
8. Periodically review our management system and environmental policy, taking account of the results of environmental audits along with changes to regulations and the context of the organisation.
9. Ensure that the necessary resources are deployed for certification and maintenance of our environmental management system.
10. Publish an annual environmental statement and make it available to the public.

Signed and dated

Barcelona, 10 July 2016.

BARCELONA PORT AUTHORITY

José Alberto Carbonell
General Manager

Context

The Port Authority has a 2016-2020 Strategic Plan in place which analyses the environment and context of the organisation and establishes specific courses of action that should serve as guidelines for all departments.

There is also a Sustainability Plan at Port Community level which analysed the context and the relationship with stakeholders. On the basis of these analyses, the Port reviewed the context with a view to analysing the impact on environmental aspects and within the framework of the Port of Barcelona Management System.

Stakeholders

The Port of Barcelona pursues sustainable action based on the concept of the Environment for our stakeholders. In other words, it works proactively to meet the environmental needs and expectations of these interest groups.

In an initial assessment, stakeholders were grouped into five levels or blocks with a view to analysing their needs and expectations in greater detail.

This allows us to establish the best possible relationships and identify the most suitable communication channels in each case.

- 1 LEVEL ONE
WORKERS AND EMPLOYEES OF THE PORT AUTHORITY
- 2 LEVEL TWO
PORT COMMUNITY COMPANIES (CONCESSION HOLDERS, SERVICE PROVIDERS, SHIPOWNERS AND SHIPPING COMPANIES, ETC)
- 3 LEVEL THREE
TRANSPORT OPERATORS AND FREIGHT CUSTOMERS
- 4 LEVEL FOUR
ADMINISTRATIONS AND PUBLIC BODIES
- 5 LEVEL FIVE
CITY OF BARCELONA
CITY OF EL PRAT DE LLOBREGAT





Environmental management

The commitment to sustainable development at the Port of Barcelona 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 responsibilities

The Environment Department forms part of the Office of the Assistant General Manager for Port Operation and Planning, led by the person with direct responsibility for the Environment and the Environmental Management System (EMS).

However, this is a cross-network system and it impacts the responsibilities of more than one department.

For example, environmental initiatives also encompass the following areas and operations:

- Building infrastructure
- Dredging
- 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



Joaquim Cortés
Air Quality Technician

"The Air Quality Improvement Plan will lead to a significant reduction in emissions over the coming years".



David González
Soil contamination technician

"The Environmental Management System ensures high quality communication with the APB stakeholders".



Daniel Ruiz
Coordination and monitoring of LNG projects

"By incorporating natural gas in the Port of Barcelona we aim to reduce emissions and increase energy efficiency for both vessels and inland transport".



Javier Romo
Marine Environment Technician

"The APB monitors and checks the quality of open and confined waters at the Port and the remediation and prevention actions in this area".



Xavier Sabaté
Responsible for environmental and energy transition projects

"The road to sustainability compels us to take on new challenges and projects. Energy transition is one of the most important".



Jordi Vila
Environment Chief

"A great team focused on monitoring and environmental management of the Port, empowering all our operators to engage in continuous improvement".

Scope of the EMS

The scope of the system covers all the facilities and activities delivered by Barcelona Port Authority in the performance of its functions in regard of facilitating and managing the passage of goods through the port by maritime, rail and road modes.

Specifically, the activities that fall within its scope comprise management of public port areas, construction and maintenance of infrastructure projects, and management and supervision of port and commercial services in relation to the transport of goods.

In the commercial and logistics area, the sports area and other facilities that are not directly related to actual port activity are not included.

The coastal lighthouses at Barcelona and Girona, administered by the APB, also fall outside the scope of the system.

NACE 52.22 Service activities incidental to water transport NACE Rev.2 (52.22)

¹ REGULATION (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 on the voluntary participation by organisations in a Community eco-management and audit scheme (EMAS) and Regulation (EU) 2017/1505

Environmental management of the Port of Barcelona complies with current legislation, with **ISO Standard 14.001:2015** and with the **EMAS Regulation¹** as well as with the sectoral standard, the **Port Environmental Review System (PERS) promoted by the European Sea Ports Organization (ESPO)**.

Information and control

The EMS is documented by a controlled manual, procedures and records, and by plans and programmes.

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

Scope of certification/validation:

Management of public port areas, maritime transport activities, construction and maintenance of infrastructure projects, and management and supervision of port and commercial services in relation to maritime, inland and rail transport of goods at the port.



Activities and processes

BUILDING INFRASTRUCTURE

New construction projects for buildings, maritime works, land works and dredging; project execution, environmental monitoring of projects; soil decontamination projects.

PRESERVATION AND MAINTENANCE OF INFRASTRUCTURE AND FACILITIES

Maintenance and preservation of infrastructure; waste collection and street cleaning services for public and common areas; cleaning port waters; maintenance of green areas and gardens; management of waste from workshops; consumption of water, electricity and fuel; consumption of office supplies and other goods and services; management of the vehicle fleet; management of the port waste water disposal system.

VESSELS AND MARITIME NAVIGATION

Regulation of maritime operations; regulation of nautical port services; emissions into the ambient air; discharge of ballast water; accidental spillages; vessel repair.

MANAGEMENT OF PUBLIC PORT AREAS: TERMINALS AND CONCESSIONS

Land-use planning, authorisation of occupation by third parties; authorisation of goods-handling activities; regulation of port services; terminal emergency plans.

ADMINISTRATIVE MANAGEMENT

Generation of waste; consumption of electricity, water and office consumables;

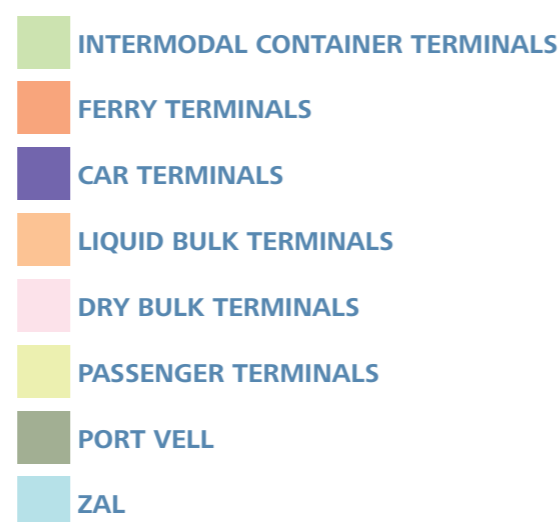
INLAND AND RAIL TRANSPORT

Regulation of the activity; emissions into the ambient air; accident rates;

ENVIRONMENTAL MANAGEMENT

Monitoring and improving the Port of Barcelona environmental management system

Schematic map of the Port of Barcelona



Impact analysis and assessment

Analysis methodology

Each year the Port of Barcelona identifies the direct and indirect aspects and impacts of port activity included in the scope of the system for normal, abnormal and emergency conditions.

The assessment of the significance of each direct and indirect aspect is determined by taking account of 4 analysis criteria:

- Frequency of occurrence (F)
- Magnitude or quantity (M)
- Seriousness for the environment and vicinity (S)
- Capacity to control or influence on the part of the Port Authority to prevent or reduce the environmental impact generated by the aspect (C)

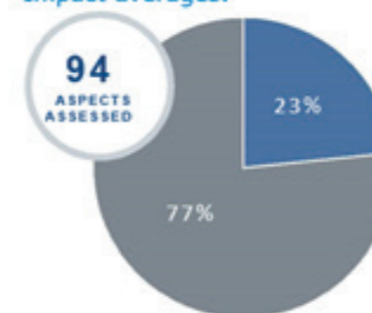
The final assessment of each aspect (**IU: Impact Units**) is obtained by multiplying the points allotted for each criterion (F x M x S x C). Aspects are considered to be significant if they score higher than the average number of points for all the aspects.

In 2018, the most significant direct environmental aspects were those associated with consumption at the APB.

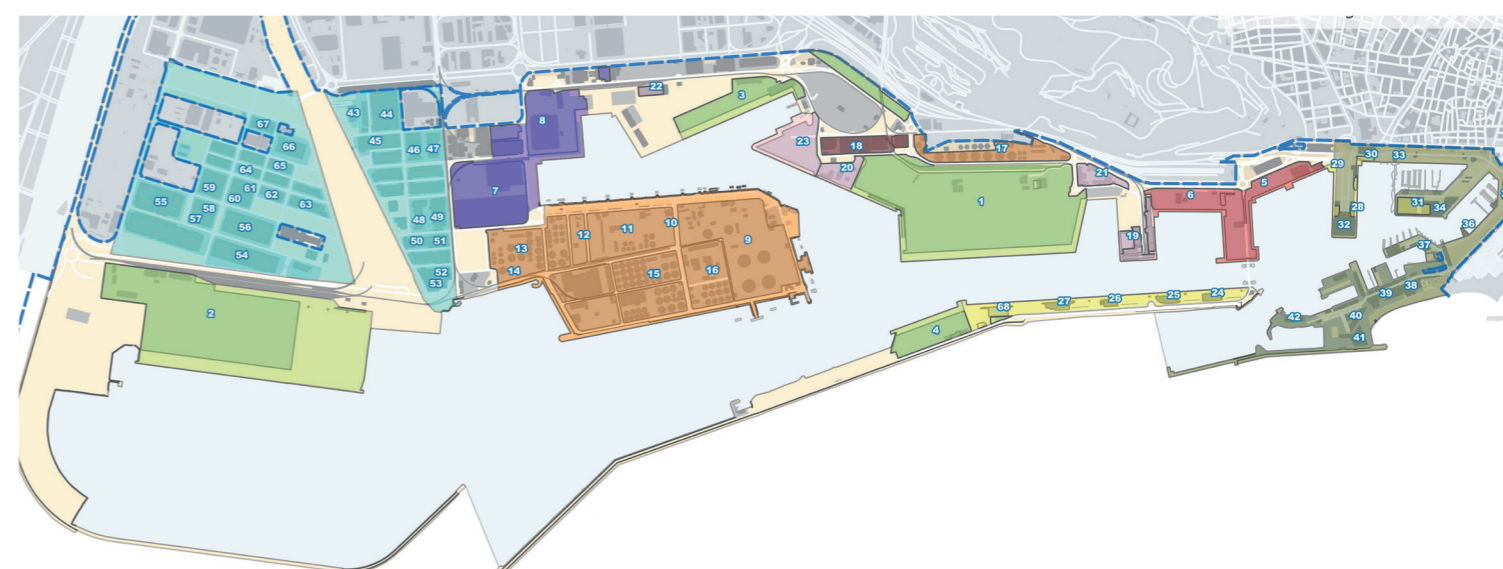
Under this analysis, the greatest impact can be observed in indirect aspects associated with port activity with regard to atmospheric pollution, generation of port waste water and waste, and consumption of materials and energy.

Environmental aspects

Impact averages:



Direct IU: 4.5 Indirect IU: 12.4





Significant direct environmental aspects under normal operating conditions.

CONSUMPTION

| | |
|---|--|
| Tap water consumption in common areas | Consumption of non-renewable resources |
| Electricity consumption in offices and common areas | Consumption of non-renewable resources |
| Fuel consumption for vehicles and port vessels | Consumption of non-renewable resources |

ATMOSPHERIC EMISSIONS

| | |
|---|-----------------------|
| Emissions from the vehicle fleet and port vessels | Atmospheric pollution |
|---|-----------------------|

CLIMATE CHANGE

| | |
|---|----------------|
| GHG emissions from fuel and electricity consumption | Global warming |
|---|----------------|

Significant indirect environmental aspects under normal operating conditions.

WASTE

| | |
|--|----------------------------------|
| Generation of solid ships' waste (MARPOL V) | Risk of soil and water pollution |
| Generation of oily water from vessels (MARPOL I) and from tank slops (MARPOL II) | Risk of soil and water pollution |
| Generation of waste in terminal workshops and concessions | Risk of soil and water pollution |

CONSUMPTION

| | |
|--------------------------------------|--|
| Electricity consumption in terminals | Consumption of non-renewable resources |
|--------------------------------------|--|

ATMOSPHERIC EMISSIONS

| | |
|---|-------------------------------|
| Emission of suspended and settleable particles from construction earthworks | Damage to health and property |
| Emission of suspended and settleable particles from vehicles and machinery | Damage to health and property |
| Emissions of gases and particles from ships and vessels during navigation | Damage to health and property |
| Emissions of gases and particles from ships during their stay at the port | Damage to health and property |
| Emissions of gases and particles from land transport | Damage to health and property |
| Emission of combustion gases from vehicles and machinery (concessions) | Damage to health and property |
| Emission of suspended and settleable particles in operations involving liquid and dry bulks (terminals and concessions) | Damage to health and property |

CLIMATE CHANGE

| | |
|---|----------------|
| Deposition of GHG Emissions from vessels | Climate change |
| GHG emissions from trucks | Climate change |
| GHG emissions from fuel and electricity consumption (terminals and concessions) | Climate change |

BIODIVERSITY

| | |
|---|--|
| Deposition of fouling on hulls and discharge of ballast water | Risk of introduction of invasive species |
|---|--|

Significant indirect environmental aspects under emergency conditions.

PORT WASTE WATER SPILLAGE

| | |
|--|------------------------------|
| Accidental spillages during bunkering operations | Risk of damage to ecosystems |
| Accidental spillages of liquid products from vessels during operations | Risk of damage to ecosystems |
| Product or fuel spillages due to a maritime accident or ship fire | Risk of damage to ecosystems |
| Accidental spillages of liquids and solids in wharfs (terminals and concessions) | Risk of damage to ecosystems |

IMPACT ON SOIL

| | |
|--|----------------------------------|
| Accidental spillages or leaks in bunkers that pollute the soil | Risk of soil and water pollution |
|--|----------------------------------|

Environmental incidents

| Type | 2016 | 2017 | 2018 |
|--|------|------|-------|
| Activating the environmental emergency plan Internal Marine Plan (PIM) | 6 | 7 | 6* |
| Deviations from environmental audits | 1 | 0 | 12 |
| Legislative non-compliance-sanctions | 0 | 0 | 0 |
| Typical environmental incidents | 283 | 319 | 167** |

* PIM (Internal Marine Plan)

- 04/05/2018 - Hydrocarbon (bilge) pollutant spill of unknown origin at berth 33b.
- 17/04/2018 - Incident at Energy wharf terminal rack.
- 17/05/2018 - Berthing incident - MARPOL waste at 33a
- 25/08/2018 - Hydrocarbon (fuel) pollutant soil originating from vessel at Ponent wharf.
- 05/09/2018 - Vegetable oil pollutant spill originating from terminal at West wharf.
- 31/10/2018 - Accident between vessel and crane on South wharf.

** includes out-of-hours authorisations of hazardous goods

Environmental incidents are categorised according to their nature and/or seriousness, as indicated in the table above. The main incidents are:

| | |
|--|-----|
| Authorisation of hazardous goods outside working hours | 32% |
| Discharges in the maritime service area | 24% |
| Large flotsam and waste in docks | 22% |
| Spillage of solids and liquids on road surface | 14% |



Environmental planning

The Port of Barcelona has a 2018 Environment Programme within the framework of its environmental management system in which objectives and goals are established for significant direct and indirect aspects. Progress and the degree of implementation are monitored every six months through the Environment Committee.

It should be noted that the Port of Barcelona has other specific plans focused on pollution control and environmental upgrading.

- Water quality monitoring programmes
- Air Quality Improvement Plan (2016-2020)
- Internal Marine Plan for containment of spillages
- Emergency plans and Emergency Response plans
- Vessel waste reception plan
- Environmental Communication Plan

The main actions and the results of any of these plans are set out in the following sections:

A decade of environmental improvements

The chart below shows some of the APB's key achievements in the environment and sustainability.

Sustainability plans and programmes

Environmental achievements

1995 - 2000

- 1996. First weather station
- 1997. Introduction of materials to fight maritime pollution caused by accidental spillages.
- 1998. APB began monitoring benthic populations as bio-indicators.
- 2000. Automatic mobile air quality control unit.

2001-2010

- 2001. Commissioning of the new port waste water disposal system, with 36km of sewers and 16 pumping stations.
- 2001. As part of the introduction of peregrine falcons in Barcelona, a reintroduction point was installed at the Contradic Wharf.
- 2003. Opening of the new entrance mouth
- 2003. Commissioning of Llobregat WWTP.
- 2004. Control centre warning and action procedures for environmental incidents.
- 2005. Automatic SO2 atmospheric monitoring station in Section VI.
- 2005. First Internal Contingency Plan for maritime pollution.
- 2008. First inventory of emissions of gaseous pollutants and particulates.
- 2010. APB began monitoring the quality of port waters in compliance with the Directive.

2011

- 2011. Automatic NO2 atmospheric monitoring station in the ZAL.

2012

- 2012. Signing up to VOLUNTARY AGREEMENTS to cut CO₂ emissions.
- 2012. Introduction of discounts for terminals with good environmental practices.

2013

- 2014. Commitment by the Port of Barcelona to promote natural gas as a cleaner alternative fuel.

2014

- 2014. APB obtained ISO 2014 certification and EMAS registration.

2015

- 2016 Completion of the Environmental noise map.

2016

- 2016 Audouin's gull breeding colony at Adossat Wharf.
- 2016 Introduction of port monitoring of vessel waste collection service (MARPOL).

2017

- 2017 First gas bunkering to a passenger ferry in Spain for the auxiliary engine.
- 2017 Pilot project to supply electricity to docked vessel from generator with natural gas engine at wharf.
- 2017 PERS certification obtained.

2018

- 2018 First gas bunkering to a Balearia ferry using natural gas.
- 2018 Opening of a service station to supply natural gas to trucks and vehicles
- 2018 First environmental communication plan.
- 2018 Completion of soil remediation works at Contradic Wharf.

2019

Programme of goals 2019

- 1. REDUCE ELECTRICITY CONSUMPTION 2.4% BASED ON 2018**
Change LED lighting with control system in offices WTC ground floor, medical services, 2, 3, 6, 7, 8
Complete refurbishment of the lighting on Princep d'Espanya wharf
- 2. REDUCE DIESEL AND GASOLINE CONSUMPTION BY 20%**
Results of the electrification of the APB's vehicle fleet
- 3. APPLICATION OF THE AIR QUALITY IMPROVEMENT PLAN**
Updating of the Air Quality Improvement Plan. See pages: 28, 30, 31, 32 and 33.
Completion of pilot project to supply electricity to vessels from distribution system
Inventory of emissions agreed with the Generalitat (Catalan Government) and the City Council Scenario 2030 and 2040
- 4. PROMOTING LNG AS A MOBILITY FUEL**
Continue with the pilot projects of the Port of Barcelona
Approve the regulations of the bunkering service GNL to ships
- 5. IMPROVING THE INTERNAL MARINE PLAN**
Introducing new resources for Prat and exterior wharves
Strengthening response procedures
- 6. IMPLEMENTING THE ENVIRONMENTAL COMMUNICATION PLAN:**
Internally: Initiatives to foster internal participation
Externally: Publishing materials: 2 videos on air and water quality, new edition of ES.2018
- 7. IMPLEMENTING THE PLASTIC REDUCTION PLAN**



Implementation review of 2018 goals

1. REDUCING ELECTRICITY CONSUMPTION BY 1% COMPARED TO 2017

Overall electricity consumption at the facilities increased by 0.14%.

In progress

2. REDUCING CO2 EMISSIONS BY 0.85%

Implemented

Total CO₂ emissions reduced by 15% thanks to the introduction of electric cars into the vehicle fleet and a reduction in natural gas consumption for air conditioning in buildings. Since 2017, electricity has been obtained from renewable sources with certification of origin. As such, associated CO₂ emissions are not counted.

3. REDUCING DIESEL AND PETROL CONSUMPTION BY 10%

Partially implemented

Total fuel consumption was cut by 9.19%, such that 92% of the expected results were attained.

4. IMPLEMENTING THE AIR QUALITY IMPROVEMENT PLAN

Implemented

Preparation of the preliminary draft and commissioning and commencement of work.

5. PROMOTING LNG AS A TRANSPORT FUEL

Implemented

Currently being negotiated and drafted

6. IMPROVING THE INTERNAL MARITIME PLAN

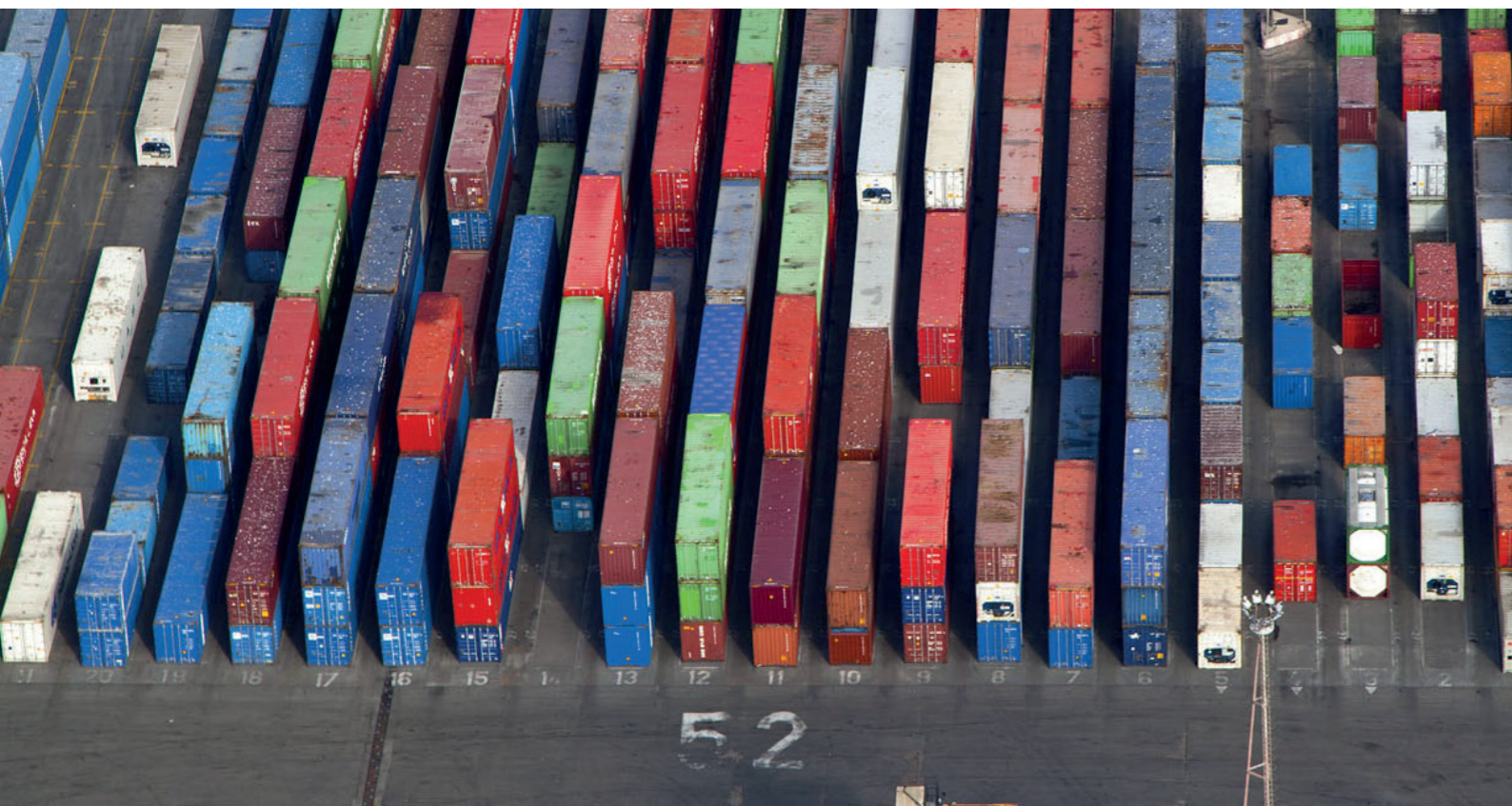
Implemented

Drafting the new PIM

7. ENVIRONMENTAL COMMUNICATION PLAN

Implemented

Improvement of intranet use indicators. Publication of new information materials (Environmental Statement and LNG).



Environmental performance and monitoring

The performance or progression of Barcelona Port Authority's environmental performance is analysed from the perspective of its relationship with the total port surface area and its personnel. In overall terms, however, this environmental performance is directly related to the increase in port activity; due to an increase in goods traffic or because of expansion projects and works that are under way.



Natural resources



The following sections show the basic environmental indicators of resource consumption in relation to the most significant direct and indirect environmental aspects.

Owing to the importance of analysing aspects associated with the circular economy in the logistics chain of the Port, in successive statements we will also take into account information relating to tonnes or resources moved, thanks to the data provided both from monitoring maritime traffic and by the terminals and concessions of the port.

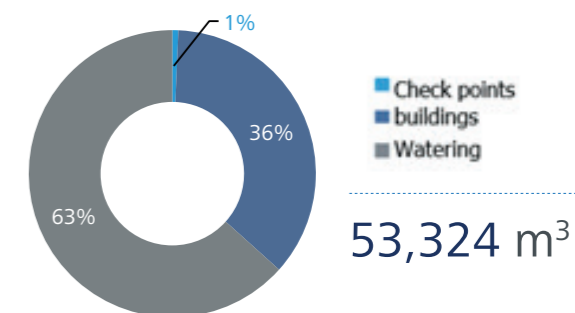


Moreover, the Port of Barcelona's commitment also extends to understanding, controlling and monitoring other impacts and aspects of port activity that may affect the Environment.

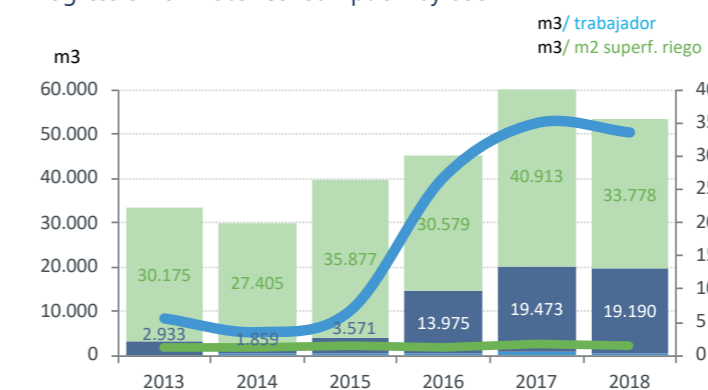
Water consumption

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

The main consumption * registered is for irrigation of green areas and gardening with 23,512m³, representing 63% of total consumption in 2018.



Progression of water consumption by use



| Consumption rates | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--|------|------|------|------|------|------|
| m ³ of water buildings /wrkr. | 5.6 | 3.6 | 6.9 | 26.9 | 35.0 | 33.6 |
| m ³ irrigation water/m ² | 1.3 | 1.2 | 1.5 | 1.3 | 1.7 | 1.4 |

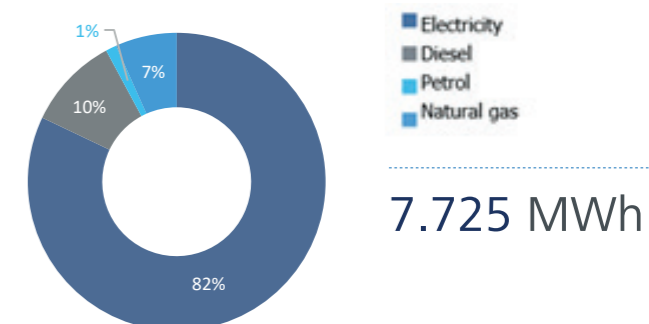
* Total the APB consumption submitted; does not include extra volume associated with third parties which essentially corresponds to drinking water supplied to vessels.

A number of construction projects in 2016 and 2017 led to an increase in the volume of water consumed for green areas due to the creation of new spaces that initially required more watering. This consumption stabilised during 2018. APB uses the following criteria to reduce the consumption of irrigation water:

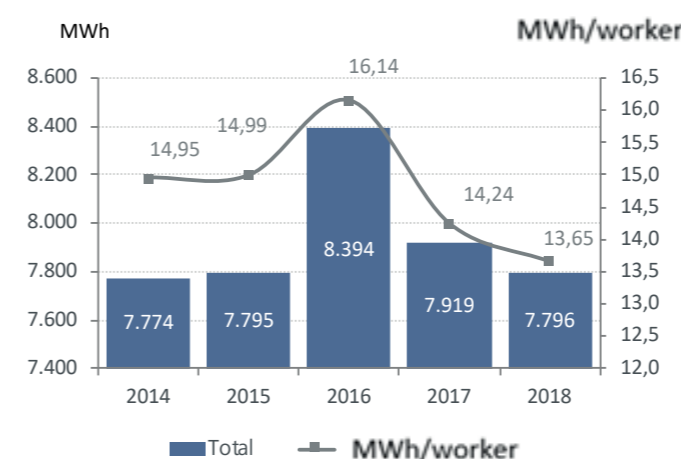
- Prioritisation of native xerophytic ornamental plant species that take root easily and require little watering.
- Drip irrigation system for the bases of trees or shrubs.
- Drought-resistant grass species that require little watering.
- Irrigation system with partial meters and roll-out of remote control to detect leaks by setting maximum flow thresholds per period of time.

Energy consumption

Barcelona Port Authority's main energy consumption corresponds to the electricity supply for buildings and lighting roads and facilities; followed by consumption of diesel, natural gas and petrol.



Progression of energy consumption



The following sections show the detailed data by energy source and some of the actions that contributed to the reduction of energy consumption at the Port of Barcelona.

Electricity consumption

Electricity consumption within the scope of the Port Authority Environmental Management System corresponds to public lighting of roads and common areas in the port area and lighting, powering equipment and air conditioning in buildings.

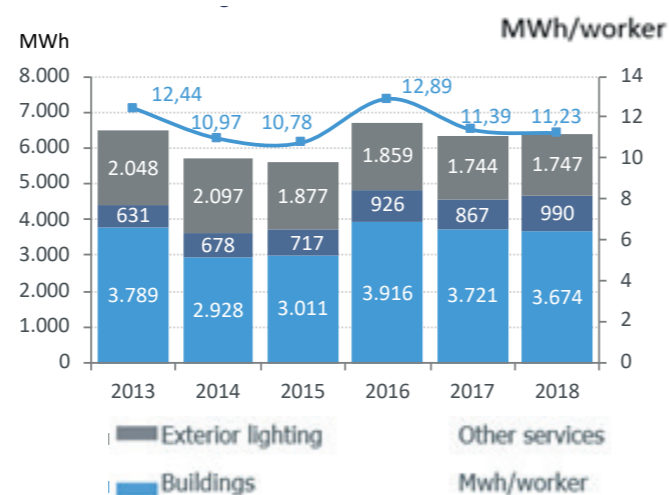
Electricity consumption is a significant aspect in our management system. An annual goal was set in 2018 to reduce consumption by 1% in relation to 2017.

The APB applies the following criteria to meet this goal of a steady reduction in electricity consumption:

- Modernising the public lighting system.
- Changing lamps to LED technology for those in use constantly or more than 10 hours a day.
- Introducing measures and actions to increase the energy efficiency of air conditioning in buildings.

Since January 2017 100% of the energy supplied to the APB and stakeholder companies (WTCB, Cilsa, Port2000) by Gas Natural Fenosa (Naturgy) is renewable.

Progression of energy consumption by uses



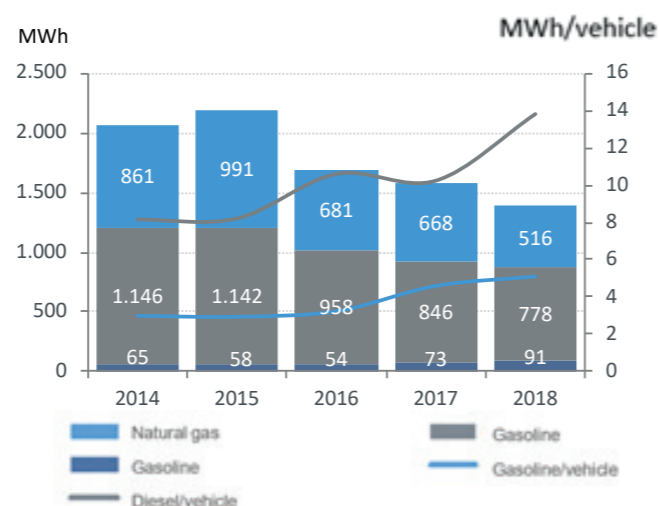
Fuel consumption

The only consumption of natural gas is for heating the ASTA building, which reduced by 22.8% during 2018.

The 8% reduction in diesel consumption is also worth noting. This reduction will continue to increase in tandem with use of the electric vehicle fleet.

APB's fuel consumption mainly corresponds to the vehicle fleet (port police cars and motorcycles, inspection vehicles, assigned vehicles, maintenance vans and trucks and two port-owned vessels). Diesel consumption is becoming less significant as it is used to power temporary electric generators that are being systematically replaced with service drops.

Progression of fuel consumption



| Consumption rates | 2014 | 2015 | 2016 | 2017 | 2018 |
|----------------------|------|------|------|------|-------|
| MWh diesel/vehicle | 8.1 | 8.2 | 10.6 | 10.2 | 13.8* |
| MWh gasoline/vehicle | 2.9 | 2.9 | 3.2 | 4.6 | 5.1 |

* increase caused by replacing diesel vehicles with electric vehicles

Electric mobility

Three new BMW C Evolution electric scooters were purchased in 2018 and added to the Port Police fleet. The Port currently has the following electric vehicles:

- 17 vehicles in the shared vehicle pool
- 8 vans for maintenance work
- 6 port police motorcycles
- 3 assigned cars

The Port of Barcelona has installed 44 charging points for port use at a number of points around the facilities to supply power to the new vehicles in the fleet. 28 of them are in the car park of the World Trade Center Barcelona building, where the port's corporate head office is located, another 14 were installed at the ASTA service building (Ronda del Port) and there are two further charging stations for Port Police motorcycles at Drassanes Terminal (Moll de Barcelona).

Three new charging points were also installed for public use: two slow charging points located at Energy Wharf and one at the passenger terminal. These points are part of the **Electric vehicle charging point installation plan**, which envisages a total of 27 points distributed throughout the port area by 2022.



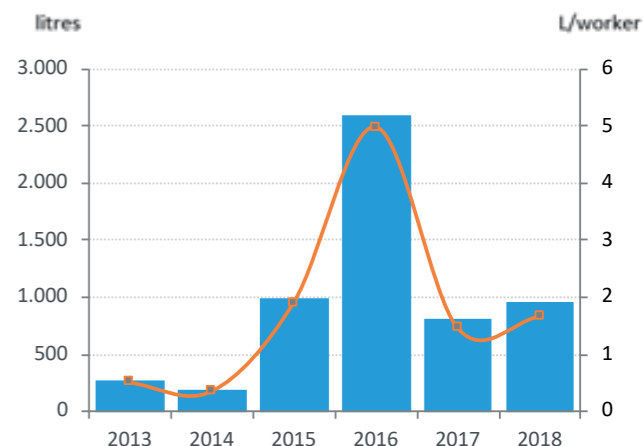
Consumption of other materials

Workshop products and materials

Hazardous waste is generated by empty containers from products consumed in workshops. This is the case for containers from paints, enamels, turpentine, solvents, sprays, lubricants, grease, cutting oils, degreasing agents and drain cleaners.

The quantity of these products and materials depends to a large extent on the maintenance actions required and therefore consumption varies according to the conservation and repair needs occurring each year.

Consumption of hazardous materials





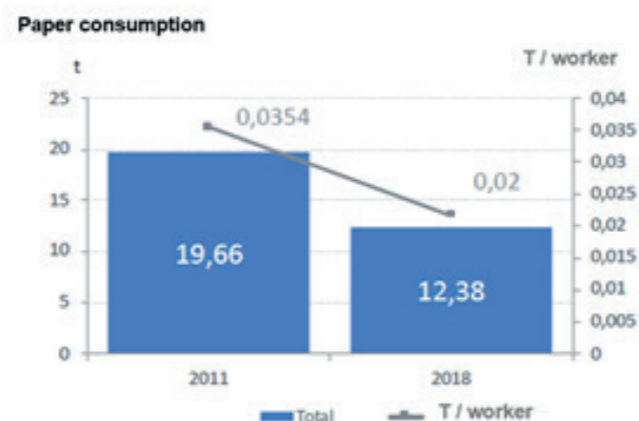
Paper consumption

In 2009, the APB launched the "Green Office" programme, an initiative focused on pursuing actions to reduce the environmental impacts caused by work activity in the organisation.

In the project, a set of Best Practice Guidelines was drawn up by a volunteer group of employees who devoted time and effort to assembling a set of initiatives, proposals and recommendations to save office consumables and implement a model of responsible consumption.

The guidelines focus on the goals of reducing consumption of paper and of ink and toner cartridges for printing.

"Green Office" guide 2009. We plan to update this in future along with news of the successes made possible by staff involvement



Improving water quality



Port waste water disposal system

Port water cleaning services

Water quality monitoring

Monitoring sediment quality

Control of operations that present a risk to water quality

Improving port water quality is one of the main environmental concerns for ports.

Port waters generally tend to receive waste water discharges from nearby urban and industrial areas and from tipping of industrial waste from the port's own facilities.

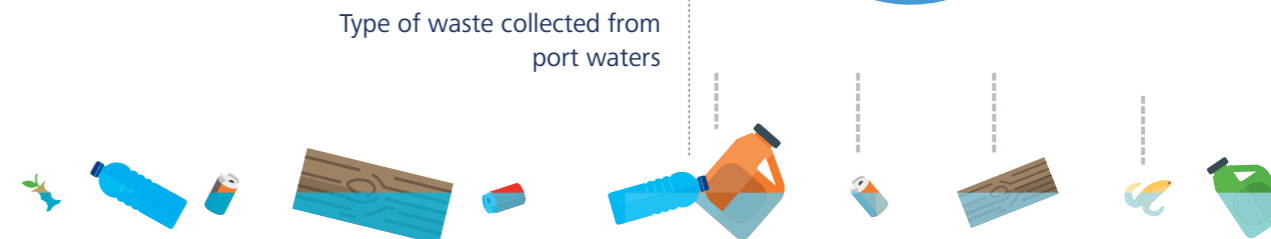
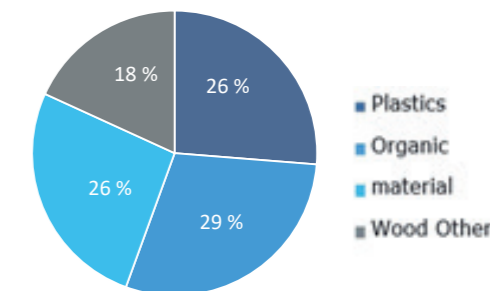
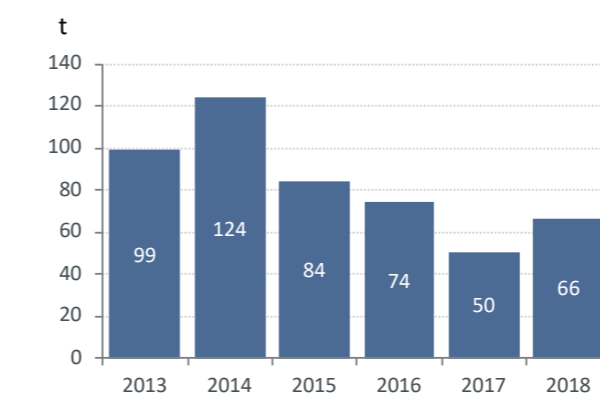
In Barcelona, the development of the city port (Port Vell) has led to greater demand to improve the appearance and quality of water in the docks.

Port waste water disposal system

One of the main actions designed to improve port water quality was the construction of the port's new waste water disposal system. With a total length of over 30 km of sewers and 16 pumping stations.

The system collects waste water generated by activities in the service area of the port and connects at 14 points with the metropolitan interceptor sewer that takes it to the Treatment plants at Llobregat and Besós. The system is managed remotely using thermal and hydrocarbon sensors, level buoys in the pumping stations, and actuators in the pumps.

[Access the explanatory leaflet Marine Environment](#)



City waste water disposal system

A further factor in improving port water quality was the steady decline in discharges from the City of Barcelona's single waste water system in rainy weather.

The amount of organic matter released into the docks from the city waste water disposal system has fallen 75% since 1995 thanks to flood control and abatement actions and the connections between waste water basins installed by the city in recent years.

Port water cleaning services

The Port of Barcelona provides a service to collect floating waste and remove it from port waters using specialised vessels every day of the year in daytime hours.



Water quality monitoring

The Port of Barcelona continued to monitor port water quality throughout 2018 as part of the Monitoring Plan for Catalan Coastal Water Bodies approved by the Catalan Water Agency.

The integrated results of the physical and chemical parameters of the sampling points in confined and open waters in 2015, 2016, 2017 and 2018 are shown in the table on the following page.

| Physico-chemical parameters | 2015 | | 2016 | | 2017 | | 2018 | |
|--------------------------------------|----------------------|-----------------|----------------------|-----------------|----------------------|-----------------|----------------------|-----------------|
| | Outer Waters Zone II | Confined Waters | Outer Waters Zone II | Confined Waters | Outer Waters Zone II | Confined Waters | Outer Waters Zone II | Confined Waters |
| Temperature (°C) | 16.92 | 19.46 | 17.63 | 18.18 | 22.67 | 22.45 | 20.31 | 20.29 |
| Salinity (PSU) | 37.77 | 37.8 | 38.068 | 38.035 | 37.710 | 37.701 | 37.819 | 37.776 |
| Turbidity (FTU) | - | - | - | - | 1.20 | 4.04 | 1.08 | 6.45 |
| Density (kg/m ³) | 1,027.64 | 1,027.02 | 1027.65 | 1027.48 | 1026.19 | 1026.11 | 1026.765 | 1025.473 |
| Chlorophyll (µg/l) | 3.04 | 2.57 | 1.23 | 2.19 | 0.37 | 1.67 | 0.68 | 1.08 |
| MIS (mg/l) | - | - | - | - | - | 3.15 | - | - |
| Average dissolved oxygen (mg/l) | 7.5 | 6.7 | 7.4 | 7.0 | 6.0 | 5.6 | 6.4 | 5.9 |
| Average OX Saturation (% saturation) | 100.0 | 92.0 | 97.2 | 92.3 | 107.4 | 98.9 | 87.9 | 81.3 |

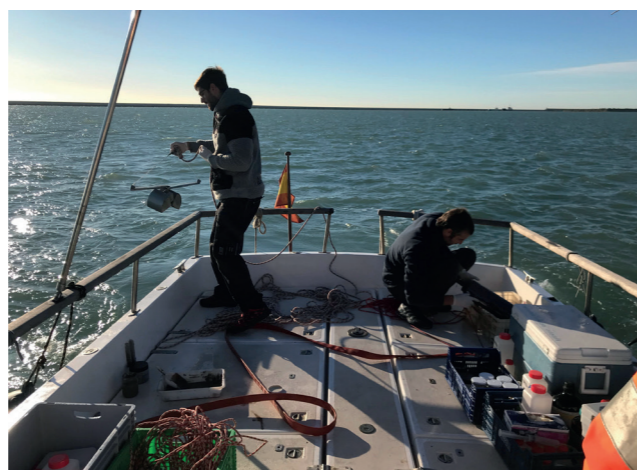
| Nutrient concentration | 2015 | | 2016 | | 2017 | | 2018 | |
|-----------------------------------|------|-----|------|------|------|------|------|------|
| Inorganic nitrogen (µmol/liter) | 2 | 2.8 | 1.07 | 2.17 | 0.94 | 2.38 | 1.92 | 2.34 |
| Inorganic phosphorus (µmol/liter) | 0.1 | 2.8 | 0.07 | 0.20 | 0.53 | 0.99 | 0.07 | 0.32 |
| Inorganic silicon (µmol/litre) | 1 | 1.6 | 0.88 | 1.09 | 0.37 | 0.57 | 1.23 | 2.11 |

| Pollutants | 2015 | | 2016 | | 2017 | | 2018 | |
|--------------------------------|--------|--------|--------|---------|--------|--------|--------|--------|
| Benzo[a]pyrene (µg/l) | 0.0001 | 0.0002 | 0.0013 | 0.0004 | 0.0001 | 0.0003 | 0.0001 | 0.0001 |
| Sum of the 16 PAH (EPA) (µg/l) | 0.0128 | 0.0235 | 0.0217 | 0.0316 | 0.0195 | 0.0228 | 0.0078 | 0.0078 |
| Cybutryne (µg/l) | 0.0004 | 0.0039 | 0.0006 | 0.01712 | 0.0002 | 0.0009 | 0.0002 | 0.0002 |
| Zn (µg/l) | 1.10 | 3.03 | 2.65 | 5.14 | 2.00 | 4.00 | 17.30 | 17.87 |
| Cd (µg/l) | 0.015 | 0.016 | 0.016 | 0.017 | 0.500 | 0.500 | 0.675 | 0.681 |
| Ni (µg/l) | 0.33 | 0.45 | 0.79 | 0.50 | 1.00 | 1.00 | 2.10 | 2.29 |
| Hg (µg/l) | 1.30 | 1.24 | 0.050 | 0.050 | 0.050 | 0.050 | 0.005 | 0.005 |

Sediment quality monitoring

The port seabed receives and accumulates part of the input resulting from activity at the port and nearby industrial and urban areas, as well as being a reservoir of historic pollution due to discharges from activities performed in the past.

As such, water quality is also checked by monitoring the composition and quality of seabed sediments, whose inorganic and organic compounds maintain a dynamic balance with the deepest waters.



The port's characteristic mesotrophic conditions, which limit the concentration of dissolved oxygen near the seabed, foster the reducing environments that cause the release of heavy metals and other pollutants from the sediments themselves.

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

Consequently, the Port of Barcelona undertakes sediment quality monitoring with regular sampling campaigns at a number of stations located inside and outside the port, analysing heavy metals, PCBs, polyaromatic hydrocarbons, organochlorine compounds, pesticides and other organic compounds listed in water legislation as priority and preferential compounds.

Benthic communities

Benthic communities, which are the group of organisms that live in seabed sediments, are used as indicators of the state of health and environmental quality of the sediments as they are organisms that are stable in space and time and therefore they accumulate a history of what happens in the sediment where they live.

Benthic communities have been monitored since 1998 and the results reflect an improvement in the quality of water and sediments in the Port of Barcelona.

The following table shows the results of the main parameters that define the composition of benthic communities in the stations inside and outside the port over the last three years.

If port seabeds are dredged to maintain or increase draughts or to undertake maritime works, the APB follows the procedures in the guidelines for the characterisation of dredged material and its relocation in publicly owned coastal waters.

All works that entail dredging the seabed are subject to strict and independent environmental monitoring that ensures proper management of dredged sediments according to their degree of pollution.

| Benthic communities | 2016 | | 2017 | | 2018 | |
|---|----------------------|-----------------|----------------------|-----------------|----------------------|-----------------|
| | Outer Waters Zone II | Confined Waters | Outer Waters Zone II | Confined Waters | Outer Waters Zone II | Confined Waters |
| Richness (Taxons/800cm ²) | 34 | 35.8 | 53 | 34.4 | 58 | 49 |
| Abundance (Individuals/800cm ²) | 141.00 | 389.00 | 183.00 | 304.60 | 235 | 583 |
| Shannon diversity (H') | 2.612 | 2.4604 | 3.255 | 2.5906 | 3.6 | 2.374 |

Control of operations that present a risk to water quality

On 22 September 2011, the APB approved an Instruction regulating the Application and Approval Procedure for small-scale works entailing painting the exterior structure of vessels, cleaning hulls and other routine upkeep and maintenance operations. This procedure establishes authorisation conditions to minimise the risk of accidental spillage of paint and other products in port docks and places limits on such works in the wharfs that are most vulnerable to pollution. The technical specifications regulating the provision of services to ships with a risk of accidental hydrocarbon spillage, the port's ship waste reception service and commercial fuel bunkering services now contain specific clauses to prevent the risk of incidents along with clauses about the means of response and immediate alert procedures that operators must implement in the event of an incident.



Improving air quality



Port of Barcelona Air Quality Improvement Plan

Immission monitoring stations

Emissions from port activity

Actions to improve the atmospheric environment

Air quality indicators

Monitoring, assessment and actions to improve air quality in the port vicinity are priority activities for Barcelona Port Authority.

Port of Barcelona Air Quality Improvement Plan

The Port Authority has been implementing the Air Quality Improvement Plan for the port vicinity since 2016 through a variety of actions designed to reduce emissions of pollutant gases and particulates.

The plan, which was approved by the Board of Directors at the meeting in July 2016, comprises a total of 53 concrete and specific actions, grouped into nine work streams:

- Emissions from vessels.
- Emissions from road traffic.
- Emissions from terminal machinery (off-road vehicles).
- Bolstering rail transport and Short Sea Shipping.
- Emissions from dry bulk handling.
- New road and rail accesses.
- Emissions from port works.
- Sustainable mobility for all companies located in the port.
- Adapting and updating the Port's air quality monitoring networks.

Concrete and viable actions have been proposed for each of these courses of action, to be implemented in three phases: immediate, short term and medium term. Most of the actions are expected to be fully operational by 2020.

Immission monitoring stations

APB oversees air quality in the port vicinity through a network of weather stations and a network of pollution monitoring stations with PM10 particulate collectors (particulates with diameters smaller than 10µm and PM2.5), and automatic analysers for the measurement of pollutant gases.

The Port's meteorological network comprises a total of 8 stations equipped with wind speed and direction sensors; 3 of them also equipped with sensors for rain, temperature and relative humidity, atmospheric pressure and solar radiation.

The Port's network of sequential high volume collectors (HVC) comprises 8 units: 5 collectors that capture suspended PM₁₀ particle samples and 3 collectors for PM_{2.5}. The PM₁₀ particle collector at the station in Port Vell is part of the Catalan Government's Atmospheric Pollution Monitoring and Forecasting network and it records official immission values, whereas the remaining collectors take indicative measurements.

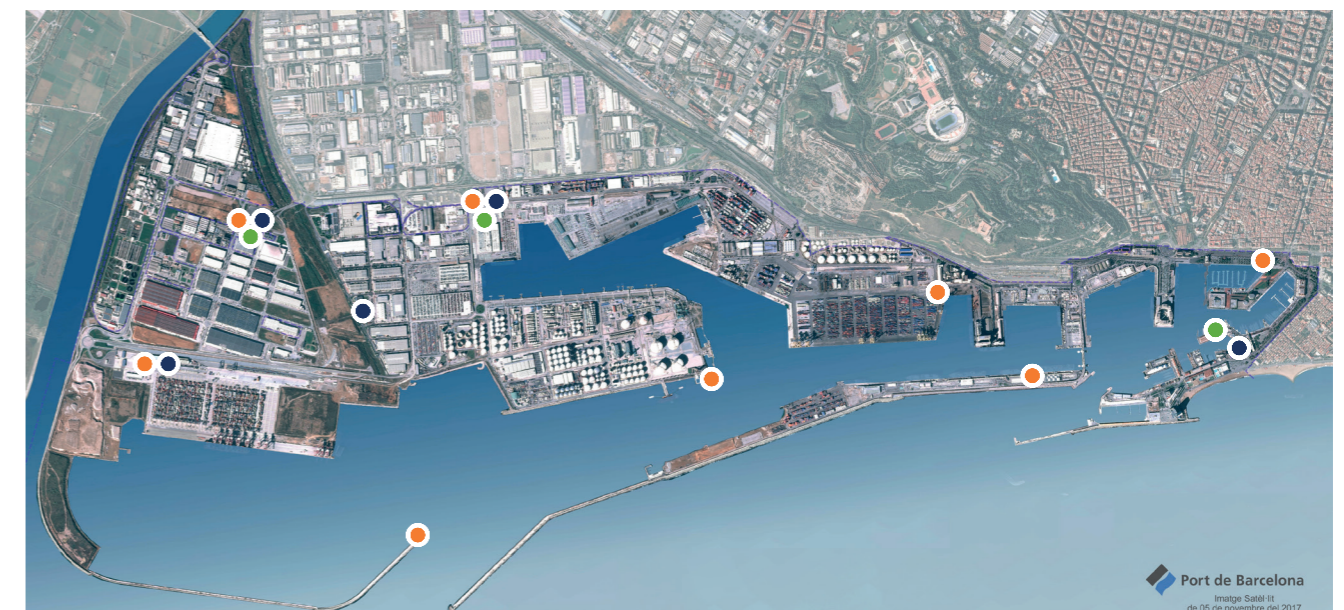


The Port of Barcelona also has 3 automatic stations that measure concentrations of gaseous pollutants such as nitrogen oxides and sulphur dioxide in ambient air.

A BTX (Benzene, Toluene and Xylene) analyser and an ozone (O₃) analyser have also been added to the Mobile Unit station.



Access the Port of Barcelona website Atmospheric Environment



● Weather station ● Automatic analyser ● High-volume collector



Emissions from port activity

The emissions estimate of pollutant gases from port activities performed by the APB itself indicates that vessel emissions are the most significant and represent more than 95% of the total emissions of nitrogen oxide and particulates.

The APB annually reviews these estimates and updates them using a calculation methodology agreed upon with Barcelona City Council and the Catalan Government.

These emissions represent 7.6% of the city's air pollution by NO_x and 1.5% by PM₁₀.

Actions to improve the atmospheric environment

Intermodality

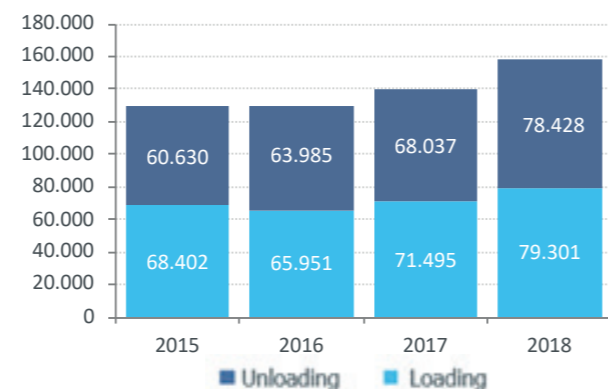
Promoting maritime and rail freight modes from or to the port is one way of reducing emissions of pollutant gases and particles in relation to road transport.

For a number of years the port has opted to foster cargo transport by rail, short sea shipping and MoS (Motorways of the Sea) as a strategy to build loyalty and expand its hinterland, which in turn has an impact on the reduction of pollutant gas and particle emissions from the inland transport it replaces.

Cabotage is measured in units called ITU (Intermodal Transport Unit), which is the equivalent of a truck or a loaded platform on a ferry. As such, each ITU moved by ship is equivalent to taking one truck off the road.

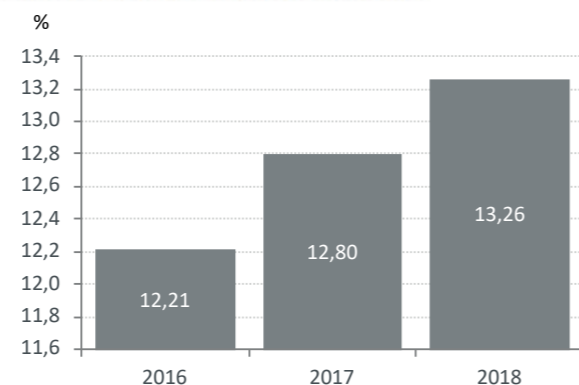
The following graph shows the ITUs moved in the Port of Barcelona in 2016, 2017 and 2018.

Movement of ITUs



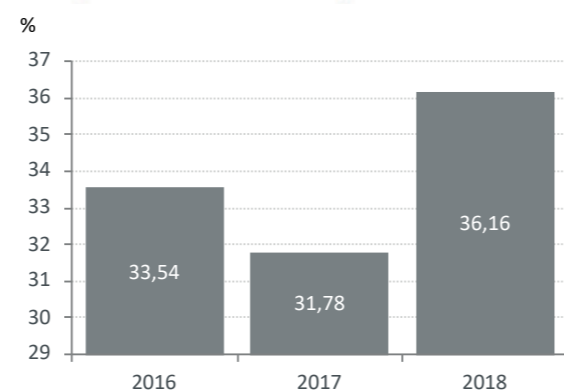
Most general cargo is handled in containers, the capacity of which is expressed in units called TEU (twenty-foot container equivalent). In general terms, each TEU moved by rail is equivalent to 1 truck taken off the road.

Percentage of TEUs moved by rail



As shown in the graph above, TEUs moved by rail in the Port of Barcelona amount to almost 13% of the total TEUs moved over the last three years, representing an increase compared to 2016.

Percentage of cars moved by rail



Similarly, the percentage of vehicles transported by rail in 2018 increased to 36% of total traffic.

Redirecting goods transport from roads to modes of transport with fewer unit emissions also makes it possible to save on other externalities that are not taken into account in the cost of road transport, such as health costs due to accidents, health costs due to respiratory diseases caused by pollution, infrastructure investment and depreciation costs and maintenance costs.

Fostering gasification

Prominent among the actions outlined in the **Air Quality Improvement Plan** are those designed to promote the use of natural gas as an alternative fuel for the transport of goods by sea and land.

This helps to actually reduce pollutant emissions and increases the competitiveness of transport activity and, by extension, of industrial and other activities that rely heavily on transport and distribution.

The availability of liquefied natural gas (LNG) at the ENAGAS terminal located in the port is an opportunity to promote this cleaner fuel. To foster the introduction of LNG, the Port of Barcelona is working in 4 areas of action:

- Making natural gas bunkering facilities available to ships and trucks as soon as possible.
- Regulating bunkering operations by prioritising safety and harmonisation with other existing regulations to provide operators with legal certainty.
- Implementing pilot and demonstration projects that demonstrate the viability of using LNG as an alternative to traditional fuels in all port transport sectors.
- Offering reductions to vessels that use the new fuels to encourage adoption in the first implementation phase.

In 2017 the first ferry with a natural gas auxiliary engine put into port and was bunkered with LNG from a tank truck. This is the first demonstration of the Port of Barcelona's readiness to supply such fuel to any vessels that need it.

In addition, the Port is working to provide equipment for **LNG bunkering to vessels on the seaward side using barges**, in a similar way to how conventional fuels (fuel oil and diesel) are bunkered to ships.

To this end, it participates as a partner with ENAGAS in a project that aims to adapt one of the two berths at the regasification terminal to bunker gas to small vessels or bunkering barges that will then bunker ships docked at the port.

As regards inland transport, in 2018 the Port opened a supply station for LNG (Liquefied Natural Gas) and CNG (Compressed Natural Gas) for both trucks and light vehicles.

In 2018 the Port of Barcelona completed an internal regulation on the port's LNG fuel bunkering service to vessels using barges or tank trucks. These rules were based on risk studies conducted with all the players involved in the supply chain and all currently applicable standards and codes for the activity were taken into consideration.

In regard to demonstration projects, the Port of Barcelona participates in a total of 5 pilot projects for the introduction of natural gas as a transport fuel. These projects are:

CLEANPORT Project, which is led by Balearia and Naturgy and ends in 2019, consisted of installing a natural gas engine as the auxiliary engine of a passenger ferry that covers the route between Barcelona and Palma de Mallorca.

Sub-activity EPM1 of the CORE LNGas hive project, led by the APB, which consists of a mobile natural gas generator engine to electrically connect the SUARDIAZ shipping company's vessel L'AUDACE during port stopovers. The connection pilot project at the port of Barcelona was implemented at the end of 2017 for over a month.

Sub-activity EV4 of the CORE LNGas hive project, led by the APB, which consists of designing a port tugboat powered by natural gas and providing bunkering infrastructure and related safety aspects.

Sub-activity EPM2 of the CORE LNGas hive project, led by the APB, which focuses on transforming two diesel engines on a machine at the APM Terminals container terminal into two natural gas engines. Tests are scheduled for 2019.

REPORT Project within the RIS3CAT MOBILITAT ECO Community, which the APB also leads, which consists of adapting 26 trucks that regularly operate in the port area to natural gas.

Reduction of emissions from vessels

The reduction of vessel emissions is a major challenge for ports as they are the main source of emissions from port activity.

However, port authorities have very few effective tools to attain the goal of reducing such emissions.

To achieve this goal, in addition to promoting natural gas as a transport fuel, the Port Authority's actions are designed to:

- Offer incentives to ships with better environmental performance to encourage newer and cleaner ships or foster the installation of combustion gas filters and other measures on board.
- Build facilities in some wharves for ships to connect to electricity, shoreside, to replace on-board auxiliary engines during the vessel's stay at the port.

The Port of Barcelona has put forward a proposal for a discount scheme for ships that takes into consideration each type and the relative importance of its emissions in relation to the overall emissions from port activity. The discounts reward the cleanest vessels but also ships that were not initially clean for design reasons but have made efforts to reduce their emissions.

As regards ship-to-wharf connection infrastructure, the Port is studying the technical and legal viability of options to electrify some wharves so that some vessels can be connected during their stopovers in Barcelona by 2020.



Sustainable mobility

The Port Authority provides a bus service within the port precinct to transport the personnel of companies located in the Port service area. This port bus (number 88) is affiliated to the Barcelona public transport network.

Moreover, to discourage private transport the APB provides integrated public travel cards ("T-trimestre") for all employees who choose to travel to work on public transport.

The number of APB employees who used public transport travel cards distributed by the company in recent years is shown below:

APB staff using public transport travel cards

| Year | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------|------|------|------|------|------|
| People | 227 | 245 | 243 | 251 | 239 |

Monitoring dry bulk operations

Most dry bulk traffic, which is prone to generating particle emissions in the ambient air at the Port of Barcelona, is handled in closed facilities, equipped with wind protection systems and, in some cases, using air aspiration and filtration.

As such, few problems arise at our port from handling dry bulk in open wharves and it is limited to the Contradic Sud and Oest wharves. On 12 April 2005, the Port Authority General Manager approved an Ordinance on operations and berthing at the Contradic Sud and Oest Wharves that outlined good practices required of operators unloading/loading and handling dry bulk.

The conditions include stopping the operation when the wind exceeds a certain speed limit.

Environmental control of works

In addition, all work projects commissioned by the Port Authority are subject to independent external environmental monitoring of the contractor which verifies that the contractor meets the prevention and pollution minimisation conditions established in the project and oversees the impacts on the environment caused by execution of the work, especially particle emission and noise emission. This report expands below on the environmental monitoring of port works.

New road and rail accesses to the port

Progress has been made in administrative preparations for the planned new road and rail accesses to the Port of Barcelona from the south. Once completed and in service, the new accesses will make it possible to move traffic entering and leaving the port goods area away from the city centre, which will reduce congestion and, consequently, the impact these emissions have on air quality in the city.



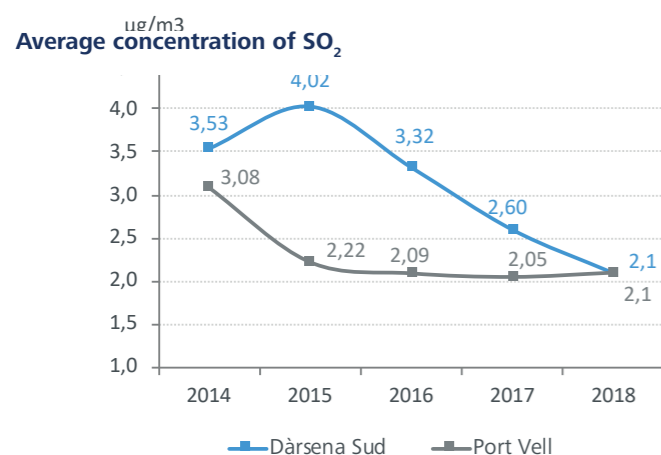


Air quality indicators

Air quality in the port vicinity has shown improvement since the beginning of the 2000s, when monitoring of immission levels of the principal pollutant gases began. The following graphs show the air quality levels measured between 2014 and 2018 for the various pollutant gases in the port area.

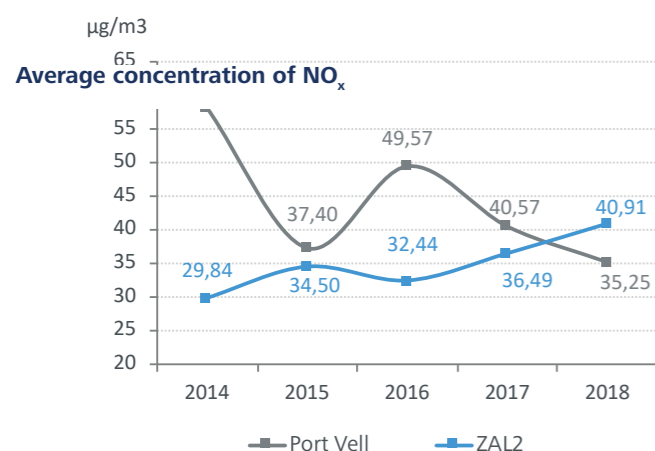
Concentration levels of sulphur dioxide are low. Current EU regulations set a maximum threshold of 125 µg/m³ for daily averages that cannot be exceeded more than 3 days a year.

SO2 Immissions



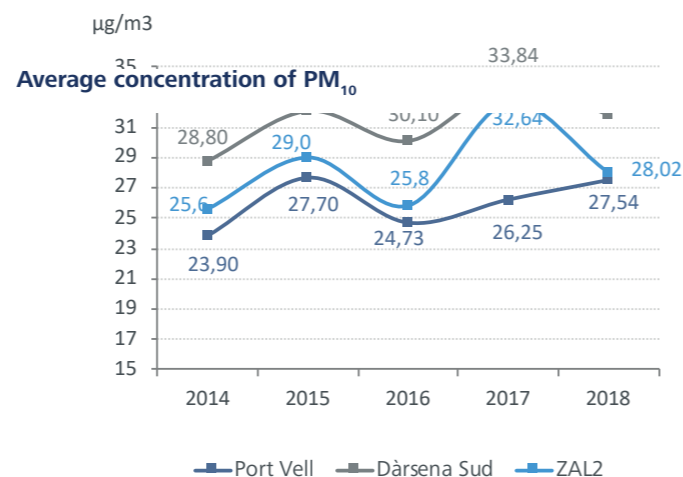
Nitrogen oxide levels show high monthly average values, especially at the Mobile Unit location at Port Vell. The reference level is 40µg/m³.

NO2 Immissions

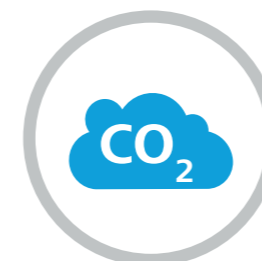


Concentration values of PM₁₀ particulates, which are highly contingent on the performance of works or dry bulk operations, can be considered low in general terms. The highest values correspond to the South Dock station and are affected by traffic.

PM10 Immissions



Climate strategy



Joining OCCC Voluntary Agreements

Renewable energy supply

BCN Zero Carbon project

EcoCalculator

Short Sea Shipping promotion



Access the Port of Barcelona website Climate Strategy

Greenhouse gas (GHG) emissions play an important role in climate change.

The effects of GHG emissions are global, regardless of where they are emitted.

Furthermore, almost all industrial and service activity sectors have associated GHG emissions caused by energy consumption, waste generation and mobility.

Adopting strategies to reduce GHG emissions is becoming increasingly necessary for ports because they are interconnection points in the freight transport supply chain and contribute to the carbon footprint of products passing through ports.

Buyers of goods are increasingly concerned about the carbon footprint of product life cycles and they demand distribution methods and routes for their products or materials that are low in GHG emissions, as transport is the largest contributor to the carbon footprint of many products.

Joining OCCC Voluntary Agreements

The Port of Barcelona has joined the Voluntary Agreements for the reduction of greenhouse gas emissions (GHG) promoted by the Catalan Climate Change Office (OCCC) of the Catalan Government. By signing this agreement in 2012, the Port committed to systematically reducing its direct and indirect emissions (Scope 2) caused by fuel consumption by its fleet of 120 vehicles, two vessels and a number of generators and reducing its electricity consumption.

As can be seen in the graph on the right, in 2018 CO_{2eq} emissions attributable to the APB represented 318 tonnes, of which 224 tonnes corresponded to fuel consumption for transport and 94 tonnes to fuel for heating.

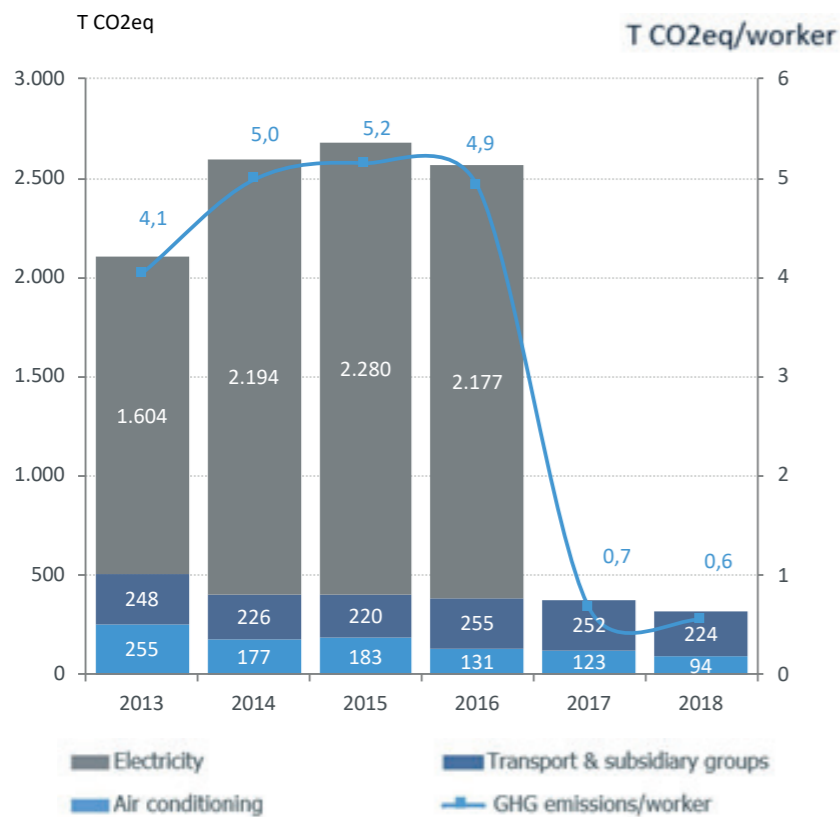
Renewable energy supply

Since 2017, indirect emissions attributed to electricity consumption are compensated by purchasing 100% renewable energy supplied by the service provider.





GHG emissions



Emissions calculator
Catalan Climate Change
Office



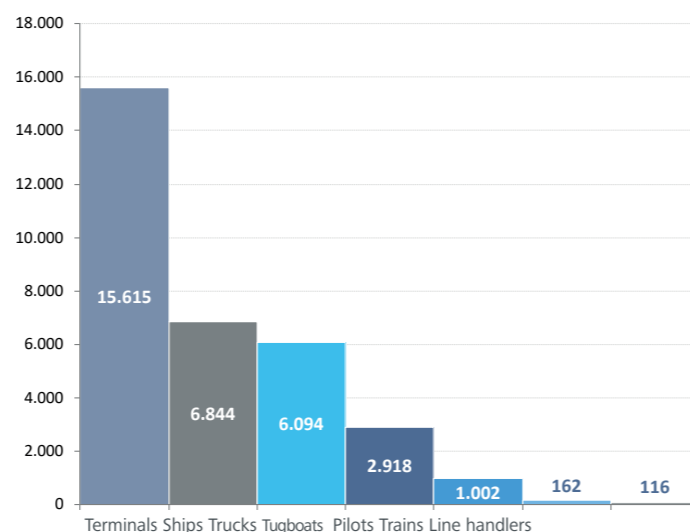
BCN Zero Carbon project

The Port of Barcelona, together with terminals and service operators, launched the BCN ZERO CARBON project in 2014 From a supply chain perspective.

This project involves drawing up an inventory of GHG emissions from activities closely related to the passage of goods through the port, reducing their emissions to the greatest possible extent and compensating those that cannot be minimised. In a few years' time the project will allow the Port of Barcelona to declare that it is GHG emission neutral for goods traffic in its area of activity.

The project focuses initially on goods moved in containers and the transport of cars, along with cruise activity at the port.

CO2eq emissions 2013



World Ports Climate Action Plan (WPCAP)

In 2018 the Port of Barcelona joined an initiative promoted by the world's main ports which aims to establish the basis to accelerate the decarbonisation of port activity and maritime transport and meet the IMO's (International Maritime Organization) commitment to reduce greenhouse gas emissions by 50% by 2050, in comparison with 2008.

The initiative includes the ports of Vancouver, Los Angeles, Long Beach, New York, Hamburg, Antwerp, Rotterdam, Gothenburg and Busan and is organised into 5 working groups focused on specific aspects.

The Port of Barcelona leads the group dedicated to wharf-to-vessel supply of electricity and zero-emission fuels and participates as a partner in the group on sustainable fuels for ships.

Energy transition

The Port of Barcelona has begun an energy transition process to achieve an energy model based on renewable energies, in compliance with the goals set by the EU and IMO under the Paris Agreement within the United Nations Framework Convention on Climate Change.

The transition is based on three basic priorities: generation of renewable energies, storage systems to modulate the use of this energy when demand exists and intelligent management of the new system to strike the most efficient balance possible between supply and demand. This energy transition applies to transport, buildings and industrial activities.

To this end, a study began in 2018 to examine the potential of renewable generation from photovoltaic and wind power in the port area, both in terminal facilities run by operators and the APB's own infrastructures and buildings.

As regards innovation, the Port, in collaboration with the Catalan Energy Research Institute, has begun to study the role of hydrogen and other clean derived fuels as possible fuels for inland and maritime transport of goods.



Article
World Ports
Sustainability Program



EcoCalculator

Buyers of goods and supply chain stakeholders are increasingly interested in identifying environmental externalities in order to take them into account when making decisions on transport routes.

To address this concern, the Port of Barcelona provided goods-owning companies and logistics operators with a tool that calculates CO₂ emissions from their transport routes and the most efficient alternative routes from an environmental perspective.

Short Sea Shipping promotion

The *Escola Europea Intermodal Transport* is the flagship European centre for training in logistics and intermodal transport. Its goal is to promote intermodal transport as the basis for the development of sustainable logistics in Europe.

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

Since its launch, the Escola has worked closely with the European Shortsea Network and specifically with Shortsea Promotion Centres, which promote short sea shipping and the work of the Escola in every EU country.

Prevention of soil pollution



The Port of Barcelona aims to prevent soil and groundwater pollution as the body in charge of and ultimately responsible for their environmental status. To this end, it continuously monitors the soil surface in the port area that is under concession to terminals and operators and in non-concessioned areas.

Polluted soil remediation actions in the port precinct can be led by the Port Authority upon expiry of a concession for the occupation of port land to perform an activity or actions can be taken by the terminals and concessions themselves during the concession period at the APB's expense.

actions and the remaining five are in the characterisation and preliminary study phase.

The main soil remediation actions undertaken in the port of Barcelona were:

- Remediation of Contradic Wharf, which was polluted by hydrocarbons and chemical products, completed in 2018.
- Soil remediation at a former service station at Bosch i Alsina Wharf.
- Remediation of Costa Wharf in the section containing a former asphalt and hydrocarbon product sump.



Access the Port of Barcelona website
Soil

A total of 15 actions on polluted soils were under way in 2018, of which ten are remediation and monitoring





Environmental monitoring of port works



Dredging

Consumption of materials, riprap and aggregates

All works projects by Barcelona Port Authority are subject to environmental monitoring performed by independent technical support, contracted directly by the APB. This helps to ensure that the performance of the works complies with the conditions established in the project and that the environmental impact is minimised.

Dredging

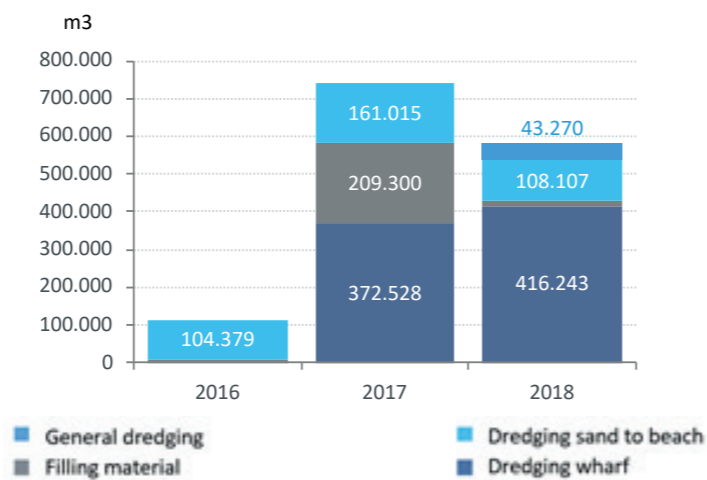
All maritime projects entailing dredging marine sediments or dredging works performed to maintain or improve draughts scrupulously follow the provisions of the Directives for the characterisation of dredged material and its relocation in publicly owned coastal waters.

Consumption of materials, riprap and aggregates

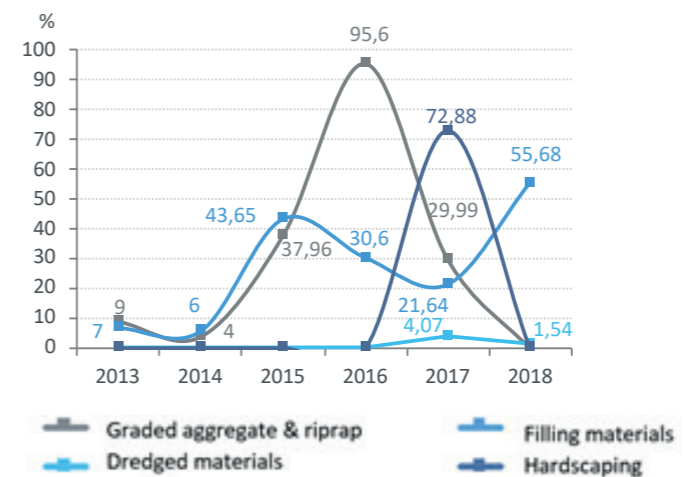
The consumption of materials for port works is one of the environmental aspects that should be considered. The table below shows the materials used in recent years in works commissioned by the Port Authority and performed at the Port of Barcelona.

The recycled materials that were used in projects performed and the percentage of the total of each type of material they represent were as follows:

Volumes dredged in works



Consumption of recycled materials



Access the Port of Barcelona website Works



Open waters next to the South Seawall. Common torpedo

Progression of dredging and infilling

| Total volumes | 2016 | 2017 | 2018 |
|-----------------------------|---------|---------|---------|
| Dredging in m ³ | 109,263 | 533,543 | 567,620 |
| Infilling in m ³ | 6,177 | 209,300 | 14,170 |

Progression of consumption of materials

| Type of material | Unit | 2016 | 2017 | 2018 |
|-----------------------------|----------------|------------|------------|------------|
| Graded aggregate and riprap | t | 187,244.57 | 729,626.41 | 230,103.30 |
| Concrete | m ³ | 6,655.82 | 44,780.18 | 39,626.96 |
| Steel | t | 6,849.92 | 4,607.28 | 144,369.24 |
| Dredged materials | m ³ | 4,883.96 | 372,527.81 | 416,243.29 |
| Filling materials | m ³ | 58,478.10 | 209,300.01 | 14,169.79 |
| Hardscaping | m ³ | 250.60 | 8,500.34 | 9,038.04 |
| Agglomerate | t | 3,502.99 | 5,423.42 | 18,259.42 |



Management of own and third party waste



The Port of Barcelona is responsible for the removal and management of all types of waste generated in its own buildings, in facilities and common port spaces and waste from street cleaning.

Waste generated by the bars and restaurants located inside the port also comes under the umbrella of rubbish collection.

The only building areas where waste is not managed by the APB are the offices and spaces occupied on the floors of the WTC East building. In this case, management of the waste collected from interior cleaning and offices is performed directly by the service manager of the building occupied by the APB.

APB collects recyclable fractions of waste selectively from paper, glass and packaging bins located outside and from bins and containers for paper, packaging, toner and used batteries inside the APB buildings.

Finally, the APB manages ordinary waste generated by its own activity and waste from one-off clean-ups.

Non-hazardous waste

Hazardous waste

Management of waste from concessions

Management of waste from vessels



Access the Port of Barcelona website
Ships' waste

Total waste generated



Waste by type



* Including own waste and waste not generated by the APB (managed by the APB).

Non-hazardous waste

Most of the waste generated by the Barcelona Port Authority is non-hazardous.



Hazardous waste

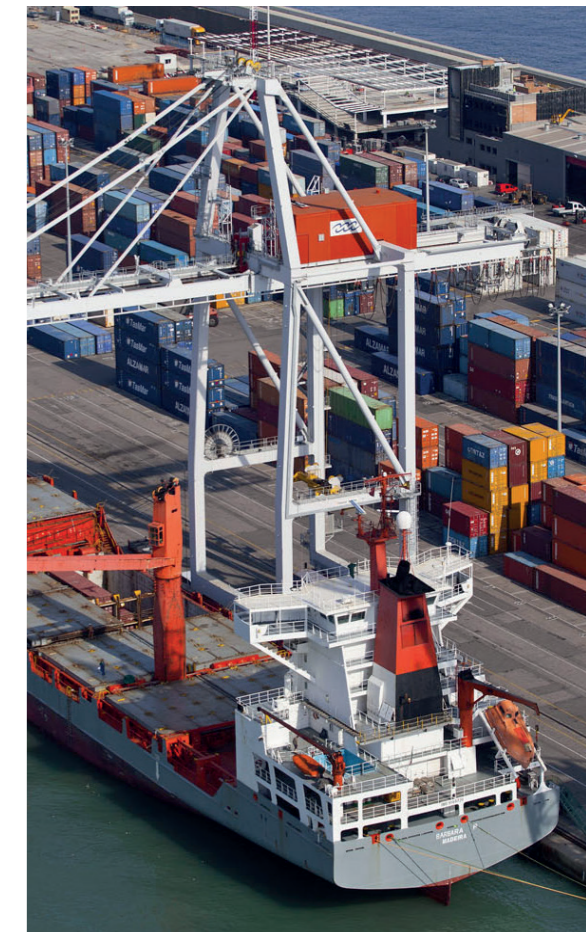
Hazardous waste management is divided into two categories: management of waste generated by the APB itself and management of extraneous waste resulting from emergency clean-ups of terraces, removal of abandoned waste produced by unknown parties, etc.

Hazardous waste generated by APB



Waste collection services

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



Hazardous waste generated by the APB

| TYPE (tonnes) | EWC | 2014 | 2015 | 2016 | 2017 | 2018 |
|---|----------------|--------------|--------------|--------------|--------------|-------------|
| Waste paint and varnish containing organic solvents or other dangerous substances | 080111 | 0.169 | 0 | 0 | 0 | 0 |
| Gases in pressure containers (including halons) containing dangerous substances | 160504 | 0.092 | 0 | 0.023 | 0 | 0.27 |
| Packaging containing residues of or contaminated by dangerous substances | 150110 | 0.605 | 0.369 | 0.508 | 0.223 | 0.87 |
| Metal packaging | 150111 | 0 | 0.86 | 0 | 0.237 | 0 |
| Lead batteries | 160601 | 0.071 | 0 | 0.076 | 0 | 0 |
| Batteries | 200133 | 0.045 | 0.022 | 0.024 | 0.01 | 0.05 |
| Fluor. tubes/lamps | 200121 /160604 | 0.2 | 0.067 | 0 | 0.113 | 0.07 |
| Electrical/electronic waste | 200136/160214 | 1.87 | 0.972 | 0 | 0 | 1.13 |
| Toner | 080318 | 0.36 | 0.025 | 0.451 | 0.307 | 0.21 |
| Asbestos cement | 170605 | 0 | 0.28 | 0 | 0 | 0 |
| Halogen-free machining solutions and emulsions | 120109 | 0 | 0 | 0.013 | 0 | 0.04 |
| Laboratory chemicals containing dangerous substances | 160506 | 0 | 0 | 0.071 | 0.354 | 0 |
| Health care waste | 180103 | 0 | 0 | 0 | 0 | L* |
| TOTAL (t) | | 3.412 | 2.595 | 1.166 | 1.244 | 2.64 |

* Amount not included in the total sum.

Extraneous hazardous waste not generated by the APB

| TYPE (tonnes) | EWC | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------------------------------|--------|---------------|---------------|--------------|--------------|--------------|
| Soy oil | 130402 | 3.6 | 0 | 0 | 0 | 0 |
| oil products | 130402 | 13.34 | 1.96 | 0 | 0 | 0 |
| Fireworks | 130402 | 0 | 0.044 | 0 | 0 | 0 |
| Bilge oils collected at wharves | 130402 | 0.5 | 6.7 | 16.2 | 5.2 | 0 |
| Oily water from oil/water separators | 130507 | 28.02 | 52.58 | 27.9 | 45.3 | 51.42 |
| Absorbents | 150202 | 0 | 0.852 | 0.15 | 0.68 | 1.70 |
| Other solvents | 140603 | 0 | 0.049 | 0.17 | 0 | 0.22 |
| Used packaging | 150110 | 0.605 | 0.369 | 0.51 | 0.22 | 0 |
| Used oils | 130205 | 4.858 | 4.328 | 0.18 | 0.29 | 5.86 |
| TOTAL (t) | | 50.923 | 66.882 | 45.11 | 51.69 | 82.14 |

Managing waste from concessions

The concessions and facilities that perform their activities in the port area manage their waste and, if applicable, are registered as waste producers and meet their waste management obligations.

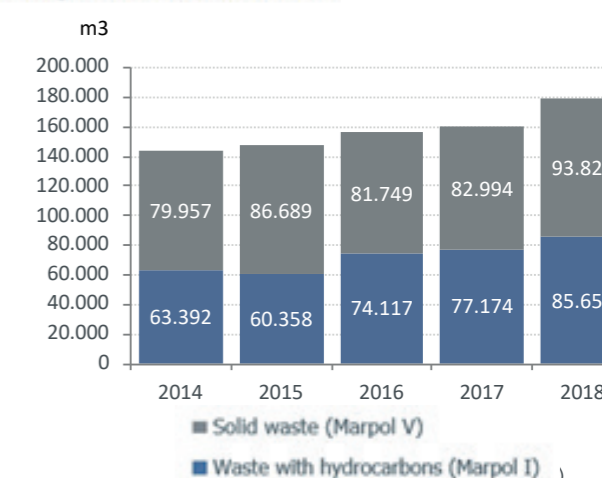


Management of ships' waste

According to the International Convention for the Prevention of Pollution from Ships of 1973 (known as MARPOL 1973/78), ports must have adequate facilities for the adequate reception of ships' waste through a port service.

The following table shows the waste received in recent years for the categories included in Annex 1c of the Convention (oily liquid waste from engine oil or bilge), Annex 1b (washings from cargo tanks that contained hydrocarbons) and Annex V (solid waste).

Management of MARPOL waste



MARPOL waste delivered by ships

| TYPE (m³) | 2014 | 2015 | 2016 | 2017 | 2018 |
|---------------------------------------|----------------|----------------|----------------|----------------|----------------|
| Oily bilge water and oil residue (1c) | 59,285 | 60,358 | 69,196 | 77,174 | 85,653 |
| Oily liquids from tank cleaning (1b) | 4,107 | | 4,921 | | |
| Solid waste (V) | 79,957 | 86,689 | 81,749 | 82,994 | 93,822 |
| TOTAL (m³) | 143,349 | 147,047 | 155,866 | 160,168 | 179,475 |

Ecology and Biodiversity



Interaction with natural spaces and protected species

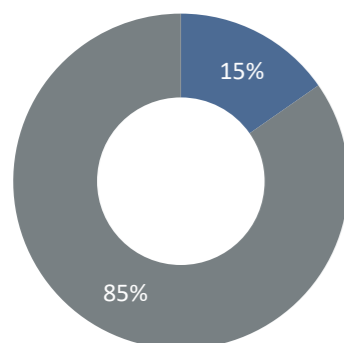
Monitoring the introduction of invasive species

Bird control

EMAS indicator

Unsealed area: 1,700,000 m²

Sealed area: 9,399,000 m²



The port occupies a land area of 1,109.9 ha and is close to the Llobregat Delta Fully Protected Nature Reserve.

Interaction with natural spaces and protected species

The location of the Llobregat Delta Fully Protected Nature Reserve adjacent to the port area obliges the APB to take precautions so that port activity and work interfere as little as possible with the ecosystems and populations of birds and other species. It is worth noting that there has been a significant Audouin's gull (*Larus audouinii*) breeding colony at the East Seawall since 2016. The 2018 census indicated that about 500 pairs had bred, making this colony one of the most significant in the Western Mediterranean.

Another innovative and proactive action to preserve animal species involved the cormorant population over the last ten years, providing them with a new habitat.

Monitoring the introduction of invasive species

Ports are risk areas for the introduction of non-native species that under certain circumstance can become invasive species.

There are numerous pathways of introduction in a port, from discharge of ballast water from ships or the shedding of fouling from vessel hulls, to introduction through a goods receptacle (a container, for example) or inside the goods themselves.

The Port of Barcelona has conducted studies and monitored animal and plant species to detect non-native species that can become invasive. To date, the monitoring has not detected any species recognised as invasive.

The phytoplankton monitoring that was performed for a number of years focused on searching for introduced non-native species.

Of all the species and genera detected and identified, there is no indication of the presence of introduced species, although some scientific journals mention the presence of *Alexandrium catanella* in phytoplankton blooms in the 1990s.

Monitoring of benthic species, which live attached to the substrate, has spread not only to the sedimentary seabed of port waters as indicators of water quality but also to species identified in vertical transects of the wharf. None of the studies mentioned the presence of introduced invasive species.

In this respect, 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 an unidentified Bryozoan individual that may constitute a potential introduced species.

As regards ballast water, in 2004 a taxonomic and viability study of organisms present in the ballast water of some docked ships was conducted. The study identified up to 40 species of phytoplankton and 42 species of zooplankton in a single tank. The research concluded that the viability of these organisms depends mainly on the time they spend in the tank water.

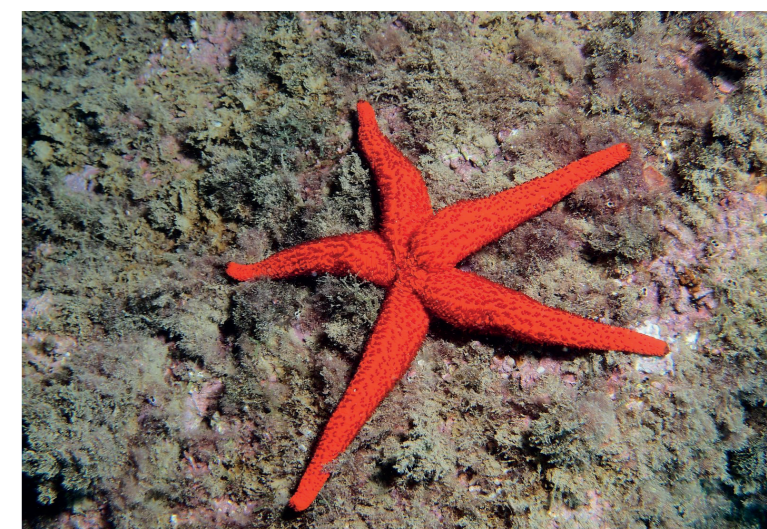
Another study conducted in 2004 on terrestrial arthropods in the port area detected the presence of the Argentine ant *Linepithema humile* and the Bradysia fly, both of which are introduced species that have been present in the area for years.

Bird control

The presence of seagulls in the facilities and wharves is considered a problem due to the inconvenience, dirt and damage that they can cause to the facilities. The Port of Barcelona has been deploying deterrent control techniques on the cruise terminal wharves since 2000 with loudspeakers continuously broadcasting calls.

On occasions it has been necessary to remove seagulls' nests from facilities. In 2001 and 2002 the Port of Barcelona took part in the reintroduction of Peregrine Falcons (*Falco peregrinus*) in the City of Barcelona, rearing 3 chicks in an artificial nest installed in a grain silo. As a result of the initiative, there are currently two artificial hawk nests in the port that have been used by two pairs for a number of years. In 2018 a third pair was detected in the port area. They have not yet bred and have been provided with an artificial nest.

The continued presence of hawks has a deterrent effect on the pigeon population that comes from the city every day to feed at Contradic wharf.



Monitoring and managing environmental noise



In its territorial role, the port must manage environmental noise pollution through the Noise Map; a management tool that provides a graphic visualisation of the current sound situation.

Port Vell

In 2014, the Port of Barcelona produced a Noise Map for the Port Vell sector, the area where the largest number of acoustic impact zones may be generated by the interaction between port activities and residential use.

The Map considered separately noise immission levels from different emission sources (road traffic, maritime traffic, industrial activities and airborne noise (aeroplanes)) and immission values were calculated for each time period.

The study's main conclusion is that noise levels are affected by road traffic and, to a lesser extent, ferries docked at the wharfs in Port Vell.

Commercial port

The Noise Map was completed to include the rest of the port territory (commercial port) in 2015 and 2016.

In contrast to the Port Vell, the study examined two noise sources separately: noise from inland traffic and noise from maritime traffic and maps were made for the day, afternoon/evening and night periods. The study established the Noise Abatement Zone, which may be affected by the activity and development of the port infrastructure.



Environmental emergency plans



The port of Barcelona has an organised and systematic response mechanism in place for environmental emergency situations with 4 operational tools.

Internal plans

The Port of Barcelona implements an active policy for the prevention of incidents and accidents involving spills of hydrocarbons and any other chemical product into port waters.

The prevention and response tool for these incidents is the APB's Internal Marine Plan (PIM), which outlines the organisational structure of the response and the resources to be used.

The PIM, which forms part of the National Marine Pollution Response System, is designed to organise the response to accidents or incidents involving discharges into the marine environment of harmful chemical substances and hydrocarbons that may damage the marine ecosystem.

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

Management of the PIM corresponds to the Port Authority, duly coordinated with the Maritime Authority.

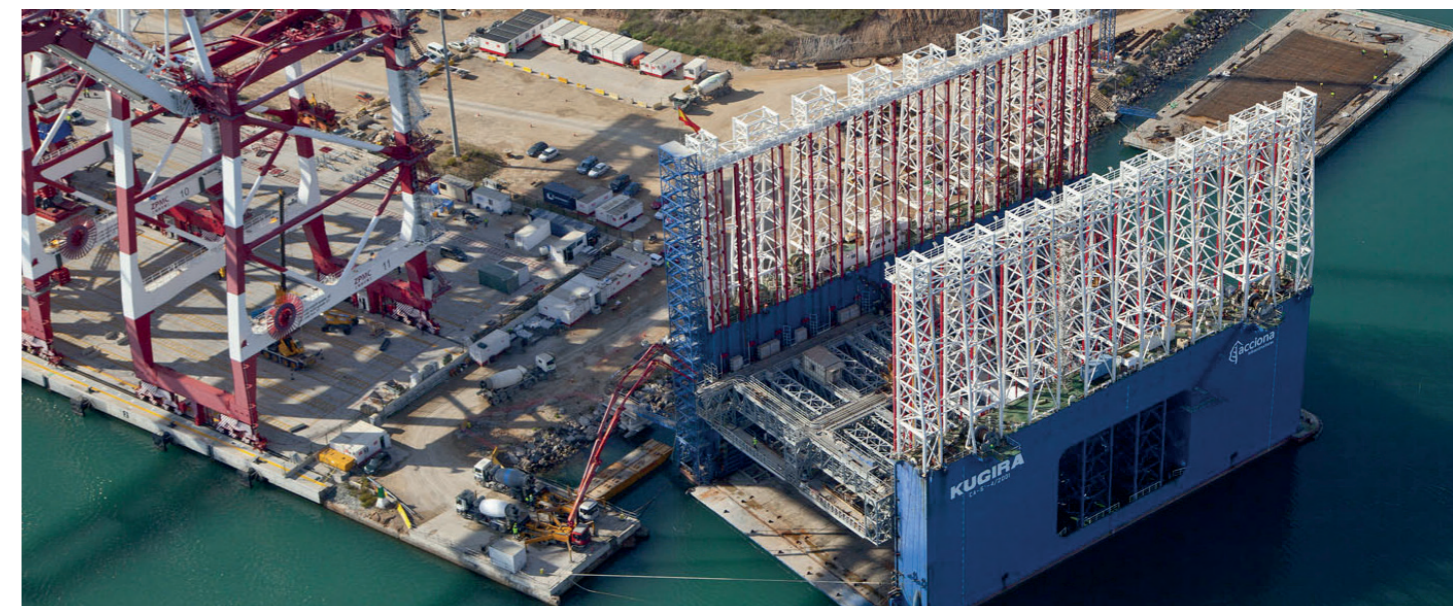
40 alerts for spills of hydrocarbons and other substances into port waters were recorded in 2018, of which only six incidents required activation of the PIM.

Internal plans

Emergency Response Plan

Metocean alert system

Control Centre procedures





Emergency Response Plan

Another environmental emergency response tool is the **Port Self-Protection Plan (SPP)** which is activated in the event of accidents or incidents of any kind that may pose a risk to people.

The port SPP is divided into 11 sectors and it comprehends the SPPs of all the port terminals and concessions. The SPP has 3 activation levels: the initial alert level, level 1 which corresponds to an emergency in a terminal, level 2 which covers an emergency in the port sector, and level 3 which refers to an emergency in more than one port sector.

The ERP is divided into two areas, maritime and land. The first responder group is the Barcelona Fire Brigade, with specialist expertise in interventions in the Port.

Metocean alert system

The Port of Barcelona has an alert procedure in place for **Metocean Warning Situations (MWS)**, which comprises a response procedure for overtopping and wind intensity predictions provided by Puertos del Estado.

The response to storm or wind warnings consists of notifying the alarms to potential stakeholders at the port (Port Authority, Maritime Authority, terminals and users), activating preventive measures and placing restrictions on activities according to the expected risk threshold.

Control Centre procedures

One of the Port Authority's main management tools for the control of environmental incidents is the **activation of Port Police Control Centre procedures when notification of an incident is received.**

These Control Centre Procedures for environmental incidents (CCP) include 19 response and warning procedures for the most frequent incidents in relation to: dust emissions, emissions from vessels, sea animals in docks, land animals, water pollution, spillages on roads and terraces, noise, odours and other similar incidents.

The procedures comprise a system for receiving warnings and calls from stakeholders and for action by the Port Police Control Centre.

Responsibility for each CCP falls to the departments involved and the Regional Department of the Environment is responsible for keeping them updated.

Environmental incidents

| Year | 2018 |
|---|------------|
| Pollutant discharge in maritime service area | 40 |
| Large floating waste in docks | 21 |
| Waste in docks | 15 |
| Sea animals in docks | 3 |
| Liquid spillages on road surface | 13 |
| Solid spillages on road surface | 10 |
| Risk of falling trees | 2 |
| Live Land Animals | 2 |
| Dead birds | 1 |
| Dust caused by dry bulk operations | 1 |
| Calls from soy-related asthma sufferers | |
| Black smoke from ship funnel | 1 |
| Soy computer system breakdown | |
| Complaints about unpleasant odours | 4 |
| Any incident detected in the Port waste water disposal network | |
| Authorisations of hazardous goods outside outside working hours | 54 |
| General total | 167 |

Environmental expenditure statement

Budget earmarked for the Environment*

| | |
|--|---------|
| Annual cost of the promotion of natural gas as fuel for transport of goods | €93,300 |
| Annual cost of monitoring air quality | €71,800 |
| Annual cost of monitoring water quality | €40,400 |
| New electrical supply viability study | €34,000 |
| Meteorological network maintenance | €24,500 |
| Annual cost of soil decontamination | €16,400 |
| Pest control | €13,000 |
| Environment department miscellaneous expenses | €7,700 |
| Audits certification environmental management system | €5,250 |

* Not including personnel items.



Stakeholders



Active participation

Best environmental practices

Best environmental practice agreements with concession holders

The Port of Barcelona is promoting a Sectorial Sustainability Plan that was launched as an initiative of the Sustainability Working Group of the Steering Council for the Promotion of the Port of Barcelona to achieve sustainable development in the Port Community

This plan demonstrates the will to act collectively beyond the individual responses of each of the organisations that make up the Port Community; in other words, taking action.

Since its launch in 2016, actions have been defined within the framework of the Plan, taking the expectations of Port Community stakeholders into account.

In this respect, the Sustainability Report is a key tool for measuring the fulfilment of these expectations, including those pertaining to environmental issues.

As regards the action plan implemented during 2018, it is worth mentioning that work has continued on the process of securing new signatories to the Plan and the milestone of 63 organisations has been reached.

This has facilitated the development of indicators that explain more accurately how the Port Community responds to the needs of its stakeholders.

Strategy lines of the Sectorial Sustainability Plan:

- Raising awareness and publicising the Port of Barcelona Sectorial Sustainability Plan.
- Creating a community to implement the Port of Barcelona Sectorial Sustainability Plan (ambassador role).
- Managing stakeholders' expectations.
- Promoting environmental sustainability.
- Promoting social sustainability.
- Promoting economic sustainability.

Active participation

APB personnel participate voluntarily in high-performance workshops and in proposing projects, some of which focus on environmental upgrading of activities and protection of the environment.

One example is the "Against Plastic" initiative, proposed by employees, which was implemented in 2018 and promotes the use of refillable corporate bottles to avoid purchasing bottled water and generating plastic containers.

Other projects associated with the introduction of electric mobility vehicles were also presented.

Intranet Environment Section

APB constantly updates the Environment section of the corporate intranet, adding relevant news and videos to the blog, as well as direct access to procedures and internal operational documents relating to the environment. Micro-surveys can be conducted through this system to consult personnel on specific issues.

Sustainability Group

The Port Community participation tool for environmental issues is framed within the Environmental Quality Working Group, which corresponds to the Corporate Social Responsibility Group of the Port Community Steering Council, of which the Social Responsibility and Occupational Risk Prevention Groups form part.

The Environmental Quality Working Group was created in 2004 and it is composed of members of port community companies that represent a variety of companies in the port sector.

The Working Group implements three major initiatives:

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

The auction is held annually in conjunction with the one conducted by the Port Authority to award its electricity supply contract.

The private companies in the purchasing group access the auction in separate lots from the Port Authority and when the best price has been auctioned, they can decide whether or not to contract with the winning bidder.

The purchasing group was launched in 2010 and it is formed for each auction. About 30 companies join the group each year.

- Designing and organising technical and awareness-raising conferences for members of the Port Community.

Environment Conferences

Technical conferences on topical questions or port activity issues are organised every four months to raise awareness and inform members of the Port Community. The goal of the conferences is to provide a support service for companies and activities that operate in the port area. The aim is to choose subjects that are of interest to a majority of people for a specific reason and to explain them clearly, and always in practical terms, in the context of the port environment.

The conferences organised in the period 2017-2018 are listed below.



05/04/2017 · Technical conference on "Adapting environmental management systems to the new ISO 14.001: 2015 and its effects on EMAS"

APB organised the conference so that a number of leading experts on this transition could explain the changes in the new ISO 14001:2015 and EMAS. This standard affects existing EMSs since all companies must renew their registration before September 2018.

The director of CLUB EMAS Catalunya and the Directorate-General of Environmental Quality (Catalan Government) took part in the conference. In addition, two practical cases were explained of concessions that have already adapted, Terquimsa and Ergransa.

02/11/2017 Technical conference on "Prevention and remediation actions for soil pollution in the port vicinity"

For technical officers and managers of concessions and service providers with activities in the Port of Barcelona. The speakers represented administrative bodies with competences in this matter: The Catalan Water Agency, the Catalan Waste Agency and the Catalan Government's Department of Land and Sustainability.

The representative of the Environmental Risk Pool also spoke at the conference. Finally, the successful example of the remediation of a plot located in the Contradic Wharf was explained.



Participation in international conferences

The Port of Barcelona plays an active part in organising conferences at European level to provide information and explanations on aspects relating to sustainability in the area of port activity.

The following stand out in 2018:

- Edition of Smart Ports Day: The ports of the future Meeting on CORE LNGas hive barge sub-activity (Madrid).
- Iberian Platform for sustainable growth Conference (Madrid).
- European Environmental Ports Conference 2018 (Antwerp).
- GreenPort Congress 2019 (Valencia).

30/11/2017 Conference "Promoting electric mobility in the Port of Barcelona"

The goal was to inform the Port Community about the incentives and reductions covered by this initiative to reduce vehicle emissions. APB has recently added 31 units with 100% electric motors to its fleet to replace old diesel and petrol units: The overall project is the most ambitious operation undertaken to date by an administrative body.



14/11/2018 Conference "Tax deductions for environmental investments"

The aim of the conference was to inform companies that perform their activity in the port about eligibility for tax incentives for investments in environmental improvements made between 2004 and 2014.

During the conference, the specific details of these incentives and their legal security were clearly explained and practical examples were given of how they apply to businesses that made improvements in facilities such as warehouses and silos, invested in tanks and pipes, replaced cranes and port logistics systems, resurfaced forecourts and streets or invested in port auxiliary facilities, among other investments.



World Ports Conference 2018

Best practices and environmental protection projects

European projects to promote natural gas as a fuel for goods transport

The port of Barcelona is located next to a large city and there is growing concern about the impact of port activity on the city's air quality, especially in relation to the concentration of NO_x and particulates.

The most significant sources of pollutant emissions into the ambient air are those generated by vessels during entry operations, manoeuvres and their stay at the port.

The port has few tools at its disposal to regulate these emissions effectively as the IMO is responsible for regulating them.

As regards maritime transport, many shipowners are now beginning to opt for change and the new vessels they order offer the possibility of being powered by natural gas.

Another effective action to be taken along with promoting the use of natural gas as an alternative fuel for goods transport by sea extends to the use of this fuel for land transport.

The Port of Barcelona is pursuing a threefold objective:

- Promoting infrastructure to facilitate the activity of supplying natural gas to ships and trucks
- Undertaking actions to demonstrate the use of natural gas in a variety of modes of transport and vehicles to show the viability of using it as an alternative fuel
- Safely regulating supply operations for this new fuel and management of the infrastructure.

Many countries and regions around the world are already promoting the introduction of natural gas trucks for reasons of pollution, fuel economy and security of supply.



APB participates in a number of projects, sometimes as a leader or coordinator and sometimes as a partner. Every effort has been made for the demonstration projects to cover the broadest range of sectors and transport modes that can use natural gas as an alternative fuel.

All the projects were launched in 2015 and 2016 and are scheduled for completion in 2019. They have a budget of €17.5 million and 27 organisations are directly involved in collaborating to implement them.



CORE LNGas hive Project Sub-activity EPT1: Pilot project involving mobile generator with natural gas engine on wharf to supply ro-ro vessel.

The port acts as coordinator and the project involves the construction of a mobile gas generator in the dock to supply electricity to the vessel L'AUDACE (ro-ro vessel) during its stay in the port

CORE LNGas hive Project Sub-activity EPM1: Construction of a loading arm from regasification terminal.

The port acts as a partner and the action involves the construction of a flexible cryogenic loading arm from one of the two berths at the LNG regasification terminal located in the port to allow loading of LNG onto barge vessels.

CORE LNGas hive Project Sub-activity EPM2: Modification of fuel bunkering barge to additionally bunker LNG

The port acts as coordinator and the action involves modifying a barge to accommodate LNG tanks and other equipment required to bunker this fuel to vessels.

CORE LNGas hive Project Sub-activity EV4: Design of a gas-powered tugboat

The port acts as coordinator and the action involves designing a port tugboat powered by natural gas in compressed natural gas tanks.

CLEANPORT Project: Installing a natural gas auxiliary engine on ferry for use during stay in port

The port acts as a partner and the action involves replacing a ferry's diesel auxiliary engines with a natural gas engine.

Internal action: Extension of a service station to supply LNG and CNG to trucks and vehicles

CORE LNGas hive Project Sub- activity EPM3: Transformation of the diesel engines on two straddle carriers to work with natural gas

The port acts as coordinator and the action involves replacing two diesel engines on two machines at the container terminal with natural gas engines.

REPORT project. RIS3CAT programme: Conversion of 25 trucks to dual fuel

The port is the project leader and the action involves converting 25 diesel truck engines to gas-diesel dual fuel with advanced technology.

Best practice agreements with concession holders

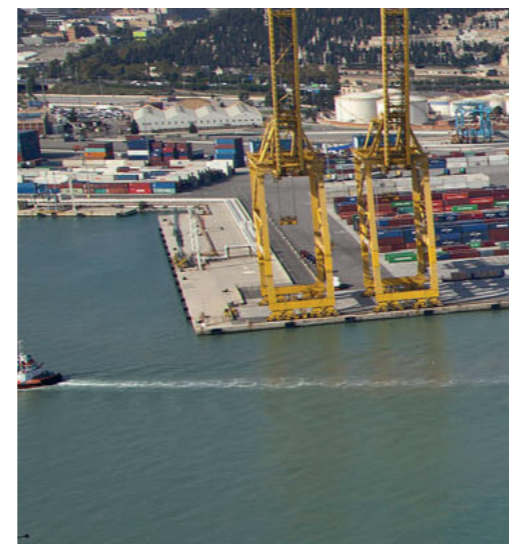
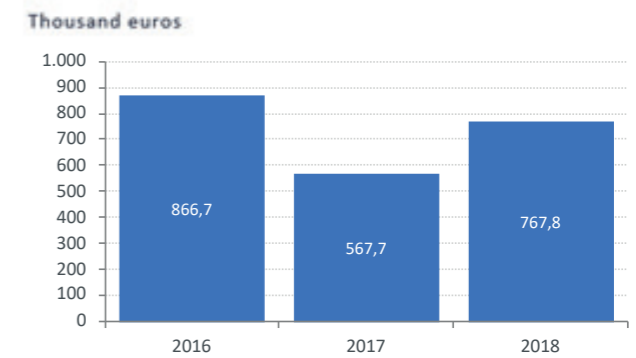
The Law on State Ports and the Merchant Navy envisages applying a discount in the activity fee for port facilities with a concession, authorisation or licence to handle goods.

This reduction aims to encourage good environmental practices and requires the facility to have an environmental management system in place and to sign a best environmental practice agreement with the Port Authority following the model of the Port of Barcelona's Best Environmental Practice Guidelines, approved by the APB on 20 November 2011 and revised on 28 November 2012.

In the agreement, the facilities undertake to implement an upgrading programme requiring financial investment in new equipment, systems and supplies.

Since 2016, companies that signed this agreement with the APB have made reduction-eligible investments in the amount shown in the following graph.

Progression of reduction-eligible environmental investment



Environmental compliance



Responsibilities of the Port Authority

Basic applicable legal requirements

Reference documents

Responsibilities of the Port Authority

From an environmental perspective, the APB's responsibilities under the Port Law are as follows:

- Fighting pollution.
- Maintaining and improving water quality.
- Vessel waste collection service.
- Preventing soil pollution.
- Preventing and monitoring environmental risks (ERP and other tools).
- Reductions for vessels and concessions for environmental performance.
- Environmental control of concessions and activities through the Ordinance, Instructions, specifications and concession specifications.

From a broader perspective, the Port Authority's environmental actions also cover the following responsibilities and management areas:

- Monitoring air quality and working to improve it.
- Monitoring water quality and working to improve it.
- Managing the waste water generated by facilities in the port service area.
- Managing environmental noise.
- Managing hazardous and non-hazardous waste.



Basic applicable legal requirements

The main legislation that Barcelona Port Authority must follow stems from:

1. International agreements to protect the sea
2. EU sectoral environmental legislation
3. State and Autonomous Community environmental legislation
4. Ordinances and municipal rules

The following is the main environmental legislation that is specifically applicable to the activity:

5. Royal Legislative Decree 2/2011, of 5 September 2011 approving the Consolidated Text of the Law on State Ports and the Merchant Navy.
 6. Law 26/2007 of 23 October 2007 on Environmental Liability. Royal Decree 2090/2008 approving the provisions for the implementation in part of Law 26/2007 on Environmental Liability.
 7. Law 22/2011, of 28 July 2011 on waste and contaminated soils.
 8. Law 5/2013 of 11 June 2013 amending Law 16/2002 of 1 July 2002 on integrated pollution prevention and control and Law 22/2011 of 28 July 2011 on polluted waste and soil.
 9. Law 21/2013 of 9 December 2013 on environmental assessment
 10. Royal Decree 9/2005 establishing the list of Potentially Soil-Polluting Activities and the Criteria and Standards for the statement of Polluted Soils,
 11. Law 34/2007 on Air Quality and Protection of Ambient Air.
 12. Royal Decree 100/2011 of 28 January 2011 updating the catalogue of potentially air-polluting activities and establishing the basic provisions for the implementation thereof.
 13. Royal Decree 102/2011 of 28 January 2011 on the improvement of air quality.
 14. Law 37/2003 on noise.
 15. Royal Decree 1513/2005 of 16 December 2005 implementing Law 37/2003 of 17 November 2003 on Noise, as regards the assessment and management of environmental noise.
 16. Royal Decree 1367/2007 of 19 October 2007 implementing Law 37/2003 of 17 November 2003 on noise, as regards noise zoning, quality objectives and noise emissions
 17. Royal Legislative Decree 1/2001 approving the Consolidated Text of the Water Law.
 18. Royal Decree 60/2011 of 21 January 2011 on environmental quality standards in the field of water policy.
 19. Royal Decree 1381/2002 on Port reception facilities for ship-generated waste. Royal Decree 1084/2009 of 3 July 2009 modifying
 20. Law 11/2012 of 19 December 2012 on urgent environmental measures.
 21. Royal Decree 1695/2012 of 21 December 2012 approving the National Marine Pollution Response System, repealing Royal Decree 253/2004, of 13 February 2004.
 22. Law 5/2013 of 11 June 2013 amending Law 16/2002 of 1 July 2002 on integrated pollution prevention and control and Law 22/2011 of 28 July 2011 on polluted waste and soil
 23. International Convention for the Prevention of Pollution from Ships of 2 November 1973 (MARPOL Convention) and the subsequent regulatory implementation thereof.
- Resolution MEPC.274(69): Amendments to the Annex to the International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL Convention), adopted in London on 22 April 2016.



Validation of the Statement



EMAS
GESTIÓ AMBIENTAL
VERIFICADA
ES-CAT-000430



ENVIRONMENTAL STATEMENT VALIDATED BY:

ENVIRONMENTAL VERIFIER: LLOYD'S REGISTER QUALITY ASSURANCE ESPAÑA, SLU.

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



CERTIFICADO DE APROBACIÓN

Certificamos que el Sistema de Gestión Medioambiental de:

AUTORITAT PORTUARIA DE BARCELONA
World Trade Center Barcelona
Edificio Este, Muelle de Barcelona s/n
08039 Barcelona
España

ha sido aprobado por Lloyd's Register Quality Assurance, de acuerdo con la siguiente Norma del Sistema de Gestión Medioambiental:

ISO 14001:2015

El Sistema de Gestión Medioambiental es aplicable a:

Gestión de dominio público portuario y obras de infraestructura y mantenimiento de las actividades de transporte marítimo y por vías navegables interiores.

Aprobación
Certificado No: SGI 00000749

Aprobación Original: 23 de Agosto 2018

Certificado en Vigor: 23 de Agosto 2018

Caducidad del Certificado: 22 de Agosto 2021

Emitido por: LRQA España, S.L.U.
Por y en nombre de: Lloyd's Register Quality Assurance Limited



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C/ Princesa, 29 - 1º - 28008 Madrid, España

Por y en nombre de 1 Trinity Park, Bickenhill Lane, Birmingham B37 7ES, United Kingdom

Esta aprobación es realizada en acuerdo con los procedimientos de evaluación y certificación de LRQA y monitoreada por LRQA.
El uso de la Marca de Acreditación UKAS indica Acreditación con respecto a aquellas actividades cubiertas por el Certificado de Acreditación 001.
Versión: 13

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Port de Barcelona

