



# Environmental Statement 2018



|                                                                                  |    |
|----------------------------------------------------------------------------------|----|
| 1. Letter from the Chairman .....                                                | 03 |
| 2. Introduction. Background .....                                                | 05 |
| 3. Description of the Port .....                                                 | 07 |
| 3.1. Location. Physical data .....                                               | 08 |
| 3.2. Legal Framework .....                                                       | 09 |
| 3.3. Basic port traffic figures .....                                            | 12 |
| 4. Description of the Environmental Management system .....                      | 13 |
| 4.1. Environmental policy .....                                                  | 14 |
| 4.2. Certifications .....                                                        | 14 |
| 4.3. Description .....                                                           | 17 |
| 4.4. Environmental Aspects .....                                                 | 17 |
| 4.5. Objectives and targets .....                                                | 19 |
| 4.5.1. Previous and planned 2018 .....                                           | 19 |
| 4.5.2. Our 2019 objectives .....                                                 | 20 |
| 5. Management of natural resources .....                                         | 22 |
| 5.1. Water .....                                                                 | 23 |
| 5.2. Electrical energy .....                                                     | 24 |
| 5.3. Fuel .....                                                                  | 26 |
| 5.4. Consumption of paper .....                                                  | 27 |
| 5.5. Summary of indicators .....                                                 | 27 |
| 5.5.1. EMAS INDICATORS .....                                                     | 27 |
| 5.5.1. OTHER INDICATORS .....                                                    | 28 |
| 6. State of the Environment .....                                                | 29 |
| 6.1. Waste .....                                                                 | 30 |
| 6.1.1. Own .....                                                                 | 30 |
| 6.1.2. From the Port Facilities .....                                            | 31 |
| 6.1.3. Ship-generated Waste .....                                                | 34 |
| 6.2. Air quality monitoring .....                                                | 35 |
| 6.2.1. Air quality in the port facilities in 2018 .....                          | 37 |
| 6.2.2. Environmental concentrations around the Port of Valencia in 2018 .....    | 39 |
| 6.2.3. Meteorological data .....                                                 | 39 |
| 6.3. Noise quality control network .....                                         | 44 |
| 6.3.1. Results obtained in 2018 according to the reference standard values ..... | 44 |
| 6.3.2. "Static" Sound Maps .....                                                 | 45 |
| 6.3.3. "Predictive" Sound Maps .....                                             | 45 |
| 6.4. Water Quality .....                                                         | 50 |
| 6.4.1. Quality of water bodies in the port facilities in 2018 .....              | 50 |
| 6.4.2. Study areas .....                                                         | 50 |
| 6.4.3. Determination of the port aquatic management units (PAMUs) .....          | 52 |
| 6.4.4. Variables studied .....                                                   | 54 |
| 6.4.5. 2018 water quality monitoring results .....                               | 58 |
| 6.5. Dredging Management .....                                                   | 61 |
| 6.6. Environmental Surveillance Plan .....                                       | 61 |
| 6.7. Soil management .....                                                       | 61 |
| 6.8. Visual impact .....                                                         | 62 |
| 6.9. Other Actions .....                                                         | 62 |
| 6.9.1. Specific actions carried out during 2018 .....                            | 62 |
| 7. Emergency responses .....                                                     | 63 |
| 8. Innovation and Cooperation Projects .....                                     | 66 |
| 8.1. Completed projects .....                                                    | 67 |
| 8.2. Projects underway .....                                                     | 69 |
| 8.3. Involvement in cooperation projects .....                                   | 69 |
| 8.4. Training .....                                                              | 70 |
| 9. Communication and Publications .....                                          | 71 |
| 9.1. Communication .....                                                         | 72 |
| 9.2. Environmental Insight Sessions .....                                        | 72 |
| 9.3. Cooperation and participation in forums and seminars .....                  | 72 |
| 9.4. Publications .....                                                          | 73 |
| 10. Green Accounting .....                                                       | 76 |
| 10.1. Environmental Costs .....                                                  | 77 |
| 10.2. Tangible and intangible fixed assets .....                                 | 77 |
| 11. Sustainability indicators .....                                              | 78 |
| 12. Recommendations for Improvement .....                                        | 80 |
| 13. Verification and Validation .....                                            | 82 |

# 1. Letter from the Chairman





# 1. Letter from the Chairman

The Environmental Statement of the Port Authority of Valencia (PAV) is proof of our commitment to sustainability by protecting the environment and its compatibility with the growth of traffic and the operations that are carried out in the port facilities managed by the PAV.

The publication of this Environmental Statement is, moreover, a demonstration of the transparency in our management, which is manifested in holding the highest current and valid port environment and energy certifications, such as ISO 14001, ISO 50001, PERS (Ports Environmental Review System) or the EMAS III register.

Of the environmental and energy actions undertaken by the PAV during 2018, I would like to highlight the registration of the carbon footprints corresponding to 2015 and 2016 in the Spanish registry of carbon footprint, compensation and absorption projects, obtaining the “calculo” stamp. Furthermore, we have begun the process of building the new electrical substation of the Port of Valencia, which will allow us to execute new energy efficiency and atmospheric emission reduction initiatives, through the electrical connection of vessels in the port.

Another of the initiatives that were launched in 2018 was the definitive commitment to renewable energies, with thorough studies having been undertaken to implement both wind and photovoltaic solar energy in port facilities managed by the PAV.

2018 was a landmark in the PAV since it was the year in which the first LNG truck-to-ship supply operation was carried out, specifically to the Balearia ship “Abel Matutes”, signifying a clear commitment by both the shipowner and by PAV to transition to cleaner fuels.

However not all the achievements are related to energy management; the companies of the port community of the Port of Valencia have also been connecting more and more to the port sewage system, which improves their treatment, ensuring greater control and quality of the waters of the port, since it prevents possible accidental spillages.

And since the foregoing cannot be achieved without prior research and being up to date with trends in technology, we continue to work on R+D projects that will allow us to improve our environmental performance. During 2018, the project GAINN4SHIP INNOVATION was finished and work continued on CORE LNG AS HIVE and GAINN4MOS, the main results of which we expect over the course of 2019.

Moreover, as has been typical in recent years, the PAV has communicated both to the port community and to society in general the activities carried out during 2018, not only through publishing this Environmental Statement, but also through preparing and distributing press releases, making video reports, using social networks, meetings with reporters, editing and distributing ‘environmental advice’, and relevant news



AURELIO MARTÍNEZ ESTÉVEZ  
Chairman of the Port Authority of Valencia

in the Environmental Bulletin. This information is distributed externally and internally through the PAV intranet, in order to raise awareness both among our staff and in the port community.

All the information about this Port Authority and its various environmental publications is on our website: [www.valenciaport.com](http://www.valenciaport.com)

And to conclude, I would like to highlight the effort both of the PAV's own staff, and that of all the members of the port community, who get involved and collaborate to achieve the targets set, and without whom we would not be sharing the results contained in this Statement.



## 2. Introduction. Background



## 2. Introduction. Background

For years, the Port Authority of Valencia has consolidated environmental criteria in its business strategy, incorporating the commitments made in its Environmental Policy with a Corporate Social Responsibility focus. While the environmental actions led by the Port Authority in the three ports it manages have been diverse, below is a description in chronological order of the most important landmarks that could be highlighted.

In 1998, the PAV launched the Project ECOPORT, Towards a Port Community that Respects the Environment, which was financed by the LIFE programme of the European Commission. The fruit of this work was the preparation of a Methodology for the Implementation of Environmental Management Systems in Port Facilities. This methodology has become a model for environmental management of ports nationally and internationally and it has later been applied in different port environments.

The ECOPORT Project meant a qualitative change in the PAV's approach to the integration of the environmental variable into its activities. The foundations were thus laid for the development of the Environmental Management System the organisation now has and whose operation is described in this document, and in 1998, it appointed staff with responsibilities exclusively concerned with environmental protection.

Thus, on 12 April 2000, the Board of Directors of the PAV approved the Environmental Policy, which has been revised over these years and which was last updated on 11 November 2016. Over these years, the PAV has extended its commitment to environmental management, such that its Environmental Management System has matured and accepted new challenges.

In 2003, the PAV was the first Spanish port to obtain the PERS (Port Environmental Review) Certificate awarded by Lloyd's Register and supported by the ECOPORTS Foundation and the European Sea Ports Organisation, ESPO. In 2006, the EMS was certified according to ISO Standard 14001 and in 2008 it was registered in the EMAS register of the Valencia Region with No. 23, the first Spanish port to obtain said registration.

In 2008, the Port Authority of Valencia received the Eco-Excellent Award at Ecofira having been proposed by the Clean Technologies Centre (CTC) of the Regional Department of the Environment, Territory and Housing.

During this time, the Port Authority has also acquired various international commitments, such as signing in 2006 the Sydney Charter for the Sustainable Development of Port Cities, under the auspices of the International Association of Cities and Ports and in July 2008 of the "Declaration of World Ports for a Better Climate", in Rotterdam.

In its commitment to improve climate change and reduce greenhouse gases, in 2016 the PAV calculated and registered the Carbon Footprint of the Port of Valencia in the Spanish registry of carbon footprint, compensation and CO2 absorption projects, created by the Ministry of Agriculture, Food and the Environment, obtaining the "calculo" stamp. In this regard and also in 2016, the PAV achieved the certification of its Energy Management System according to the ISO 50001 standard, integrating both the environmental and energy policies into a single Environmental and Energy Policy.

Furthermore, and as described later, the PAV currently carries out numerous initiatives and participates in various projects in order to improve the environmental performance of its activities, as well as those of the companies that make up the Port Community, incorporating in its actions the continuous improvement it seeks. Notable among these actions are the following:

- The improvement of the monitoring tools for the main environmental aspects generated in the ports it manages.
- The improvement of the efficiency of consumption through, among other things, policies to monitor and measure the consumption of water and electricity in the ports' supply networks, as well as policies to replace vehicles with others with better environmental performance, for example.
- Monitoring through the Environmental Surveillance Plan of the environmental aspects generated by the works for the Expansion of the Port of Valencia and Sagunto.
- Supporting and driving companies in the Port Community on their path to the incorporation of Environmental Management Systems in their organisations through the ECOPORT II Project.
- Maintenance of the Environmental Management System, the operation of which ensures the information contained in this Statement and allows us to improve our environmental performance year after year.



# 3. Description of the Port





# 3. Description of the Port



The Port Authority of Valencia (PAV), which trades under the name Valenciaport, is the public body responsible for the management and administration of three state-owned ports located on an 80 km stretch of the Mediterranean coast in eastern Spain: Sagunto, Valencia, and Gandia.

Valenciaport has an exceptional geographical and strategic location in the centre of the Western Mediterranean Arc, in line with the east-west shipping corridor which crosses the Suez Canal and the Gibraltar Straits. This makes Valenciaport the first and last port of call for the main regular shipping companies operating between America, the Mediterranean Basin and the Far East.

## 3.1. Location. Physical data

The Ports of Sagunto, Valencia and Gandia are located geographically on the Iberian Mediterranean Watershed, with a subtropical Mediterranean climate featuring moderate winters and quite hot summers.

| Port     | Location                                     | Total Area   | Flotation dimensions | Quays. Berthing line               |
|----------|----------------------------------------------|--------------|----------------------|------------------------------------|
| Sagunto  | longitude 0º 13' W<br>latitude 39º 39' N     | 2.397.800 m² | 2 206 000 m²         | 14 quays<br>5,801 m berthing line  |
| Valencia | longitude 0º 18,1' W<br>latitude 39º 26,9' N | 5.626.534 m² | 5.746.000 m²         | 27 quays<br>13,554 m berthing line |
| Gandía   | longitude 0º 9' W<br>latitude 38º 59' N      | 245.000 m²   | 284 000 m²           | 6 quays<br>1,289 m berthing line   |



Port of Sagunto. Year 2017



Port of Valencia. Year 2017



Port of Gandia. Year 2017

# 3. Description of the Port



## 3.2. Legal Framework

The legal regime of the Port Authorities is described in Royal Decree 2/2011, of 5 September, passing the Consolidated Text of the National Ports and Merchant Navy Act.

The Port Authority is a body governed by public law, with its own legal status and equity, which are independent from those of the State. It reports to the public body Puertos del Estado (National Ports) and is responsible for the administration, management, supervision and exploitation of the ports of Sagunto, Valencia and Gandia. Its main functions include managing the public port domain, awarding concessions and authorisations, planning, designing and building any necessary infrastructure, organising surveillance and policing within the port service area and maintaining navigational aids, among others.

The law grants the General State Administration sole jurisdiction over public ports (art.149.1.20ª of the Spanish Constitution) and establishes that the governing bodies of the Port Authorities shall be appointed by the Autonomous Regions. The bodies of the Port Authority of Valencia are as follows:

- a) Governing:
  - Board of Directors
  - Chairman
- b) Management:
  - Director
- c) Advisory:
  - Shipping and Port Council

With regard to legal requirements, the Port Authority of Valencia has a system to regularly identify and evaluate the provisions of legal and other environmental requirements. Thus it ensures compliance with the updating of environmental authorisation and complies with its environmental obligations on a regular basis.

The Port Authority of Valencia considers it essential to comply with current legislation and especially environmental legislation. This includes compliance with environmental requirements in aspects such as:

- Waste: The production of both hazardous and non-hazardous waste is monitored, as well as the proper storage, labelling, sorting, transport and management of this waste using duly authorised transport and waste management companies.
- Emissions: there are records from the vehicle inspections that are carried out and other types of emissions are monitored such as those generated by the organisation's boiler system.
- Discharges: although this is not a representative aspect as the discharges in the facilities are domestic—from toilets and showers installed in its facilities—it is still monitored.
- Noise: noise is regularly measured, thus complying with the applicable legal requirements in this area.

The PAV also encourages its staff and the concessions located in the port facility to comply with environmental legal requirements by providing training on the legal requirements that facilities must comply with such as hazardous waste, environmental responsibility and discharges.

The most important environmental legal requirements applicable to the organisation, and most relevant in 2018, are described in the following table:

| EMAS                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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), repealing Regulation (EC) No 761/2001 and Commission Decisions 2001/681/EC and 2006/193/EC |
| REGULATION (EU) No 2017/1505 OF THE COMMISSION of 28 August 2017 amending Annexes I, II and III 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)              |
| REGULATION (EU) No 2018/2026 OF THE COMMISSION 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)                         |



# 3. Description of the Port



## GENERAL

Legislative Royal Decree 1/2016, of 16 December, passing the consolidated text of the Integrated Pollution Prevention and Control Act.

Law 5/2014, of 25 July, of the Valencian Regional Government, on Territorial Planning, Urban Planning and Landscape, of the Valencian Region.

Law 6/2014, of 25 July, on Prevention, Quality and Environmental Control of Activities in the Valencian Region.

Law 11/2014, of 3 July, amending Law No 26/2007 of 23 October on Environmental Responsibility (Official State Gazette no. 162, of 04/07/2014).

Law 21/2013, of 9 December on Environmental Evaluation.

Legislative Royal Decree 2/2011, of 5 September, passing the Consolidated Text of the National Ports and Merchant Navy Act.

Law 6/2010, of 24 March, amending the consolidated text of the Environmental Impact Assessment of Projects Act, passed by Legislative Royal Decree 1/2008, of 11 January.

Law 33/2010, of 5 August, amending Law 48/2003, of 26 November, on the financial system and provision of services in ports of general interest.

Legislative Royal Decree 1/2008, of 11/01/2008, passing the consolidated text of the Environmental Impact Assessment of Projects Act. (OSG no. 23, of 26/01/2008).

Law 26/2007 of 23 October on Environmental Responsibility.

## WASTE

Law 22/2011, of 28 July, on waste and contaminated soils.

Law 10/2000, of 12 December, on waste in the Valencia Region

Royal Decree 180/2015, of 13 March, regulating moving waste within the territory of the State.

International Convention for the Prevention of Pollution from Ships, 2 November 1973 (MARPOL Convention) and subsequent amendments.

Royal Decree 1381/2002 on Port Facilities that receive waste generated by vessels.

## DISCHARGES AND WATER

Legislative Royal Decree 1/2001, of 20/07/2001, passing the consolidated text of the Water Act. (OSG no. 176, of 24/07/2001).

Royal Decree 817/2015, of 11 September, establishing the criteria for monitoring and evaluating the state of the surface water and the environmental quality standards.

## EMISSIONS

Royal Decree 100/2011, of 28 January, updating the catalogue of activities that potentially pollute the environment and setting out basic provisions to apply them.

Law 34/2007, of 15/11/2007, on Air Quality and Protection of the Atmosphere. (OSG no. 275, of 16/11/2007).

## NOISE

Royal Decree 1367/2007, of 19 October, implementing Law 37/2003, of 17 November, on Noise, as regards noise zoning, quality objectives and noise emissions.

Law 37/2003, of 17/11/2003, on noise. (OSG no. 276, of 18/11/2003).

# 3. Description of the Port

## CONSUMPTION

Royal Decree 56/2016, of 12 February, transposing Directive 2012/27/EU of the European Parliament and of the Council of 25 October 2012 on energy efficiency, as regards energy audits, accreditation of service suppliers and energy audits, and the promotion of efficient energy supply.

## OTHERS

Royal Decree 513/2017, of 22 May, passing the Regulations on fire protection facilities.

Royal Decree 337/2014, of 9 May, passing the Regulations on technical conditions and safety guarantees in high voltage electrical installations and their Complementary Technical Instructions ITC-RAT 01 to 23.

Royal Decree 1695/2012, of 21 December, passing the National Marine Pollution Response System.

Royal Decree 1027/2007, of 20 July, approving the Regulation of Thermal Installations in Buildings.

The PAV's main environmental authorisations and obligations include:

- An Environmental Impact Statement for the Expansion of the Port of Valencia.
- An Environmental Surveillance Plan for the expansion of the Port of Valencia.
- Registration as a Producer of Small Volumes of Hazardous Waste No. 3631/P02/RP/CV.
- Annual Declaration of Possession of Equipment Containing PCBs.
- Register of potentially polluting activities. Air pollution.
- International Convention for the Prevention of Pollution from Ships, 2 November 1973 (MARPOL Convention).



*Clocktower Building*



# 3. Description of the Port

## 3.3. Basic port traffic figures

|                                        | 2017              | 2018              | Diferencia       | Δ18/17 dic<br>acum |
|----------------------------------------|-------------------|-------------------|------------------|--------------------|
| <b>Autoridad Portuaria de Valencia</b> |                   |                   |                  |                    |
| <b>Tráfico total (t)</b>               | <b>73.559.877</b> | <b>76.621.101</b> | <b>3.061.224</b> | <b>4,16%</b>       |
| Granel Líquido                         | 3.203.487         | 1.909.692         | -1.293.795       | -40,39%            |
| Granel Sólido                          | 2.278.857         | 2.544.075         | 265.218          | 11,64%             |
| Mercancía No Containerizada            | 11.788.513        | 14.085.935        | 2.297.422        | 19,49%             |
| Mercancía Containerizada               | 55.978.616        | 57.885.808        | 1.907.192        | 3,41%              |
| Pesca                                  | 1.937             | 2.894             | 957              | 49,41%             |
| Avituallamiento                        | 308.467           | 192.697           | -115.770         | -37,53%            |
| <b>Buque (ud)</b>                      | <b>7.715</b>      | <b>7.722</b>      | <b>7</b>         | <b>0,09%</b>       |
| G.T.                                   | 256.175.377       | 262.922.154       | 6.746.777        | 2,63%              |
| <b>Contenedores (TEU)</b>              | <b>4.832.156</b>  | <b>5.182.665</b>  | <b>350.509</b>   | <b>7,25%</b>       |
| <b>Pasajeros (ud)</b>                  | <b>1.062.580</b>  | <b>1.071.963</b>  | <b>9.383</b>     | <b>0,88%</b>       |
| Línea Regular                          | 650.252           | 650.445           | 193              | 0,03%              |
| Cruceros                               | 412.328           | 421.518           | 9.190            | 2,23%              |
| <b>Automóviles (ud)</b>                | <b>794.954</b>    | <b>820.221</b>    | <b>25.267</b>    | <b>3,18%</b>       |

|                             |                   |                   |                  |               |
|-----------------------------|-------------------|-------------------|------------------|---------------|
| <b>Puerto de Valencia</b>   |                   |                   |                  |               |
| <b>Tráfico total (t)</b>    | <b>67.489.331</b> | <b>70.778.376</b> | <b>3.289.045</b> | <b>4,87%</b>  |
| Granel Líquido              | 1.560.290         | 1.488.639         | -71.651          | -4,59%        |
| Granel Sólido               | 1.603.217         | 1.871.096         | 267.879          | 16,71%        |
| Mercancía No Containerizada | 8.542.767         | 9.852.024         | 1.309.257        | 15,33%        |
| Mercancía Containerizada    | 55.491.372        | 57.396.829        | 1.905.457        | 3,43%         |
| Pesca                       | 420               | 577               | 157              | 37,28%        |
| Avituallamiento             | 291.265           | 169.211           | -122.054         | -41,90%       |
| <b>Buque (ud)</b>           | <b>6.180</b>      | <b>6.048</b>      | <b>-132</b>      | <b>-2,14%</b> |
| G.T.                        | 231.287.499       | 236.832.093       | 5.544.594        | 2,40%         |
| <b>Contenedores (TEU)</b>   | <b>4.779.749</b>  | <b>5.128.855</b>  | <b>349.106</b>   | <b>7,30%</b>  |
| <b>Pasajeros (ud)</b>       | <b>1.029.288</b>  | <b>1.018.992</b>  | <b>-10.296</b>   | <b>-1,00%</b> |
| Línea Regular               | 616.960           | 597.474           | -19.486          | -3,16%        |
| Cruceros                    | 412.328           | 421.518           | 9.190            | 2,23%         |
| <b>Automóviles (ud)</b>     | <b>523.797</b>    | <b>528.975</b>    | <b>5.178</b>     | <b>0,99%</b>  |

|                             |                  |                  |                 |                |
|-----------------------------|------------------|------------------|-----------------|----------------|
| <b>Puerto de Sagunto</b>    |                  |                  |                 |                |
| <b>Tráfico total (t)</b>    | <b>5.716.363</b> | <b>5.458.913</b> | <b>-257.450</b> | <b>-4,50%</b>  |
| Granel Líquido              | 1.643.170        | 421.053          | -1.222.117      | -74,38%        |
| Granel Sólido               | 675.640          | 672.979          | -2.661          | -0,39%         |
| Mercancía No Containerizada | 2.897.481        | 3.859.816        | 962.335         | 33,21%         |
| Mercancía Containerizada    | 487.229          | 488.937          | 1.708           | 0,35%          |
| Pesca                       | 255              | 150              | -105            | -41,20%        |
| Avituallamiento             | 12.588           | 15.978           | 3.390           | 26,93%         |
| <b>Buque (ud)</b>           | <b>1.288</b>     | <b>1.396</b>     | <b>108</b>      | <b>8,39%</b>   |
| G.T.                        | 23.610.776       | 23.927.774       | 316.998         | 1,34%          |
| <b>Contenedores (TEU)</b>   | <b>52.401</b>    | <b>53.800</b>    | <b>1.399</b>    | <b>2,67%</b>   |
| <b>Pasajeros (ud)</b>       | <b>32</b>        | <b>81</b>        | <b>49</b>       | <b>153,13%</b> |
| Línea Regular               | 32               | 81               | 49              | 153,13%        |
| Cruceros                    |                  |                  |                 | -100,00%       |
| <b>Automóviles (ud)</b>     | <b>271.155</b>   | <b>291.209</b>   | <b>20.054</b>   | <b>7,40%</b>   |

|                             |                |                |               |                 |
|-----------------------------|----------------|----------------|---------------|-----------------|
| <b>Puerto de Gandía</b>     |                |                |               |                 |
| <b>Tráfico total (t)</b>    | <b>354.183</b> | <b>383.813</b> | <b>29.630</b> | <b>8,37%</b>    |
| Granel Líquido              | 27             | 0              | -27           | -100,00%        |
| Granel Sólido               |                |                |               | -100,00%        |
| Mercancía No Containerizada | 348.265        | 374.095        | 25.830        | 7,42%           |
| Mercancía Containerizada    | 15             | 42             | 27            | 180,00%         |
| Pesca                       | 1.262          | 2.168          | 906           | 71,74%          |
| Avituallamiento             | 4.614          | 7.508          | 2.894         | 62,72%          |
| <b>Buque (ud)</b>           | <b>247</b>     | <b>278</b>     | <b>31</b>     | <b>12,55%</b>   |
| G.T.                        | 1.277.102      | 2.162.287      | 885.185       | 69,31%          |
| <b>Contenedores (TEU)</b>   | <b>6</b>       | <b>10</b>      | <b>4</b>      | <b>66,67%</b>   |
| <b>Pasajeros (ud)</b>       | <b>33.260</b>  | <b>52.890</b>  | <b>19.630</b> | <b>59,02%</b>   |
| Línea Regular               | 33.260         | 52.890         | 19.630        | 59,02%          |
| Cruceros                    |                |                |               | -100,00%        |
| <b>Automóviles (ud)</b>     | <b>2</b>       | <b>37</b>      | <b>35</b>     | <b>1750,00%</b> |

## 4. Description of the Environmental Management system



# 4. Description of the Environmental Management system

## 4.1. Environmental policy

### THE PORT AUTHORITY OF VALENCIA'S ENVIRONMENTAL AND ENERGY POLICY

Shipping is an essential element in the flow and exchange of goods. Modern port management and market competition have led port companies to concentrate and increase the volume of their activities and accordingly, they use ever larger amounts of resources, which makes the inclusion of ecoefficient management criteria increasingly more important. One of the business strategy priorities of the Port Authority of Valencia, as the managing body of one of the main port areas in the Mediterranean, is sustainable development, combining respect for the environment with the economic and social growth of port activities in the facilities it manages.

The PAV is committed to developing an environmental and energy management system which, in addition to making all the members of its organisation aware of the responsibilities of sustainable management, also publicises and extends the need to adopt this ethical commitment to all the companies that operate on public port land, and involves customers, suppliers, official bodies, and other companies in the sector in this Environmental and Energy Policy. This commitment is specifically reflected in:

- The incorporation of environmental and energy considerations into public port land planning, organisation, management, and conservation processes to set goals and objectives for the improvement of both systems.
- Regular systematic analysis and assessment of the activities, products, and services of companies that may interact with the environment, in order to be aware of and manage the environmental risks they may create.
- Measuring, monitoring and managing the use of natural resources and energy, including eco-efficiency criteria in general, and energy efficiency criteria in particular, to ensure suitable environmental and energy performance in the services provided.
- Compliance with applicable environmental and energy legislation and requirements, aiming to go further than the demands required by law, whenever possible.
- Prevention and minimisation of emissions, consumption, discharges, noise, and waste produced as a result of its activities, aiming to recover as much as possible of the waste generated.
- Using and encouraging the implementation of the best, most viable technologies in each activity.
- The provision of suitable training and information for employees to encourage awareness and take-up of this policy.

As part of the voluntary commitments taken on to encourage environmental sustainability in the facilities it manages, the PAV supports a number of initiatives in its port community:

- Providing a forum where port companies can participate to establish common environmental initiatives and objectives, facilitate training for port company employees, and share concerns and needs linked to projects, communication and regulatory aspects which help to improve the environmental performance of all the participating firms.
- Encouraging port community companies to adopt the best technologies available to them through their participation in projects.
- Helping companies in the port community to implement energy efficiency improvements.
- Regularly assessing and measuring the impact of activities that take place in port facilities by calculating their carbon footprint.

Similarly, regular reports including a review of environmental initiatives will be drawn up and circulated to customers, suppliers, industry firms, members of the organisation and other stakeholders.

This Environmental and Energy Policy will be published and sent to all the members of the PAV so they can take part in improving the Environmental and Energy Management System. This policy will be updated when appropriate through a process of continuous improvement.

Approved by the Port Authority of Valencia's Board of Directors, on 12th April 2000, amended on 14th May 2015, and last updated on 11th November 2016 to include energy aspects.

  
Aurelio Martínez Estévez  
Presidente de la Autoridad Portuaria de Valencia

## 4.2. Certifications



The Port Authority of Valencia is certified under the PERS (Port Environmental Review System) model.



The Port Authority of Valencia has been certified under the ISO 14001 standard since 2006. In October 2017, we renewed the certificate for the new standard 14001:2015.



# 4. Description of the Environmental Management system



**LR** Lloyd's Register LRQA

Assurance Statement related to  
The Greenhouse Gas Inventory Report 2010  
of the Port Authority of Valencia

**Terms of Engagement**  
This Assurance Statement has been prepared for the Port Authority of Valencia.

Lloyd's Register Quality Assurance España, S.L. (LRQA), was commissioned by the Port Authority of Valencia to verify its Greenhouse Gas Inventory Report for the calendar year 2010 ('the Report'). The Report relates to direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions from the activities of concession companies, ship emissions and transport of goods produced within the port of Valencia, all under normal operating conditions.

**Management Responsibility**  
The management of the Port Authority of Valencia was responsible for preparing the Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with the Port Authority of Valencia. Ultimately, GHG Inventory and GHG Report have been approved by, and remain the responsibility of the Port Authority of Valencia.

**LRQA's Approach**  
Our verification has been conducted in accordance with ISO14064-3:2008 - Specification with guidance for validation and verification of greenhouse gas assertions to provide limited assurance that the Port Authority of Valencia Report has been prepared in accordance with ISO14064-2:2008 - Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals.

In order to form our conclusions we have:

- Conducted site tours of the facilities, as defined in the operational scope of the Report and reviewed processes related to the control of GHG emissions data and records;
- Verified back to source, the historical data and information for the calendar year 2010 for:
  - Gasoil and gasoline consumption by Port Authority of Valencia vehicles within the port of Valencia;
  - Electricity consumption; and
  - Diesel, gas and electricity consumption of concessionaries companies.
- Verified at an aggregated level, the historical data and information for the calendar year 2010 for:
  - Fuel oil consumed by vessels from their point of entry into the port until berthed and from berth to exiting the port; and
  - Diesel consumption resulting from the transport of goods to the port of Valencia.

**Level of Assurance & Materiality**  
The opinion expressed in this Assurance Statement has been formed based on a limited level of assurance and at a materiality of the professional judgement of the verifier.

**LRQA's Opinion**  
Based on LRQA's approach nothing has come to our attention that would cause us to believe that the Report was not prepared in accordance with ISO14064-2:2008 and that the direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions from mobile combustion sources included in the Report, as summarized in Table 1, are not materially correct.

  
Fernando Adam  
Lead Verifier  
On behalf of Lloyd's Register Quality Assurance Limited represented by Lloyd's Register Quality Assurance España, S.L.  
C/ Princesa, 29, 1ª  
28008 Madrid  
España

Dated: 18 February 2016

Table 1. Port Authority of Valencia, GHG Inventory Report 2010

| Scope of Emissions according to ISO14064-1                                                                            | Tonnes CO <sub>2</sub> e       |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Direct GHG Emissions                                                                                                  | 229                            |
| Energy Indirect GHG Emissions                                                                                         | 1423                           |
| Other Indirect GHG Emissions from concession companies                                                                | 154373                         |
| <b>Total</b>                                                                                                          | <b>158026</b>                  |
| <b>Origin of Emissions</b>                                                                                            | <b>Tonnes CO<sub>2</sub>e</b>  |
| Port of Valencia facilities                                                                                           | 1662                           |
| Diesel, gas and electricity consumption of concession companies                                                       | 52078                          |
| Diesel consumption resulting from the transport of goods to the port of Valencia                                      | 17922                          |
| Fuel oil consumed by vessels from their point of entry into the port until berthed and from berth to exiting the port | 87905                          |
| <b>Total</b>                                                                                                          | <b>158026</b>                  |
| <b>Indicator : CO<sub>2</sub>e kg per ton of goods transported</b>                                                    | <b>2,74 CO<sub>2</sub>e Kg</b> |

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The English version of this statement is the only valid version. Lloyd's Register assumes no responsibility for versions translated into other languages.

Declaration of the verifier according to ISO 14064 for the calculation of the PAV's carbon footprint for 2010.

**LR** Lloyd's Register LRQA

Assurance Statement related to  
The Greenhouse Gas Inventory Report 2012  
of the Port Authority of Valencia

**Terms of Engagement**  
This Assurance Statement has been prepared for the Port Authority of Valencia.

Lloyd's Register Quality Assurance España, S.L. (LRQA), was commissioned by the Port Authority of Valencia to verify its Greenhouse Gas Inventory Report for the calendar year 2012 ('the Report'). The Report relates to direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions from the activities of concession companies, ship emissions and transport of goods produced within the port of Valencia, all under normal operating conditions.

**Management Responsibility**  
The management of the Port Authority of Valencia was responsible for preparing the Report and for maintaining effective internal controls over the data and information disclosed. LRQA's responsibility was to carry out an assurance engagement on the Report in accordance with our contract with the Port Authority of Valencia. Ultimately, GHG Inventory and GHG Report have been approved by, and remain the responsibility of the Port Authority of Valencia.

**LRQA's Approach**  
Our verification has been conducted in accordance with ISO14064-3:2008 - Specification with guidance for validation and verification of greenhouse gas assertions to provide limited assurance that the Port Authority of Valencia Report has been prepared in accordance with ISO14064-2:2008 - Specification with guidance at the organizational level for quantification and reporting of greenhouse gas emissions and removals.

In order to form our conclusions we have:

- Conducted site tours of the facilities, as defined in the operational scope of the Report and reviewed processes related to the control of GHG emissions data and records;
- Verified back to source, the historical data and information for the calendar year 2012 for:
  - Gasoil and gasoline consumption by Port Authority of Valencia vehicles within the port of Valencia;
  - Electricity consumption; and
  - Diesel, gas and electricity consumption of concessionaries companies.
- Verified at an aggregated level, the historical data and information for the calendar year 2012 for:
  - Fuel oil consumed by vessels from their point of entry into the port until berthed and from berth to exiting the port; and
  - Diesel consumption resulting from the transport of goods to the port of Valencia.

**Level of Assurance & Materiality**  
The opinion expressed in this Assurance Statement has been formed based on a limited level of assurance and at a materiality of the professional judgement of the verifier.

Declaration of the verifier according to ISO 14064 for the calculation of the PAV's carbon footprint for 2012.

**LRQA's Opinion**  
Based on LRQA's approach nothing has come to our attention that would cause us to believe that the Report was not prepared in accordance with ISO14064-2:2008 and that the direct GHG emissions, energy indirect GHG emissions and other indirect GHG emissions from mobile combustion sources included in the Report, as summarized in Table 1, are not materially correct.

  
Fernando Adam  
Lead Verifier  
On behalf of Lloyd's Register Quality Assurance Limited represented by Lloyd's Register Quality Assurance España, S.L.  
C/ Princesa, 29, 1ª  
28008 Madrid  
España

Dated: 15 February 2016

Table 1. Port Authority of Valencia, GHG Inventory Report 2012

| Scope of Emissions according to ISO14064-1                                                                            | Tonnes CO <sub>2</sub> e       |
|-----------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Direct GHG Emissions                                                                                                  | 215                            |
| Energy Indirect GHG Emissions                                                                                         | 1393                           |
| Other Indirect GHG Emissions from concession companies                                                                | 159162                         |
| <b>Total</b>                                                                                                          | <b>160770</b>                  |
| <b>Origin of Emissions</b>                                                                                            | <b>Tonnes CO<sub>2</sub>e</b>  |
| Port of Valencia facilities                                                                                           | 1608                           |
| Diesel, gas and electricity consumption of concession companies                                                       | 52078                          |
| Diesel consumption resulting from the transport of goods to the port of Valencia                                      | 19179                          |
| Fuel oil consumed by vessels from their point of entry into the port until berthed and from berth to exiting the port | 87905                          |
| <b>Total</b>                                                                                                          | <b>160770</b>                  |
| <b>Indicator : CO<sub>2</sub>e kg per ton of goods transported</b>                                                    | <b>2,66 CO<sub>2</sub>e Kg</b> |

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# 4. Description of the Environmental Management system



Declaration of the verifier according to ISO 14064 for the calculation of the PAV's carbon footprint for 2014.



Since 15 January 2008, the Port Authority of Valencia has been registered by the Regional Department of Infrastructure, Territory and the Environment with number ES-CV 000023 in fulfilment of its Environmental Management System according to the Regulations (EC) 1221/2009 and 761/2001.

In 2016 the Port Authority of Valencia obtained the ISO 50001 certification for the port of Valencia.







# 4. Description of the Environmental Management system



The frequency of each type of aspect is classified according to three categories: Low, Medium and High. Both the Magnitude and the Hazardousness, which establish the Severity, are classified into the categories Low, Moderate, Medium, and High. Aspects are considered to be significant if their severity is evaluated as being High, regardless of the frequency, as shown in the following table.

|           |        | Severity |          |        |      |
|-----------|--------|----------|----------|--------|------|
|           |        | Low      | Moderate | Medium | High |
| Frequency | Low    |          |          |        |      |
|           | Medium |          |          |        |      |
|           | High   |          |          |        |      |

Indirect environmental aspects are evaluated using the criteria of the Frequency with which the environmental aspect occurs and the Consequences, which evaluates the magnitude for each of the identified aspects. The Frequency is classified as: Low, Medium and High, and the Consequence are classified as: Low impact, Medium impact and High impact.

Therefore, aspects are considered to be significant if their Consequences have a High or Medium Impact, with a High Frequency, as shown in the following table.

|           |        | Consecuencias |               |             |
|-----------|--------|---------------|---------------|-------------|
|           |        | Low impact    | Medium impact | High impact |
| Frequency | Low    |               |               |             |
|           | Medium |               |               |             |
|           | High   |               |               |             |

Environmental aspects identified in emergency situations are evaluated according to the criteria of Frequency, Magnitude of the Impact and Sensitivity of the Environment, and scores previously defined using the methodology established in the EMS are assigned accordingly. Thus the total score is obtained as the sum of the points assigned for each criterion and for each aspect. Once all the identified aspects have been evaluated, their scores are ranked from highest to lowest. The top 20% of scores are considered to be significant. If there are any aspects not included in this segment, but which have the same points as the lowest scoring aspect on the top list, this aspect will also be considered as significant.

The possible aspects that the Port Authority of Valencia may have, in general on the environment, both directly and indirectly, as well as the objectives set related to them, are summarised in the following table:

| Direct:                          | Obj.           | Indirect                                                      | Obj.                    |
|----------------------------------|----------------|---------------------------------------------------------------|-------------------------|
| Waste Generation.                |                | Waste Generation in the Port Facilities                       |                         |
| Emissions into the atmosphere    | No 58<br>No 62 | Emissions derived from port operations in the Port Facilities | No 58<br>No 59<br>No 64 |
| Water Quality                    |                | Environmental behaviour of the Concessions                    | No 61                   |
| Noise, Visual impact             |                | Noise in the roads of the Port Facility                       |                         |
| Water consumption                |                | Water consumption in the Port Facility                        |                         |
| Consumption of electrical energy | No 57<br>No 61 | Consumption of electrical energy in the Port Facilities       | No 61                   |
| Consumption of raw materials     |                | Consumption of raw materials in the Port Facilities           |                         |

Besides the aforementioned environmental aspects, the environmental aspect “environmental behaviour of concessions” is established. The evaluation is done by using the criterion of the percentage of concessions that are at the different levels defined in Ecoport.

Following the evaluation criteria set out in the “Procedure for the Identification and Evaluation of Environmental Aspects”, the significant environmental aspects are shown below.

# 4. Description of the Environmental Management system



| Significant Aspects              |       |       |                                                               |
|----------------------------------|-------|-------|---------------------------------------------------------------|
| Direct:                          | Obj.  | Obj.  | Indirect                                                      |
| Consumption of electrical energy | No 57 | No 61 | Environmental behaviour of the Concessions                    |
|                                  | No 61 |       |                                                               |
|                                  |       |       |                                                               |
|                                  |       |       |                                                               |
|                                  |       | No 58 | Emissions derived from port operations in the Port Facilities |
|                                  |       | No 59 |                                                               |
|                                  |       | No 64 |                                                               |

The inventory of aspects is reviewed each year, and updated where it is considered necessary.

Objectives are set (see point 4.5) to improve the main aspects and above all the significant aspects.

In the case of public works, environmental aspects are identified and their significance is evaluated through an Environmental Impact Study. The Environmental Impact Statement and the Environmental Surveillance Plan are used to monitor them.

## 4.5. Objectives and targets

### 4.5.1. Previous and planned 2018

The objectives planned and carried out during 2018 are differentiated by colours according to the legend described below and were as follows:

|                                                                                                     |
|-----------------------------------------------------------------------------------------------------|
| Objective established in previous years that has not yet been achieved.                             |
| Objective planned in the current year, which is linked to objectives established in previous years. |
| New objective established in the current year.                                                      |

**No. 57 Decrease electricity consumption in PAV buildings at the Port of Valencia by 2% compared to the previous year.**

LED lamps have been installed in the buildings of the PAV, which make it possible to directly reduce consumption. Moreover, various measurements have been made in the air-conditioning plant, where the salt water pumps have been replaced by well water pumps, which, due to the temperature difference, are more

efficient; the heat transfer fluid output set points have been regulated according to the operating season; and the start-ups of the compressors have been reduced. All this has helped with energy improvement as set out in the Report about the energy improvement of the main buildings of the PAV.

The reduction in consumption was analysed, achieving 22% in the buildings of the PAV and 20.6% in the climate plant with respect to the previous year. The total reduction of the PAV's electricity consumption, taking into account that it includes other installations (roads, services, etc.) was 5.3%

therefore, the objective is fulfilled.

**No. 58 OBJECTIVE: Calculate the Carbon Footprint of the Port of Valencia for 2016 and validate the result with a certifying company and registration in MAPAMA.**

In 2017, the carbon footprint was calculated for both 2015 and 2016. The value obtained for both years was 2.58 kg of CO2e/Mt of transported goods. In 2018, these results were validated with a certifying entity and it was registered in MAPAMA.

Se ha cumplido el objetivo.

**No. 59 Installation of a substation at the Port of Valencia.**

Once sent to National Ports, the project was sent to the Regional Department of Sustainable Economy to have the corresponding authorisation processed. We are awaiting said authorisation. The objective continued as planned in 2019.

**No. 61: Establishment of an Environmental Energy study of PAV. Phase I Environmental energy prospective analysis in the framework of the project ECOPORT III in the PAV ports (origin 2018).**

Meetings have been held with the companies in the ECOPORT group to compile information. An internal environmental energy analysis of the cluster of companies that operate in PAV's port facilities was carried out. A SWOT analysis has been conducted, as has an evaluation of the feasibility, importance and urgency of implementing a list of environmental Good Practices carried out by the companies in the port community and in other ports in the world. This has resulted in an Internal Valenciaport Analysis report.

The objective set has been fulfilled.

**No. 62: Replacement of motorcycles for electric models used by the Port Police in the PAV's fleet of vehicles. (origin 2018).**

After comparing the options available, two Port Police motorcycles have been replaced, thus expanding the PAV's fleet of electric vehicles to a total of six electric vehicles.

The objective has been fulfilled.

# 4. Description of the Environmental Management system



## No. 63: Implement a Feline Control Plan in the PAV's ports (origin 2018).

The captures and treatments in the ports of Valencia, Sagunto and Gandia have been completed. In total, 40 of them have been captured, most of them in the Port of Sagunto, where the population is much larger. As a conclusion to the Plan, a series of operating guidelines is proposed to prevent the disproportionate growth of the population, the spread of diseases and control of the population. Moreover, a second Plan is proposed, involving a larger number of captures, up to and including all of them. We have now reached approximately 30% of the population, with Sagunto being the port with the most work to be done.

**The objective is fulfilled.**

## No. 64 Improvement in air quality monitoring at the port of Sagunto, by installing a particle collector device. (origin 2018).

A report has been drawn up on the characteristics of the equipment to be installed. The plan is to purchase and install them by the second quarter of 2019.

**Hence the objective is moved to 2019.**

### 4.5.2. Our 2019 objectives

The objectives planned for 2019 deal with the main environmental aspects associated with the PAV's activities, as well as with the processes developed and which have environmental implications. The objectives are grouped below according to these criteria and with the aforementioned colour code:

#### a) ENVIRONMENTAL ASPECTS:

##### ATMOSPHERE:

### No. 64 Improvement in the air quality monitoring at the port of Sagunto, by installing a particle collector device.

This objective is carried out with the aim of expanding the control measures over the activities that may affect air quality.

**Starting point:** There is air quality control monitoring equipment.

**Expected situation:** Improve the air quality monitoring and have real-time data on the air quality at the port of Sagunto

**Result:** Improvement of the air quality monitoring at the port of Sagunto. Environmental **Policy Lines:** Systematically and periodically analyse and evaluate the company's activities, products and services that may interact with the environment, in order to be aware of and manage the environmental risk that may arise.

## No. 65 Execution of a campaign to measure the wind resource at the port of Valencia

This objective seeks to establish the viability to generate wind resources in the Port of Valencia.

**Starting point:** There are no data about the potential wind resource in the port of Valencia.

**Expected situation:** Have data about the viability of installed wind energy at the PAV's facilities in Valencia according to the data obtained about the port's wind resource.

**Result:** Improve the energy efficiency of the port of Valencia. Policy lines: Use and promote the use of better technologies that are viable in each activity.

## No. 69: Improvement of emissions by replacing three fuel vehicles from the PAV's fleet with electric vehicles (Origin 2019)

This objective seeks to reduce the emissions from the vehicles in the PAV's fleet.

**Starting point:** There is a fleet of vehicles for service use, which has been replaced with electric vehicles.

**Expected situation:** This line continues to be worked on with the forthcoming vehicle replacements. Reduce the emissions and therefore improve the carbon footprint of the port of Valencia.

**Result:** Improve the air quality of the port of Valencia. Policy Line: Prevent and minimise the emissions, discharges, noise and waste generated as a result of its activity, trying to recover the waste generated as much as possible.

#### b) IMPROVING PROCESSES / ACTIVITIES

##### ECO-EFFICIENCY:

### No. 59 OBJECTIVE: Installation of a substation at the Port of Valencia.

This objective is carried out with the purpose of identifying the expected future use and being able to plan, monitor and improve the energy system in the Port of Valencia.

**Starting point:** Provision of current information concerning energy management in the Port of Valencia.

**Expected situation:** Viable alternatives for action to deal with the future energy demand at the Port of Valencia.



# 4. Description of the Environmental Management system



**Result:** Energy Evaluation of the port. **Environmental Policy Lines:** Integrate environmental and energy considerations into the planning, organisation, management, and conservation processes of the public port domain, serving to set goals and objectives for improving both systems.

## No. 67 Energy Strategy Plan of the PAV at the port of Valencia.

It seeks to follow defined action lines, focussed on achieving the strategic objectives set, aimed at energy improvement.

**Starting point:** Various measurements are made aimed at improving energy efficiency.

**Expected situation:** Define and plan the future action lines.

**Result:** Planning of actions to be implemented. **Environmental Policy Lines:** Integrate environmental and energy considerations into the planning, organisation, management, and conservation processes of the public port domain, serving to set goals and objectives for improving both systems.

## No. 68 Improvement in energy efficiency by preparing a Plan to replace external luminaires by LED technology. Phase I East Quay Roundabout-Shipyard Roundabout.

This objective is carried out in order to reduce the consumption of electricity in the port of Valencia, by carrying out specific actions to improve the energy efficiency.

**Starting point:** The necessary monitoring exists to know the consumption on roads.

**Expected situation:** Carry out the actions necessary to be able to reduce the consumption of electricity compared to the previous year.

**Result:** Improved energy efficiency. **Policy Line:** Measure, control and manage the consumption of natural resources and energy, incorporating eco-efficiency criteria in general and energy efficiency in particular, to achieve the adequate environmental and energy performance of the services provided.

## No. 70 Improvement of energy efficiency by installing photovoltaic panels at facilities of the Northern Expansion of the Port of Valencia.

This objective seeks to improve the energy efficiency by implementing renewable energies.

**Starting point:** There is a small photovoltaic panel grid in the port of Valencia.

**Expected situation:** Extend the existing grid and reduce the consumption of electricity by incorporating renewable energies that improves the emissions and the carbon footprint in the port of Valencia.

**Result:** Improved energy efficiency. **Policy Line:** Measure, control and manage the consumption of natural resources and energy, incorporating eco-efficiency criteria in general and energy efficiency in particular, to achieve the adequate environmental and energy performance of the services provided.

## MANAGEMENT:

## No. 66 OBJECTIVE: Phase II ECOPORT III: Study and statistical Analysis of the eco-efficiency levels of the PAV's ports, strategic definition of the roadmap and updating of the GG inventory of the PAV (origin 2019).

This objective is carried out in order to know the level of eco-efficiency of the port facilities of the ports managed by the PAV, as well as the GG inventory, to set out future action lines.

**Starting point:** Within the framework of ECOPORT III, where most of the companies in the port community operate, environmental and energy initiatives are undertaken, where those that make up ECOPORT participate by carrying out joint objectives.

**Expected situation:** Carry out an initial study to establish joint strategies.

**Result:** Improvement of emissions and GGs in the ports managed by the PAV. **Policy Lines:** Integrate environmental and energy considerations into the planning, organisation, management, and conservation processes of the public port domain, serving to set goals and objectives for improving both systems.

# 5. Management of natural resources



# 5. Management of natural resources

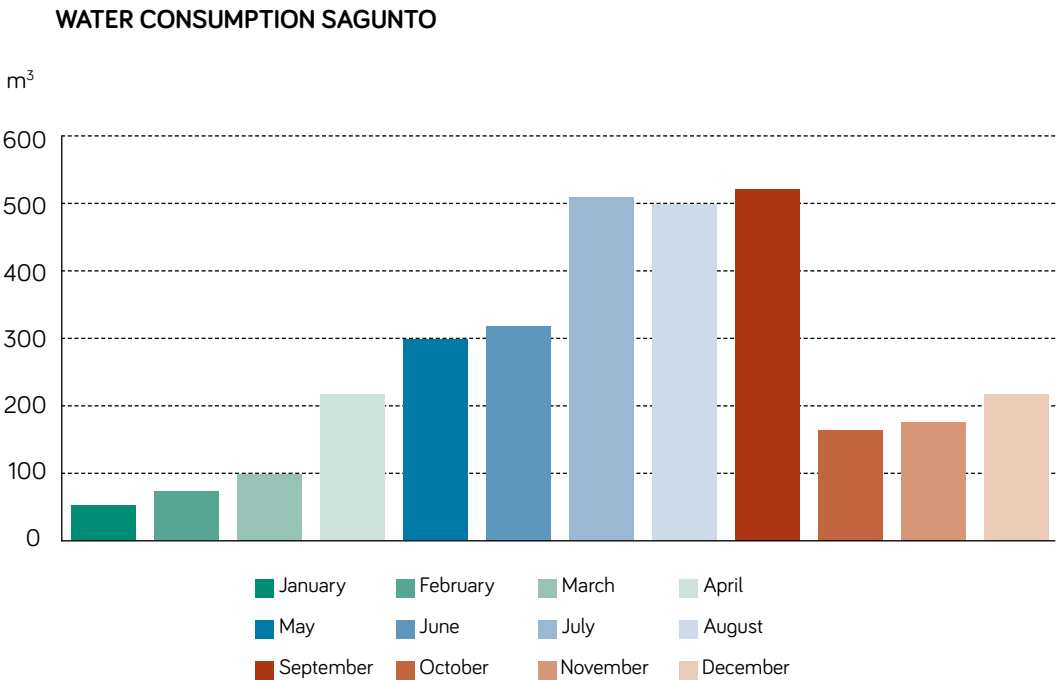


## 5.1. Water

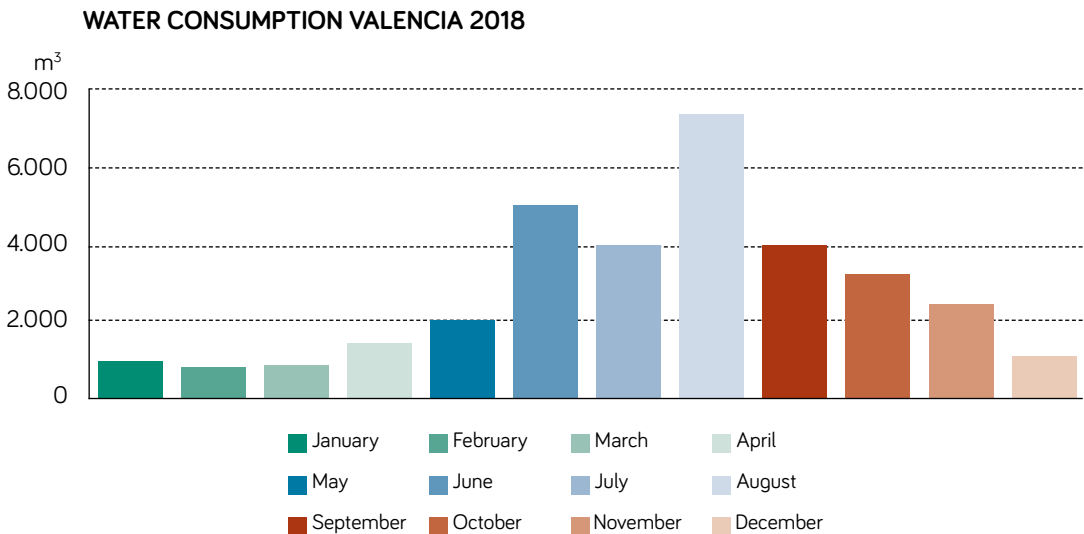
The PAV's water consumption is from the consumption in buildings and from watering gardens. Total water consumption in the PAV in 2018 was 38,807 m<sup>3</sup>, 0.6% less than the previous year, when consumption was 39,033 m<sup>3</sup>.

Consumption by ports was distributed as follows:

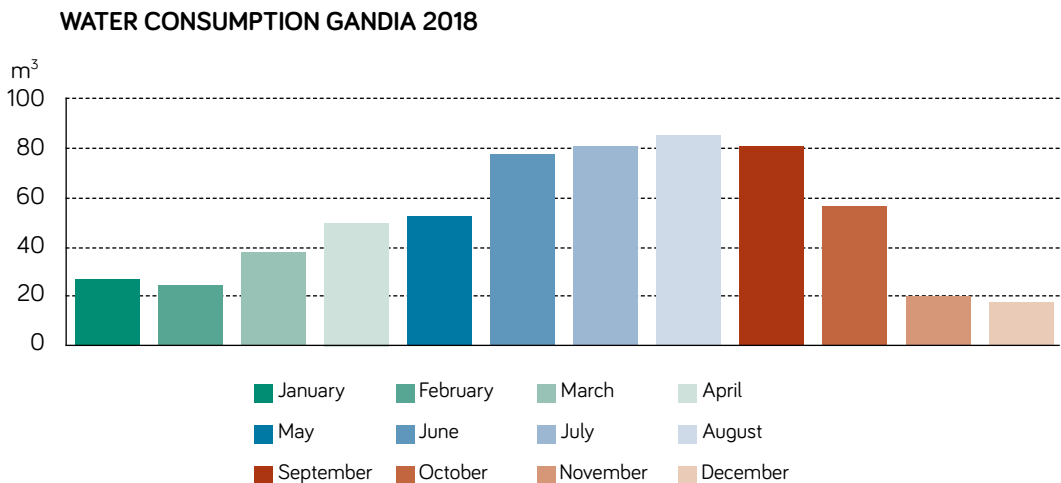
At the Port of Sagunto it was 3,137 m<sup>3</sup>. The graph shows the monthly consumption.



At the Port of Valencia, in 2018 a total of 33,049 m<sup>3</sup> was consumed, with monthly consumption as follows:



At the Port of Gandia, a total of 603 m<sup>3</sup> was consumed during the period. The monthly consumption was distributed as follows:

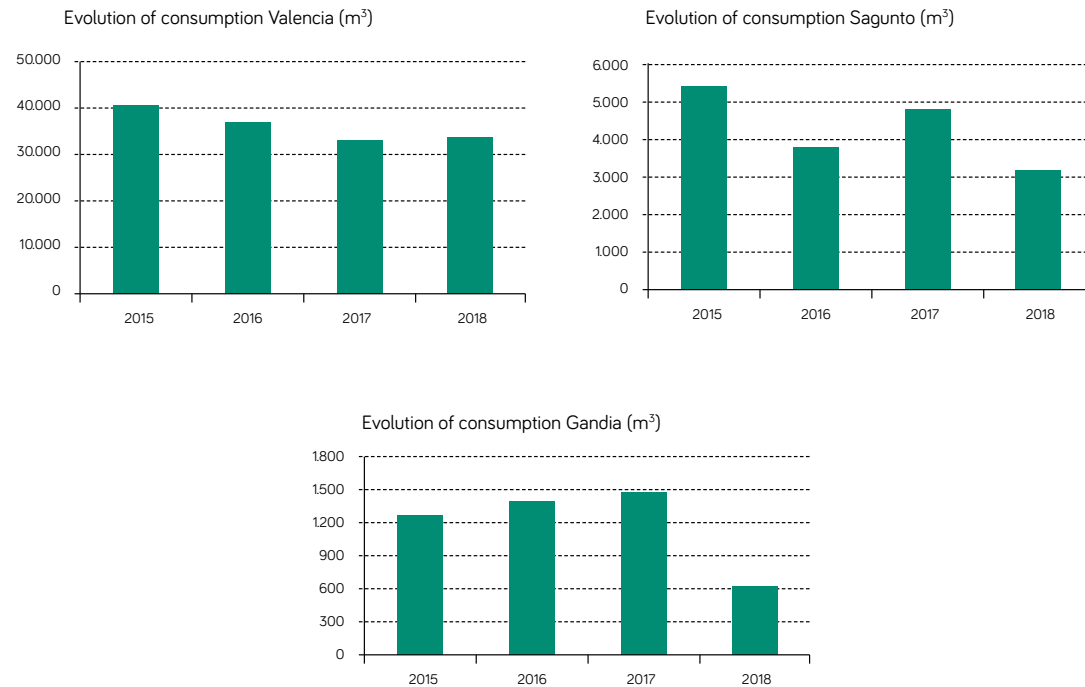




# 5. Management of natural resources

During this period, there has been no gardening contract, therefore in the early months it was watered according to what was set out in the previous contract, and in the later months, the watering was switched off and it was watered according to the needs of the land. That is why there has been a fall in the consumption of water compared to the previous year, since there has been no watering for most of the year.

As regards the evolution of the annual water consumption in the ports of Sagunto, Valencia and Gandia, it is as follows:



The same trend is followed at the port of Valencia. At Sagunto, there is evidence of a slight increase in water consumption. At the port of Gandia there has been a fall caused mainly by the absence of watering during most of the year.

## 5.2. Electrical energy

During 2018, the total energy consumption of the Port Authority of Valencia came to 7,597,553 kWh (7,596.55 MWh), which has meant an 8.2% reduction compared to the previous year.

As regards the source of the electrical energy we consume, Iberdrola assures us that the energy comes exclusively from 100% renewable sources.

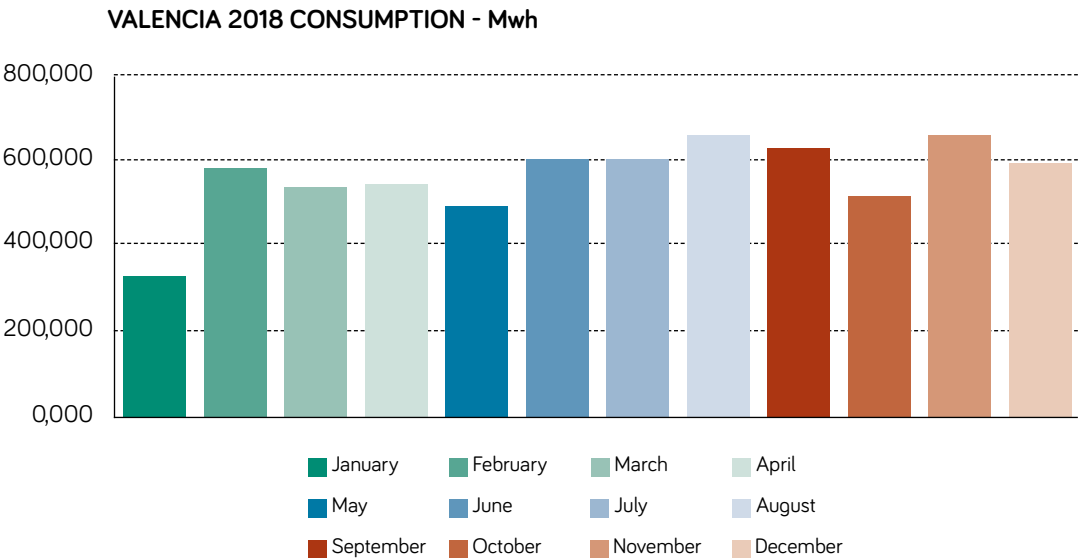


Monthly consumption of electricity by ports was distributed as follows:

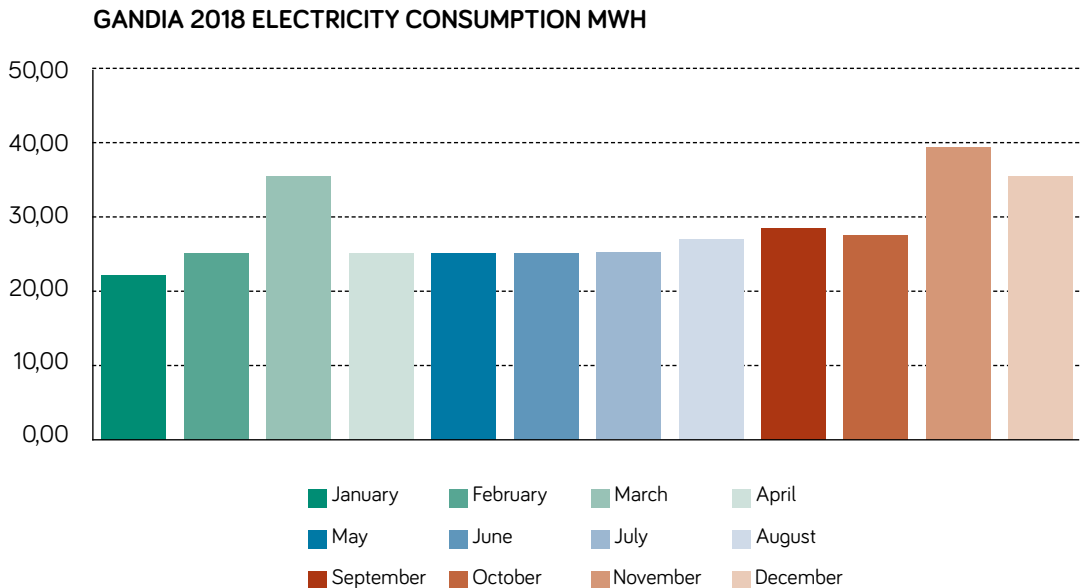
# 5. Management of natural resources



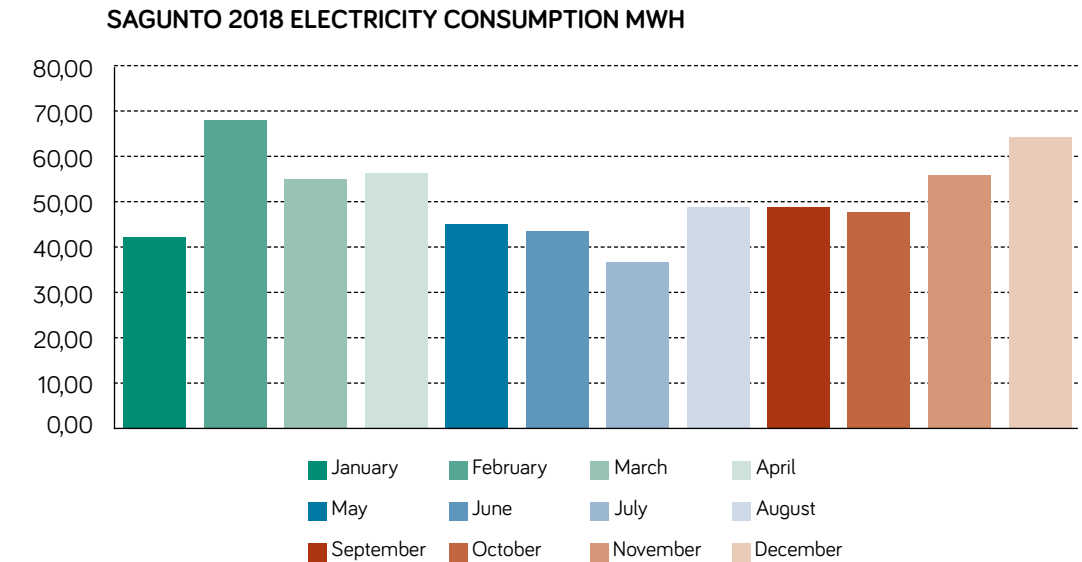
The total consumption in the Port of Valencia during the period was 6,650,255 kWh (6,650.26 MWh), distributed monthly as follows:



In the port of Gandia, the total electrical energy consumption of the PAV's roads and buildings during this year, was 339,897 kWh (339.897 MWh), the monthly consumption being as per the following graph:



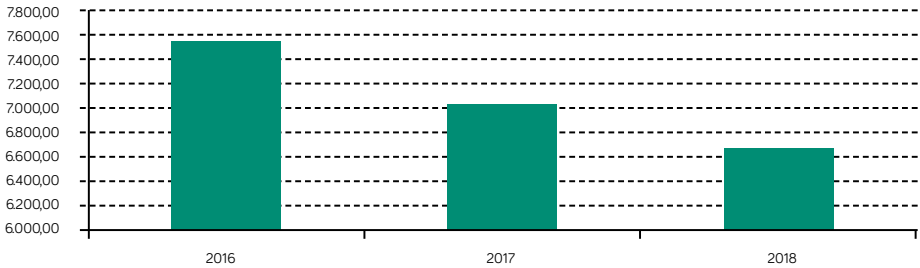
In the Port of Sagunto, the total electrical energy consumption was 607,656 kWh (607.66 MWh). The monthly consumption was distributed as follows:



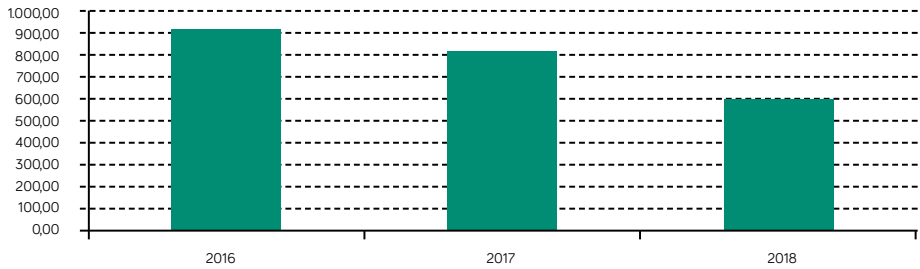
# 5. Management of natural resources

As regards the evolution of the consumption in the ports of Sagunto, Valencia and Gandia, it is as follows:

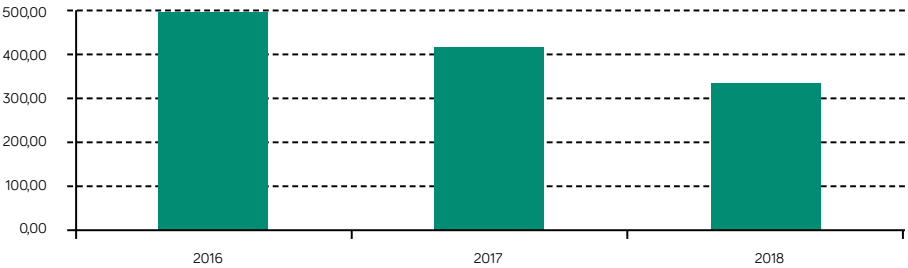
EVOLUTION OF CONSUMPTION VALENCIA (Mwh)



EVOLUTION OF CONSUMPTION SAGUNTO (Mwh)



EVOLUTION OF CONSUMPTION GANDIA (Mwh)



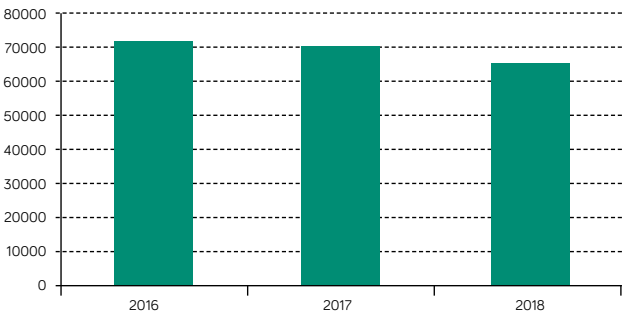
The Energy Management System was introduced in 2016. Since then, and due to the increase in monitoring and the scope of the system (change of approach in the monitoring, including PAV services not considered until then) and of the actions carried out, a decline in consumption can be seen, which we hope will be consolidated in subsequent years.

## 5.3. Fuel

In 2018, the fuel consumption of the PAV's vehicles in the ports it manages was 16,855 litres of Unleaded Petrol 98, 47,121 litres of Diesel oil. The total consumption was 63,976 litres.

| TOTAL fuel consumption in litres | 2016      | 2017      | 2018      |
|----------------------------------|-----------|-----------|-----------|
| Petrol                           | 25.776,00 | 18.846,00 | 16.855,00 |
| Diesel oil                       | 45.185,00 | 51.306,00 | 47.121,00 |
| TOTAL                            | 70.961,00 | 70.152,00 | 63.976,00 |

Total fuel consumption PAV (litres)



As can be seen in the previous graph, the consumption of fossil fuels has slightly fallen compared to the previous year (-8.8%).

The consumption of fuel is not specified for each port because the service is centralised in Valencia.

In 2018, the PAV had the following fleet of vehicles:

- Cars: 28, compared to 34 last year, four of them electric.
- Vans: 26, compared to 20 last year, one of them electric.
- Motorcycles: 2, compared to 3 last year, both electric.
- Lorries: 5, compared to 4 last year.

Besides the PAV's vehicles, it has several power generating sets and other auxiliary equipment that consumes fuel. Said groups are used to generate electrical energy in those areas of the quays that require it.



## 5.4. Consumption of paper

Since 2010, conventional paper has been replaced by “eco-friendly” paper (Triotec Q), which guarantees that it is certified by the Forest Stewardship Council (FSC). Consumers that purchase FSC paper know that it has been produced sustainably and that using it contributes to conserving forests and the environment.

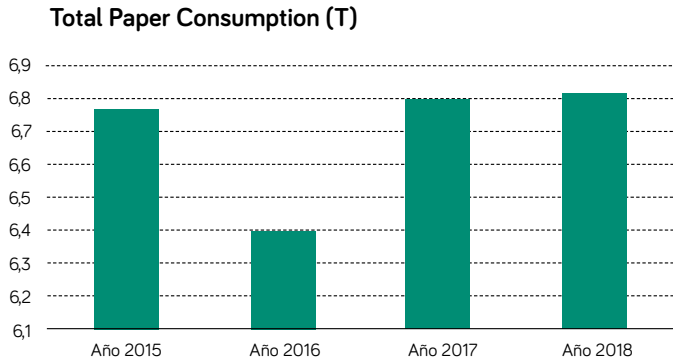
- The virgin fibre used to make the paper is obtained via environmentally friendly methods, maintaining the biodiversity of forest eco-systems and ensuring that forests can be used by future generations.
- The paper bleaching process is totally chlorine-free.
- The rights of local communities who live or work in the forest are respected.

The paper consumed at the PAV is 100% ecological paper.

In 2018, 6.8 t of paper were consumed, which is practically the same quantity as the previous year.

Over the last few years, a series of measures have been implemented aimed at reducing paper consumption, such as the implementation of the austerity plan at the PAV, improving staff awareness, configuring printers to print on both sides of the paper, and reusing paper for drafts.

The consumption of paper is not specified by ports because the service is centralised in Valencia.



## 5.5. Summary of indicators.

### 5.5.1. EMAS INDICATORS

In accordance with the requirements of Regulation (EC) No 1221/2009 of the European Parliament and of the Council of 25 November 2009 relating to the voluntary participation by organisations in a community eco-management and audit scheme (EMAS), the following indicators were proposed:

*\*average workforce 2018 = 435. Data facilitated by Human Resources*

| Indicator 2018                                        | Yearly total   | Relative                                 |
|-------------------------------------------------------|----------------|------------------------------------------|
| Electricity consumption                               | 7.597,553 Mwh  | 17.46 (MWh/worker)                       |
| Water consumption 100% from mains supply              | 38.807 m³      | 89.211 (m³/worker)                       |
| Total fuel consumption                                | 632,120 Mwh    | 1.453 MWh/worker                         |
| Total Area                                            | 3.503.600 m²   | 8,054.25 (m2 Total area/worker)          |
| Total sealed area                                     | 3.033.547 m²   | 6,973.67 (m2 Total sealed area/worker)   |
| Total area in the centre arranged according to nature | 46.265,05 m²   | 106.36 (m2 Total garden area/worker)     |
| Total unsealed area                                   | 470.053 m²     | 1,080.58 (m2 Total unsealed area/worker) |
| Paper                                                 | 6,80 t         | 0.015 (t/worker)                         |
| Hazardous Waste                                       | 4,59 t         | 0.010 (t/worker)                         |
| Non-Hazardous Waste                                   | 9,78 t         | 0.022 (T/worker)                         |
| CO2 Equivalent Emissions ** (direct)                  | 165,777 tCO2eq | 0.381 (tCO2eq/worker)                    |
| CO2 Equivalent Emissions ** (indirect)                | 1542,303 tO2eq | 3.545 (tCO2eq/worker)                    |
| Total CO2 Equivalent Emissions ** (direct + indirect) | 1708,08 tCO2eq | 3.92 (tCO2eq/worker)                     |

# 5. Management of natural resources



As regards the annual evolution of the relative indicators calculated, we may observe the following:

| Relative indicator                                    | 2016     | 2017     | 2018     |
|-------------------------------------------------------|----------|----------|----------|
| Electricity consumption                               | 21,04    | 18,86    | 17,46    |
| Water consumption                                     | 95,985   | 84,595   | 89,211   |
| Fuel consumption                                      | 1,625    | 1,581    | 1,453    |
| Total Area                                            | 8.185,98 | 7.999,09 | 8.054,25 |
| Total sealed area                                     | 7.011,37 | 6.851,29 | 6.973,67 |
| Total area in the centre arranged according to nature | 107,86   | 105,63   | 106,36   |
| Total unsealed area                                   | 1.174,61 | 1.147,79 | 1.080,58 |
| Paper                                                 | 0,014    | 0,015    | 0,015    |
| Hazardous Waste                                       | 0,017    | 0,063    | 0,010    |
| Non-Hazardous Waste                                   | 0,019    | 0,036    | 0,022    |
| CO2 Equivalent emissions ** (direct) (tCO2)           | 170,06   | 170,37   | 153,83   |
| CO2 Equivalent emissions ** (indirect) (tCO2)         | 2.521,47 | 2.314,14 | 0        |

**\*\*CO2 Equivalent Emissions:** As an organisation, the Port Authority of Valencia does not generate CO2 emissions over and above those associated with the vehicles it owns (direct emissions) and indirect emissions, associated with energy consumption. As a source for calculating total emissions in tCO2eq, the conversion factors referring to the years 2016, 2017 and 2018 were used, which are published in the scope 1+2 carbon footprint calculators for v.11 organisations of the Ministry of Agriculture and Fisheries, Food and the Environment for the corresponding years.

The coefficient in kg of CO2 equivalent/KWh for indirect CO2 emissions due to electrical energy consumption is 0.28

The coefficient in kg of CO2 equivalent/litre for direct CO2 emissions due to fuel consumption is 2.52 for diesel and 2.18 for petrol.

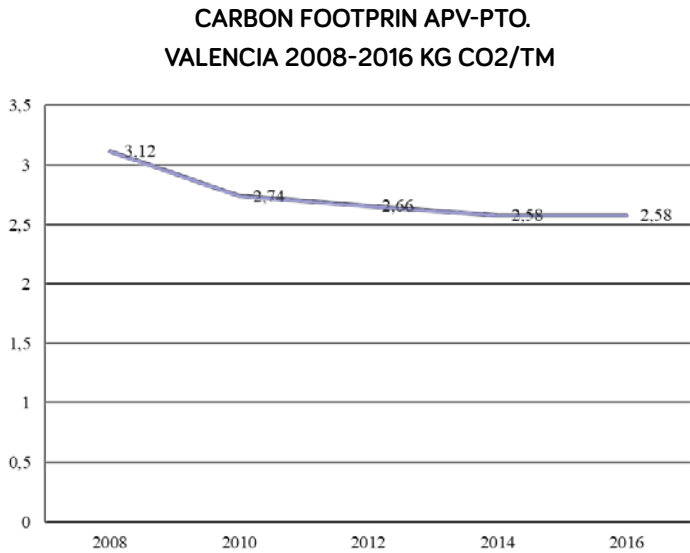
## 5.5.2. OTHER INDICATORS

Since 2018, the Carbon Footprint of the entire port of Valencia has been calculated every two years. Said calculations were made using the ISO 14064 standard and have been validated by Lloyd's Register.

The evolution of the emissions, goods transported and Carbon Footprint from 2008 to 2016 are shown below. The calculation of the 2018 Footprint is being prepared.

| Año                           | 2008       | 2010       | 2012       | 2014       | 2016       |
|-------------------------------|------------|------------|------------|------------|------------|
| Emisiones (tCO2)              | 161.685    | 158.026    | 160.770    | 159.100    | 166.115    |
| Toneladas (t)                 | 51.897.937 | 56.893.676 | 60.517.225 | 59.359.080 | 64.361.045 |
| Huella de Carbono (kgCO2/t)   | 3,12       | 2,74       | 2,66       | 2,58       | 2,58       |
| Intensidad Energética (kWh/t) | 9,04       | 7,31       | 7,02       | 6,82       | 6,60       |

The following graph shows the evolution from the beginning of the calculation.



## 6. State of the Environment





## 6.1. Waste

The Port Authority of Valencia is responsible for managing the waste produced directly by the organisation as the Producer (Law 22/2011, of 28 July, on waste and contaminated soils).

The PAV is also indirectly responsible for ensuring that the waste that is produced in the port facilities of Valencia, Sagunto and Gandia, which are managed by the PAV in the role of Waste Holder, is managed properly.

### 6.1.1. Own

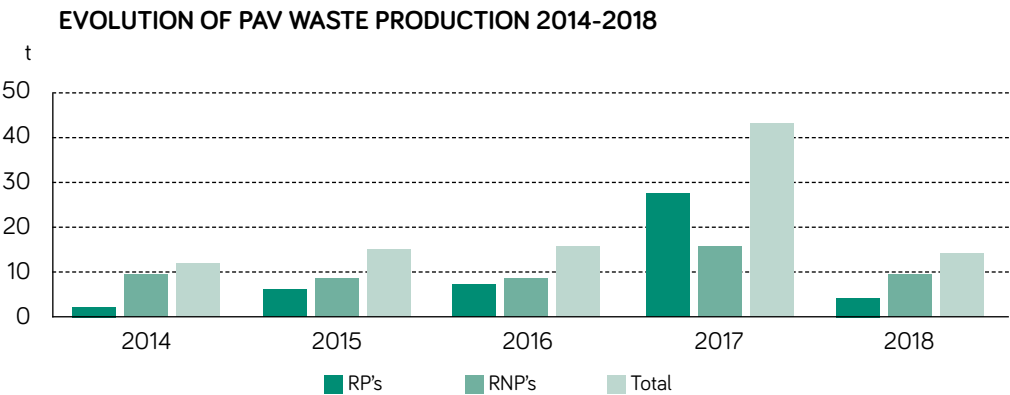
The PAV produces waste as a consequence of the activity the company carries out in the offices at Valencia, Sagunto and Gandia, as well as in the workshops and in the clinic, both facilities located in the Port of Valencia.

In compliance with Law 22/2011, of 28 July, on waste and contaminated soils, for waste that is directly produced by the company activity, the PAV is defined as a Producer of hazardous waste and of sanitary waste, with registration numbers 3631/P02/RP/CV and 46/9127/CV, respectively.

In 2018, the PAV's activity generated a total of 14.37 t of waste, of which 9.78 t correspond to non-hazardous waste and 4.59 t was hazardous waste.

To analyse the data obtained in 2018, the following graph presents data on the evolution of waste produced by the PAV from 2014 to 2018:

Graph 1



As can be seen graph 1, there has been a clear fall in both hazardous and non-hazardous waste production during 2018.

Graphs 2 and 3 below show data on non-hazardous waste and hazardous waste production from PAV's activity during 2018:

A) In 2018 non-hazardous waste production was 9.78 t.

As has been happening since 2013, graph 2 shows that, in 2018, the most significant volume of non-hazardous waste generated by the PAV corresponds with the heading "Confidential documentation". However, in 2018, the production of this waste fell compared to 2017, going from 6.91 t in 2017 to 4.179 t in 2018.

Moreover, the second heading by production of non-hazardous waste in 2018 was "Paper and Cardboard." The production of this waste also fell compared to 2017, going from 1.54 t in 2017 to 1.339 t in 2018.

B) In the case of hazardous waste, there has also been a reduction, since in 2017, there was a significant increase in the production of Waste Electrical and Electronic Equipment (WEEE) and the removal and management of Transformers that contain PCBs, which has meant an annual hazardous waste production of 27.74 t.

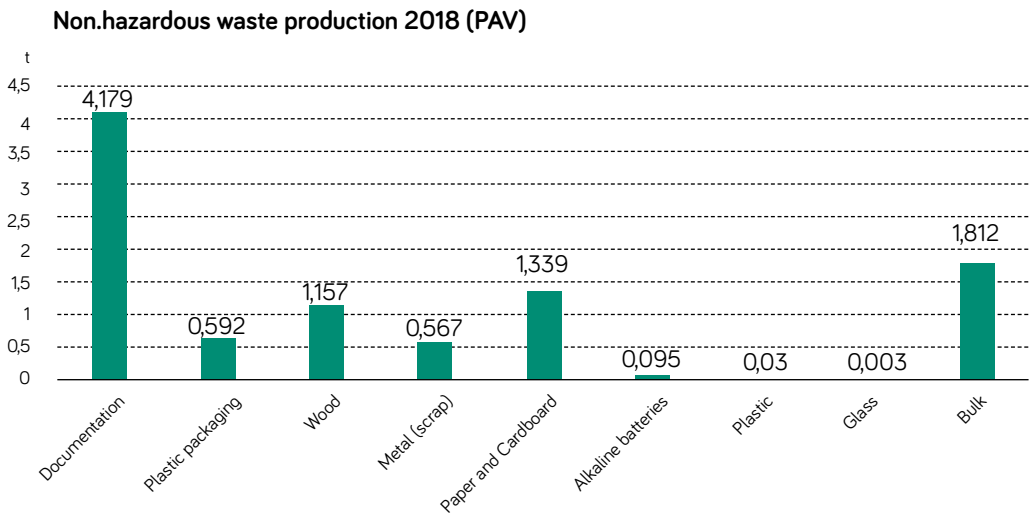
In 2018, there was a reduction in WEEE compared to 2017 from 14.62 t to 3.027 t in 2018. There has been a reduction of more than 11 tonnes in this type of production compared to 2017.

On the other hand, note that the largest volume of waste worth mentioning in this section is "Water-based cleaning liquids" that is generated as a result of the washing of parts in the two washing machines that were installed in the workshops in Valencia. The production figure for this waste fell significantly compared to 2017, at 0.798 t in 2018, while in 2017 1.340 t were produced.

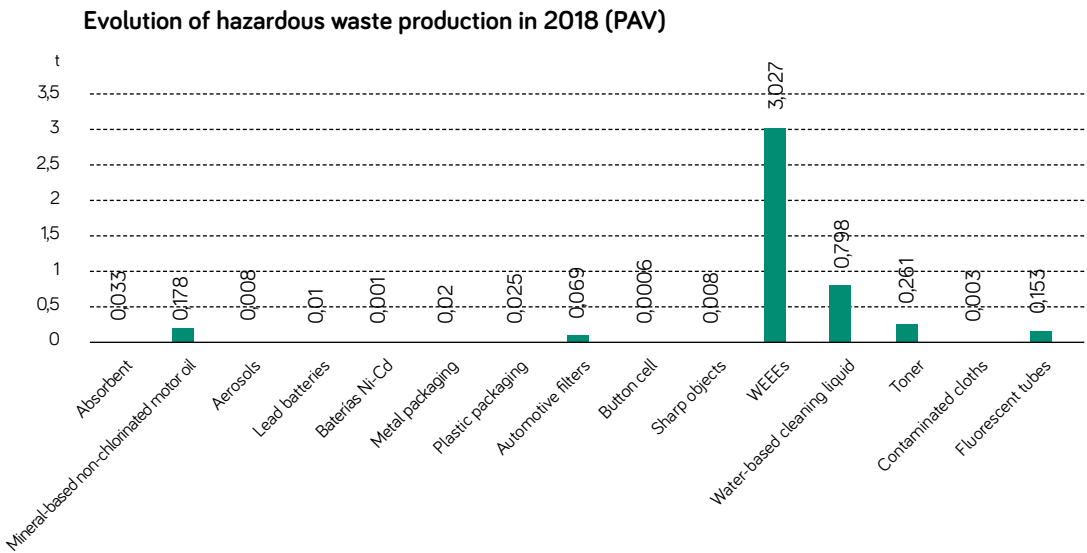
Therefore, it has been proven that in 2017, the total production of hazardous waste in 2017 exceeded, exceptionally and justifiably, the figure of 10 tonnes, since in 2018 the production figure was restored, reaching 4.59 t.

# 6. State of the Environment

Graph 2



Graph 3



## 6.1.2. From the Port Facilities

The companies located within the Port Authority of Valencia's port facilities are obliged to appropriately manage the waste they generate in their premises.

To help manage this waste generated by the companies in the port facilities of Valencia, Sagunto, and Gandia, a Waste Transfer Centre (WTC) was set up in the Port of Valencia in 2005 to collect and store the waste generated in the port facilities. This waste is stored in the WTC for subsequent transport to the final treatment plants where they will be reused, recycled, recovered or disposed, in any case respecting the waste hierarchy set out in article 8 of the Law 22/2011, of 28 July, on waste and contaminated soils.

Through the WTC, the Port Authority of Valencia:

- Facilitates the collection and management of the waste generated at the Ports of Sagunto, Valencia, and Gandia.
- Facilitates the paperwork associated with waste removal and management.
- Contributes to maintaining its port facilities in harmony with its environment.

The Port of Valencia's WTC, located on the Xita Quay, has a total surface area of 3,235.18 m<sup>2</sup>, of which 2,400 m<sup>2</sup> are used to store waste before it is transported for final management.



# 6. State of the Environment

To store non-hazardous waste, there is one 20 m<sup>3</sup> container for bulk, one 20 m<sup>3</sup> container for wood, several 3 m<sup>3</sup> containers for light packaging and plastics, one 11 m<sup>3</sup> container for glass, two 11m<sup>3</sup> and 25 m<sup>3</sup> containers for metals (scrap), one 11 m<sup>3</sup> container used for tyres and several 3 m<sup>3</sup> containers for paper/cardboard.

In addition, the WTC also has a calibrated weighbridge, and a vehicle authorised to transport hazardous goods.

The companies located in the port areas managed by the Port Authority of Valencia therefore have a facility where it is possible to manage the waste they produce as a result of their activity in a convenient and flexible way, in accordance with current legislation, and benefiting from the savings generated by economies of scale.



*Detail of a trailer loaded for the transfer of waste to the final destination plant.*



*Detail of loading of containers containing HW onto the trailer, to later be unloaded at the final destination plant.*

For waste generated indirectly by the PAV, i.e. it appears accidentally or under controlled conditions in the port facilities of Valencia, Sagunto, and Gandia, the PAV has the status of waste holder (in line with the adaptation to Spanish Law 22/2011, of 28 July, on waste and contaminated soils), with registration numbers POS363, POS365, and POS364, respectively.

The waste generated at the port facilities in Valencia, Sagunto, and Gandia is divided into two categories:

- Waste generated under controlled conditions, which is deposited in containers installed in the facilities, or waste generated as a result of specific cleaning in which bulky or inert waste, rubble, etc., may be produced.
- Waste generated accidentally as a result of spills caused by traffic accidents, waste that may appear in the sea (such as driftwood, buoys or other marine signage debris), waste arising from maritime pollution emergencies, dumped waste, etc.

As for the volume of waste produced in the three port areas managed by the PAV, there was a total of 49.3 t of waste generated in 2018, broken down as follows:

- Controlled waste: a total of 9.66 t, of which 9.42 t was non-hazardous waste and 0.24 t was hazardous waste.
- Accidental waste: a total of 39.64 t, broken down into 17.5 t of non-hazardous waste and 22.14 t of hazardous waste..

Therefore, the PAV has been directly or indirectly responsible (as the Producer or Waste Holder) for a total of 26.97 t of hazardous waste and 36.7 t of non-hazardous waste, for a total of 63.67 t of total waste in 2018.

## **Waste generated in port facilities under Controlled Conditions**

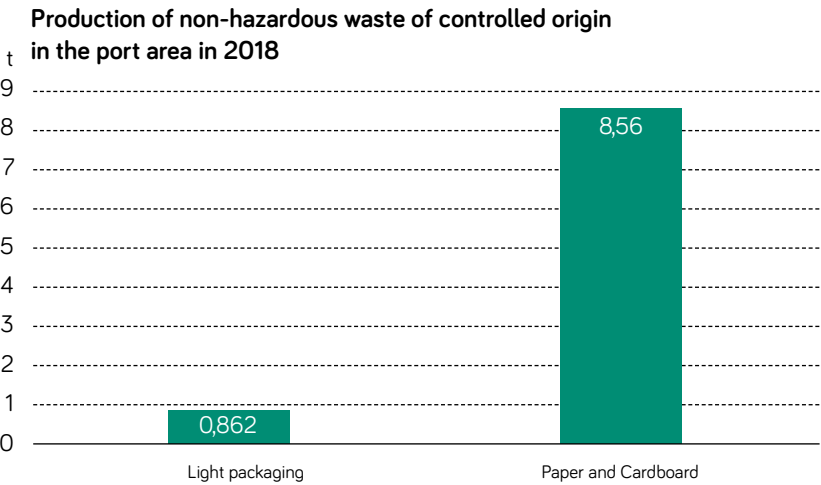
Below, the waste with the highest volume in 2018 was “Paper/cardboard” under the heading of non-hazardous waste and “Used oil” under the heading of hazardous waste, with 8.56 t and 0.24 t, respectively.

- A) The origin of the “paper/cardboard” heading is due to the paper and cardboard deposited in the containers installed throughout the port areas of Valencia, Sagunto, and Gandia specifically for this purpose.
- B) The heading “Used oil” arises due to the fact that in 2018 0.24 t were managed in the port facilities on different occasions.

Note: No graph has been made showing the production of hazardous waste generated under controlled conditions in the port facilities, since only the heading “Used oil” was produced in 2018

# 6. State of the Environment

Graph 4



**Waste generated accidentally in the port facilities.**

In the case of accidental waste, as can be seen in graphs 5 and 6, within the heading of non-hazardous waste, “Floating Waste” stands out and within hazardous waste “Contaminated soils” stands out, with production figures of 5.91 t and 12.532 t respectively.

A) With regard to the heading “Floating Waste”, two types should be distinguished:

- As part of its commitment and respect for the Environment, the PAV has exhaustively monitored the state of the waters of the old course of the river Turia for a number of years, as waste of different types originating from upstream frequently accumulates in the anti-pollution barrier installed there. In 2018 a production of 3.8 t was reached, which was lower than that recorded in 2017.



Photograph taken during installation of the barrier

- Waste produced as a result of the water surface cleaning carried out by the boat Limpiamar. In this case, 2.11 t of “Floating waste” was produced from this cleaning service in 2018. A similar volume of waste to that produced in 2017.



Thanks to the daily monitoring, the corrective actions that may be necessary in order to avoid an impact on the environment are implemented.

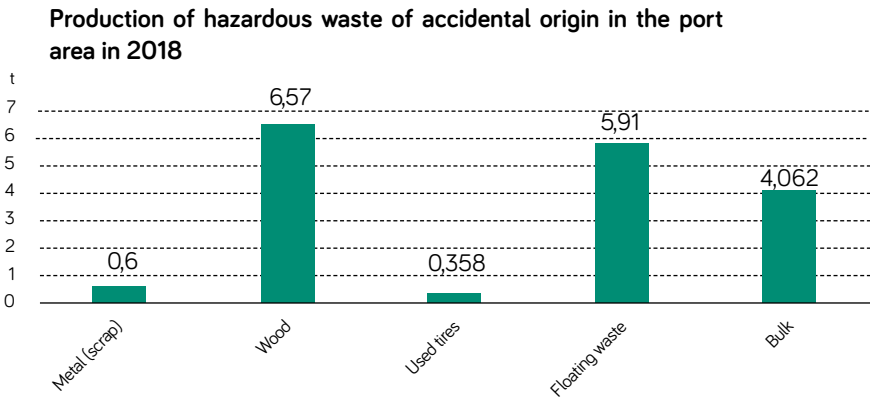


# 6. State of the Environment

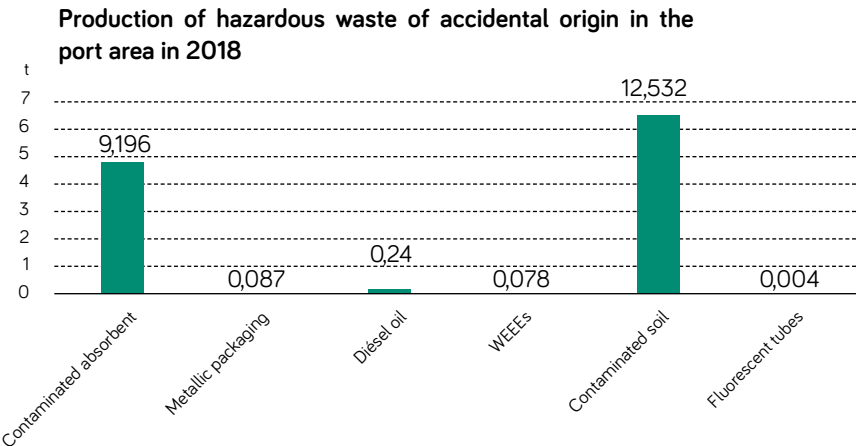


B) As for the heading “Contaminated soils” considered as hazardous waste, it should be noted that these occur as a result of the cleaning of spills, both on land and at sea, from traffic accidents that occur in the three port facilities, bilge water discharges to the sea, etc.

Graph 5



Graph 6



## 6.1.3. Ship-generated Waste

The Marpol 73/78 International Convention to prevent marine pollution by vessels is one of the tools created under the auspices of the IMO for prevention. It contains six annexes which include detailed rules on the various sources of pollution. These are:

- Annex I – Rules for the prevention of pollution by hydrocarbons.
- Annex II – Rules for the control of pollution by noxious liquid substances in bulk.
- Annex III – Rules for the prevention of pollution by harmful substances carried by sea in packaged form.
- Annex IV – Rules for the pollution by sewage from ships.
- Annex V – Rules for the pollution by garbage from ships.
- Annex VI – Rules for the prevention of air pollution from ships.

Royal Decree 1381/2002, of 20 December, on port reception facilities for ship-generated waste and cargo residues, sets out the obligation for all the vessels that berth at the Ports of Sagunto, Valencia, and Gandia to hand over waste subject to the Marpol Convention to an authorised Marpol facility, excluding the exceptions regulated in the decree.

To comply with article 132 of the consolidated text of the National Ports and Merchant Navy Act, the PAV charges a fixed fee to ships that dock in port, whether or not they use the waste reception service. With this measure, all discharges to the sea are avoided, as ships can discharge all wastes included in annexes I and V of Marpol Convention as needed.

The volume of waste managed in 2018 in the three ports was 56,327.06 m³ of Marpol I and 21,259.69 m³ of Marpol V, broken down as follows:

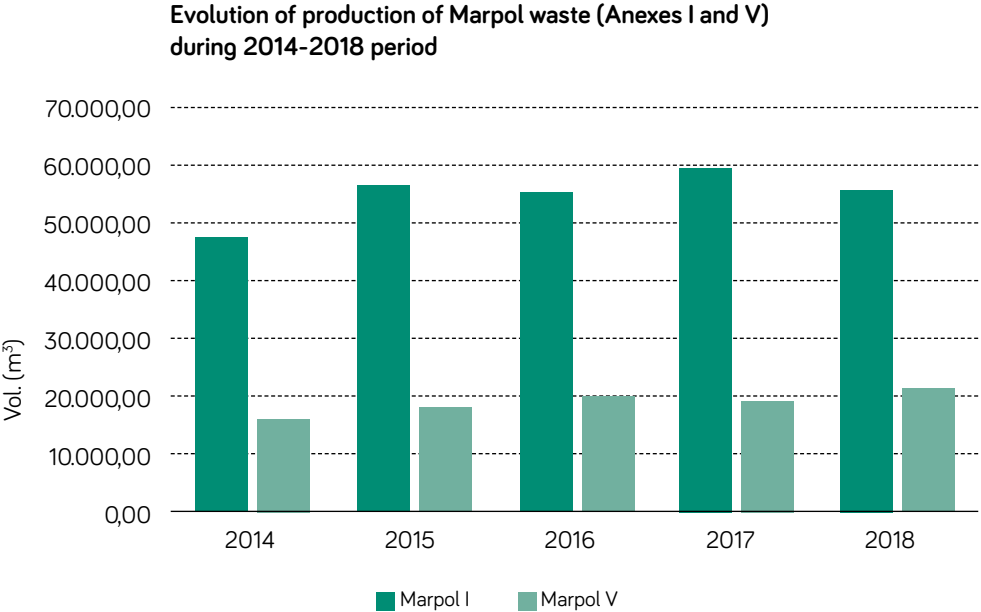
| VOLUME REMOVED (m³) |           |           |           |           |           |
|---------------------|-----------|-----------|-----------|-----------|-----------|
| ANNEX               | 2014      | 2015      | 2016      | 2017      | 2018      |
| Marpol I            | 47.565,00 | 56.725,94 | 55.499,55 | 59.450,36 | 56.327,06 |
| Marpol V            | 16.149,00 | 18.261,91 | 20.094,90 | 19.335,58 | 21.259,69 |

| DISTRIBUTION BY PORTS IN 2018 (m³) |           |           |
|------------------------------------|-----------|-----------|
| PORTS                              | MARPOL I  | MARPOL V  |
| Valencia                           | 49.674,60 | 18.984,17 |
| Sagunto                            | 6.122,50  | 1.934,68  |
| Gandía                             | 529,96    | 340,84    |
| TOTALES                            | 56.327,06 | 21.259,69 |

# 6. State of the Environment

Below, graph 7 shows the evolution over the study period:

Graph 7



## 6.2. Air quality monitoring.

The Port Authority of Valencia checks and monitors various quality parameters that affect the quality of its environment. In this regard, monitoring air quality is one of the Environmental Policy Department's priority objectives. The Port Authority of Valencia uses an instrumentation and monitoring network for this purpose which provides continuous data about air quality and enables us to analyse its status almost in real time. In particular, concentrations of the various pollutants affecting air quality in the port facility are monitored, such as particulate matter (measured in PM10, PM2.5 and PM1 concentrations), sulphur dioxide, nitrogen dioxide, carbon monoxide and ozone. At the same time, meteorological data is recorded by five weather stations situated in significant locations around the port facility.

The plan below shows the strategic location of the various pieces of equipment in the Port of Valencia's air quality network.



The sensors are located in an Air Quality Monitoring Station which was positioned according to recommendations made by the Energy, Environmental and Technological Research Centre (EETRC), in the Transversal de Poniente. This location on the port-city interface means we can track the evolution of pollutants and their potential impact on the area between the port and the city and hence find timely solutions to possible air pollution episodes. Another particle collector is located on the port-city interface in the area closest to the Nazaret neighbourhood.

There is a regular maintenance and data validation plan for the Air Quality Monitoring Station, the Weather Stations and the Particle collectors to ensure the accuracy of the data they supply.

In addition to the stations shown on the map, there are three more weather stations: two at the Port of Sagunto and another at the Port of Gandia.

# 6. State of the Environment

## Air quality monitoring stations



1. East Breakwater Buoy Weather Station



2. Príncipe Felipe Weather Station



3. Silo Weather Station



6. River Turia Particle Collector



7. Immission Station - Particle Collector



4. Xita Weather Station



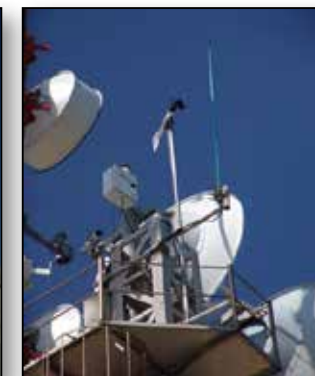
5. Turia Weather Station



Sagunto Offices Weather Station



Sagunto East Breakwater Weather Station



Gandia Serpis Quay Weather Station

# 6. State of the Environment

## 6.2.1. Air quality in the port facilities in 2018

Numerous epidemiological studies have demonstrated the adverse effect on health of occasional or prolonged exposure to high levels of air particles. The most recent studies indicate that smaller diameter particles are responsible for the most important respiratory conditions. Hence there was a clear need to monitor air pollution by particulate matter in terms of not only PM10, but also PM2.5 and PM1.

The PAV, in addition to measuring the air quality within the port area, has put in place various measures to control operations that could have any impact on air quality.

Among these measures, note the control over the wind direction and intensity variables. When certain intensity and duration values are exceeded, operations concerning the loading, unloading or handling of powdery materials are suspended, all through the air quality control network supervised by the PAV's Emergency Control Centre.

To improve and reduce the negative impacts of particle emissions, the PAV has also invested in the construction of physical barriers that minimise the movement of particles in the bulk handling area of Sagunto.

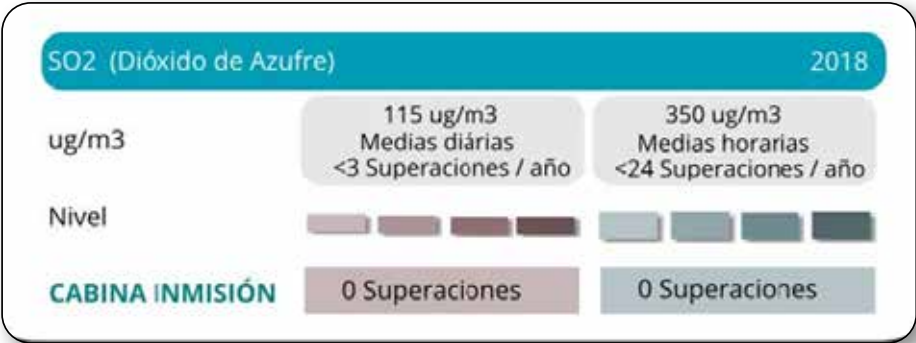
In addition, the inclusion of particle emission minimisation measures is required for any operation performed at PAV sites, such as cleaning the area, equipment maintenance, good handling practices, determination of the maximum height of the pits, in case of storage, etc.

These concentrations are monitored and controlled in accordance with the reference levels established in Spanish Royal Decree 102/2011, of 28 January, on improving air quality.

### Evaluation of the results obtained in 2018 according to reference standard values

The Port Authority of Valencia draws up monthly reports on the data obtained and evaluates trends in these data in order to identify the possible underlying causes. This is done following tables with colorimetric scales showing the quality limit values in the reference standards and the number of exceedances or cumulative average values in each case.

The air indices recorded in 2018 were as follows:



Number of exceedances of the sulphur dioxide (SO<sub>2</sub>) concentration levels



Number of exceedances of the carbon monoxide (CO) concentration levels



Number of exceedances of the annual mean nitrogen dioxide (NO<sub>2</sub>) concentration levels



# 6. State of the Environment

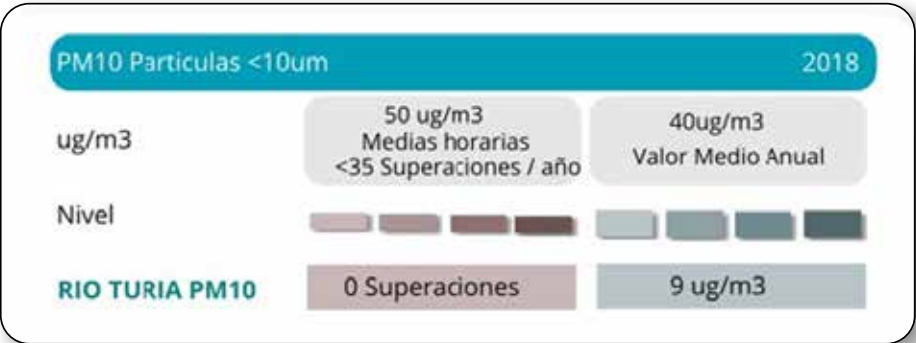


Number of exceedances of the Ozone (O<sub>3</sub>) concentration levels



Number of exceedances and annual mean value of the PM2.5 concentration levels

Note: In the tables above ug/m3 = µg/m3 (microgrammes per cubic metre)



Number of exceedances and annual mean value of the PM10 Particulates concentration levels

## Conclusions on Air Quality Results

Analysis of data for 2018 (January-December) and their evaluation with respect to the applicable limit levels led to the following conclusions:

- The hourly limit values for the environmental parameters SO<sub>2</sub>, NO<sub>2</sub>, O<sub>3</sub> and CO were not exceeded at any time.
- The daily limit value was never exceeded for these parameters.
- The annual average value for NO<sub>2</sub> was below the annual limit value.
- There has been no improvement of the daily PM<sub>10</sub> value in the data registered in the River Turia PC. On the other hand, in the Immission Station 9 exceedances were recorded, without discounting Saharan dust intrusions. The maximum number of exceedances under Royal Decree 102/2011 is 35 for the whole year, therefore the objectives set for this parameter are met.
- The average annual values for PM<sub>10</sub> fall under the admissible annual limit value at both stations.

In conclusion, in 2018 the data registered in both the Immission Station and the River Turia Station did not exceed the limit values for air quality established in Spanish Royal Decree 102/2011, of 28 January, on improving air quality.

## 6.2.2. Environmental concentrations around the Port of Valencia in 2018.

In order to evaluate the results obtains in the port facilities, the data from the measurements that have been made in the city of Valencia by the Regional Department of Agriculture, the Environment, Climate Change and Rural Development have been collected. The statistical data shown in the following table were obtained from the information contained on the website of the mentioned Regional Department.

Annual mean values of the city of Valencia:

| STATION        | SO2<br>µg/m³ | NO2<br>µg/m³ | O3<br>µg/m³ | CO<br>µg/m³ | PM10<br>µg/m³ | PM2.5<br>µg/m³ |
|----------------|--------------|--------------|-------------|-------------|---------------|----------------|
| AVDA. FRANCIA  | 4            | 27           | 52          | 0.2         | 18            | 11             |
| BULEVARD SUR   | 4            | 34           | 50          | -           | -             | -              |
| MOLÍ DEL SOL   | 3            | 21           | 54          | 0.2         | 18            | 16             |
| PISTA DE SILLA | 4            | 36           | 45          | 0.1         | 32            | 15             |
| POLITÉCNICO    | 4            | 18           | 56          | -           | 22            | 14             |
| VIVEROS        | 4            | 23           | 54          | -           | -             | -              |

The annual mean values obtained by the stations of the Port of Valencia are:

| STATION                                 | SO2<br>µg/m³ | NO2<br>µg/m³ | O3<br>µg/m³ |     | PM10<br>µg/m³ | PM2.5<br>µg/m³ |
|-----------------------------------------|--------------|--------------|-------------|-----|---------------|----------------|
| PORT OF VALENCIA -<br>IMMISSION STATION | 5            | 24           | 39          | 0.2 | 26            | -              |
| PORT OF VALENCIA -<br>RIVER TURIA CABIN | -            | -            | -           | -   | 9             | 7              |

The environmental evaluation carried out in line with the regulations indicates that all the parameters are below the level of the “lowest evaluation threshold”, and in line with the lowest legal limits.

In general, the parameters of the Port Authority of Valencia’s network stations are normal and correlate with the automatic stations nearby in the city of Valencia.

In 2018, the results of the data obtained from the Port Authority of Valencia’s network complied with the limit values for air quality established in Spanish Royal Decree 102/2011, of 28 January, on improving air quality.

## 6.2.3. Meteorological data.

The Port Authority of Valencia currently has eight strategically situated weather stations: five at the Port of Valencia, two at the Port of Sagunto and one at the Port of Gandia.

The information provided by these stations is extremely useful for decision-making in a range of port operations, for instance solid bulk operations, where handling has to be stopped when winds reach a specific intensity to avoid the possible release of particles into the air.

The monthly statistical data recorded at some of the measuring stations in the ports of Valencia, Sagunto and Gandia during 2018 is given below.

# 6. State of the Environment

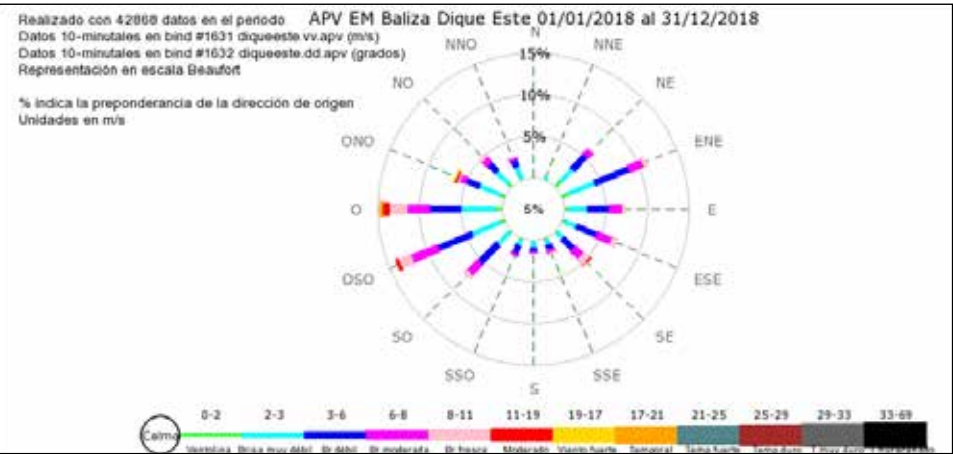


Monthly statistical values of the MA.V.1 station EAST BREAKWATER BUOY. EM.1 - Year 2018

|            | DD<br>(°grados) |        | VV<br>(m/s) |       |       |      | TMP<br>(°C) |       |       |       | HR<br>(%) |       |       |       |
|------------|-----------------|--------|-------------|-------|-------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|
|            | Muestras        | Media  | Muestras    | Media | Máx.  | Min. | Muestras    | Media | Máx.  | Min.  | Muestras  | Media | Máx.  | Min.  |
| Enero      | 31              | 47.29  | 31          | 5.03  | 9.61  | 2.11 | 31          | 13.46 | 19.24 | 10.22 | 31        | 53.74 | 78.58 | 34.55 |
| Febrero    | 28              | 15.93  | 28          | 4.12  | 6.75  | 1.46 | 28          | 11.05 | 15.21 | 7.92  | 28        | 59.58 | 92.10 | 33.19 |
| Marzo      | 30              | 50.77  | 30          | 6.12  | 10.14 | 2.83 | 30          | 14.61 | 20.06 | 9.93  | 30        | 49.39 | 84.79 | 30.36 |
| Abril      | 29              | 43.89  | 29          | 4.37  | 9.12  | 1.24 | 29          | 16.31 | 18.92 | 13.72 | 30        | 59.52 | 84.32 | 41.05 |
| Mayo       | 31              | 326.34 | 31          | 3.64  | 6.89  | 1.92 | 31          | 18.67 | 21.79 | 14.28 | 31        | 63.58 | 76.23 | 37.73 |
| Junio      | 29              | 19.78  | 29          | 3.73  | 5.79  | 1.94 | 29          | 23.07 | 25.56 | 19.68 | 30        | 62.22 | 90.05 | 37.97 |
| Julio      | 31              | 46.15  | 31          | 3.93  | 6.32  | 2.69 | 31          | 26.46 | 28.24 | 25.59 | 31        | 67.67 | 76.19 | 33.87 |
| Agosto     | 6               | 315.29 | 6           | 4.18  | 4.49  | 2.65 | 6           | 26.99 | 27.33 | 26.69 | 6         | 72.17 | 74.95 | 62.67 |
| Septiembre | 30              | 14.44  | 30          | 3.70  | 6.49  | 2.18 | 30          | 25.06 | 26.76 | 22.15 | 29        | 73.21 | 86.12 | 50.56 |
| Octubre    | 28              | 22.37  | 28          | 3.73  | 8.70  | 1.42 | 28          | 19.43 | 22.82 | 11.49 | 27        | 68.23 | 93.13 | 37.67 |
| Noviembre  | 30              | 57.29  | 30          | 4.78  | 8.22  | 2.64 | 30          | 14.79 | 18.10 | 11.89 | 30        | 66.42 | 92.50 | 42.71 |
| Diciembre  | 29              | 58.15  | 29          | 3.78  | 8.64  | 1.71 | 31          | 12.99 | 15.49 | 10.64 | 31        | 65.15 | 84.42 | 42.02 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.V.1. EAST BREAKWATER BUOY. EM.1 - Year 2018

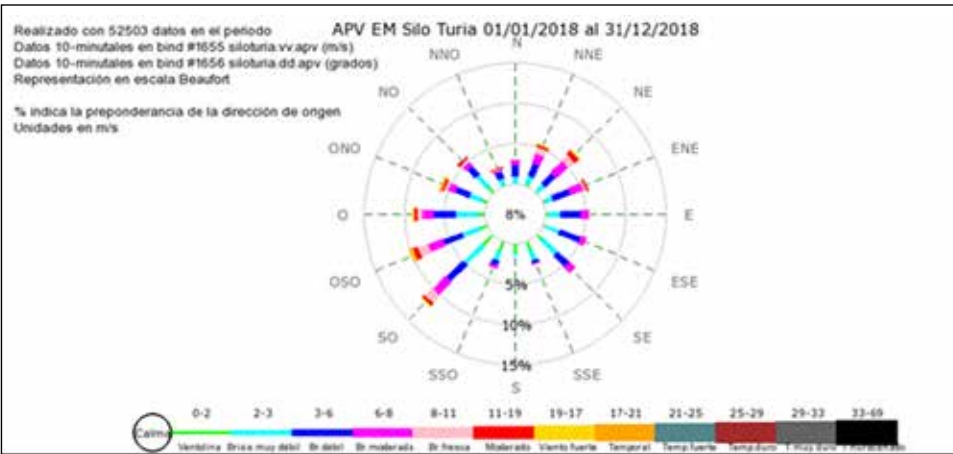


Monthly statistical values of the MA.V.6 SILO station EM4 - Year 2018

|            | DD<br>(°grados) |        | VV<br>(m/s) |       |       |      |
|------------|-----------------|--------|-------------|-------|-------|------|
|            | Muestras        | Media  | Muestras    | Media | Máx.  | Min. |
| Enero      | 31              | 43.24  | 31          | 3.14  | 9.87  | 1.12 |
| Febrero    | 28              | 12.43  | 28          | 2.60  | 5.19  | 0.40 |
| Marzo      | 30              | 55.17  | 30          | 6.11  | 12.42 | 0.99 |
| Abril      | 30              | 29.49  | 30          | 5.39  | 12.90 | 2.10 |
| Mayo       | 31              | 1.68   | 31          | 3.61  | 9.20  | 1.60 |
| Junio      | 30              | 10.96  | 30          | 3.82  | 6.32  | 1.47 |
| Julio      | 31              | 22.39  | 31          | 4.06  | 6.76  | 1.91 |
| Agosto     | 31              | 353.41 | 31          | 4.05  | 12.35 | 1.88 |
| Septiembre | 30              | 18.75  | 30          | 4.07  | 10.64 | 2.20 |
| Octubre    | 31              | 28.68  | 31          | 4.36  | 10.89 | 1.47 |
| Noviembre  | 30              | 47.63  | 30          | 5.73  | 9.94  | 2.65 |
| Diciembre  | 31              | 47.33  | 31          | 4.17  | 10.76 | 1.94 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.V.6.SILO.EM4 - Year 2018



# 6. State of the Environment

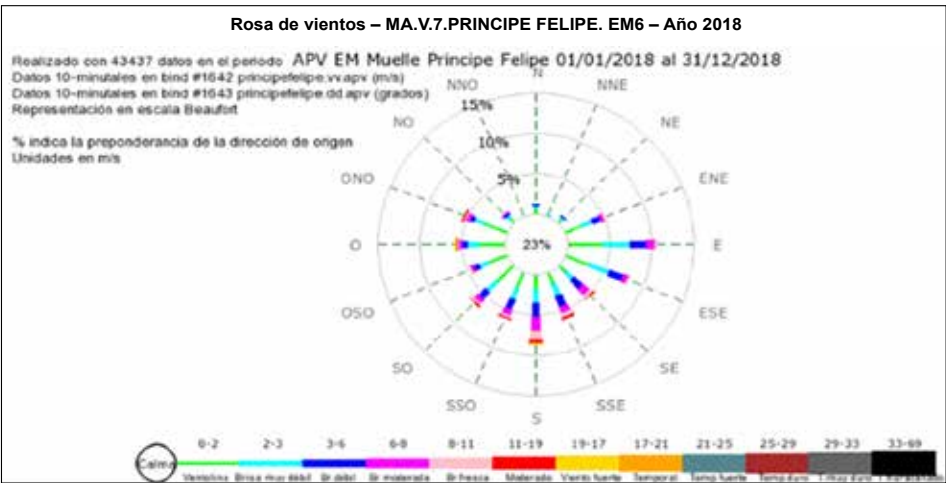


Monthly statistical values of the MA.V.7 PRINCIPE FELIPE station. EM6 - Year 2018

|            | DD<br>(°grados) |        | VV<br>(m/s) |       |      |      | TMP<br>(°C) |       |       |       | HR<br>(%) |       |       |       | RS<br>(w/m2) |        |        |        | PLU<br>(l/m2) |
|------------|-----------------|--------|-------------|-------|------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|--------------|--------|--------|--------|---------------|
|            | Muestras        | Media  | Muestras    | Media | Máx. | Mín. | Muestras    | Media | Máx.  | Mín.  | Muestras  | Media | Máx.  | Mín.  | Muestras     | Media  | Máx.   | Mín.   |               |
| Enero      | 31              | 5.93   | 31          | 3.36  | 8.38 | 0.89 | 31          | 13.92 | 20.41 | 10.22 | 31        | 54.67 | 79.18 | 36.13 | 31           | 97.83  | 129.50 | 23.11  | 20.00         |
| Febrero    | 28              | 12.28  | 28          | 2.58  | 5.25 | 0.81 | 28          | 11.29 | 16.41 | 7.24  | 28        | 56.73 | 84.78 | 34.30 | 28           | 110.72 | 176.12 | 1.17   | 35.60         |
| Marzo      | 30              | 355.30 | 30          | 4.87  | 9.47 | 1.46 | 30          | 14.66 | 21.08 | 10.40 | 30        | 48.02 | 81.13 | 31.92 | 30           | 158.65 | 231.81 | 59.23  | 12.10         |
| Abril      | 30              | 334.50 | 30          | 2.00  | 7.53 | 0.67 | 30          | 16.65 | 19.83 | 12.34 | 30        | 56.33 | 79.44 | 37.10 | 30           | 196.57 | 262.03 | 71.82  | 8.00          |
| Mayo       | 31              | 320.59 | 31          | 1.85  | 4.28 | 0.42 | 31          | 19.59 | 22.29 | 15.12 | 31        | 52.56 | 70.58 | 36.13 | 31           | 233.40 | 344.00 | 156.84 | 8.60          |
| Junio      | 30              | 317.91 | 30          | 1.82  | 4.01 | 0.71 | 30          | 23.79 | 27.61 | 19.91 | 30        | 54.41 | 71.35 | 19.25 | 30           | 255.46 | 338.70 | 83.81  | 56.80         |
| Julio      | 31              | 338.63 | 31          | 1.76  | 4.06 | 0.72 | 31          | 27.32 | 30.08 | 25.84 | 31        | 60.43 | 69.82 | 34.68 | 31           | 265.43 | 354.78 | 166.93 | 2.90          |
| Agosto     | 6               | 53.17  | 6           | 1.72  | 1.70 | 0.87 | 6           | 27.51 | 28.23 | 26.75 | 6         | 66.82 | 67.94 | 64.86 | 6            | 221.22 | 263.23 | 147.73 | 2.80          |
| Septiembre | 30              | 4.09   | 30          | 1.44  | 3.50 | 0.52 | 30          | 24.68 | 27.22 | 21.98 | 30        | 68.50 | 79.80 | 48.88 | 30           | 161.46 | 220.92 | 21.93  | 77.90         |
| Octubre    | 28              | 0.02   | 28          | 1.80  | 6.54 | 0.21 | 28          | 19.24 | 23.22 | 12.38 | 28        | 64.23 | 87.53 | 37.67 | 28           | 133.14 | 194.77 | 5.94   | 155.80        |
| Noviembre  | 30              | 25.95  | 30          | 2.87  | 7.77 | 1.02 | 30          | 15.71 | 19.07 | 12.71 | 30        | 66.25 | 92.50 | 42.71 | 30           | 84.06  | 147.52 | 9.68   | 98.00         |
| Diciembre  | 29              | 24.94  | 29          | 2.09  | 7.78 | 0.44 | 29          | 13.63 | 17.04 | 10.73 | 31        | 63.62 | 79.34 | 42.02 | 29           | 88.90  | 107.30 | 50.59  | 0.00          |
| Acumulado  |                 |        |             |       |      |      |             |       |       |       |           |       |       |       |              |        |        |        | 478.50        |

NOTE: Data calculated on an hourly basis

Wind rose – MA.V.7.PRINCIPE FELIPE. EM6 – Year 2018

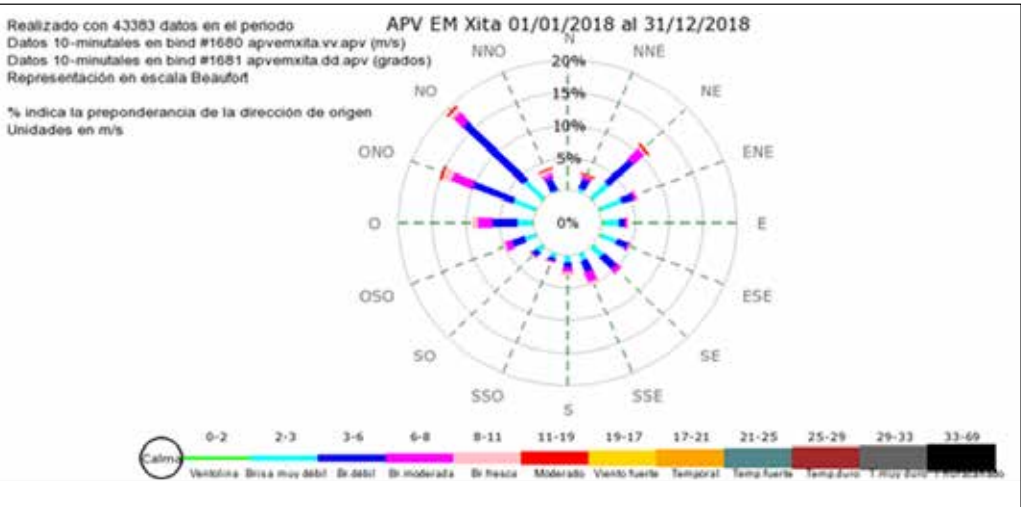


Monthly statistical values of the MA.V.2 station. XITA. EM2 - Year 2018

|            | DD<br>(°grados) |        | VV<br>(m/s) |       |       |      | TMP<br>(°C) |       |       |       | HR<br>(%) |       |       |       | PRB<br>(mb) |        |        |        |
|------------|-----------------|--------|-------------|-------|-------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|-------------|--------|--------|--------|
|            | Muestras        | Media  | Muestras    | Media | Máx.  | Mín. | Muestras    | Media | Máx.  | Mín.  | Muestras  | Media | Máx.  | Mín.  | Muestras    | Media  | Máx.   | Mín.   |
| Enero      | 31              | 327.90 | 31          | 4.87  | 12.46 | 2.80 | 31          | 13.27 | 18.59 | 10.19 | 31        | 57.19 | 77.94 | 40.35 | 31          | 1020.9 | 1034.3 | 998.7  |
| Febrero    | 28              | 329.07 | 28          | 4.34  | 9.12  | 2.54 | 28          | 10.80 | 14.92 | 8.04  | 28        | 59.60 | 81.87 | 39.32 | 28          | 1012.9 | 1022.4 | 1000.9 |
| Marzo      | 30              | 327.12 | 30          | 5.57  | 8.87  | 3.38 | 30          | 14.40 | 19.20 | 9.91  | 30        | 50.99 | 80.00 | 36.69 | 30          | 1006.9 | 1020.7 | 992.3  |
| Abril      | 30              | 10.67  | 30          | 4.93  | 9.33  | 2.86 | 30          | 16.16 | 18.92 | 12.18 | 30        | 60.59 | 79.90 | 39.96 | 30          | 1013.0 | 1024.4 | 994.4  |
| Mayo       | 31              | 357.48 | 31          | 3.85  | 6.96  | 2.28 | 31          | 18.36 | 20.49 | 14.24 | 31        | 66.64 | 80.06 | 44.22 | 31          | 1014.0 | 1016.9 | 1009.2 |
| Junio      | 30              | 36.00  | 30          | 3.88  | 5.57  | 2.41 | 30          | 22.93 | 25.25 | 19.53 | 30        | 64.63 | 73.95 | 52.52 | 30          | 1014.2 | 1019.8 | 1009.1 |
| Julio      | 31              | 13.19  | 31          | 3.76  | 5.51  | 2.78 | 31          | 26.22 | 28.51 | 25.43 | 31        | 67.20 | 74.57 | 44.42 | 31          | 1013.9 | 1018.8 | 1010.7 |
| Agosto     | 6               | 326.36 | 6           | 3.69  | 3.91  | 2.79 | 6           | 26.77 | 27.13 | 26.46 | 6         | 72.19 | 73.71 | 70.46 | 6           | 1016.2 | 1017.8 | 1015.3 |
| Septiembre | 30              | 25.00  | 30          | 3.94  | 8.28  | 2.84 | 30          | 24.79 | 26.55 | 22.06 | 30        | 69.59 | 76.14 | 54.40 | 30          | 1018.3 | 1027.4 | 1011.5 |
| Octubre    | 28              | 1.97   | 28          | 4.30  | 7.80  | 2.89 | 28          | 19.49 | 22.56 | 12.40 | 28        | 64.43 | 82.15 | 40.58 | 28          | 1014.2 | 1024.8 | 999.5  |
| Noviembre  | 30              | 309.84 | 30          | 5.15  | 8.48  | 3.49 | 30          | 15.75 | 18.67 | 12.82 | 30        | 63.84 | 83.31 | 45.42 | 30          | 1014.5 | 1022.9 | 1000.7 |
| Diciembre  | 29              | 293.83 | 29          | 4.26  | 8.92  | 3.06 | 29          | 13.75 | 16.52 | 11.09 | 29        | 62.36 | 78.54 | 43.53 | 29          | 1024.5 | 1029.8 | 1015.1 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.V.2. XITA. EM2 - Year 2018





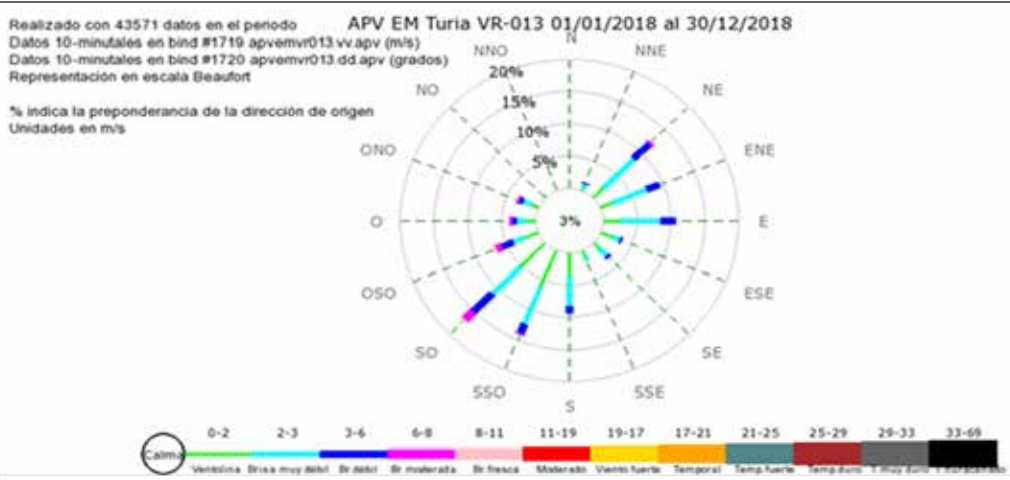
# 6. State of the Environment

Monthly statistical values of the MA.V.6 station. TURIA. EM5 - Year 2018

|            | DD<br>("grados) |        | VV<br>(m/s) |       |      |      | TMP<br>("C) |       |       |       | HR<br>(%) |       |       |       | PRB<br>(mb) |        |        |        |
|------------|-----------------|--------|-------------|-------|------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|-------------|--------|--------|--------|
|            | Muestras        | Media  | Muestras    | Media | Máx. | Mín. | Muestras    | Media | Máx.  | Mín.  | Muestras  | Media | Máx.  | Mín.  | Muestras    | Media  | Máx.   | Mín.   |
| Enero      | 31              | 18.60  | 31          | 2.66  | 5.45 | 1.29 | 31          | 13.54 | 19.48 | 10.03 | 31        | 56.64 | 74.74 | 40.55 | 31          | 1020.1 | 1033.4 | 998.1  |
| Febrero    | 28              | 15.28  | 28          | 2.20  | 3.84 | 1.20 | 28          | 11.17 | 15.90 | 7.88  | 28        | 58.91 | 79.32 | 39.33 | 28          | 1012.1 | 1021.3 | 1000.5 |
| Marzo      | 30              | 26.81  | 30          | 3.34  | 5.83 | 1.53 | 30          | 15.05 | 20.85 | 10.55 | 30        | 50.00 | 77.46 | 37.74 | 30          | 1005.9 | 1019.7 | 991.8  |
| Abril      | 30              | 27.74  | 30          | 2.76  | 6.42 | 1.28 | 30          | 16.83 | 19.92 | 12.41 | 30        | 58.84 | 76.29 | 40.56 | 30          | 1011.8 | 1023.2 | 993.6  |
| Mayo       | 31              | 329.13 | 31          | 2.16  | 4.10 | 1.50 | 31          | 19.25 | 21.61 | 15.11 | 31        | 63.04 | 76.29 | 41.99 | 31          | 1012.7 | 1015.6 | 1007.9 |
| Junio      | 30              | 8.37   | 30          | 2.31  | 3.58 | 1.74 | 30          | 24.01 | 26.20 | 20.77 | 30        | 61.22 | 68.29 | 41.05 | 30          | 1012.9 | 1018.3 | 1007.7 |
| Julio      | 31              | 22.68  | 31          | 2.44  | 3.38 | 1.98 | 31          | 27.31 | 29.71 | 26.60 | 31        | 62.90 | 69.55 | 42.11 | 31          | 1012.5 | 1017.5 | 1009.4 |
| Agosto     | 6               | 70.27  | 6           | 2.30  | 2.60 | 1.79 | 6           | 27.73 | 28.27 | 27.30 | 6         | 67.27 | 68.16 | 66.54 | 6           | 1014.9 | 1016.5 | 1014.0 |
| Septiembre | 30              | 347.86 | 30          | 2.08  | 3.70 | 1.39 | 30          | 25.23 | 27.40 | 22.33 | 30        | 66.81 | 73.69 | 52.41 | 30          | 1017.0 | 1026.2 | 1010.1 |
| Octubre    | 28              | 5.12   | 28          | 2.01  | 4.36 | 1.20 | 28          | 19.95 | 26.14 | 12.56 | 28        | 63.07 | 78.77 | 41.49 | 28          | 1012.9 | 1023.4 | 998.6  |
| Noviembre  | 30              | 31.28  | 30          | 2.53  | 4.17 | 1.49 | 30          | 15.69 | 19.07 | 12.62 | 30        | 63.23 | 80.66 | 45.72 | 30          | 1013.4 | 1021.6 | 999.9  |
| Diciembre  | 28              | 15.82  | 28          | 1.98  | 4.51 | 1.15 | 31          | 13.75 | 16.44 | 10.78 | 28        | 61.79 | 75.09 | 43.53 | 28          | 1023.3 | 1028.8 | 1014.2 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.V.6. TURIA. EM5 - Year 2018

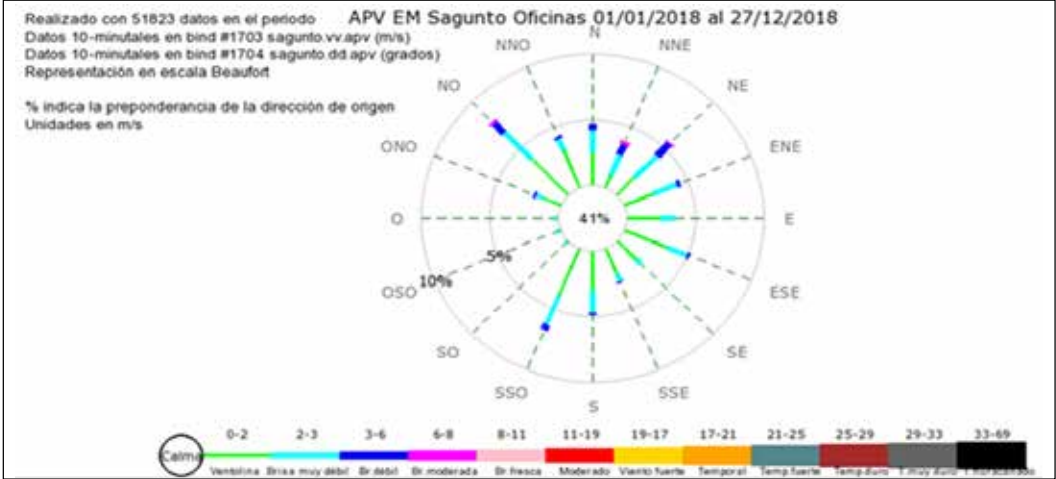


Monthly statistical values of the MA.S.1 station. OFFICES.EM1 - Year 2018

|            | DD<br>("grados) |        | VV<br>(m/s) |       |      |      | TMP<br>("C) |       |       |       | HR<br>(%) |       |       |       | R5<br>(w/m2) |       |       |       | PRB<br>(mb) |        |        |        |
|------------|-----------------|--------|-------------|-------|------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|--------------|-------|-------|-------|-------------|--------|--------|--------|
|            | Muestras        | Media  | Muestras    | Media | Máx. | Mín. | Muestras    | Media | Máx.  | Mín.  | Muestras  | Media | Máx.  | Mín.  | Muestras     | Media | Máx.  | Mín.  | Muestras    | Media  | Máx.   | Mín.   |
| Enero      | 31              | 31.96  | 31          | 1.19  | 5.76 | 0.17 | 31          | 13.64 | 21.09 | 9.56  | 31        | 52.48 | 72.72 | 31.89 | 31           | 9.95  | 13.69 | 1.99  | 31          | 1015.2 | 1028.9 | 993.6  |
| Febrero    | 28              | 355.50 | 28          | 1.09  | 3.34 | 0.20 | 28          | 10.81 | 15.63 | 7.05  | 28        | 55.08 | 85.85 | 33.06 | 28           | 11.55 | 18.50 | 0.16  | 28          | 1007.7 | 1016.9 | 995.9  |
| Marzo      | 30              | 18.66  | 30          | 1.50  | 3.82 | 0.43 | 30          | 14.63 | 19.40 | 10.31 | 30        | 47.92 | 77.91 | 28.86 | 30           | 16.27 | 22.78 | 7.09  | 30          | 1001.2 | 1015.0 | 987.1  |
| Abril      | 30              | 22.00  | 30          | 1.29  | 3.17 | 0.40 | 30          | 16.55 | 19.71 | 12.66 | 30        | 57.23 | 77.48 | 35.97 | 30           | 19.64 | 27.57 | 7.69  | 30          | 1007.2 | 1018.6 | 988.6  |
| Mayo       | 31              | 358.89 | 31          | 1.14  | 4.13 | 0.29 | 31          | 18.88 | 20.90 | 14.75 | 31        | 63.07 | 79.10 | 38.16 | 31           | 21.79 | 30.01 | 10.58 | 31          | 1008.0 | 1011.1 | 1003.1 |
| Junio      | 30              | 24.85  | 30          | 1.13  | 2.14 | 0.33 | 30          | 23.71 | 26.36 | 19.90 | 30        | 60.07 | 72.36 | 39.31 | 30           | 25.67 | 31.42 | 15.28 | 30          | 1007.8 | 1013.7 | 1002.4 |
| Julio      | 31              | 31.85  | 31          | 1.29  | 2.58 | 0.67 | 31          | 26.76 | 29.16 | 25.17 | 31        | 63.56 | 71.36 | 42.19 | 31           | 22.60 | 28.53 | 9.51  | 31          | 1007.1 | 1012.2 | 1002.3 |
| Agosto     | 31              | 17.61  | 31          | 0.85  | 4.01 | 0.21 | 31          | 27.43 | 30.49 | 24.78 | 31        | 61.68 | 70.95 | 48.36 | 31           | 21.71 | 26.39 | 12.12 | 31          | 1008.8 | 1013.8 | 1004.4 |
| Septiembre | 30              | 7.04   | 30          | 1.05  | 3.38 | 0.26 | 30          | 24.92 | 27.09 | 22.41 | 30        | 66.00 | 76.10 | 47.39 | 30           | 16.91 | 22.33 | 3.11  | 30          | 1011.6 | 1021.1 | 1004.8 |
| Octubre    | 31              | 357.99 | 31          | 1.14  | 3.12 | 0.16 | 31          | 19.43 | 22.92 | 12.15 | 31        | 61.31 | 81.70 | 33.13 | 31           | 14.12 | 19.46 | 1.51  | 31          | 1007.5 | 1018.6 | 993.7  |
| Noviembre  | 30              | 15.71  | 30          | 1.13  | 2.62 | 0.11 | 30          | 15.38 | 18.82 | 12.58 | 30        | 62.91 | 83.61 | 38.09 | 30           | 8.93  | 15.53 | 0.39  | 30          | 1008.5 | 1016.6 | 995.5  |
| Diciembre  | 27              | 13.37  | 27          | 0.60  | 2.60 | 0.11 | 27          | 13.88 | 17.00 | 11.23 | 27        | 61.91 | 75.61 | 41.47 | 27           | 9.47  | 11.17 | 2.13  | 27          | 1017.7 | 1023.9 | 1001.7 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.S.1. OFFICES.EM1 – Year 2018



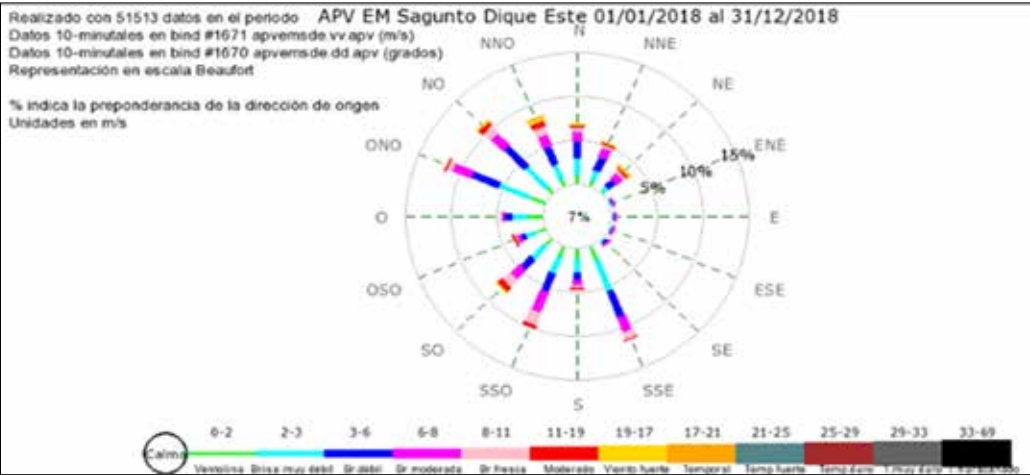
# 6. State of the Environment

Monthly statistical values of the MA.S.1 station. EAST BREAKWATER BUOY EM2 - Year 2018

|            | DD<br>(°grados) |        | VV<br>(m/s) |       |       |      |
|------------|-----------------|--------|-------------|-------|-------|------|
|            | Muestras        | Media  | Muestras    | Media | Máx.  | Min. |
| Enero      | 31              | 35.31  | 31          | 5.02  | 9.93  | 1.29 |
| Febrero    | 28              | 344.19 | 28          | 3.91  | 8.34  | 1.42 |
| Marzo      | 30              | 18.85  | 30          | 5.72  | 9.60  | 1.98 |
| Abril      | 30              | 10.26  | 30          | 4.43  | 10.77 | 1.25 |
| Mayo       | 31              | 29.52  | 31          | 2.70  | 6.25  | 1.17 |
| Junio      | 30              | 16.42  | 30          | 2.85  | 7.13  | 0.71 |
| Julio      | 31              | 1.13   | 31          | 4.01  | 8.74  | 1.58 |
| Agosto     | 31              | 25.29  | 31          | 5.12  | 15.74 | 2.39 |
| Septiembre | 25              | 349.04 | 25          | 6.43  | 15.80 | 3.02 |
| Octubre    | 31              | 358.74 | 31          | 5.97  | 14.91 | 1.01 |
| Noviembre  | 30              | 22.41  | 30          | 4.13  | 7.84  | 1.38 |
| Diciembre  | 31              | 41.16  | 31          | 2.63  | 8.39  | 0.84 |

NOTE: Data calculated on an hourly basis

Wind rose – MA.S.1. EAST BREAKWATER BUOY EM2 – Year 2018

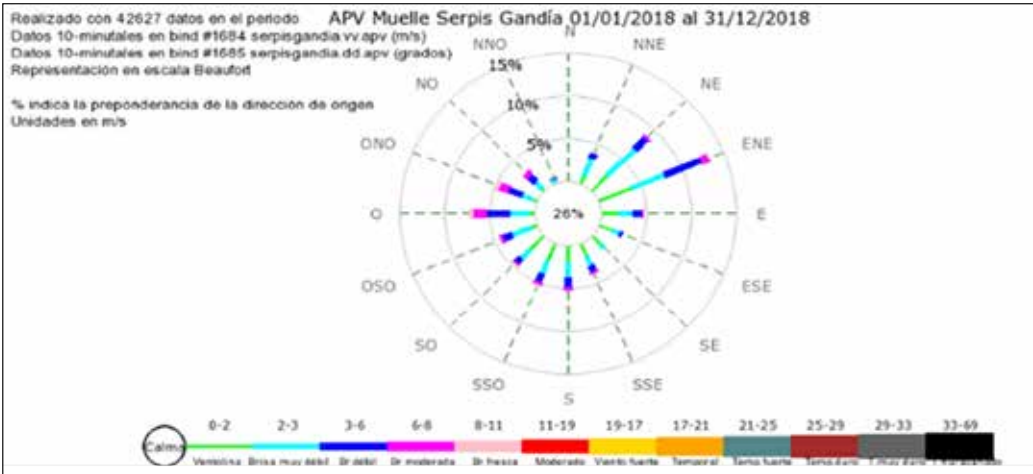


Monthly statistical values of the MA.G.EM1 station. SERPIS QUAY – Year 2018

|            | DD<br>(°grados) |       | VV<br>(m/s) |       |      |      | TMP<br>(°C) |       |       |       | HR<br>(%) |       |       |       | RS<br>(w/m2) |        |        |        | PRB<br>(mm) |        |        |        | II<br>(l/m2) |           |       |           |
|------------|-----------------|-------|-------------|-------|------|------|-------------|-------|-------|-------|-----------|-------|-------|-------|--------------|--------|--------|--------|-------------|--------|--------|--------|--------------|-----------|-------|-----------|
|            | Muestras        | Media | Muestras    | Media | Máx. | Min. | Muestras    | Media | Máx.  | Min.  | Muestras  | Media | Máx.  | Min.  | Muestras     | Media  | Máx.   | Min.   | Muestras    | Media  | Máx.   | Min.   | Muestras     | Media     | Máx.  | Acumulado |
| Enero      | 31              | 41.07 | 31          | 2.92  | 8.31 | 1.47 | 31          | 13.66 | 19.73 | 9.85  | 31        | 69.45 | 95.01 | 47.64 | 31           | 127.01 | 157.97 | 65.81  | 31          | 1019.9 | 1032.7 | 997.0  | 31           | 1.68      | 33.70 | 52.00     |
| Febrero    | 28              | 343.6 | 28          | 2.33  | 3.61 | 0.90 | 28          | 11.26 | 15.99 | 7.71  | 28        | 74.20 | 96.39 | 58.64 | 28           | 152.00 | 231.49 | 49.17  | 28          | 1011.6 | 1021.0 | 999.4  | 28           | 3.31      | 19.30 | 92.70     |
| Marzo      | 30              | 11.55 | 30          | 3.04  | 4.78 | 1.70 | 30          | 15.45 | 20.39 | 10.24 | 30        | 60.47 | 89.49 | 44.01 | 30           | 207.90 | 295.93 | 93.61  | 30          | 1006.1 | 1019.6 | 991.1  | 30           | 0.30      | 3.50  | 9.00      |
| Abril      | 25              | 15.50 | 30          | 2.68  | 4.81 | 1.26 | 30          | 16.51 | 20.36 | 12.71 | 30        | 66.14 | 88.80 | 36.40 | 30           | 243.24 | 327.35 | 91.69  | 30          | 1011.8 | 1023.0 | 994.83 | 30           | 0.25      | 2.70  | 7.60      |
| Mayo       | 31              | 17.66 | 31          | 2.82  | 4.20 | 1.83 | 31          | 20.20 | 24.43 | 14.75 | 31        | 56.68 | 76.01 | 37.38 | 31           | 297.00 | 392.73 | 199.51 | 31          | 1012.5 | 1015.6 | 1007.0 | 31           | 0.11      | 2.40  | 3.40      |
| Junio      | 30              | 36.64 | 30          | 2.85  | 4.43 | 1.73 | 30          | 25.41 | 28.83 | 21.05 | 30        | 57.48 | 73.77 | 40.77 | 30           | 281.46 | 347.81 | 139.22 | 30          | 1012.7 | 1018.3 | 1008.1 | 30           | 1.17      | 31.00 | 35.00     |
| Julio      | 30              | 32.73 | 30          | 2.99  | 4.09 | 1.60 | 30          | 26.68 | 31.43 | 27.12 | 30        | 63.44 | 75.84 | 31.99 | 30           | 283.44 | 343.27 | 221.40 | 30          | 1012.4 | 1017.0 | 1009.2 | 30           | 0.05      | 1.60  | 1.60      |
| Agosto     | 6               | 21.43 | 6           | 3.27  | 3.87 | 2.15 | 6           | 26.77 | 27.04 | 25.86 | 6         | 73.71 | 75.81 | 72.14 | 6            | 274.98 | 299.40 | 199.35 | 6           | 1014.6 | 1016.3 | 1013.8 | 6            | 0.00      | 0.00  | 0.00      |
| Septiembre | 30              | 348.1 | 30          | 2.62  | 5.30 | 1.76 | 30          | 24.63 | 26.96 | 21.40 | 30        | 78.69 | 95.94 | 66.76 | 30           | 220.89 | 273.64 | 97.58  | 30          | 1016.8 | 1025.9 | 1010.1 | 30           | 3.86      | 27.20 | 115.9     |
| Octubre    | 27              | 353.3 | 9           | 2.68  | 4.97 | 1.75 | 27          | 19.20 | 22.99 | 13.30 | 27        | 77.89 | 100.0 | 45.09 | 27           | 174.13 | 248.89 | 66.49  | 27          | 1012.8 | 1023.7 | 998.4  | 27           | 3.29      | 32.00 | 88.10     |
| Noviembre  | 25              | 42.84 | -           | -     | -    | -    | 25          | 15.91 | 18.91 | 12.98 | 30        | 76.15 | 100.0 | 54.51 | 25           | 122.54 | 190.82 | 40.25  | 25          | 1013.6 | 1021.9 | 1004.5 | 25           | 6.28      | 138.0 | 156.9     |
| Diciembre  | 27              | 40.06 | -           | -     | -    | -    | 31          | 14.39 | 18.20 | 10.72 | 31        | 68.59 | 85.89 | 48.75 | 27           | 114.15 | 138.06 | 56.37  | 27          | 1024.1 | 1029.3 | 1015.2 | 27           | 0.82      | 1.50  | 22.20     |
| TOTAL      |                 |       |             |       |      |      |             |       |       |       |           |       |       |       |              |        |        |        |             |        |        |        |              | Acumulado |       | 584.40    |

NOTE: Data calculated on an hourly basis

Wind rose – MA.G.EM1. SERPIS QUAY – Year 2018





# 6. State of the Environment

## 6.3. Noise quality control network

The Port Authority of Valencia checks and monitors noise emissions in the port area. Monitoring noise quality is thus another of the Environmental Policy Department’s priority objectives.

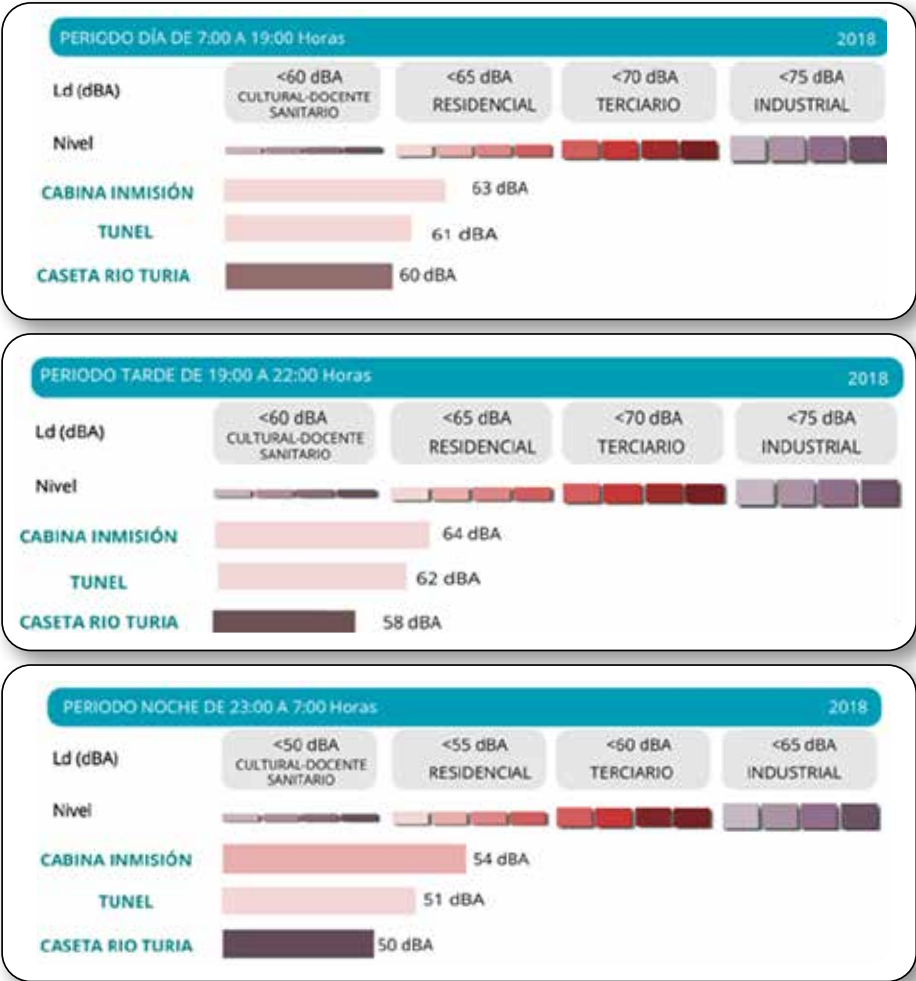
The Port Authority of Valencia has three sound level meters to carry out this monitoring which are strategically situated on the port-city interface and enable noise quality to be analysed almost in real time.

The locations of the noise monitoring terminals are shown in the following image:



### 6.3.1. Results obtained in 2018 according to the reference standard values

Throughout 2018, monthly reports were drawn up about the evolution of the data recorded in order to identify trends. The graph below shows the annual average per station in 2018, using as a reference the noise quality objectives applicable to existing built-up areas in Table A of Annex II in Spanish Royal Decree 1367/2007, of 19 November, for the 3 evaluation periods (the annual average for daytime and evening should be less than 75 dB and for night-time it should be less than 65 dB):



After the analysis of the data in the annual period evaluated (January-December 2018), it can be concluded that all the noise level measurement stations fulfil the noise quality objectives for predominantly Industrial sectors in Royal Decree 1367/2007, of 19 October, implementing Law 37/2003, of 17 November, on Noise, as regards noise zoning, quality objectives and noise emissions.

# 6. State of the Environment

## 6.3.2. “Static” Sound Maps.

Some years ago, the Port Authority of Valencia drew up static maps for the ports of Gandia, Sagunto and Valencia. “In situ” readings were taken at a number of representative sites in the port facilities during the day and night and these were then used to draw up the corresponding noise maps.

These maps showed that the impact of the noise generated in the area around the ports of Gandia, Sagunto, and Valencia were generally confined to the service area.

Creating the static map for the Port of Gandia involved taking readings for 10 minutes in each one-hour period at 32 monitoring sites. These readings were taken over two days, one with vessels in the port and the other without in order to analyse their impact on noise levels in the area.

Continuous readings were subsequently taken over 24 hours at two representative monitoring sites close to the port-city interface.



Lday (without ships in port) Port of Gandia



Lday (with ships in port) Port of Gandia

These maps concluded that the levels of noise emitted into the external environment of the noise areas, during the morning, afternoon and night, measures on 30 November and 1 December 2009 are below the noise immission limit levels applicable to port infrastructure and to activities set out in Royal Decree 1367/2007 for sectors in the territory that predominantly use land for industrial purposes.

## 6.3.3. “Predictive” Sound Maps.

Since 2011, there have been updates to the noise prediction maps of the ports of Sagunto and Valencia; it was during 2012 that work began to update the noise map of the port of Gandia, and it finished at the end of 2013. Version 8 of the Predictor calculation software was used with the HARMONOISE NOMEPORTS model for these updates.

In the case of the Port of Valencia, the initial information used for the 2008 map was updated and adapted to new circumstances of the port: road traffic, the type of operations carried out, noise power of the machinery used in each area, work schedules and shifts, etc., in order to make the calculations.



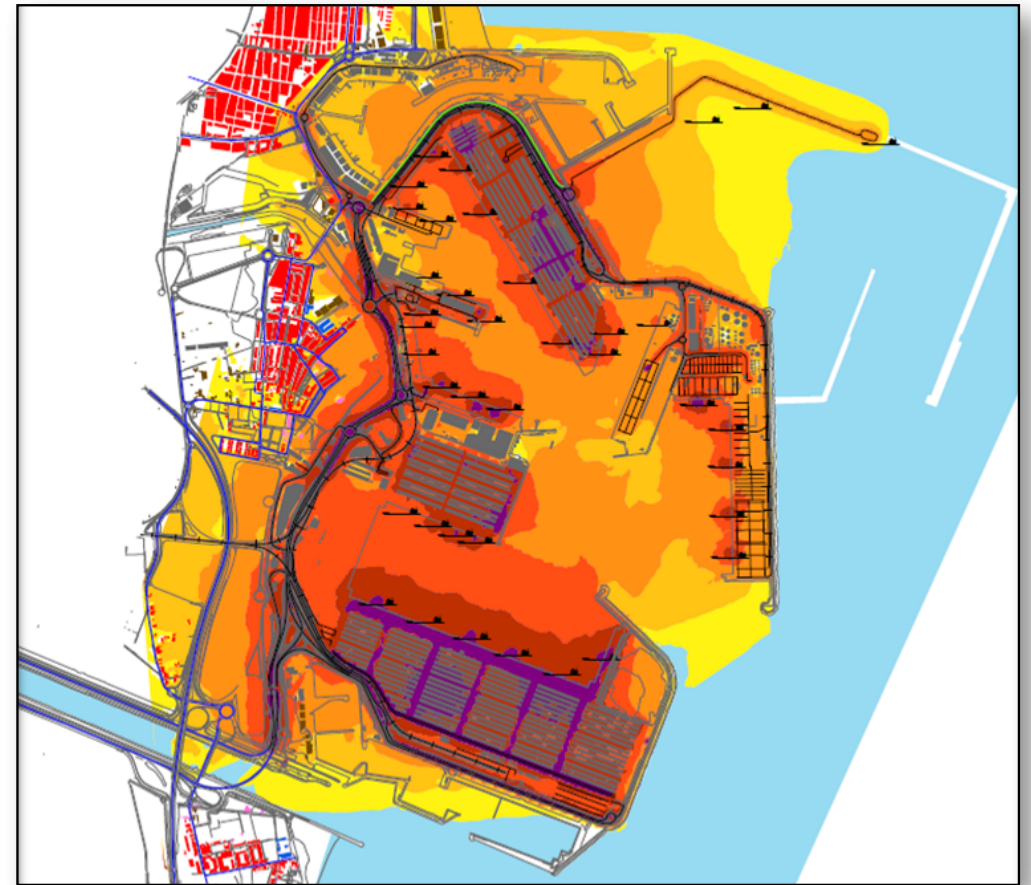
# 6. State of the Environment

Based on all this information and after a modelling process, the software was used to draw a series of maps divided by operations, schedules, etc., which provide a tool for managing noise levels in the Port area. An analysis of these maps leads to the following conclusions:

- The most significant noise source during the day/evening is road traffic.
- The most significant noise source during the night is industrial noise.
- Average Lden1: Most affected by industry.
- Trains have no significant impact on noise levels in the Port.

The compliance maps show that at no point in the adjoining built-up area did noise levels from port activities exceed the 60 dB(A) established in R.D. 1367/2007 during the day, or the 50 dB(A) set for night-time.

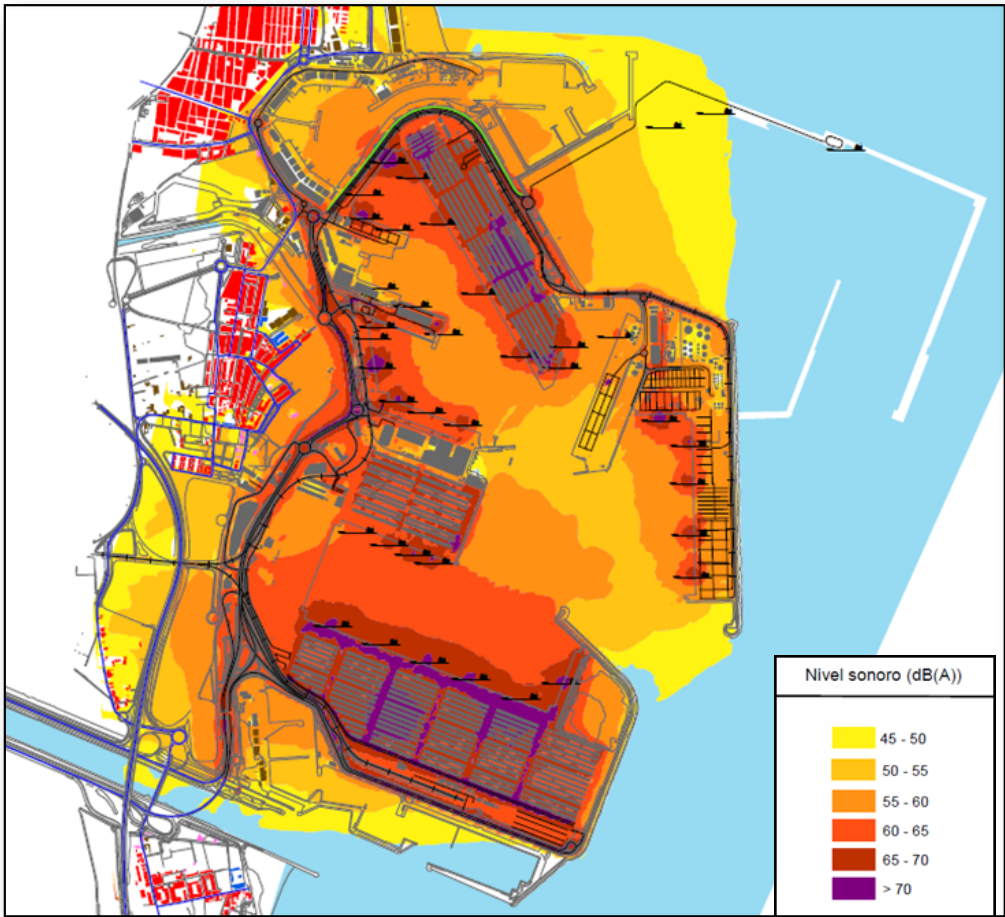
In 2016, the predictive noise map of the Port of Valencia was updated, including the new northern expansion. The maps prepared are shown below:



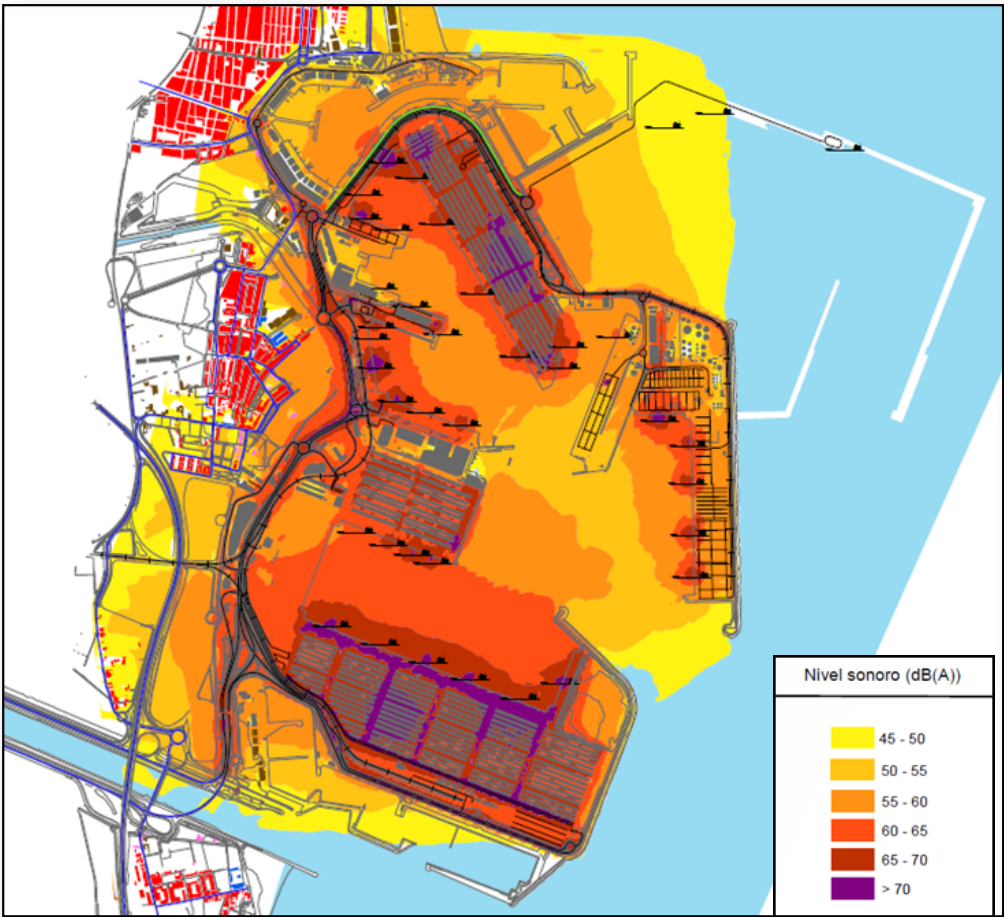
*Lday Port of Valencia*

*Lden. Average noise generated during the day, the evening and the night-time*

# 6. State of the Environment



Levening Port of Valencia



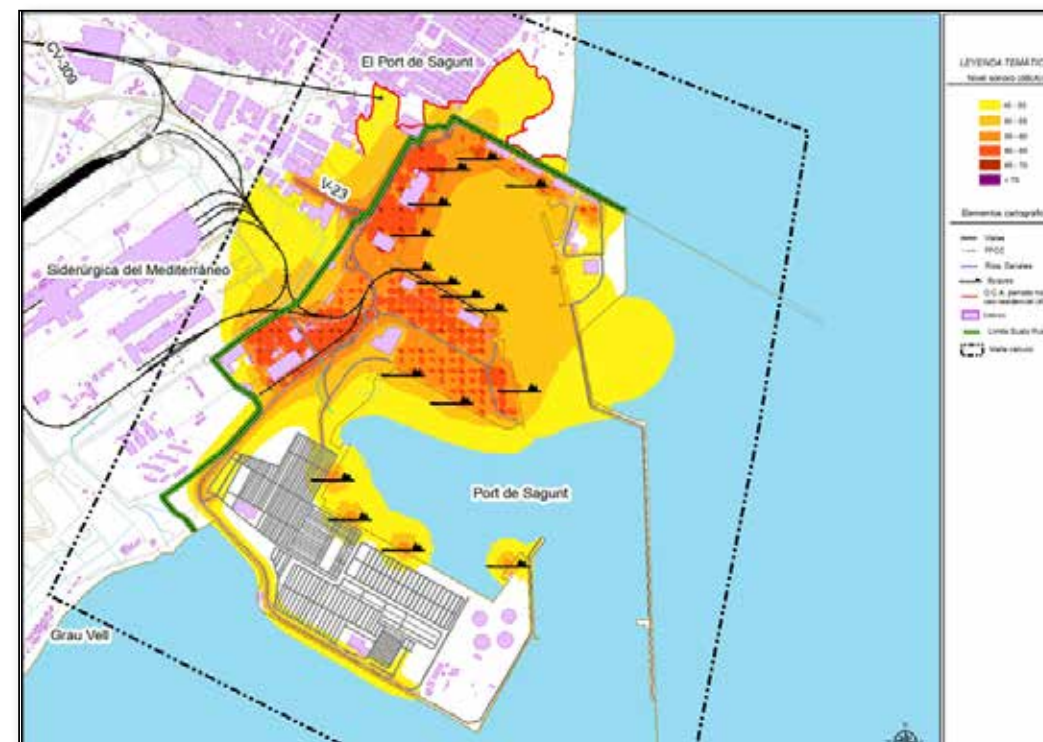
Knight Port of Valencia

# 6. State of the Environment

In 2018, the predictive noise map for the port of Sagunto was updated. The maps prepared are shown below:



*Ld total port of Sagunto*



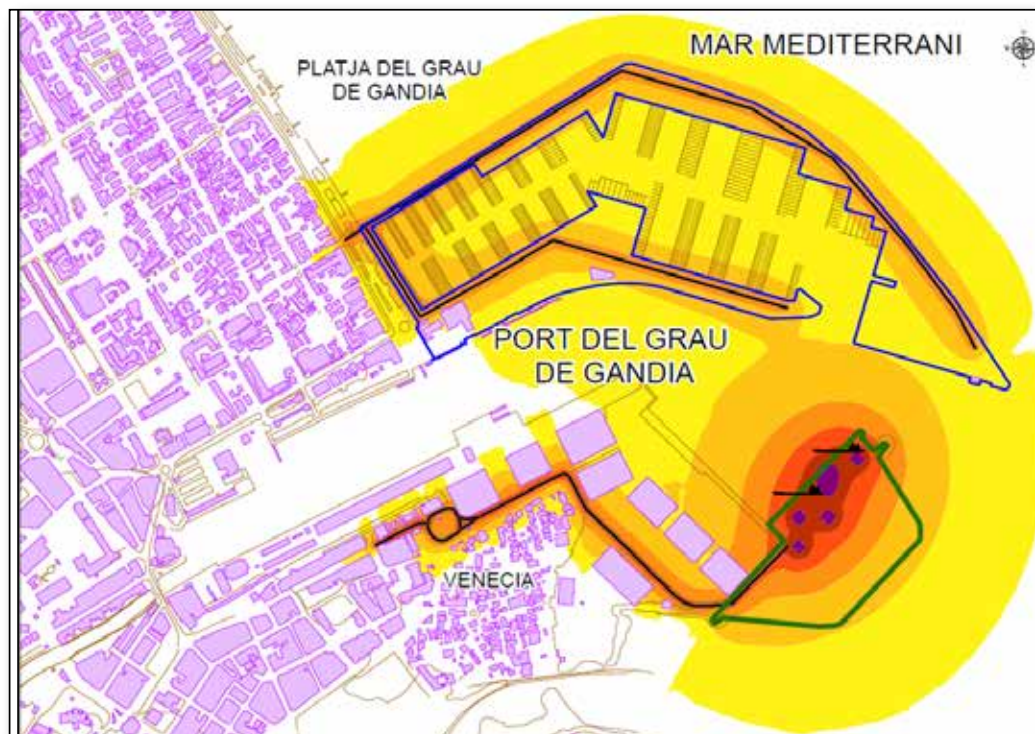
*Ln total port of Sagunto*

The main conclusion that can be drawn from the above sound maps is that the residential areas closest to the port infrastructures are not exposed, by the activity of the ports, to levels higher than those set out in table A1 of annex III of Royal Decree 1367/2007

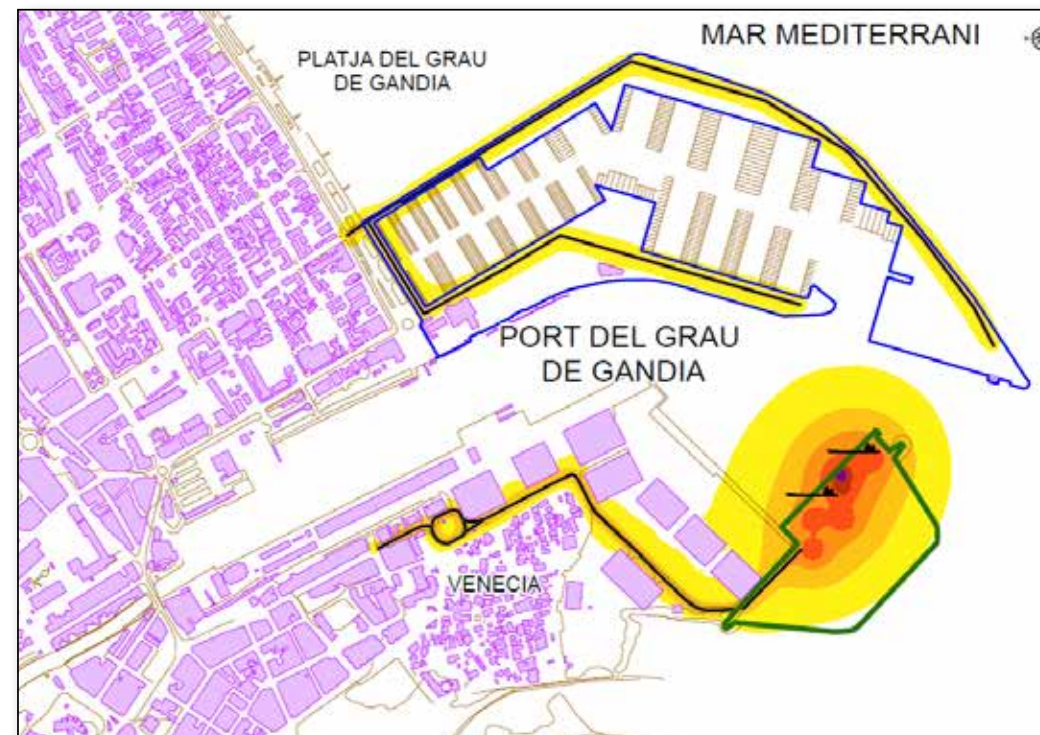


# 6. State of the Environment

In addition, a predictive study has been carried out in May of 2013, of the new planned expansion in the Port of Gandia. The maps for daytime and night-time are shown below:



*Ld total port of Gandia*



*Ln total port of Gandia*

The conclusion drawn from the above studies is that in no case do the noise levels obtained in the prediction exceed the noise quality objectives set out in Valencian Regional Government Law 7/2002 in adjacent or nearby areas.

# 6. State of the Environment

## 6.4. Water Quality

### 6.4.1. Quality of water bodies in the port facilities in 2018

The Water Framework Directive (2000/60/EC) states that Member States must protect, improve and regenerate all bodies of surface water with the aim of achieving good surface water status at the latest 15 years after the date of the entry into force of the Directive, i.e. by 2015. The Directive goes on to say that Member States shall protect and enhance all artificial or heavily modified bodies of water, as is the case in the ports of Valencia, Sagunto, and Gandia, with the aim of achieving good ecological potential and a good chemical status, all in accordance with the guidelines set out in the Royal Decree 817/2015, of 11 September, establishing the criteria for monitoring and evaluating of the condition of surface waters and environmental quality standards.

In 2013, ROM 5.1-13 was published on the “Quality of coastal waters in port areas” (hereinafter ROM 5.1-13), prepared by National Ports, which contains the standards and protocols for analysis and evaluation of intra-port waters. This document is compatible with Royal Decree 817/2015 and it is specifically prepared to be applied in ports, which is why the PAV is implementing said methodology in the three port facilities that it manages in order to evaluate the environmental quality of its waters.

### 6.4.2. Study areas

In 2018, periodic sampling campaigns were carried out to monitor the quality of the water in the three ports managed by the Port Authority of Valencia:

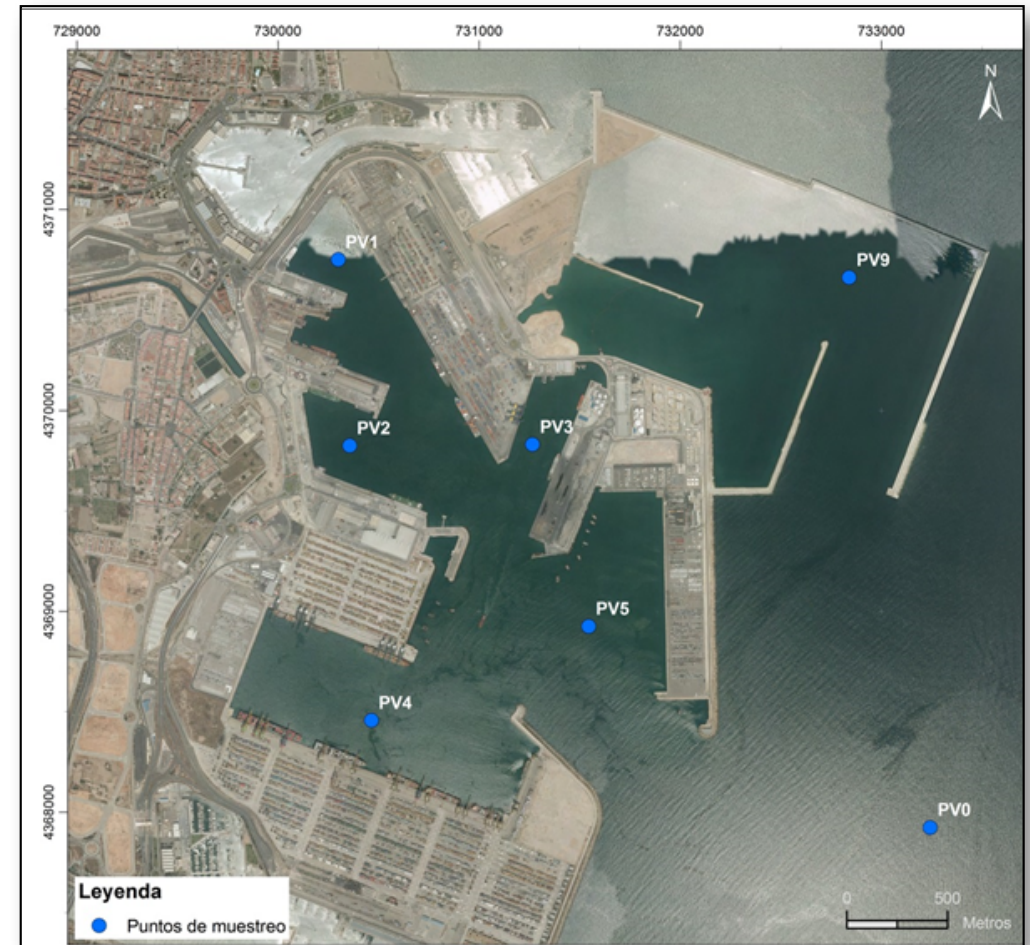
Port of Valencia

Port of Sagunto

Port of Gandia

The study area includes both the waters inside the port (bodies of water heavily modified by the presence of ports), as well as a representative monitoring station for the waters outside the port (body of coastal water) in each port.

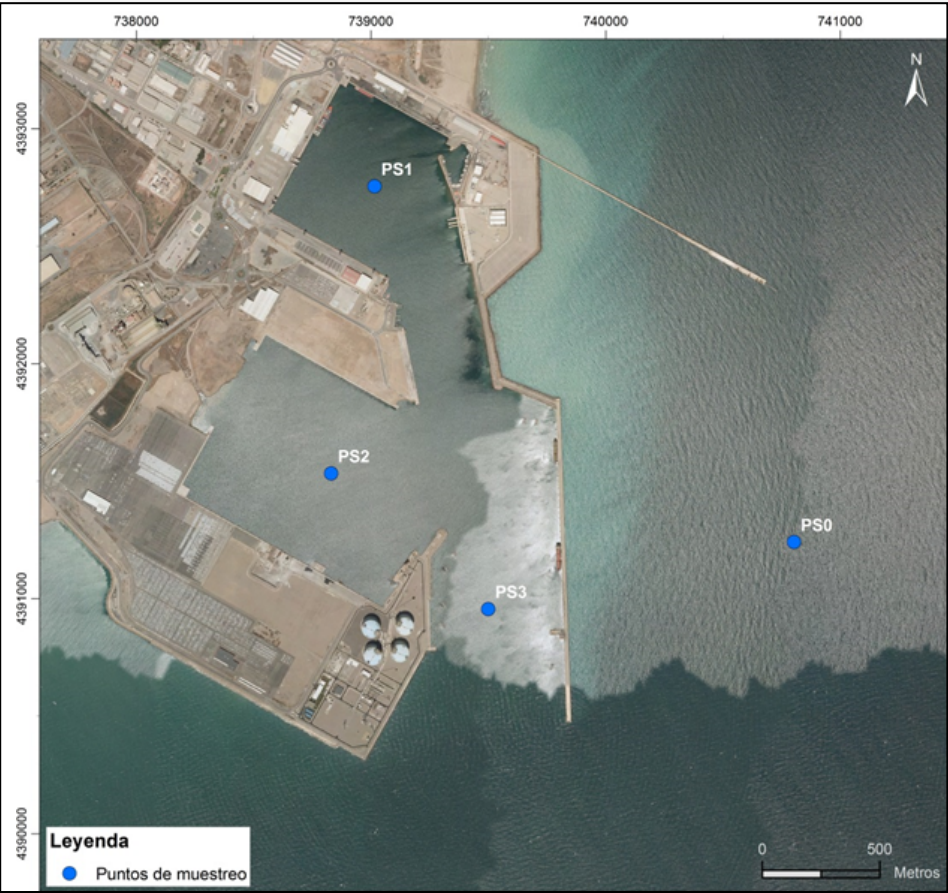
The locations of the sampling points that were established for each of the port facilities are shown below:



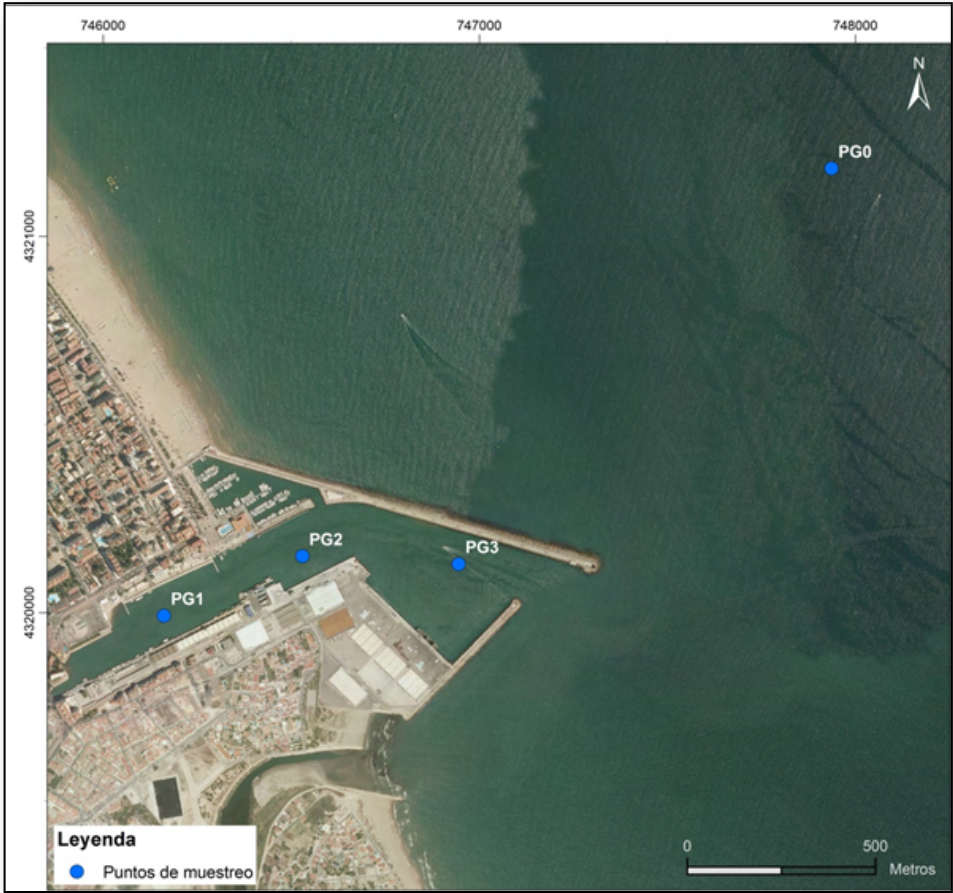
*Distribution of sampling points in the Port of Valencia*



# 6. State of the Environment



Distribution of the sampling points in the Port of Sagunto



Distribution of the sampling points in the Port of Gandia



# 6. State of the Environment

## 6.4.3. Determination of the port aquatic management units (PAMUs)

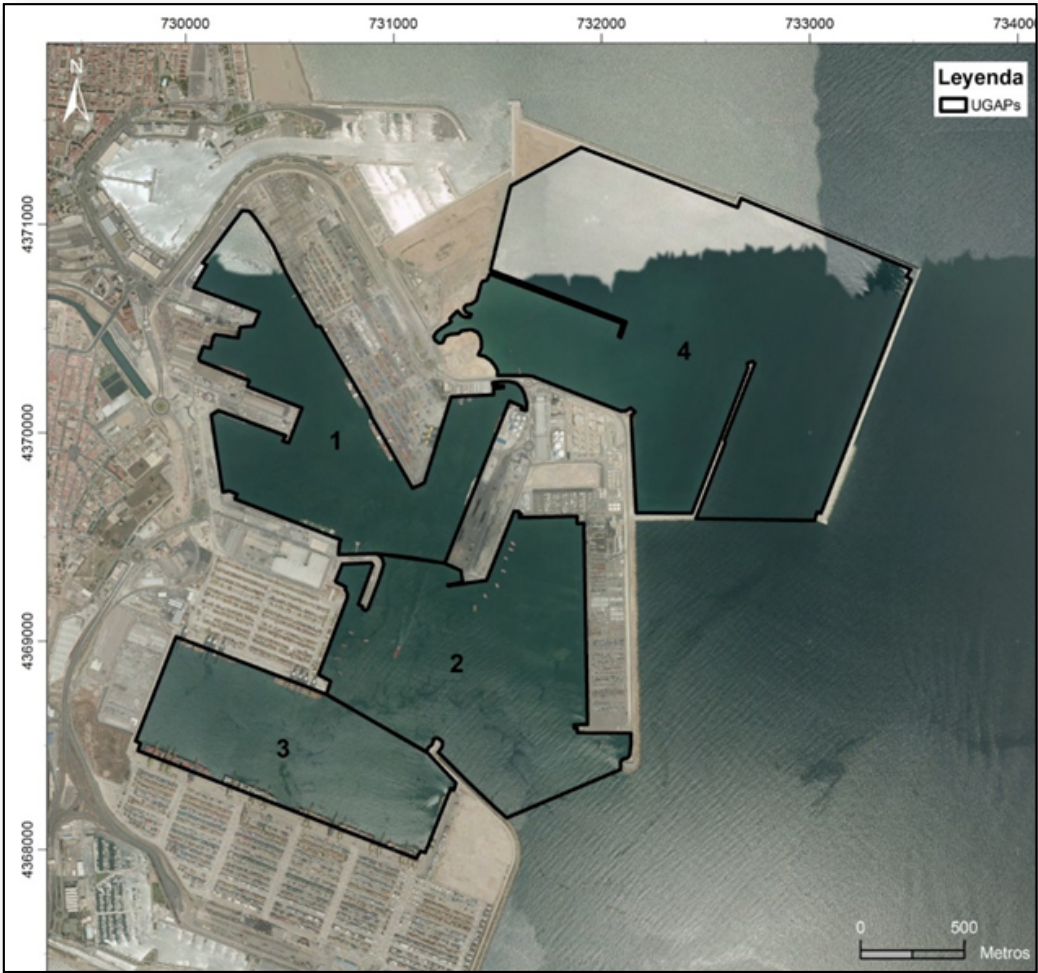
In order to evaluate the environmental quality of port waters following the criteria established in ROM 5.1-13, the Port Aquatic Management Units (hereinafter PAMU) have been delimited and typified as a management instrument for the water environment in the port service area (PSA). In this context, these PAMUs are the basic units for the management of port water quality, and have been created according to the following aspects::

- Uses and activities that are developed in the PSA
- Physical and hydromorphological characteristics
- Hydrodynamic conditions.

All PAMUs have been typified as:

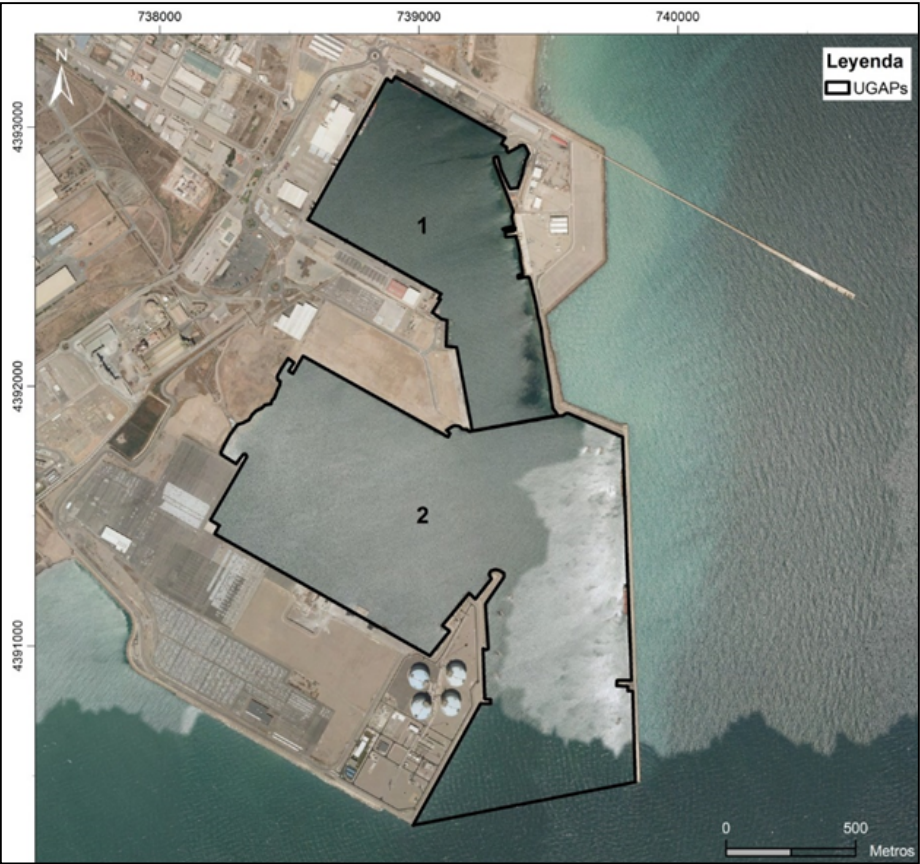
| CATEGORY       | CLASS                   | TYPE                                              |
|----------------|-------------------------|---------------------------------------------------|
| Coastal waters | Heavily modified waters | CM3: Mediterranean waters with a low renewal rate |

Below are the PAMUs considered for each port:

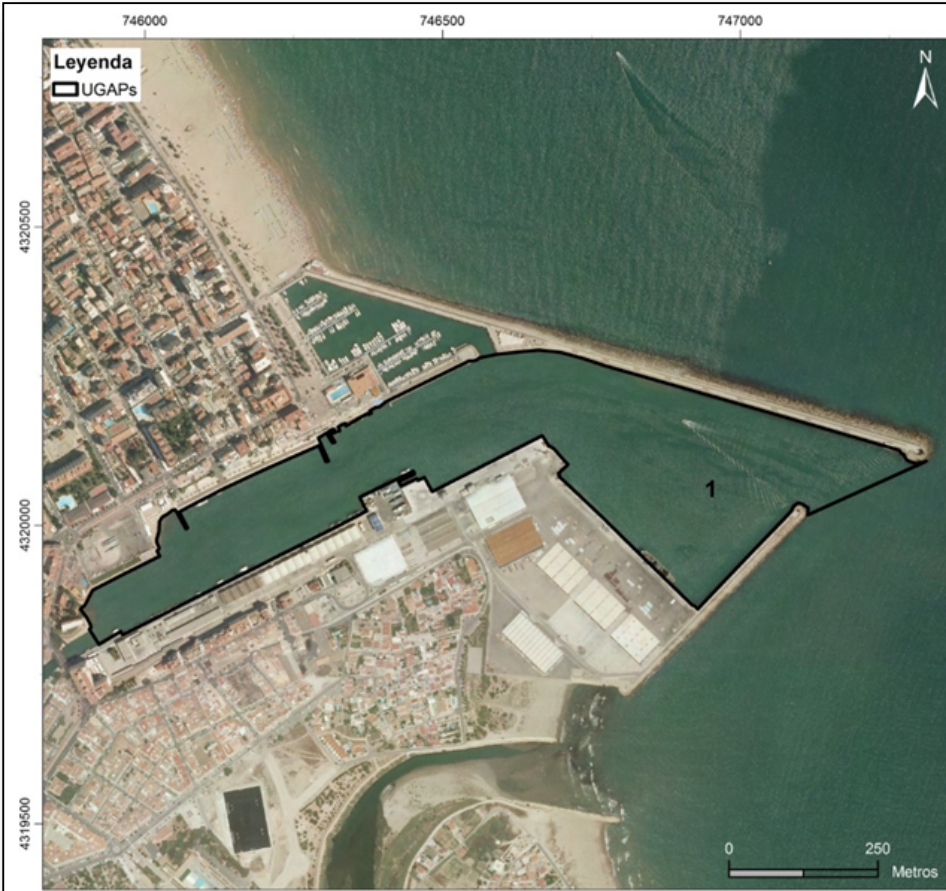


PAMUs established for the Port of Valencia

# 6. State of the Environment



PAMUs established for the Port of Sagunto



PAMUs established for the Port of Gandia

## 6.4.4. Variables studied

The monitoring of the quality of the intra-port waters has been made on the basis of the indicators considered for the environmental quality evaluation in the ROM 5.1.13, which are, for each of the PAMUs, as follows:

- Sediment PC quality indicators: Organic Quality Index (OQI)
- Indicators of biological water quality: phytoplankton (concentration of chlorophyll a) and benthic invertebrates (BOPA)
- Water PC quality indicators: turbidity, oxygen saturation, total hydrocarbons, faecal contamination and nutrients
- Chemical quality of the water and of the sediment: priority substances and other pollutants

Below are the variables analysed, both in situ and in the laboratory, during 2018:

| MATRIX       | MEASUREMENTS<br>IN SITU | LABORATORY ANALYSIS                                         | SAMPLING POINTS                                                                                                                               |
|--------------|-------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| Water column | - Chlorophyll a         |                                                             | PORT OF VALENCIA: PV1, PV2, PV3, PV4, PV5, PV9 and PVO..<br>PORT OF SAGUNTO: PS1, PS2, PS3 and PS0.<br>PORT OF GANDIA: PG1, PG2, PG3 and PG0. |
|              | - Temperature           |                                                             |                                                                                                                                               |
| Water column | - Salinity              | - Faecal contamination: E. coli and intestinal enterococci. | PORT OF VALENCIA: PV1, PV2, PV3, PV4, PV5, PV9 and PVO..<br>PORT OF SAGUNTO: PS1, PS2, PS3 and PS0.<br>PORT OF GANDIA: PG1, PG2, PG3 and PG0. |
|              | - Dissolved oxygen      | - Nutrients: nitrates, nitrites, ammonium and phosphates.   |                                                                                                                                               |
|              | - Turbidity             |                                                             |                                                                                                                                               |
|              | - Total hydrocarbons    |                                                             |                                                                                                                                               |
|              |                         |                                                             |                                                                                                                                               |
| Sediment     |                         | - Total organic carbon                                      | PORT OF VALENCIA: PV2, PV3, PV4, PV5, PV9, PVO<br>PORT OF SAGUNTO: PS1, PS2, PS3, PS0<br>PORT OF GANDIA: PG1, PG2, PG3, PG0.                  |
|              | - Redox Potential       | - Kjeldahl nitrogen                                         |                                                                                                                                               |
|              |                         | - Total phosphorus                                          |                                                                                                                                               |
|              |                         | - Benthic invertebrate fauna (BOPA)                         |                                                                                                                                               |

Table with the variables analysed for the study of the ecological potential.



# 6. State of the Environment



| MATRIX       | LABORATORY ANALYSIS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | SAMPLING POINTS                                                                                                               |
|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Water column | Compounds of tributyltin (TBT's), 1,2-Dichloroethane, Alachlor, Aldrin, Arsenic, Atrazine, Cadmium, Chlorfenvinphos, Chloroalkanes C10-13, Chlorpyrifos, Copper, Chromium VI, Total DDT, Di (2-ethylhexylphthalate (DEHP), Dichloromethane, Dieldrin, Brominated diphenyl ethers, Diuron, Endosulphan, Endrin, Hexachlorobenzene, Hexachlorobutadiene, Hexachlorocyclohexane, Isodrin, Isoproturon, Mercury, Nickel, P, P' - DDT, Pentachlorobenzene, Pentachlorophenol, Lead, Selenium, Simazine, Terbutilazine, Carbon tetrachloride, Trichloromethane (chloroform), Trifluralin, Zinc. | PORT OF VALENCIA: PV5                                                                                                         |
|              | Compounds of tributyltin (TBT's), 1,2-Dichloroethane, Arsenic, Cadmium, Chloroalkanes C10- 13, Copper, Chromium VI, Total DDT, Di (2-ethylhexylphthalate (DEHP), Dichloromethane, Brominated diphenyl ethers, Hexachlorobenzene, Hexachlorobutadiene, Mercury, Nickel, P, P'-DDT, Lead, Selenium, Terbutilazine, Carbon tetrachloride, Trichloromethane, Zinc.                                                                                                                                                                                                                            | PORT OF SAGUNTO: PS3<br>PORT OF GANDIA: PG3                                                                                   |
|              | Nonylphenol, Octylphenol                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PORT OF VALENCIA: PV1, PV2, PV3, PV4, PV5 and PV9.<br>PORT OF SAGUNTO: PS1, PS2 and PS3.<br>PORT OF GANDIA: PG1, PG2 and PG3. |
| Sediment     | Cadmium, Lead, Copper, Nickel, Zinc, Arsenic, Mercury, Chromium VI, Polychlorinated Biphenyls (PCBs), Tributyltin compounds (TBTs), HAPs                                                                                                                                                                                                                                                                                                                                                                                                                                                  | PORT OF VALENCIA: PV5<br>PORT OF SAGUNTO: PS3<br>PORT OF GANDIA: PG3                                                          |

Table with the variables analysed for the chemical status study.

“In situ” continuous readings of the various hydrological variables were taken throughout the water column with the aid of a high-precision CTD oceanographic profiler (model. SBE 19Plus V2). A laboratory accredited by ENAC, the Spanish National Accreditation Body, carried out the laboratory tests.

# 6. State of the Environment

The sampling level, the sampling method and the analysis method of the variables studied are detailed below.

| VARIABLE                                                                                                                                                                                                                                                                                                                                | UNITS           | SAMPLING LEVEL                   | SAMPLING METHOD                                       | METHOD OF ANALYSIS       |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|----------------------------------|-------------------------------------------------------|--------------------------|
| Temperature                                                                                                                                                                                                                                                                                                                             | °C              | Water column profile             | Multi-parameter profiler SBE 19plusv2                 | Thermometry              |
| Salinity                                                                                                                                                                                                                                                                                                                                | PSU             | Water column profile             | Multi-parameter profiler SBE 19plusv2                 | Conductometry            |
| Dissolved oxygen                                                                                                                                                                                                                                                                                                                        | mg/l and % sat. | Water column profile             | SBE 43 sensor fitted to an SBE 19plusv2               | Polarographic Method     |
| Turbidity                                                                                                                                                                                                                                                                                                                               | NTU             | Water column profile             | Seapoint sensor fitted to an SBE 19plusv2             | Nephelometry             |
| Chlorophyll a                                                                                                                                                                                                                                                                                                                           | µg/l            | Water column profile             | Cyclops-7 sensor fitted to an SBE 19plusv2            | Fluorometry              |
| Nutrients                                                                                                                                                                                                                                                                                                                               | µg/l            | Integrated into the water column | Hydrographic hose                                     | UV-VIS Spectrophotometry |
| Faecal contamination: Intestinal enterococci/E.coli                                                                                                                                                                                                                                                                                     | CFU/ 100 ml     | Surface                          | Sterile bottle                                        | ISO 7899-2/ ISO 9308-1   |
| Total hydrocarbons                                                                                                                                                                                                                                                                                                                      | ppb             | Water column profile             | Cyclops-7 sensor fitted to a multi-parameter profiler | Fluorometry              |
| Polychlorinated biphenyls (PCBs)                                                                                                                                                                                                                                                                                                        | µg/l            | Integrated into the water column | Hydrographic hose                                     | GC/MS chromatography     |
| Compounds of Tributyltin (TBTs)                                                                                                                                                                                                                                                                                                         | µg/l            | Integrated into the water column | Hydrographic hose                                     | GC/MS chromatography     |
| Nonylphenol, Octylphenol                                                                                                                                                                                                                                                                                                                | µg/l            | Integrated into the water column | Hydrographic hose                                     | GC/MS chromatography     |
| Biocides: Aldrin, Dieldrin, Endrin, Isodrin, Alachlor, Atrazine, Chlorfenvinphos, Hexachlorocyclohexane, Chlorpyrifos, Diuron, Endosulfan, Isoproturon, Simazine, Terbutylazine, Trifluralin, Pentachlorobenzene, Pentachlorophenol, Hexachlorobenzene, p,p'-DDT, Pentachlorophenol, Sum Total DDT.                                     | µg/l            | Integrated into the water column | Hydrographic hose                                     | GC/MS chromatography     |
| Bromodiphenyl ethers: 2,2',4,4',5,5'-Hexabromodiphenyl ether (PBDE 153); 2,2',4,4',5,6'-Hexabromodiphenyl ether (PBDE 154); 2,2',4,4',5-Pentabromobromodiphenyl ether (PBDE 99); 2,2',4,4',6-Pentabromobromodiphenyl ether (PBDE 100); 2,2',4,4'-Tetrabromobromodiphenyl ether (PBDE 47); 2,4,4'-Tri-bromobromodiphenyl ether (PBDE 28) | µg/l            | Integrated in the water column   | Hydrographic hose                                     | GC/MS chromatography     |
| Chloroalkanes: Chloroalkanes (C10-C13)                                                                                                                                                                                                                                                                                                  | µg/l            | Integrated in the water column   | Hydrographic hose                                     | GC/MS chromatography     |

# 6. State of the Environment

| VARIABLE                                                                                | UNITS | SAMPLING LEVEL                 | SAMPLING METHOD       | METHOD OF ANALYSIS                                    |
|-----------------------------------------------------------------------------------------|-------|--------------------------------|-----------------------|-------------------------------------------------------|
| Phthalates: Bis(2-ethylhexyl) phthalate                                                 | µg/l  | Integrated in the water column | Hydrographic hose     | GC/MS chromatography                                  |
| Trihalomethanes Chloroform.                                                             | µg/l  | Integrated in the water column | Hydrographic hose     | GC/MS chromatography                                  |
| Organochlorides: 1,2-Dichloroethane; Dichloromethane.                                   | µg/l  | Integrated in the water column | Hydrographic hose     | GC/MS chromatography                                  |
| Heavy metals Arsenic, Cadmium, Copper, Chrome VI, Mercury, Nickel, Lead, Selenium, Zinc | µg/l  | Integrated in the water column | Hydrographic hose     | Inductively coupled plasma mass spectrometry (ICP/MS) |
| VOCs: Hexachlorobutadiene, Carbon tetrachloride                                         | µg/l  | Integrated in the water column | Hydrographic hose     | GC/MS chromatography                                  |
| Cadmium, Lead, Copper, Nickel, Zinc, Arsenic, Mercury, Chromium VI                      | mg/kg | Sediment                       | Van Veen Grab Sampler | Inductively coupled plasma mass spectrometry (ICP/MS) |
| Polychlorinated biphenyls (PCBs)                                                        | mg/kg | Sediment                       | Van Veen Grab Sampler | GC/MS chromatography                                  |
| Compounds of tributyltin (TBTs)                                                         | mg/kg | Sediment                       | Van Veen Grab Sampler | GC/MS chromatography                                  |
| PAHs                                                                                    | mg/kg | Sediment                       | Van Veen Grab Sampler | GC/MS chromatography                                  |
| COT                                                                                     | mg/kg | Sediment                       | Van Veen Grab Sampler | IR Spectroscopy                                       |
| Kjeldahl nitrogen                                                                       | mg/kg | Sediment                       | Van Veen Grab Sampler | Volumetric titration                                  |
| Total phosphorus                                                                        | mg/kg | Sediment                       | Van Veen Grab Sampler | Spectroscopy                                          |
| Benthic invertebrate fauna (BOPA)                                                       |       | Sediment                       | Van Veen Grab Sampler | Optical microscopy                                    |





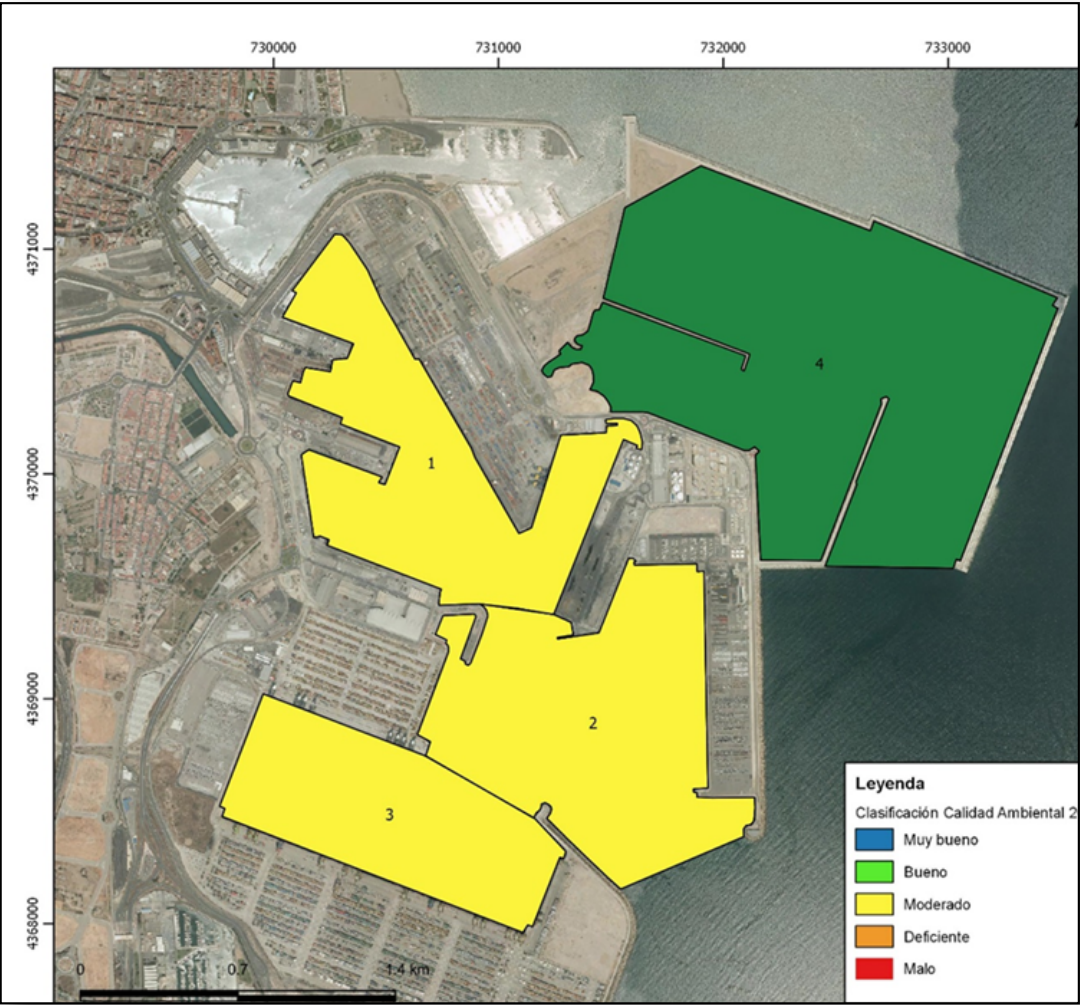
As shown in the figure, the final classification of the water bodies can be: Good, Moderate, Deficient or Poor

| Port     | PAMU   | QC sediment quality indicators | Indicators of water and benthos biological quality | QC water quality indicators | Chemical quality of water and sediment | CLASSIFICATION OF ENVIRONMENTAL QUALITY |
|----------|--------|--------------------------------|----------------------------------------------------|-----------------------------|----------------------------------------|-----------------------------------------|
| VALENCIA | PAMU 1 | VERY GOOD                      | MODERATE                                           | MODERATE                    | NE                                     | MODERATE                                |
|          | PAMU 2 | VERY GOOD                      | GOOD                                               | GOOD                        | NOT YET GOOD                           | MODERATE                                |
|          | PAMU 3 | VERY GOOD                      | GOOD                                               | MODERATE                    | NE                                     | MODERATE                                |
|          | PAMU 4 | VERY GOOD                      | GOOD                                               | VERY GOOD                   | NE                                     | GOOD                                    |
| SAGUNTO  | PAMU 1 | VERY GOOD                      | GOOD                                               | GOOD                        | NE                                     | GOOD                                    |
|          | PAMU 2 | VERY GOOD                      | GOOD                                               | GOOD                        | GOOD                                   | GOOD                                    |
| GANDÍA   | PAMU 1 | GOOD                           | GOOD                                               | GOOD                        | NOT YET GOOD                           | MODERATE                                |

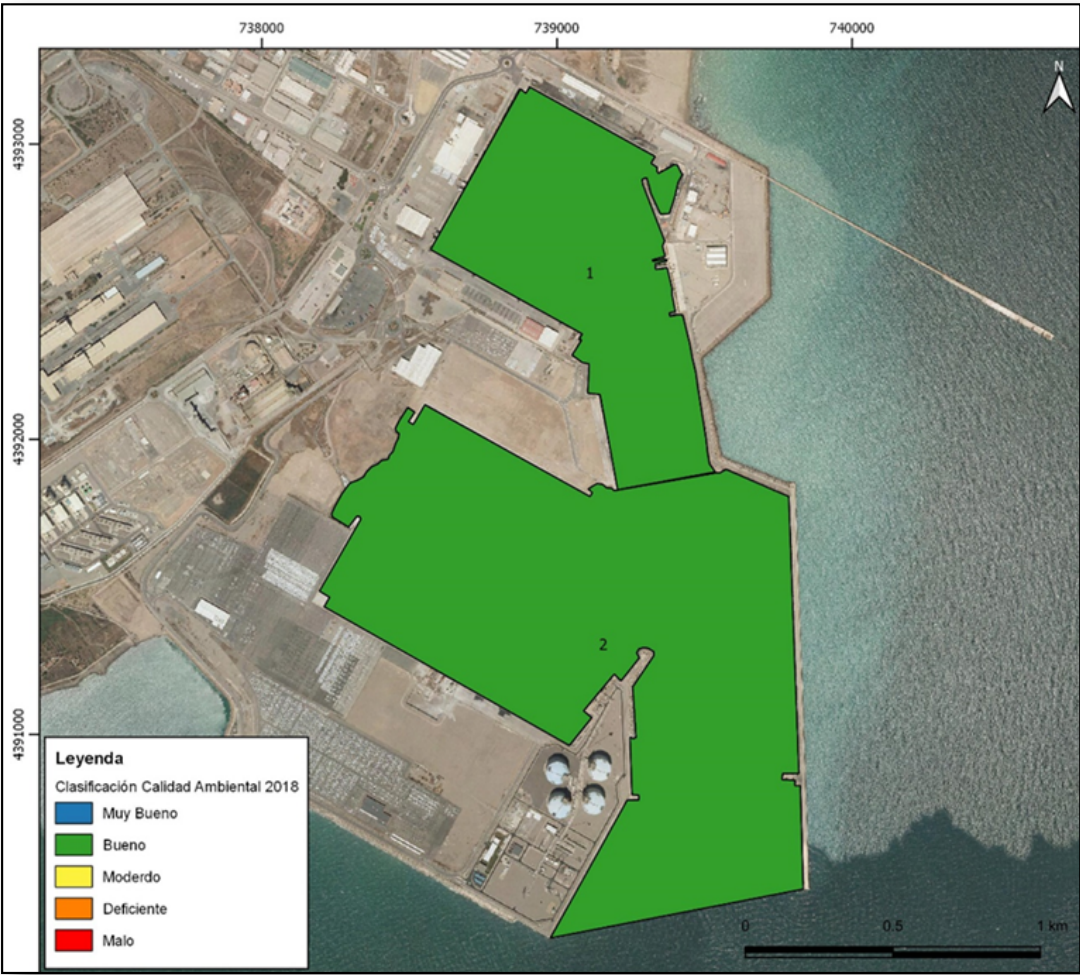
Based on the results of the monitoring of each of the indicators, we can conclude that the classification of environmental quality is good in one of the PAMUs of the Port of Valencia and moderate in the rest. At the port of Sagunto, all the PAMUs achieved Good environmental quality, and in Gandia, it achieved a Moderate environmental quality.

# 6. State of the Environment

The results obtained for each PAMU and port are shown below:



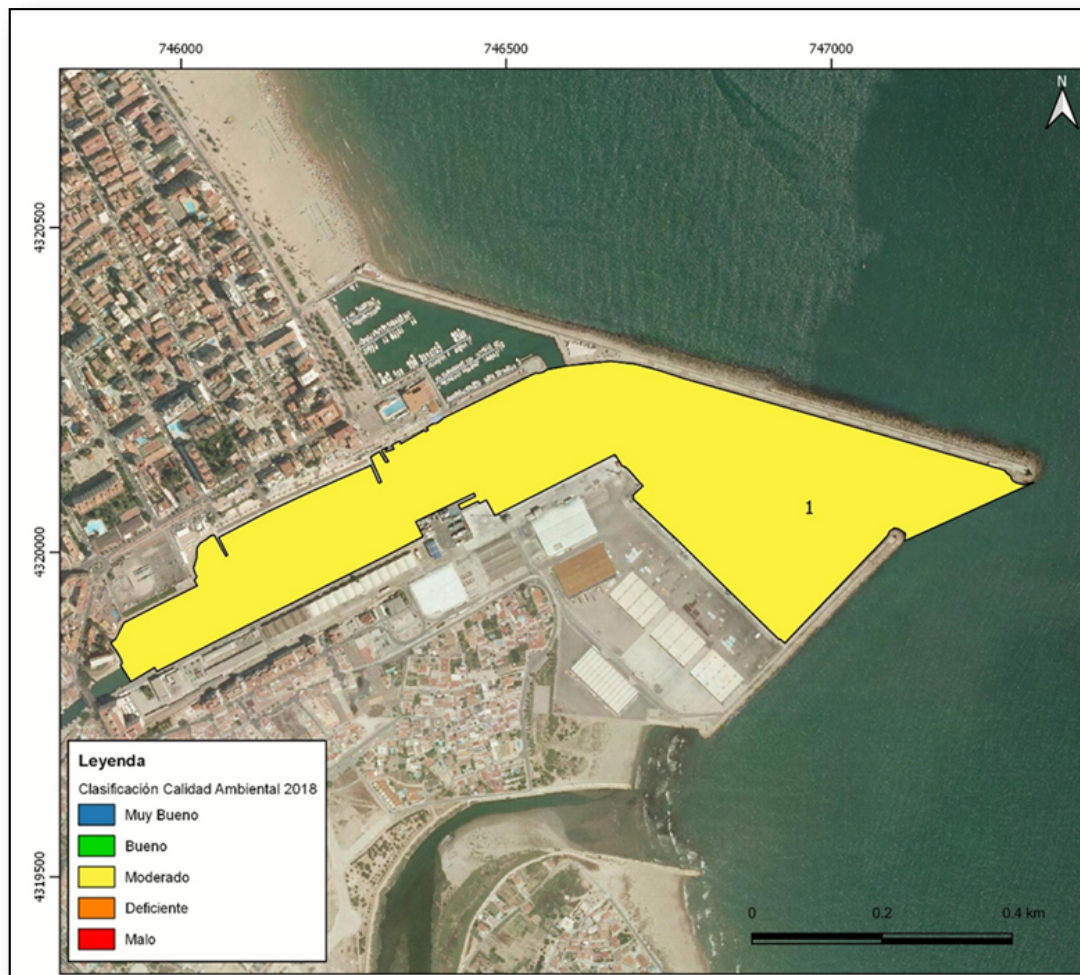
Evaluation of the Port of Valencia



Evaluation of the Port of Sagunto



# 6. State of the Environment



*Evaluation of the Port of Gandia*

The PAV also endeavours to minimise any possible impact on water quality through schemes such as clearing floating waste from the port's water surface. To that end, in 2003, the Spanish Maritime Safety Agency, which belongs to the Directorate General for Merchant Shipping gave the vessel LIMPIAMAR III to the Port Authority of Valencia, which took over this service. The service is currently outsourced to a private company.

The vessel is mainly intended to collect solid and liquid floating waste and to assist the service for tackling episodes of accidental marine pollution, for which it is considered an additional unit.

In 2018, the LIMPIAMAR III removed and handled a total of 226 m<sup>3</sup> of floating waste, largely plastics, wood and other by-products.





# 6. State of the Environment

## 6.5. Dredging Management.

The accumulation of sand and lime deposits in the entrance channels to the ports and in the construction of new quays means that from time to time the Port Authority of Valencia carries out maintenance dredging to enable access and manoeuvrability in the ports it manages. In 2018, the volumes dredged were as follows:

- Dredging to improve the access to the east quay and south quay of the Port of Valencia—between September and December—a total of 483,261 m<sup>3</sup>.

All these activities applied the recommendations that the Centre for Experimentation in Public Works, CEDEX, has published to ensure appropriate environmental management of the dredged materials generated; none was found in the analyses conducted on the material any that required specific treatment due to its quality.

## 6.6. Environmental Surveillance Plan

In 2008, work began on the Port of Valencia expansion. In line with the requirements set out in the project's Environmental Impact Statement (EIS) of 30 July 2007, the works have a comprehensive Environmental Surveillance Plan to ensure compliance with corrective and preventive measures in the construction and operational phases, and guarantee that impact levels do not exceed those specified in the impact evaluation.

In order to comply with the requirements included in the EIS, the Plan requires monitoring of the following environmental factors:

- Water and sediment quality
- Marine ecosystem
- Fishing resources
- Evolution of shellfish resources
- Monitoring of Birdlife
- Atmospheric pollution
- Noise pollution
- Follow-up of archaeological field surveys
- Coastal dynamics.

In addition to the above follow-up, and to comply with the EIS's requirements, a study was carried out in 2008 into the Project's possible effect on the Dispersion of Discharge from the Cabañal Overflow Channel and the Vera Sewer Outlet. The study found there was no change from the initial situation.

In April 2012, the first phase of the expansion works was completed with the main result being the enclosure of waters in the new dock. In August 2012, work began on the 'Cruise Quay – Phase 1' and was completed in December 2013.

Environmental monitoring of the aforementioned vectors continued throughout 2018, though work has been reduced to occasional contributions of filler material during this period.

The Environmental Surveillance Plan has been monitored since the works began in 2008, and the data gathered and set out in the reports for 2008-2018 show that the environmental impact of the operations corresponding to the Northern Expansion of the Port of Valencia are within the forecast margins and therefore they do not significantly affect the environment.

## 6.7. Soil management.

During 2018, the PAV did not carry out any specific environmental characterisation study of the soil or groundwater at the Ports of Valencia, Sagunto and/or Gandia.

In the Security, Environment and Facilities area of the PAV, environmental checks of the concessions were performed, carrying out the following action

- Compilation of the Soil Situation Reports submitted by the concession holders/authorised companies subject to the provisions of article 3 of Royal Decree 9/2005, of 14 January, establishing the list of activities that potentially pollute the soil and the criteria and standards for the declaration of contaminated soils (hereinafter, Royal Decree) before the competent environmental body.
- Request for more detailed supplemental reports, data or analysis to evaluate soil contamination, in accordance with the provisions of Article 3.3 of the Royal Decree, which the environmental body has requested, either ex officio or through the Integrated Environmental Authorisation.
- Report, through the PAV Internal Viability Reports, the obligations that companies must fulfil in relation to the soil.

## 6.8. Visual impact.

The Port Authority of Valencia has, for another year, continued to pay special attention to the maintenance of the green areas inside the port facility's green areas. The total area of green areas in 2018 in the Port of Valencia was approximately 37,221.05 m<sup>2</sup>, of which 20,432.33 m<sup>2</sup> correspond to grass areas and 16,788.72 m<sup>2</sup> to garden areas without grass.

The total area of gardens and green areas at the Port of Gandia was 1,675.00 m<sup>2</sup>, broken down as follows: 425.00 m<sup>2</sup> were grass lawns and 1,250.00 m<sup>2</sup> garden areas, including trees, shrubs, ground cover plants, flowers, palm trees and hedges, etc.

The total area of gardens and green areas at the Port of Sagunto was 7,369.00 m<sup>2</sup>, broken down as follows: 3,059.00 m<sup>2</sup> were grass lawns and 4,310.00 m<sup>2</sup> garden areas, including trees, shrubs, ground cover plants, flowers, palm trees and hedges, etc.

Sprinkler and drip irrigation systems are used to maintain these green areas, which contributes to reducing water consumption.

## 6.9. Other Actions.

### 6.9.1. Specific actions carried out during 2018

This section lists the specific environment-related activities carried out in 2018.

- Repair and structural reinforcement of the anti-pollution barrier of the old course of the river Turia.
- Since 2018, the Port Authority of Valencia has been a member of the Sustainable Development Committee of the ESPO.
- Installation of a series of signs in the ports of Valencia, Sagunto and Gandia, in order to warn of the prohibition on feeding the feline colonies in the three ports, since they are already fed in a controlled manner.
- Installation of excrement collection trays at the Swallow (*Delincho urbicum*) at the Clocktower Building, in order to prevent deterioration of the building and preserve the location of the nests, thus preventing them from being removed.
- Since 2007, Port Authority of Valencia has been making a great effort to properly monitor and surveil the waters of the old course of the river Turia. In 2018, as well as the daily inspection of the waters and cleaning them when necessary, a sampling campaign was undertaken by an ENAC-accredited laboratory.
- Participation in Environment Day, 1 to 5 June 2018, Clocktower Building, Port of Valencia

# 7. Emergency responses





# 7. Emergency responses

One of the Port Authority of Valencia's priorities is to ensure the ports of Sagunto, Valencia, and Gandia maximise safety levels, whilst also maintaining efficient cooperation channels with other organisations which have jurisdiction in police, civil defence, fire prevention, sea rescue, and pollution prevention matters.

Therefore, it is essential, in defence of the public interest, to make the spectacular increase in port traffic in the ports managed by the PAV compatible with safeguarding the integrity of people, the environment, infrastructure, and goods.

To achieve this objective, the Port Authority has its own Port Police service, a fire station that works closely with the Valencia City Council, equipment to handle fuel spills operated by specialist staff, and an emergency ambulance amongst other resources, which are operational 24 hours a day, 365 days a year. These resources, and contact with other authorities which may be called upon to intervene, are coordinated by the PAV's Emergency Control Centre.

| INCIDENTS                                | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|------------------------------------------|------|------|------|------|------|------|
| Urgent medical attention                 | 179  | 209  | 236  | 218  | 287  | 326  |
| Total discharges                         | 37   | 32   | 20   | 20   | 11   | 27   |
| <i>Small discharges in the water</i>     | 11   | 16   | 16   | 12   | 4    | 9    |
| <i>Small discharges on land (Spills)</i> | 26   | 6    | 4    | 8    | 7    | 18   |
| Recovery of objects                      | 14   | 12   | 20   | 11   | 10   | 15   |
| Closure of the port                      | 6    | 6    | 9    | 16   | 12   | 9    |
| Fires or incipient fires                 | 7    | 11   | 6    | 1    | 7    | 6    |

Through this Centre, the Port Authority of Valencia supervises dangerous goods operations, handles emergencies, and takes part in preventive industrial, operational, occupational, and environmental safety operations at the ports of Sagunto, Valencia, and Gandia, both on land and in port waters.

The Control Centre's staff and equipment are on permanent alert to intervene immediately in any incident that may take place. In the meantime, the Centre's equipment is constantly maintained, procedures are improved, staff are trained, and technological innovations are implemented.

The most important training courses include emergency drills and exercises which are regularly carried out. In 2018, the following exercises and drills were carried out:

| DRILLS                                               | 2013      | 2014      | 2015      | 2016      | 2017      | 2018      |
|------------------------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| <b>1. PAV Emergency Plans</b>                        |           |           |           |           |           |           |
| <b>1.1.- Led by the PAV:</b>                         | <b>6</b>  | <b>6</b>  | <b>7</b>  | <b>7</b>  | <b>7</b>  | <b>5</b>  |
| Fire                                                 | 5         | 1         | 5         | 6         | 7         | 5         |
| Hydrocarbon discharges                               | 0         | 2         | 1         | 1         | 0         | -         |
| Others                                               | 1         | 3         | 1         | -         | -         | -         |
| <b>1.2. In conjunction with other organisations:</b> | <b>2</b>  | <b>5</b>  | <b>1</b>  | <b>3</b>  | <b>1</b>  | <b>2</b>  |
| In different Terminals                               | 2         | 3         | -         | 1         | -         | 2         |
| In conjunction with other Entities                   | -         | -         | -         | 2         | 1         | -         |
| In conjunction with Mooring services                 | -         | 2         | -         | -         | -         | -         |
| <b>2. Concerning Protection:</b>                     | <b>20</b> | <b>27</b> | <b>20</b> | <b>11</b> | <b>11</b> | <b>14</b> |
| <b>Total</b>                                         | <b>28</b> | <b>38</b> | <b>28</b> | <b>21</b> | <b>19</b> | <b>21</b> |

The following training initiatives have been carried out for all CCE staff:

- A guided visit to the Port of Gandia.
- An English course - Seaspeak lasting 40 hours.
- A training session on port railway security.
- An advanced refresher training session on the application Socaire.

With respect to training actions that we have provided to Bombers València [Valencia Fire Brigade], in the framework of the current Collaboration Agreement, the following are detailed:

- Five visits to Friopuerto's premises.
- Seven visits to see the new dry columns that have been installed on the container cranes of the MSC terminal of the Port of Valencia.
- 12 training sessions about the port of Valencia, its configuration, port uses, its Self-Protection Plan and available resources. It includes a guided visit to Boluda Tugboats involving practising throwing water outside the port.

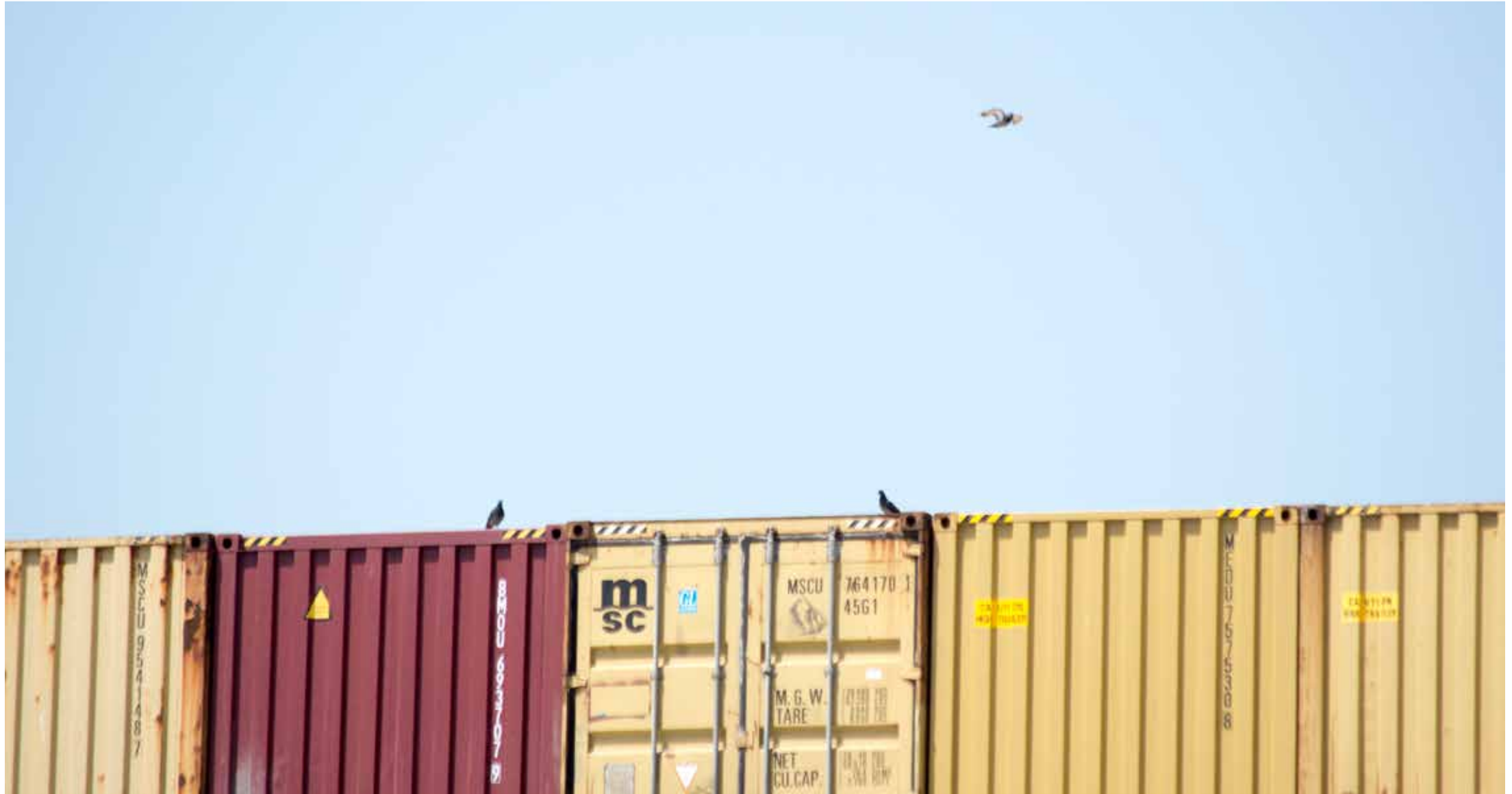
# 7. Emergency responses

Also, the following drills related to the PAV's Emergency Plans:

- A leak of hydrochloric acid from a container on the APM Terminals Valencia loading yard.
- A fire in the PAVO's warehouse in the Port of Sagunto
- A fire in the basement of building 3 of the PAV's office premises in Valencia
- A radiological incident at Noatum CT Valencia
- A fire in the PAV's office building in Gandia (Table top)
- A fire at the Clocktower Building in Valencia (Table top)
- A fire in the workshop premises in Valencia (Table top)



## 8. Innovation and Cooperation Projects





# 8. Innovation and Cooperation Projects



For the implementation, in the ports managed by the PAV, of responsible environmental policies, it is essential to acquire both technical and practical knowledge. This knowledge is obtained thanks to participating in cooperation and innovation projects. The PAV's participation in these projects takes place both directly, by directly implementing the results obtained in the projects in the management itself, and indirectly, by making the knowledge acquired available to third parties for implementation at their premises.

The PAV promotes the participation, both of itself and of the companies that form part of the Port Community, in all those innovative programmes and projects whose objectives are compatible with those in the aforementioned Environmental and Energy Policy. This participation provides up-to-date knowledge of the latest trends, techniques and technologies available in the control and monitoring of the environmental situation of the ports it manages, as well as their possible transfer to the rest of the Port Community.

## 8.1. Completed projects

The PAV has so far participated in the following projects. From 2010 they are given in more detail:

- **ECOPORT PROJECT (1998)** - LIFE Programme of the European Commission
- **INDAPORT PROJECT (2000)** - Technology Research Promotion Project (PROFIT) of the Ministry of Science and Technology
- **HADA PROJECT (2002)** - LIFE Programme of the European Commission
- **ECOPORTS PROJECT (2002)** - V Framework Programme of the European Commission
- **SECURMED PROJECT (2004)** - Interreg IIIB Programme of the European Commission
- **SIMPYC PROJECT (2005)** - LIFE Programme of the European Commission
- **MADAMA PROJECT (2005)** - Interreg IIIB Medocc Programme of the European Commission
- **NOMEPORTS PROJECT (2005)** - LIFE Programme of the European Commission
- **ELEFSINA BAY PROJECT (2020) (2007)** - LIFE Programme of the European Commission
- **ECO-LOGISTYPORT PROJECT (2008)** - Emplea Verde Programme of the European Social Fund
- **IMPROVEMENT OF THE ENVIRONMENTAL PROJECT IN THE PORTS OF THE GULF OF HONDURAS (2008)** - Inter-American Development Bank and Spanish International Development Funds
- **EFICONT (2009)** - National R+D Plan of the Ministry of Development
- **EFICONT (2009)** - the Ministry of Development's National R&D Plan

### GREENCRANES PROJECT (2012)

The GREENCRANES project (Green Technologies and Eco-Efficient Alternatives for Cranes and Operations at Port Container Terminals) had a total budget of €3,688,000, 50% of which was funded by the European Union through the Trans-European Transport Network (TEN-T) programme. The project's objective was to demonstrate the viability of new technologies and alternative fuels through pilot schemes implemented in port container terminals (PCTs). The ultimate goal was to provide decision-making criteria and recommendations that can be used to draft European policies and enable the logistics and port industry to make informed decisions.

The project was coordinated by the Valenciaport Foundation, and its partners included the PAV, Noatum, ABB, Konecranes, the Port Authority of Koper (Slovenia), and the Italian Ministry of Infrastructure and Transport, the Port Authority of Livorno, RINA SpA, Global Service Srl, and the Sant'Anna School of Advanced Studies (Italy).

The main outcome of the project was the design of two port machinery prototypes powered by natural gas. In addition, the feasibility of using this type of fuel in container terminal machinery operations was also studied.

The project was completed in November 2014.

### GREENBERTH PROJECT (2013)

The GREENBERTH project (Promotion of Port Communities' SMEs role in Energy Efficiency and GREEN Technologies for BERTHING Operations) has a budget of €1,616,115 and is 75% funded by the European Union's regional funds under the MED programme. The project lasted 30 months.

GREENBERTH is led by the PAV, and partnered by the Mediterranean's leading ports, such as Marseilles (France), Livorno and Venice (Italy), Koper (Slovenia), and Rijeka (Croatia). The project also has technological partners which include FEPORTS (the Valencian Region Port Institute for Studies and Cooperation), the University of Cadiz, and the Centre for Research and Technology Hellas/Hellenic Institute of Transport (CERTH/HFT).

The basic aim of the Greenberth project is to encourage SME access to opportunities in the port sector in the application of solutions to improve energy management and the implementation of renewable energies, with a special focus on port-vessel operations.

# 8. Innovation and Cooperation Projects



The most important outcomes of the project were:

1. Preparation of reports on the energy efficiency diagnosis, the identification of needs and the participation of SMES in port activities.
2. Design of the Energy Plans for ports in the Mediterranean.
3. Development of action plans for the application and transfer of available technology, which included three pilot projects
  - a. Replacement of traditional engines in the port fleet with more efficient and less polluting alternatives.
  - b. Implementation of On-Shore Power Supply (OPS) technology and
  - c. Replacement of traditional engines by more efficient, less polluting engines in port terminal machinery and lorry fleets.

The project was completed in June 2015.

## MONALISA 2.0 PROJECT (2013)

The project's main objective is to promote Motorways of the Sea (MoS) through the application of various measures aligned with the EU's policies on shipping.

The PAV participated in this project by coordinating the vessel components in the maritime section, and the port facility component in the land section for accidents or incidents focusing not only on large passenger vessels but also on other vessels or facilities at risk.

The results aimed for in the project were to draw up documents on contingency plans in ports and the guidelines to be followed, as well as carrying out a pilot experiment consisting of a mass port evacuation exercise and drawing up the corresponding report on this drill.

The MONALISA 2.0 consortium had 39 members from 10 EU countries. The project is 50% funded by the EU through the Trans-European Transport Network Executive Agency and has a budget of €24,317,000.

The project was completed in December 2015.

## SEA TERMINALS PROJECT (2014)

The SEA TERMINALS (Smart, Energy Efficient and Adaptive Port Terminals) project had a budget of €6,273,896 and 50% EU funding through its TEN-T programme. The project lasted 22 months.

The project was coordinated by the Valenciaport Foundation and its partners included the PAV, Noatum, Terberg, NACCO, the Technological Institute of Energy (ITE), EDAE, Ampliatel, Baltic Ports Organization and the Italian Ministry of Infrastructure and Transport, in addition, as implementing agencies, to the Port Authority of Livorno, Global Service Srl, Offshore LNG Toscana and the Sant'Anna School of Advanced Studies (Italy).

The aim of SEA TERMINALS was to promote the evolution of the port industry toward a progressive and effective low-carbon operational model, the integration of smart and energy-efficient technologies (concepts of hybrid engines, liquefied natural gas as fuel, heavy electric vehicles) through innovative energy efficiency and business solutions, focusing on the handling of machinery and equipment for heavy work.

SEA TERMINALS was based on the lessons learned from the project GREENCRANES, mentioned earlier.

The project was completed in December 2015.

## GAINN4SHIP INNOVATION PROJECT (2015)

The GAINN4SHIP INNOVATION Project (LNG Technologies and Innovation for Maritime Transport for the Promotion of Sustainability, Multimodality and Efficiency of the Network) has a budget of €15,025,564 with 50% funding from the EU through its CEF programme (Connecting Europe Facility).

GAINN4SHIP INNOVATION aims to implement European environmental regulations through the conversion of Diesel engines to LNG (Liquefied Natural Gas) engines on a Fast-Ferry vessel that provides regular service in the Canary Islands. This project includes final engineering projects on the prototype LNG-fuelled vessels and their adaptation to a real vessel.

The results obtained in this study include:

- definition of environmental indicators for vessels adapted to the use of LNG;
- definition of technical fuelling solutions;
- control of methane emissions into the atmosphere of the prototype vessels adapted to LNG.

The project was completed in March 2018.

# 8. Innovation and Cooperation Projects

## 8.2. Projects underway

### CORE LNG AS HIVE PROJECT (2014)

The CORE LNG AS HIVE project (Core Network Corridors and Liquefied Natural Gas) has a budget of €33,295,760, with 50% funding from the EU through its CEF programme (Connecting Europe Facility).

The main objective of this project is to provide Spain and Portugal with a suitable infrastructure and operational framework for the deployment of a global liquid natural gas (LNG) supply network for use in transport within the network formed by the Mediterranean and Atlantic corridors, and the connection zone through the Strait of Gibraltar.

The project consortium is composed of different types of representatives (public and private) from different sectors (energy, education, transport, etc.), thus allowing different interests to be considered and ensuring the market-oriented approach of the work included in this proposal.

The pilot actions to be implemented include the following:

- Adaptation of the SAGGAS terminal at the Port of Sagunto to supply LNG to ships as fuel.
- Basic project to convert tugboats from diesel to LNG.
- Basic project to install an LNG/CNG supply plant at the Port of Valencia.

The project is expected to be completed in December 2020.

### GAINN4MOS PROJECT (2015)

The GAINN4MOS Project (Sustainable LNG Operations for Ports and Shipping – Innovative Pilot Actions) has a budget of €41,314,934, with 50% funding from the EU through its CEF programme (Connecting Europe Facility).

GAINN4MOS aims to improve the Motorways of the Sea (MoS) network in 6 member states (Spain, France, Croatia, Italy, Portugal and Slovenia) through engineering studies to rehabilitate existing vessels and/or undertake new constructions, development of LNG port infrastructures, fuelling stations and a large number of pilot projects.

GAINN4MOS includes 14 detailed engineering studies on LNG infrastructures and stations for the provision and conversion of vessels and/or the construction of new ships and 11 prototypes (4 conversions of vessels and 7 LNG supply stations in nodal ports).

The project will be completed in September 2019.

## 8.3. Involvement in cooperation projects

As part of the objectives included in its Environmental Policy, the PAV is committed to cooperating with third parties in disseminating and sharing the knowledge it has accumulated in protecting the port environment and in extending environmental management to other areas. Accordingly, it takes part in cooperation projects, sharing its knowledge and thus contributing to improving the environment.

### Participation in the EUROPHAR EEIG

The PAV has been a member of the EUROPHAR European Economic Interest Grouping since 1997 and currently chairs the group. EUROPHAR's members include the Port Authorities of Toulon in France, as well as Genoa, Livorno, Piombino and Salerno in Italy. Other Spanish, French and Italian companies and institutions are also part of the Group, mainly linked to the fields of security and environmental port protection.

EUROPHAR is a privileged tool for the communication and promotion of the PAV's policies in the international arena, as well as a cooperation tool for the development of R&D+i projects. In recent years, EUROPHAR has participated in numerous projects such as the SIMPYC Project and the SUPPORT "Security Upgrade for Ports" project, under the 7th Programme, which ended in 2014. Also, worth mentioning is its participation in the GREENCRANES and GREENBERTH projects as part of the Advisory Board.

In 2018, EUROPHAR has collaborated in a proposal called MARDEVAL about the valuation of waste from the MARPOL V vessels as well as from ports being represented by the PAV, FV, Port of Genoa and GEAM (Italy), a waste management company. Said proposal was within the framework of the LIFE programme and coordinated by the AIMPLAS Technological Institute (Spain).



# 8. Innovation and Cooperation Projects



In addition to the above, EUROPHAR has supported different project initiatives such as the SAURON safety project whose objective is to improve the management and visualisation of risk in the physical and cyber-security combination in the port environment. It should be pointed out that EUROPHAR is in contact with numerous environmental projects through participation of both the PAV, as chair, and the FV, as the general secretary.

Lastly, it should be noted that with all its experience, EUROPHAR is an international leader in the fields of environmental protection and port security at the European level.

## 8.4. Training

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As set out in the environmental policy, the PAV aims to provide the necessary environmental training and awareness, as set out in its environmental policy. This is understood not only as a way of improving staff knowledge, but also as a means to acquire new skills and abilities that will make the ports of Sagunto, Valencia and Gandia more competitive. Thus, training courses and sessions are scheduled every year to enhance knowledge in line with the activities carried out in this area. As far as possible, and as set out in the ECOPORT II project, these activities are carried out in conjunction with the rest of the Port Community.

In 2018 various environmental tips were drawn up for training purposes, as part of the Ecoport II project's training plan.

### **Informative emails**

A series of environmental tips were sent monthly to both the PAV staff through the employee website, as well as to the concessions of the PAV port facilities.

## 9. Communication and Publications



# 9. Communication and Publications



The proximity of the Port Authority of Valencia to its stakeholders means it is more aware of their demands and concerns, and also serves as a basis for designing and developing specific actions to comply with its commitments. One of the PAV's objective is to provide as many professionals and organisations as possible with access to information about the areas they operate in.

## 9.1. Communication

The PAV uses various communication channels to make this information available to its stakeholders. These include the following: These include the following.

### **The Port Authority of Valencia's website**

The PAV's web site ([www.valenciaport.com](http://www.valenciaport.com)) continues to be one of the organisation's major communication platforms across the different areas, including environmental aspects.

### **The Ecoport II Project's website**

The website of the Ecoport II project ([www.ecoport.valenciaport.com](http://www.ecoport.valenciaport.com)) aims to be a portal for members of the port community to exchange information about environmental performance initiatives and to share tools promoted by the PAV to enhance the performance of those involved.

## 9.2. Environmental Insight Sessions

The PAV continued to maintain contact with institutions, customers, and other stakeholders about the environmental activities of its ports in 2018.

The Port Authority played host to 240 visits, all of which featured an Environmental component. During the year, approximately 8,853 people came to the PAV from various organisations and centres. The institutional visits have included representatives of the Chinese Delegation, National Coordinator of the Mediterranean Corridor, MEPs Inés Ayala and Inmaculada Rodríguez Piñeiro, Delegation from the Dominican Republic, Delegation of ASEAN Ambassadors, Japanese Delegation, Naval Engineering Conference, Secretary General of Transport, Ministry of Health, Consumption and Social Welfare, USA Commercial Attache.

Among the technical visits, the following stand out: School of Civil Engineers of Madrid, EDEM, Polytechnic University of Valencia, Catholic University of Valencia, Official Chamber of Commerce, ITENE Foundation, Avans Breda University, Iowa State University, Russian Presidential Academy of National Economy and Public administration, University of Applied Science Utrecht, The Japanese Foundation for IAPH International Port Management Training for Japanese Professionals.

## 9.3. Cooperation and participation in forums and seminars

In 2018, the PAV took part in a great number of congresses and conferences about the environment in relation to ports, both national and international. These included:

- Seminar: Key Aspects of Port Management (Guatemala February 2018)
- Launch conference of the World Ports Sustainability Program (Antwerp, March 2018)
- Master's in Port Management and Intermodal Transport XXVII Edition – Valenciaport Foundation (Valencia, April 2018)
- VI GASNAM Conference "Natural Gas: smart ecology for mobility", (Madrid, April 2018)
- Participation in the II European Environmental Ports Conference, in Antwerp (Belgium, May 2018)
- Attendance at the conference "Offshore sector opportunities for the region of Valencia" (June 2018)
- Technical conferences about Marine Renewable Energies (Seville, June 2018)
- Attendance at the NEDGIA FORUM: Gas natural: smart ecology solutions for the logistics sector (September 2018)
- Master's in Logistics and Port Management I Edition (Buenos Aires, Argentina, October 2018)
- Conference: Greenport Congress and Cruise Conference (Valencia, October 2018)
- 57th Naval Engineering Conference (Valencia, October 2018)
- National SPC Spain Conference for the promotion of short sea shipping (Valencia, November 2018)
- Participation in the Collaboration with WPCI/IAPH/PIANC taskforce in the taskforce WG174 "Sustainability Reporting for Ports"



# 9. Communication and Publications

## 9.4. Publications

The publications produced by the PAV include monographs and specific guides on particular subjects, others providing information on its activities, as well as periodicals. Thus, it is necessary to distinguish between those made this year and publications prior to 2017.

### Publications in 2018

#### 2017 Environmental Report

As a key element of its environmental communication, once again the Port Authority of Valencia has published the Environmental Report that includes the actions that have been carried out in environmental matters during 2017.

#### Advance Environmental information 2018

One of the Port Authority of Valencia's aims is to disclose the environmental actions carried out during the period.

For this reason, advance environmental information was produced for the 2018 period for dissemination to the Organisation and the general public.

#### Environmental newsletters

The Port Authority of Valencia began publishing an environmental newsletter three times a year in 1998, which features all the latest national and international news and information of environmental interest in the port industry.

In 2018, continuing the trend of recent years, the environmental newsletters have become one of the port industry's preferred channels to remain up to date with the latest environmental information. The contents of said newsletter are as follows:

- An editorial on environmental issues.
- An article written by an expert in environmental issues in the shipping-port industry.
- Opinion piece by a port community company.
- Brief news items on environmental issues in ports.
- Developments in environmental legislation.
- Forthcoming events.



The following numbers were published in 2018:

- Environmental Bulletin no. 53, published in March, 2018
- Environmental Bulletin no. 54, published in July, 2018
- Environmental Bulletin no. 55, published in November, 2018

### Publications prior to 2018

#### Guide for the Calculation and Management of the Carbon Footprint in Port Facilities in stages

This guide was published to support port companies in calculating and reducing their greenhouse gas emissions and was drafted by a team from the Port Authority of Valencia, the Polytechnic University of Valencia and the Valenciaport Foundation, which spent the year working on drafting it.

The extensive document includes the methodology for calculating and managing the carbon footprint, adapted to the needs of the port community and based on the study of good energy-environmental practices and successful energy efficiency projects over the last 8 years implemented in the ports of Valencia, Sagunto and Gandia. The Guide proposes the inventory and study of the different emissions sources of greenhouse gases directly produced by the consumption of fossil fuels, and the indirect emissions from electricity consumption. It also includes other emissions derived from the activity in the terminals.



#### Book: "Living the Port Environmentally. A tour of the ports of Sagunto, Valencia and Gandia"

The Port Authority of Valencia, aware of the social, economic and environmental value of the Ports of Sagunto, Valencia and Gandia, published this book "Living the Port Environmentally", to discuss its responsible management of these historic spaces, vital in the development of both the municipalities in which they are located, as well as their citizens, workers and employees, through their environmental protection and their integration into the society to which they belong.

With this book, the PAV provides a transparent and integrative view of all the actions that it carries out for the sustainable development of its ports, so that the port activities fulfil the current maximum levels of respect and environmental protection and without compromising their future economic, social and environmental capacity.



# 9. Communication and Publications

## “Environmental initiatives” brochure

In 2011, the Port Authority of Valencia published an Environmental Initiatives brochure in Spanish and English, which details the activities the PAV carries out to protect the environment, as well as its response to the commitments undertaken in its Environmental Policy.

## Greenberth project brochure and newsletter

Brochures and a newsletter were published as part of the Greenberth project to promote the initiative in various national and international forums.

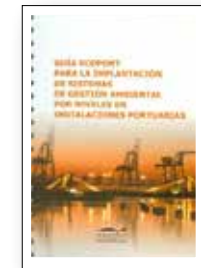
## E4Port Guide to the Implementation of Energy Management Systems in Stages in Port Facilities

This guide sets out a specific method to evaluate significant energy aspects that are applicable to port activities, as well as a three-tiered management model for concessionaires and port service providers to implement energy management systems in line with relevant current standards.

## ECOPORT Guide to Implementation of Environmental Management Systems in by Levels in Port Facilities.

The Port Community is made up of a great number of companies of different sizes, environmental situations and activities, such that the adoption of an Environmental Management System may entail different efforts and difficulties for each of them. With the idea of facilitating the access and participation of companies in this project and taking into account the characteristics of each of them, the Port Authority has developed a guide that structures into 5 levels the requirements of an Environmental Management System in line with the ISO14001 standard and the EMAS II regulations.

According to this methodology, each company is assessed according to its environmental situation; it starts at the most appropriate level and gradually works to achieve higher levels until it reaches the last level, which guarantees the permanent implementation of an Environmental Management System, allowing simple, low-cost access in the implementation of said System.



## Eco-efficiency Guides

The Port Authority of Valencia (PAV) has published five Eco-efficiency Guides with the main aim of driving sustainability criteria in the companies in the port facilities managed by the PAV: Sagunto, Valencia and Gandia. The guides set out various proposals and actions that make it possible to produce goods and services while consuming fewer natural resources and, as a consequence, to reduce pollution through environmentally and economically efficient procedures.

These Guides were prepared after a thorough study of Eco-efficiency and Sustainability in the ports managed by the PAV and they make it possible to apply eco-efficiency criteria in the following fields of action: energy eco-efficiency, preparation of an inventory of greenhouse gases, water use, waste generation and the use of material in the execution of works.

## Guide to environmental risk evaluation in port facilities

The purpose of said guide is to be an easy-to-use and effective tool for those companies located in the ports of Sagunto, Valencia and Gandia that wish to make their own environmental risk evaluation according to the standard UNE 150.008.

## Guide to environmental good practices

On the occasion of the ECOPORT project, there began to be published in 2000 a series of Guides to Environmental Good Practices in Ports in order to raise awareness among the various groups who work in the port facilities of the importance of applying criteria to respect the environment in their daily work. Each of these Guides is concerned with a specific port activity and offers everything from useful advice to apply in the typical processes of each activity to legislation applicable to each specific case. The Guides published so far are as follows:

- Offices (published in 2000, republished in 2006 and 2009)
- Workshops (published in 2000, republished in 2006 and 2009)
- Land Transport by Road (published in 2004 and republished 2009)
- Handling and Storage of solid bulk cargoes (published in 2005 and republished in 2009)



# 9. Communication and Publications

## Environmental Reports (annual since 2001) of the Port Authority of Valencia

The publication in 2002 of the first Environmental Report of the Port Authority of Valencia (first on the Spanish port system), set out all the actions that had been carried out in this area in 2001, seeking to take a step forward and achieve the firm purpose of informing the whole of society within the continuous improvement process in which the PAV is involved.

Since then and in successive years, the Port Authority of Valencia has published these Reports, which recognise the institution's special interest in consolidating its commitment to respecting and caring for the environment, setting out the main activities related to protecting the environment carried out in the ports of Sagunto, Valencia and Gandia, as well as the main environmental management parameters and indicators associated with them, alongside a detailed description of the results obtained.

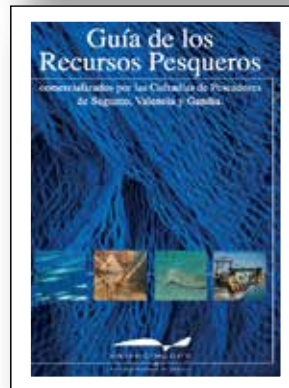
## Guide to Birds of the Port of Valencia

With the publication of this guide to Birds of the Port of Valencia, the PAV seeks to disseminate the great variety of birds that can be watched in the port facilities, giving experts basic knowledge from which they can carry out their study and monitoring and, at the same time, offering any citizen the possibility of identifying in a practical manner the species that overfly our ports during the different seasons.

The idea of this guide arose as a consequence of the ECOPORT project and the publication fulfils two objectives: Firstly, properly to respond to the demand for information in society in general as regards knowledge of the biodiversity of our port. And, secondly, to fulfil the commitment to "provide adequate training and awareness-raising for the staff that promotes the implementation of this policy", as set out in the Environmental Policy.

## Guide to fishing resources

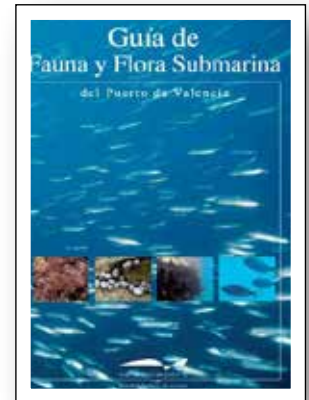
It shows the species that are traded in the Guild of Fisherman of Sagunto, Valencia and Gandia. The guide has the advantage of presenting the species in their natural habitat.



## Guide to the submarine flora and fauna of the Port of Valencia.

Following the commitments made in its Environmental Policy, this Port Authority, in conjunction with the University of Valencia, has carried out a study of the submarine flora and fauna of the Port of Valencia. The special morphological characteristics of the port environment, the great diversity of commercial activities, as well as marine traffic in this inter-ocean port make this study an effective tool for discovering the biodiversity of the port facilities. At the same time, the study makes it possible, as well as have initial information to later determine the possible effects that the port activity may have on the fauna and flora, to display the richness and importance of the living beings that inhabit the port.

As a result of this work, this guide has been published, which has the virtue that all the images shown in it were taken in the Port of Valencia. The list of species that are shown are the most representative ones in the study area and, therefore, they are a small part of the extraordinary broadest catalogue of species present.



## Video of the Environmental Actions of the Port Authority of Valencia

A DVD has been made that compiles the main environmental actions carried out so far by the Port Authority of Valencia in the ports it manages (Sagunto, Valencia and Gandia) in order to report on the main environmental actions, and the results obtained, thus contributing to enriching the environmental actions of the various actors who participate in the port activity and, especially, of other port authorities with similar environmental problems.





# 10. Green Accounting



# 10. Green Accounting

## 10.1. Environmental Costs

During 2018, the PAV incurred costs for the protection and improvement of the environment of €4,562,216.93, which is broken down in the following summary table:

| CONCEPTOS                                        | EJERCICIO<br>2018   | EJERCICIO<br>2017   |
|--------------------------------------------------|---------------------|---------------------|
| <b>GASTOS DE PERSONAL:</b>                       | <b>274.687,19</b>   | <b>264.562,37</b>   |
| <b>OTROS GASTOS DE EXPLOTACIÓN:</b>              | <b>3.962.919,30</b> | <b>3.834.826,57</b> |
| <i>Recogida desechos generados por buques</i>    | 3.291.200,70        | 3.209.188,13        |
| <i>Reparaciones y conservación</i>               | 460.715,43          | 381.473,83          |
| <i>Servicios de profesionales independientes</i> | 40.738,96           | 94.150,61           |
| <i>Suministros y consumos</i>                    | 11.534,72           | 11.993,14           |
| <i>Otros servicios y otros gastos</i>            | 158.729,49          | 138.020,86          |
| <b>AMORTIZACIONES DEL INMOVILIZADO:</b>          | <b>324.610,44</b>   | <b>247.766,12</b>   |
| <b>TOTAL GASTOS Y COSTES MEDIOAMBIENTALES</b>    | <b>4.562.216,93</b> | <b>4.347.155,06</b> |

## 10.2. Tangible and intangible fixed assets

The PAV has the following investments in intangible and tangible fixed assets related to the improvement of the environment, broken down as follows:

| ACTIVOS MEDIOAMBIENTALES<br>(importes brutos) | 31/12/2017          | Adiciones del<br>ejercicio (+) | Bajas (-) | 31/12/2018          |
|-----------------------------------------------|---------------------|--------------------------------|-----------|---------------------|
| ACCESOS MARÍTIMOS                             | 3.748.162,71        | -                              | -         | 3.748.162,71        |
| OBRAS DE ABRIGO Y DÁRSENAS                    | 148.247,29          | -                              | -         | 148.247,29          |
| OBRAS DE ATRAQUE                              | 91.772,15           | -                              | -         | 91.772,15           |
| INSTALACIONES GENERALES                       | 285.057,81          | -                              | -         | 285.057,81          |
| PAVIMENTOS CALZADAS Y VÍAS DE CIRCULACIÓN     | 5.899,45            | -                              | -         | 5.899,45            |
| MATERIAL FLOTANTE                             | 126.147,18          | -                              | -         | 126.147,18          |
| MATERIAL DIVERSO                              | 801.130,42          | 120.560,88                     | -         | 921.691,30          |
| APLICACIONES INFORMÁTICAS                     | 14.909,00           | -                              | -         | 14.909,00           |
| PROPIEDAD INDUSTRIAL                          | 3.270,00            | -                              | -         | 3.270,00            |
| TERRENOS                                      | 63.534,43           | -                              | -         | 63.534,43           |
| <b>TOTAL ACTIVOS MEDIOAMBIENTALES</b>         | <b>5.288.130,44</b> | <b>120.560,88</b>              |           | <b>5.408.691,32</b> |

| AMORTIZACIONES DE ACTIVOS MEDIOAMBIENTALES              | 31/12/2017          | Adiciones del<br>ejercicio (+) | Bajas (-) | 31/12/2018          |
|---------------------------------------------------------|---------------------|--------------------------------|-----------|---------------------|
| ACCESOS MARÍTIMOS                                       | 1.212.628,21        | 78.185,17                      | -         | 1.290.813,38        |
| OBRAS DE ABRIGO Y DÁRSENAS                              | 59.416,84           | 2.969,28                       | -         | 62.386,12           |
| OBRAS DE ATRAQUE                                        | 61.339,50           | 3.068,88                       | -         | 64.408,38           |
| INSTALACIONES GENERALES                                 | 180.446,57          | 16.540,98                      | -         | 196.987,55          |
| PAVIMENTOS CALZADAS Y VÍAS DE CIRCULACIÓN               | 5.141,25            | 395,58                         | -         | 5.536,83            |
| MATERIAL FLOTANTE                                       | 68.896,62           | 9.546,18                       | -         | 78.442,80           |
| MATERIAL DIVERSO                                        | 473.730,48          | 66.919,88                      | -         | 540.650,36          |
| APLICACIONES INFORMÁTICAS                               | 14.909,00           | -                              | -         | 14.909,00           |
| PROPIEDAD INDUSTRIAL                                    | 3.270,00            | -                              | -         | 3.270,00            |
| <b>TOTAL AMORTIZACIONES DE ACTIVOS MEDIOAMBIENTALES</b> | <b>2.079.778,47</b> | <b>177.625,95</b>              |           | <b>2.257.404,42</b> |

# 11. Sustainability indicators





# 11. Sustainability indicators



Our Environmental Reports always include a summary of the environmental indicators used to provide information about this Port Authority's activity.

The PAV has been working with three groups of indicators since 2011. The first group comes from the Global Reporting Initiative (GRI) method, adapted to the characteristics of port activities, as defined in the MESOPORT project.

The second group is made up of the indicators established in EMAS III Regulation (EC) 1221/2009. The PAV is also working on a third group of sustainability indicators that are included in the PAV's Sustainability Report and were created by the National Ports Sustainability Working Group. These indicators aim to standardise criteria for reporting on the sustainable behaviour of the Spanish port system, but are not included in this Statement.

This Statement only lists the most relevant indicators from the first group, and those from the second group, as required by EMAS III Regulation (EC) 1221/2009.

## First group:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|
| A 14                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total number and volume of significant accidental spills.            |
| See Chapter 7. Emergency responses                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                      |
| A 15                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Initiatives to mitigate environmental impacts of the PA's activities |
| <p><b>Certificates:</b> see Chapter 4. Description of the Environmental Management System, section 4.2. Certifications:</p> <ul style="list-style-type: none"><li>• Standard UNE EN ISO 14001:2015 on Environmental Management since 2006.</li><li>• Standard UNE EN ISO 50001:2011 on Energy Management since 2016.</li><li>• EMAS III certification since 2008.</li><li>• PERS (Port Environmental Review System) Certificate, last renewed in 2015..</li></ul> |                                                                      |

## Water quality:

- Cleaning floating waste from the water surface: using the Limpiamar III vessel. See Chapter 6, section 6.4.5. 2018 water quality monitoring results.
- Combating pollution caused by fuel spills: through the emergency plans. The PAV has equipment to mitigate the effects of pollution. See Chapter 7. Emergency responses
- Water quality control network. See Chapter 6. State of the Environment, section 6.4. Water Quality.

## Air quality:

See Chapter 6. State of the Environment, section 6.2. Air Quality Monitoring:

- Existence of Monitoring Network, Chapter 6. State of the Environment.
  - Noise quality control network, section 6.3.
  - Air quality monitoring, section 6.2.

## Waste management:

- A Waste Transfer Centre (WTC) that facilitates waste collection. See Chapter 6. State of the Environment, section 6.1. Waste, sub-sections 6.1.1. Own waste and 6.1.2. Waste from the port facility.
- The PAV has an indirectly managed port service to collect Marpol I, IV and V waste. See Chapter 6. State of the Environment, section 6.1. Waste, sub-section 6.1.3. Ship-generated waste.

## Innovation and Cooperation Projects:

See Chapter 8. Innovation and Cooperation Projects

|                                                                                                          |                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| A 17                                                                                                     | Monetary value of significant fines and total number of non-financial sanctions for non-compliance with environmental regulations. |
| No fines or non-financial sanctions for non-compliance with environmental regulations have been imposed. |                                                                                                                                    |

## Second group:

See Chapter 5. Management of Natural Resources, section 5.5. Summary of indicators.

## 12. Recommendations for Improvement



# 12. Recommendations for Improvement

In the last section of this statement, the Port Authority of Valencia would like to promote the improvement of our environment as far as possible, encouraging readers, whether they are an industry, a government body, a local resident or any other stakeholder interested in the management system, to implement best practices that will undoubtedly result in current and future generations being able to enjoy clean and healthy port facilities:

- Reduce the waste you generate at source whenever possible.
- Reuse what may look like waste in another part of the process.
- Separate different types of hazardous waste and also separate it from non-hazardous waste.
- Manage this waste correctly through duly authorised transport and waste management companies.
- Do not dispose of unauthorised substances into the sewer system.
- Check your vehicle(s). Remember they need regular servicing. This will reduce fuel consumption and prevent unwanted emissions.
- The sea belongs to everyone. Do not throw any solid or liquid substances into port waters.
- Water is a precious resource. Only use the water you need, no more. Use drip irrigation systems for your plants, use low-flush toilets, and reuse water whenever you can.

Let's not forget that:

**“WE ARE NOT ONLY THE INHERITORS OF THE EARTH,  
THE RIVERS, THE MOUNTAINS AND THE WIND; WE ARE  
THEIR GUARDIANS AND TRUSTEES”**  
**Kyoto Protocol**



# 13. Verification and Validation



# 13. Verification and Validation



This environmental statement was verified in an internal audit by C Más Innovación de Sistemas, S.L. on 13 June and 10 July 2019, and in an external audit carried out by DNV GL Business Assurance España on 23 December 2019 and 9 and 10 January 2020.

Verification body: DNV GL BUSSINESS ASSURANCE ESPAÑA, S.L. – ES-V-0005

## Verifier:

This is the annual statement for 2018 registered with the Valencian Regional Government under the number E/CV/000023.