Environmental Product Declaration

In accordance with **ISO 14025** for:

Port Operation Services of the Balearia RoPax Terminal in the Port of Valencia

from

Baleària Eurolíneas Marítimas S.A.

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BALEARIA

INDEX

PROGRAMME INFORMATION

BALEARIA

Programme:
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PCR review was conducted by:
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A full list of members available on www.environdec.com
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Chair of the PCR review: Adriana Del Borghi.

Independent third-party verification of the declaration and data, according to ISO 14025:2006:

- EPD process certification
- EPD verification

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Approved by:
The International EPD® System

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This EPD was done with the technical support of Project Management, Innovation and Sustainability Research Centre (PRINS), at Universitat Politècnica de València, and CARTIF Technology Centre.

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INTRODUCTION

BALEARIA

1. Description of the terminal: Infrastructure and operation mode

The port of Valencia handles all kind of commodities for almost every sector of the Economy. The bulk of the goods belong to the following industries: furniture and wood products, textile, footwear, agriculture, food and feed (cereals, wine and beverages, canned goods, fruit, etc), fuels (gas-oil, petrol, coal), automobiles, construction (cement and clinker, ceramic, marble, etc.), machinery, etc

It also manages regular passenger traffic from and to the Balearic Islands and Italy. In recent years, the port has experienced solid and steady growth in the traffic of cruise ships across the Mediterranean Sea. The port of Valencia is a financial hub for the region with an area of influence within 350 km that generates the 51 % of the Spanish GDP and groups half of the country's active population. Its docks are 12 km long, and it has 1.2 km² of storage area.

Balearia is a leading Spanish shipping company in the transport of goods and passenger towards the Balearic Islands, also connecting Ceuta, Melilla and the Canary Islands with the Peninsula. At international level, it provides services in Morocco, Argelia and the Caribbean (connecting the United States with the Bahamas).

Balearia started its activity in the Port of Valencia in 2007 operating a RoPax terminal. RoPax terminals combine passenger and RoRo[1] cargo. The RoPax terminal has a surface area of 15 126 m² and manages regular traffic at national level (Connecting the Peninsula and the Balearic Islands) and more recently at international level (with regular connections to Mostaganem-Algeria). The terminal hosts the regular national connections and additionally, it can manage international traffic as it has its own services for customs control and cross-border safety. The terminal also hosts several parking lots, driving areas, office buildings and prefabricated modules for police control and customs control.

1. RoRo stands for 'Roll-on, Roll-off', which describes how products are loaded and discharged from a vessel. RoRo allows your products to roll on and off the vessel. Self-propelled products, such as cars and tractors, roll on and off the vessel on their own wheels. Products that are not self-propelled are placed on handling equipment with wheels in the terminal to be rolled on and off the vessel.

LIFE CYCLE ASSESSMENT METHODOLOGY

2.1 Functional Unit and Reference Flow

The function of the system is to provide transportation services for passengers and goods in the RoPax terminal which is currently managed by Balearia in the Port of Valencia by means of an occupancy authorization year revised by the Port Authority of Valencia.

Since the RoPax terminal handles the traffic of both goods and passengers, two different functional units (FUs) were selected as required by the document: PCR 2018:06, "Port operation services". These two FUs were **the transportation of 1 ton of cargo** and **the transportation of 1 passenger.**

Accordingly, two reference flows were selected, one for each FU:

1 757 511 tonnes of cargo
285 802 passengers

2.2 Reference service life

The reference service life of the terminal was set at 100 years for the calculation of the environmental impacts as required by the PCR.

2.3 System description

This EPD considered all the services related to the main activity in the Terminal. All the companies operating the different services required for the management of the traffic of goods and passengers were identified for the year 2019 (Table 1).

Service	Companies
Machinery maintenance	Javitrans T&M Big Work Actividades Auxiliares Portuarias GAM
Safety and surveillance	*Levantina de seguridad*
Prevention and emergency control	*ASPY prevención S.L.U*
Lighting and cleaning services	*Interactiva*
Mooring services	*Amarradores del Puerto de Valencia*
Berthing services	*Balearia*
Waste collection	*Seroil*
Fuel supply	*Cepsa* *Repsol Comercial* *Repsol Bunker*
Pilotage	*Corporación prácticos del puerto*
Stevedores	*Sevasa*
Towing services	*Boluda*
Electric Maintenance	*Ramón Albert*
Passengers and cargo handling services	*Balearia*

Table 1. Services associated to the main activity and responsible entities.

2.4 System Boundaries

The assessment followed a cradle-to-grave approach, considering all the stages in the life cycle, from the extraction of the raw materials to the EoL processes. Following the guidelines in the PCR 2018:06, the different process stages were grouped in three main modules: Upstream, Core and Downstream (Figure 1).

The Upstream module includes the construction of the Terminal's infrastructure, dredging operations at the construction stage and the production of the fuel and the different raw materials required for the operation of the Terminal.

In the core module, annual maintenance activities for the machinery involved in the different operations are included. Additionally, the emissions resulting from the consumption of the fuels are considered, as well as electricity consumption and the emissions resulting from the transport of cargo and staff.

Finally, the downstream module includes the treatment of the waste produced as a result of the operation of the Terminal, including MARPOL waste and the hazardous and non-hazardous waste generated on a daily basis at the Terminal.

Several activities were excluded from the study as stated in the PCR 2018:06:

- Upstream module: production of vehicles and machinery and IT equipment manufacturing.
- Core module: IT equipment maintenance, building maintenance, and dredging operations with maintenance purposes.
- Downstream module: end-of-life of vehicles, machinery and the dismantling and treatment of the infrastructure of the Terminal

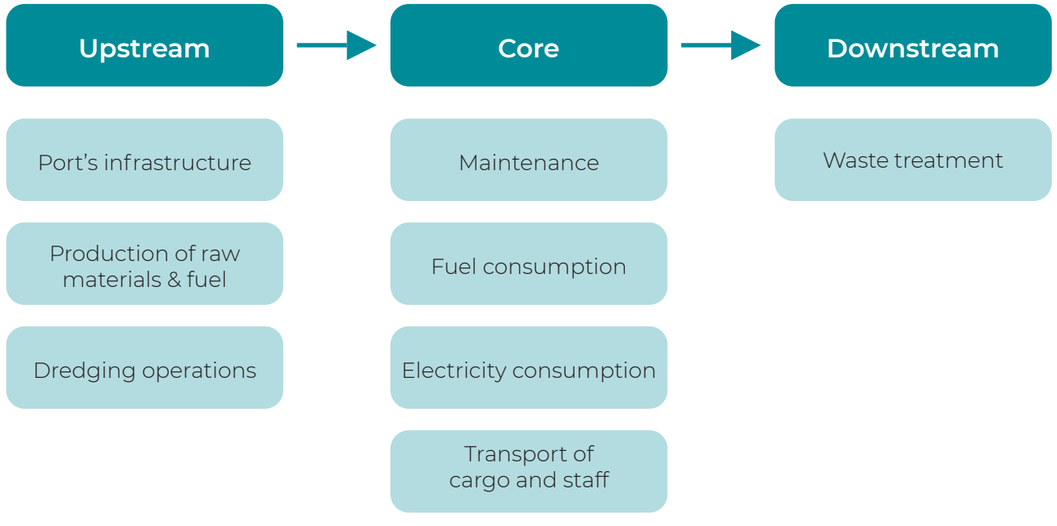


Figure 1. System boundaries

2.5 Allocation rules and Cut-off

Following the recommendations in the PCR document, when it comes to multifunctionality, economic factors were used for the allocation of the impacts to the passengers and the cargo. Port taxes were used to evaluate the % allocation, considering the total economic value of the taxes that Balearia paid to the Port Authority of Valencia for the passengers and for the cargo. According to this information, 67 % of the impacts were allocated to the transport of cargo, while the remaining 33 % was allocated to the transport of the passengers.

The 99 % cut-off rule was adopted, as stated by the PCR 2018:06, so all processes with a contribution to the overall impact higher than 1 % were considered in the EPD.

For recycling processes and reuse scenarios, the polluter pays principle (PPP) was used for modelling purposes.

2.6 Representativeness

Data used in this assessment is representative of the year 2019 and specifically refers to Spain in that year, ensuring geographic and time representativeness. For the model of the electricity mix, the Port Authority of Valencia supplies electricity sourced 100 % from renewables to the Turia terminal. The Port Authority provided the Guarantee of Origin that certificates the renewable origin of the energy (Figure 2).

2.7 Data sources and data quality

In this study, primary data was used when available in accordance with the requirements in the PCR. When no primary information was available and the PCR allows the use of estimations, secondary data from Ecoinvent v3 was used to complete data gaps.

The model was developed and evaluated using SimaPro v 9.1.1.1


IBERDROLA

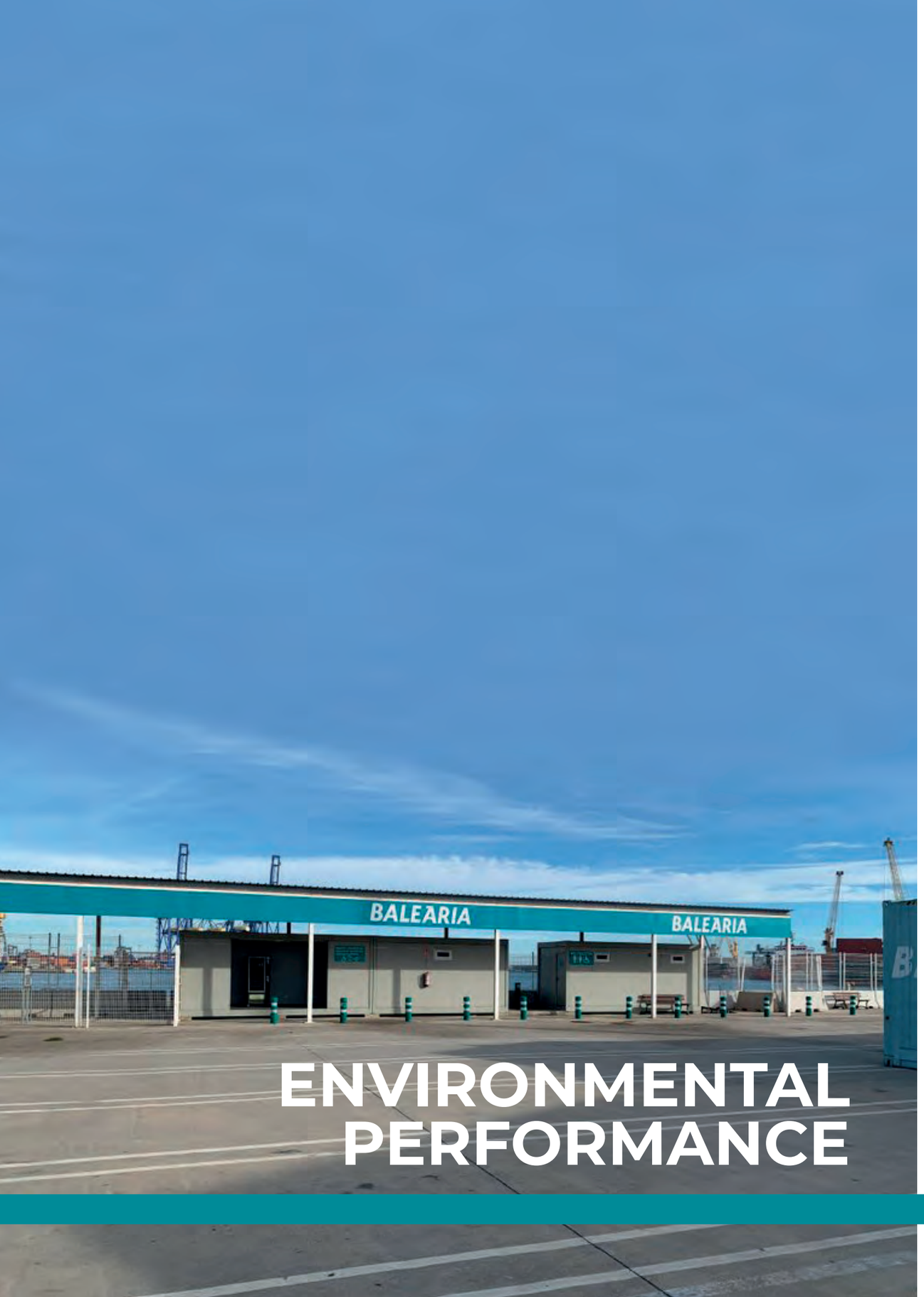
IBERDROLA CLIENTES certifica que ha realizado las gestiones necesarias para acreditar que la energía con **Garantía de Origen** de Iberdrola consumida por:

Autoridad Portuaria de Valencia (Q4667047G)

en el periodo comprendido entre 01/01/2019 y el 31/12/2019 , por un volumen de 83.246.000 kWh en barras de central, conste ante la Comisión Nacional de Mercados y la Competencia como energía proveniente exclusivamente de fuentes **100% renovables**, que respetan el medio ambiente y evitan las emisiones de CO_2 y otros gases contaminantes.

Alfonso Calderón Jiménez
Director Comercial

Figure 2. Guarantee of Origin for the renewable energy.



ENVIRONMENTAL PERFORMANCE

3.1 Potential environmental impact

The assessment of the environmental impact considered all the impact categories required by the PCR.

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	7,31E-02	1,15E-02	2,48E-02	1,09E-01
	Biogenic	kg CO_2 eq.	4,49E-03	3,03E-03	2,61E-01	2,68E-01
	Land use	kg CO_2 eq.	6,31E-05	4,19E-04	8,68E-06	4,91E-04
	TOTAL	kg CO_2 eq.	7,76E-02	1,49E-02	2,86E-01	3,78E-01
Abiotic depletion - elements		kg Sb eq.	1,10E-06	1,08E-07	1,31E-07	1,34E-06
Abiotic depletion - fossil fuels		MJ	8,31E-01	1,08E-02	2,20E-01	1,06E+00
Photochemical oxidant formation potential (POFP)		kg C_2H_4 eq.	1,91E-05	1,27E-06	4,60E-05	6,63E-05
Acidification potential		kg SO_2 eq.	4,69E-04	4,35E-05	1,18E-04	6,31E-04
Eutrophication potential		kg PO_4^{3-} eq.	1,23E-04	9,95E-06	8,69E-04	1,00E-03
Water scarcity potential		m^3	6,67E-04	4,39E-04	2,38E-05	1,13E-03
Ozone layer depletion (ODP)		kg CFC-11 eq.	1,01E-08	1,15E-10	2,32E-09	1,25E-08
Marine aquatic toxicity		kg 1,4-DB eq.	1,02E+02	2,27E+00	3,24E+02	4,28E+02
Land competition		m^2a	6,26E-03	4,62E-03	3,37E-03	1,43E-02

Table 2. Results of the environmental impact assessment referred to 1 tonne of cargo

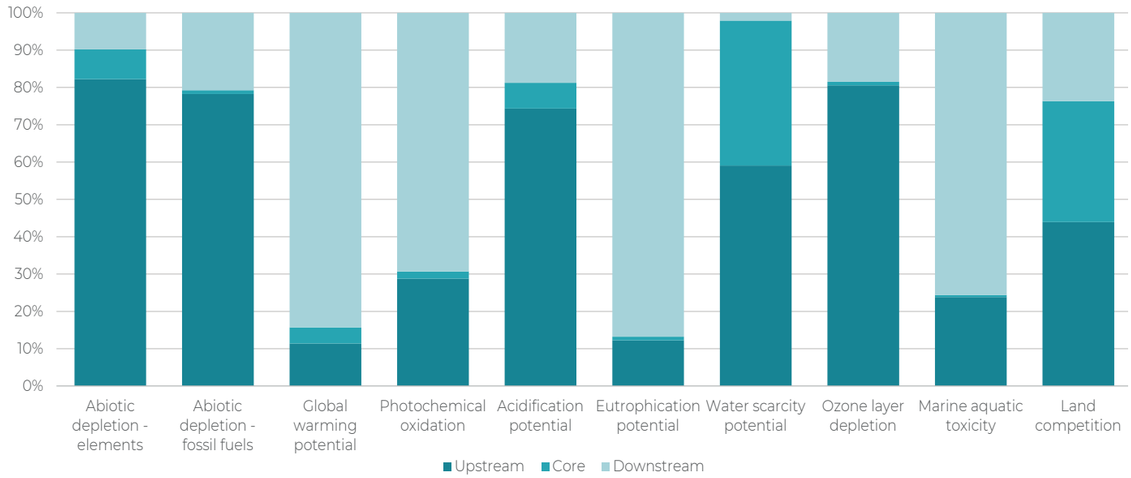


Figure 3. Results for 1 tonne of cargo.

Parameter		Unit	Upstream	Core	Downstream	Total
Global warming potential (GWP)	Fossil	kg CO_2 eq.	2,32E-01	1,07E-01	7,52E-02	4,14E-01
	Biogenic	kg CO_2 eq.	1,37E-02	9,17E-03	7,90E-01	8,13E-01
	Land use	kg CO_2 eq.	1,94E-04	1,27E-03	2,63E-05	1,49E-03
	TOTAL	kg CO_2 eq.	2,46E-01	1,17E-01	8,65E-01	1,23E+00
Abiotic depletion - elements		kg Sb eq.	3,37E-06	3,27E-07	3,96E-07	4,10E-06
Abiotic depletion - fossil fuels		MJ	3,65E+00	3,26E-02	6,67E-01	4,35E+00
Photochemical oxidation		kg C_2H_4 eq.	6,25E-05	1,63E-05	1,39E-04	2,18E-04
Acidification potential		kg SO_2 eq.	1,53E-03	5,24E-04	3,59E-04	2,41E-03
Eutrophication potential		kg PO_4^{3-} eq.	3,85E-04	1,32E-04	2,63E-03	3,15E-03
Water scarcity potential		WSI (m^3)	2,02E-03	1,33E-03	7,19E-05	3,42E-03
Ozone layer depletion		kg CFC-11 eq.	4,52E-08	3,47E-10	7,02E-09	5,26E-08
Marine aquatic toxicity		kg 1,4-DB eq.	3,14E+02	6,92E+00	9,80E+02	1,30E+03
Land competition		m^2a	1,92E-02	1,40E-02	1,02E-02	4,34E-02

Table 3. Results of the environmental impact assessment referred to 1 passenger

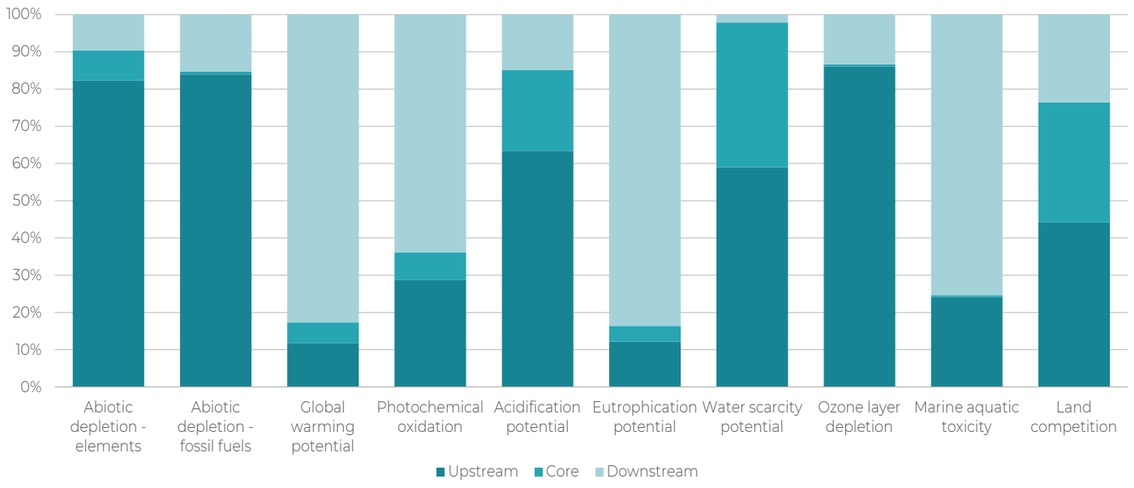


Figure 4. Results for 1 passenger.

3.2 Use of Resources

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	1.94E-01	1.80E-01	2.77E-02	4.02E-01
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	1.94E-01	1.80E-01	2.77E-02	4.02E-01
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	1.27E+00	1.17E-02	2.45E-01	1.52E+00
	Used as raw materials	MJ, net calorific value	0,00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	1.27E+00	1.17E-02	2.45E-01	1.52E+00
Secondary material		kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	1.29E+01	6.33E-03	1.35E-01	1.30E+01
Net use of fresh water		m^3	2.78E-02	2.53E-02	1.57E-03	5.46E-02

Table 4. Use of resources referred to 1 tonne of cargo.

Parameter		Unit	Upstream	Core	Downstream	Total
Primary energy resources – Renewable	Use as energy carrier	MJ, net calorific value	5.91E-01	5.46E-01	8.38E-02	1.22E+00
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	5.91E-01	5.46E-01	8.38E-02	1.22E+00
Primary energy resources – Non-renewable	Use as energy carrier	MJ, net calorific value	4.97E+00	3.56E-02	7.43E-01	5.75E+00
	Used as raw materials	MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
	TOTAL	MJ, net calorific value	4.97E+00	3.56E-02	7.43E-01	5.75E+00
Secondary material		kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Renewable secondary fuels		MJ, net calorific value	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-renewable secondary fuels		MJ, net calorific value	4.96E+01	1.93E-02	4.08E-01	5.00E+01
Net use of fresh water		m^3	8.43E-02	7.66E-02	4.75E-03	1.66E-01

Table 5. Use of resources referred to 1 passenger.

3.3 Waste production and output flows

3.3.1 Waste production

Parameter	Unit	Upstream	Core	Downstream	Total
Radioactive waste disposed	kg	7.48E-06	4.15E-08	1.11E-06	8.63E-06
Hazardous waste disposed	kg	2.84E-06	2.13E-07	6.22E-07	3.68E-06
Non-hazardous waste disposed	kg	1.60E-01	8.29E-04	3.40E-01	5.01E-01

Table 6. Waste production referred to 1 tonne of cargo.

Parameter	Unit	Upstream	Core	Downstream	Total
Radioactive waste disposed	kg	3.08E-05	1.26E-07	3.35E-06	3.43E-05
Hazardous waste disposed	kg	1.19E-05	6.44E-07	1.88E-06	1.44E-05
Non-hazardous waste disposed	kg	4.85E-01	2.51E-03	1.03E+00	1.52E+00

Table 7. Waste production referred to 1 passenger.

3.3.2 Output flows

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	1.61E-04	1.61E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 8. Output flows referred to 1 tonne of cargo.

Parameter	Unit	Upstream	Core	Downstream	Total
Components for reuse	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Material for recycling	kg	0.00E+00	0.00E+00	4.87E-04	4.87E-04
Materials for energy recovery	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, electricity	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy, thermal	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 9. Output flows referred to 1 passenger.

OTHER ENVIRONMENTAL INDICATORS

4.1 Noise emissions

Noise emissions resulting from the different port operation services have been evaluated according to the recommendations in the European Directive 2002/49 / EC.

The study assessed noise levels in the residential area surrounding the terminal to check that noise emissions are below the legal levels required for this kind of activity.

4.2 Clarification on the emission of particulates

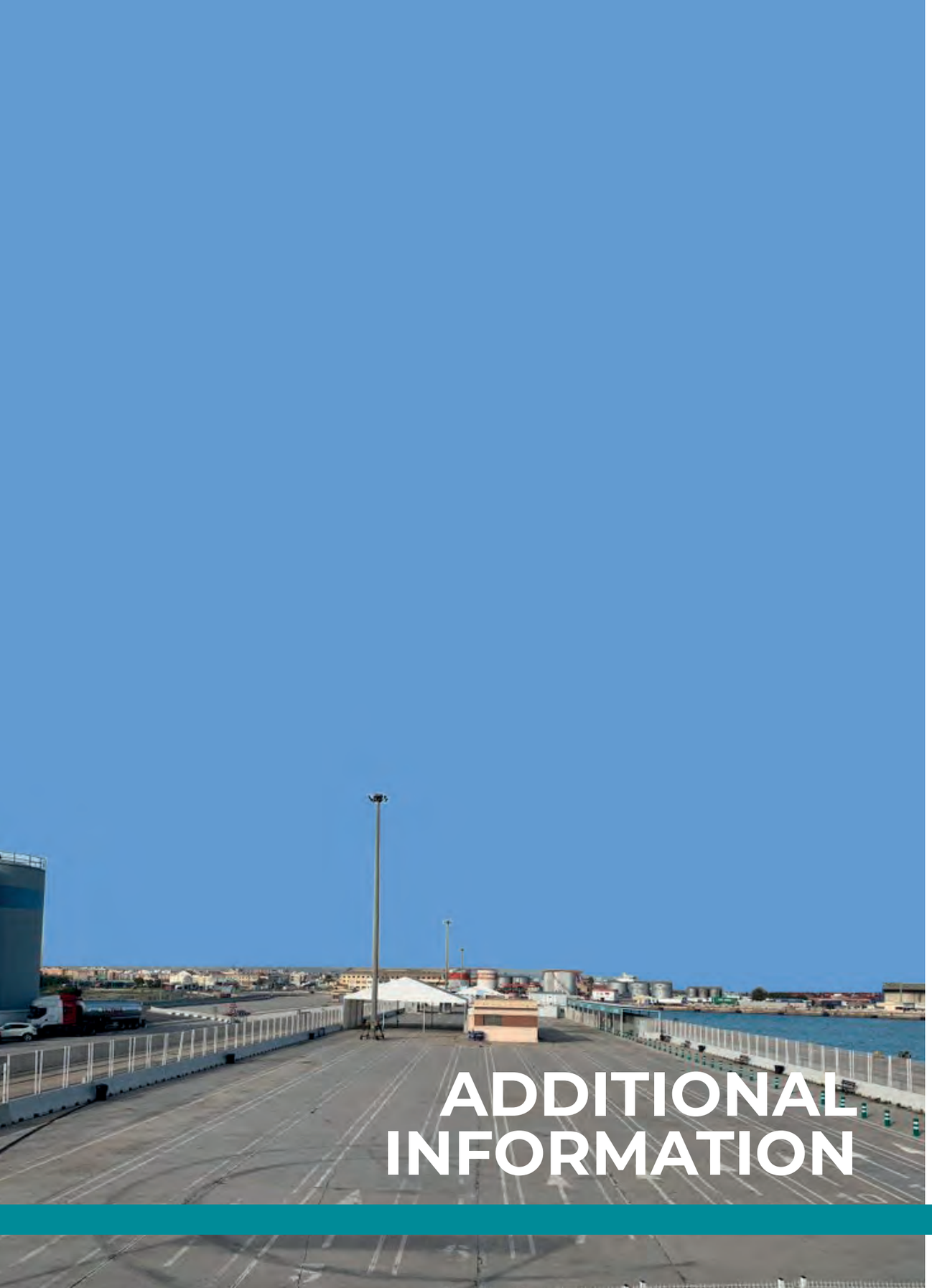
Particulate emissions are not reported as RoPax port terminal operations services do not include solid bulk handling.

Figure 5. Boundaries of the evaluation.

Period	Measurement point	$L_{keq.\ Ti}$ [dB(A)]		$L_{keq.\ day}$ [dB(A)]		Evaluation
		Result	Limit	Result	Limit	
Daytime	Measure 1 - Regina Baltica / entry and landing	48.8	55 (1)	49	55 (1)	Compliant
Daytime	Measure 2 - Vismar one / departure and boarding	49.7	55 (1)	50	55 (1)	Compliant

Table 10. Evaluation of noise levels in the daytime period, as stated in the audit report (basis of this statement).

Note: (1) Limits established according to Annex II of the Municipal Ordinance.
Definitions:
Period: Evaluation period reflected in the Municipal Ordinance. The daytime period is between 7:00 a.m. and 7:00 p.m., and the evening period between 7:00 p.m. and 11:00 p.m.
$L_{keq.\ Ti}$ [dB(A)]: Evaluation level of the noise phase i.
$L_{keq.\ daytime,\ evening}$ [dB(A)]: Assessment level calculated from measurements that include the entire assessment period.
Evaluation: "Complies" if "Result < Limit" (for all results); "Does not comply" if "Result > Limit" (for any of the results); "Undetermined" if "Difference < Measurement uncertainty" (both in absolute value).



ADDITIONAL INFORMATION

5.1 Environmental protection

Balearia Eurolineas Maritimas, S.A. has procedures in place for identifying and evaluating risks and possible environmental impacts, and periodically analyses and evaluates its activities to bolster both its continuous improvement and environmental performance. In its Quality and Environmental policy, drawn up in accordance with ISO 14001 and ISO 50001, Balearia undertakes to prevent pollution beyond the applicable legal requirements as far as possible.

5.2 Innovation, service and sustainability

Balearia Eurolineas Maritimas, S.A. is an international pioneer in the use of natural gas, a fuel that reduces pollutant emissions. In 2020, the fleet already included six ships sailing with this cleaner energy, with three more to be added in 2021. The company's strategic commitment to natural gas is based on the principles of social responsibility, environment conservation, and economic profitability. Balearia is working to achieve zero emissions through renewable energy projects and the generation of renewable gases, like green hydrogen and biomethane.

5.3 Socially responsible policies

The company takes part in the United Nations Global Compact, the world's largest corporate sustainability initiative to encourage businesses and firms worldwide to adopt sustainable and socially responsible policies. The objective is companies to align strategies and operations with universal principles on human rights, labor, environment and anti-corruption, fostering actions that advances societal goals.

DIFFERENCES VERSUS PREVIOUS VERSIONS

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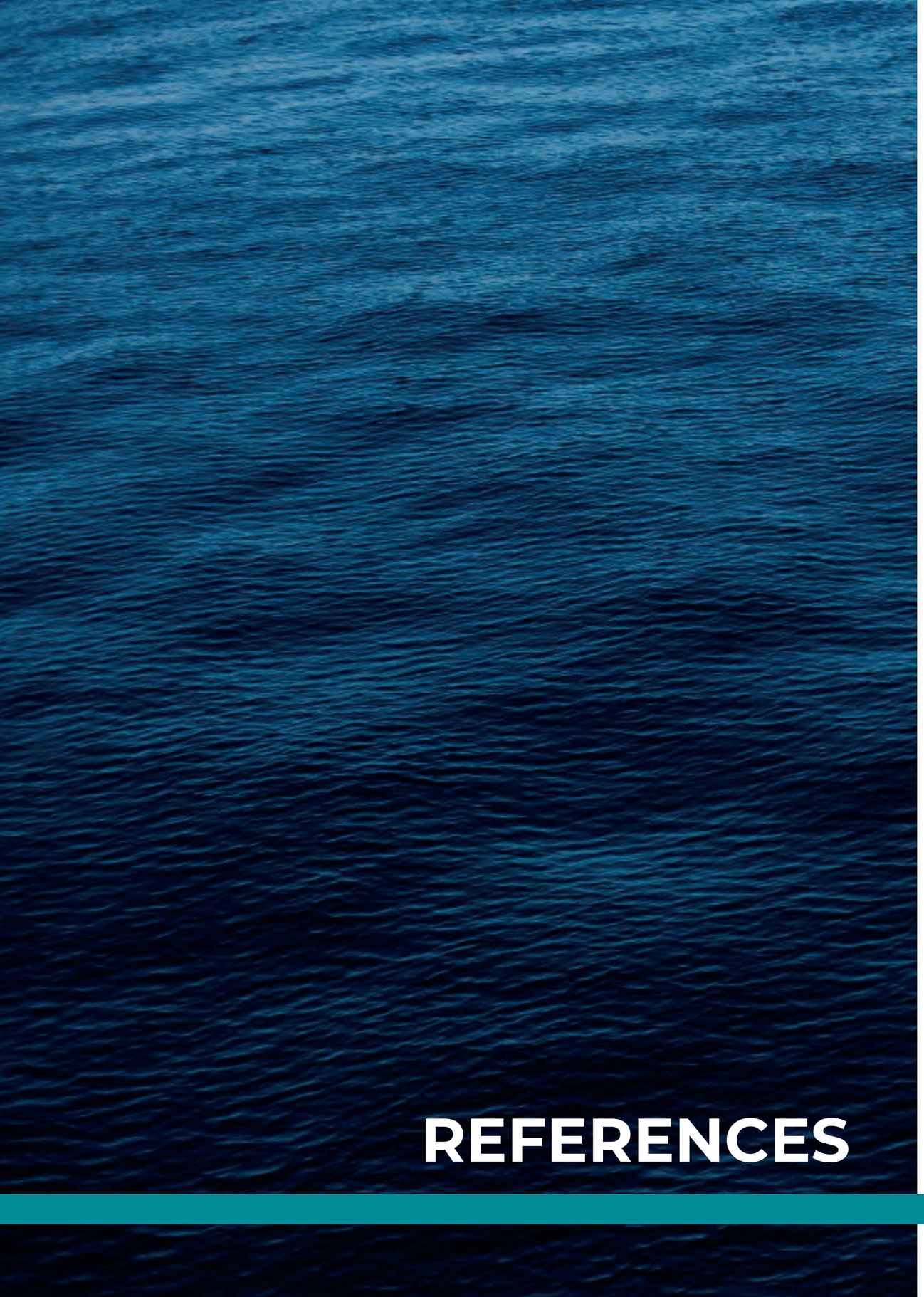
This is the first version of this EPD.



REFERENCES

General Programme Instructions of the International EPD® System. Version 3.01.

PCR 2018:06 Port operation services, version 1.02.

ISO 14040:2006 “Environmental management – Life Cycle Assessment – Principles and framework”.

ISO 14044:2006 “Environmental management – Life Cycle Assessment – Requirements and guidelines”.

ISO 14001:2015 “Environmental management systems – Requirements with guidance for use”.

ISO 50001:2018 “Energy management systems – Requirements with guidance for use”.

Stripple, H., Fridell, E., and Winnes, H. (2016). Port Infrastructures in a System Perspective. A Part of the Project Environmental Calculations for Transport Infrastructure. C128.

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