

Environmental Bulletin of Rodos “Diagoras” Airport (KGS)

Reference year 2018

Fraport Greece

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1. INTRODUCTION

Location

“Diagoras” Rhodes airport is located on the island complex of the Dodecanese, on the north-west part of Rhodes island.

Administration

The airport administratively belongs to the Municipal Unit (MU) of Petaloudes of the Municipality of Rhodes of the Region of South Aegean, at a distance of approximately 14km to the south-west of the town of Rhodes. The airport is extended to two Local Communities (LC) of the MU of Petaloudes: LC Kremasti and LC Paradeisio.

Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	32648/04.11.1994
E.T. Amendment Decision Reference number	100425/ 17.01.2006
	23983/11.05.2016
	37974/07.12.2017
	6304/20.03.2018
	72087/2629/09.01.2019

1.1. Airport Basic Data

Airport Basic Data					
Airport name IATA / ICAO	RHO / LGRP				
Airport position – Airport Reference Point (ARP)	Latitude: 36° 24' 19" N Longitude: 28° 05' 10" E				
Altitude:	5.73 m				
Number of runways	1				
Operation hours (high season)	0:01-24:00				
Runways	Length / Width			Code	
Runway	3,305 x 45.0			07/25	
Full length of parallel taxiway	A 1,000m, F: 1,700m				
Number of taxiways	4 (B,C,D,E)				
Apron capacity	A	B	C	D	E
	-	-	13	-	2
Employees	High season			Low season	
Fraport Greece (FG) employees	51			51	
Employees of other companies	369			105	
Terminal					
➤ Total area (m ²)				23,160	
Other buildings and service/storage areas					

➤ RFF (m ²)	Temporarily housed in ISOBOX until completion of new RFF
Parking Areas	
Car parking spaces	500
Bus parking spaces	50
Taxi parking spaces	60

1.2. Airport Facilities

1.2.1. Fuel Handlers

Number of fuel handler companies				
Number of fuel handler companies operating at the Airport			2	
Installations inside the airport		EKO	GISCO	HAFCO
Environmental Management System (EMS)	(YES/NO)	YES	YES	Not operating at the airport

1.2.2. Ground Handlers

Ground Handlers				
Number of ground handler companies operating at the airport			3	
Installations inside the airport		SKYSERV	SWISSPORT	GOLDAIR
Vehicles (total number)		36	59	199
Environmental Management System (EMS)	(YES/NO)	YES	YES	YES

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2018	
Overall Annual Air Traffic Movements ¹	38,669
Percent of increase or decrease in relation to the previous year	4.3%
Annual passenger traffic	5,567,748
Percent of increase or decrease in relation to the previous year	5.0%
Annual cargo transferred (tn)	774
Percent of increase or decrease in relation to the previous year	19.76%
Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	No. of flights
A320	3302
AT45	1561

¹ Military and training flights not included.

B73H	528
A32A	522
DH8A	518
A321	478
A319	382
JS41	280
DH8D	88
B73C	73
Other	558
Prevailing aircraft types for international flights	
Aircraft type	No. of flights
B73H	8706
A320	6627
B738	2879
A321	1949
A319	1304
A32B	1194
A32A	780
B73W	668
B737	640
B733	458
Other	5174

2.2. High season traffic data

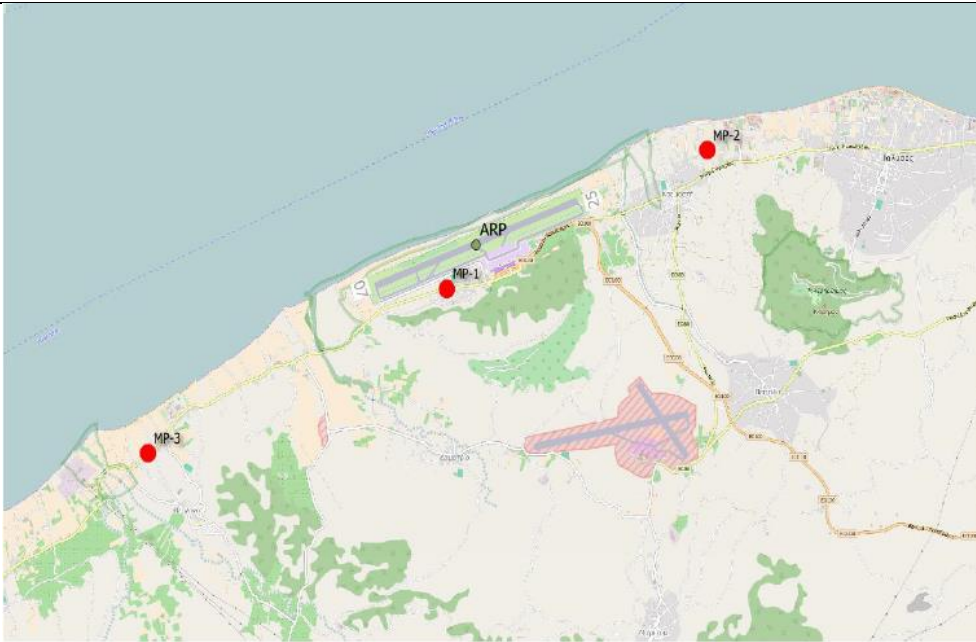
High season traffic data (June-September)	
Highest traffic month	August
Air traffic movements during the month with highest traffic	6,893
Air traffic movements daily average number during the month with highest traffic	222

2.3. Low season traffic data



Low season traffic data (October-May)	
Lowest traffic month	February
Air traffic movements during the month with lowest traffic	521
Air traffic movements daily average number during the month with lowest traffic	19

3. AIRCRAFT NOISE

3.1. Noise measurements during the reference year

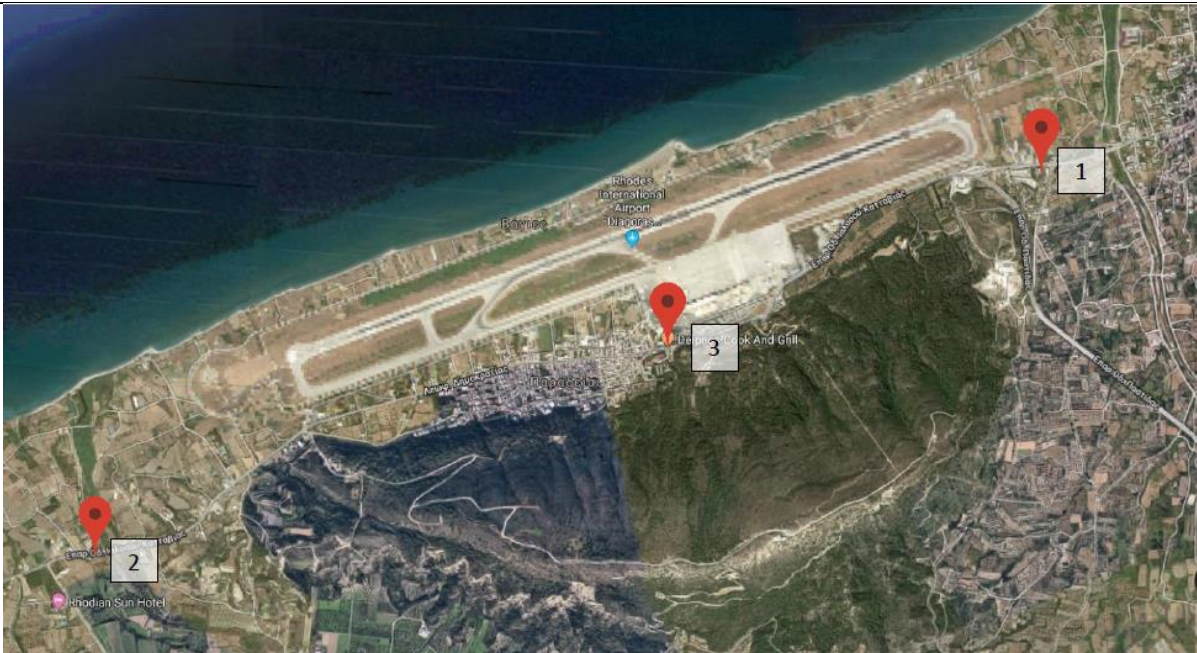
Have noise measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
Measurement points		
		
Measurement points coordinates	Measurement points description	
1) Position: 36° 24' 00" N 28° 04' 52" E	Paradisi area, south of the runway on the balcony of a house. Affected by all procedures to and from all directions	
2) Position: 36° 24' 59" N 28° 07' 32" E	Kremasti area, east of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 25 and departures RWY 07	
3) Position: 36° 22' 40" N 28° 01' 48" E	Theologos area, south-west of RWY 16/34 on a hotel rooftop. Affected by arrivals RWY 07 and departures RWY 25	
Measurement period	21.07.2018 – 22.07.2018	
Noise indicators	Lden, Lnight	
Summary of measurement results:		
Noise levels are monitored according to the airport's monitoring program. At measurement points 1 & 3 no exceedance was recorded in the noise indicators levels Lden = 70 dB(A) & Lnight = 60 dB. At measurement point 2 a slight exceedance of the Lnight indicators was recorded.		

3.2. Noise levels calculation based on noise simulation software

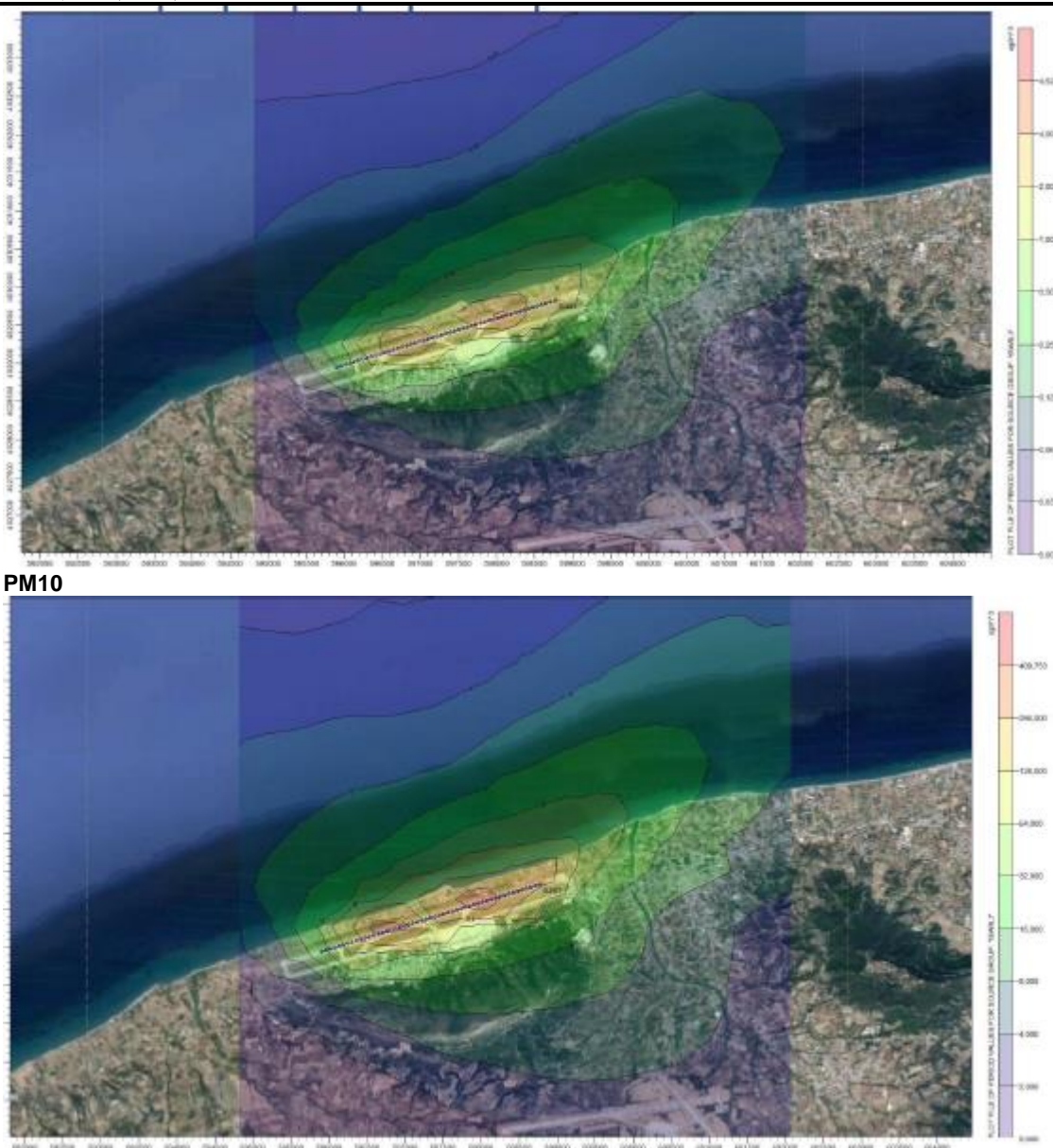
Aircraft noise levels calculation based on simulation software [YES/NO]	YES
Software used: IMMI Noise Prediction Software	
Noise indicators and respective contours calculation:	Lden, Lnight
 <p style="text-align: center;">Lden</p>	 <p style="text-align: center;">Lnight</p>
Summary of results:	
For the year 2018 some buildings within a residential area in the vicinity of the airport are exposed to noise levels higher than the limits $L_{night} = 60 \text{ dB(A)}$. No exceedance of the $L_{den} = 70 \text{ dB(A)}$ indicator was recorded.	

4. AIR QUALITY

4.1. Air quality measurements during the reference year

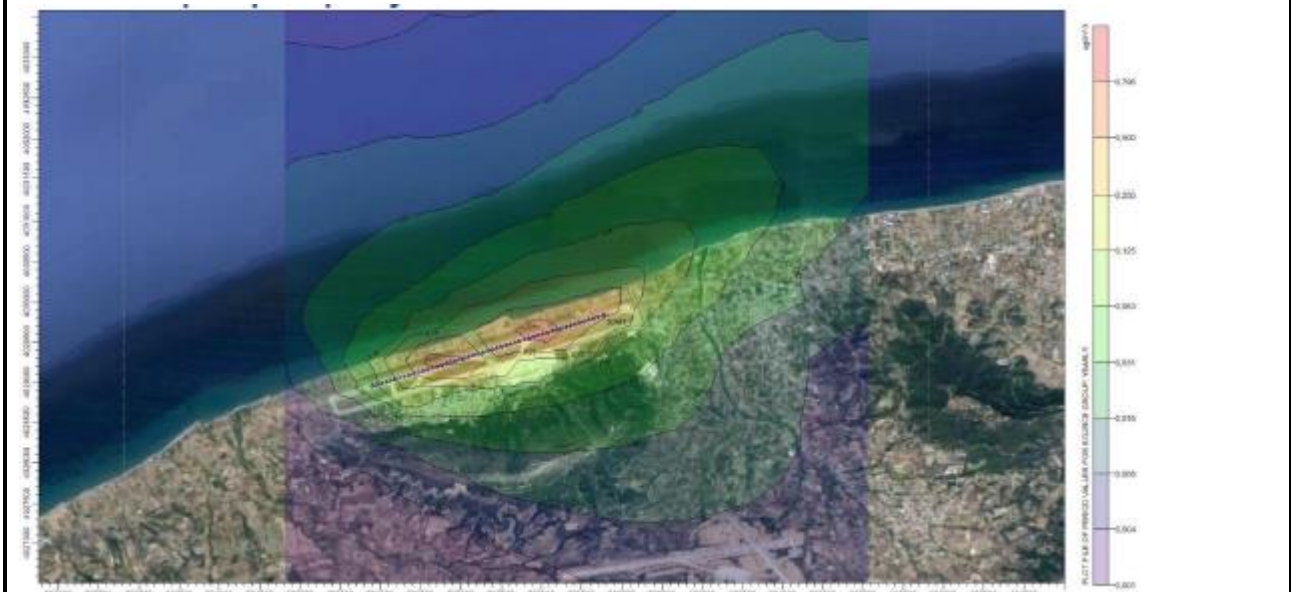
Have air quality measurements at the airport's surrounding area been performed during the reference year? [YES/NO]		YES
Measurement points		
		
Measurement points coordinates	Measurement points description	
1) Position: --° --' --" N --° --' --" E	At a distance of 1km approximately, east of the airport.	
2) Position: --° --' --" N --° --' --" E	At a distance of 2km approximately, west of the airport.	
3) Position: --° --' --" N --° --' --" E	At a distance of approximately 500 meters from the runway to the south	
Measurement period	11.10.2018 – 18.10.2018.	
Pollutants measured: PM ₁₀ , PM _{2,5} , NO ₂ , SO ₂ , C ₆ H ₆ , O ₃		
Summary of measurement results:		
Air quality is monitored according to the airport's monitoring program. No exceedance of the air quality limits was observed.		

4.2. Air pollutants emission and dispersion modelling

<p>Calculation of air pollutants concentrations based on an emission and dispersion modelling software [YES/NO]</p>	<p>YES</p>
<p>Software used: Emissions and Dispersion Modeling System (EDMS) - US Federal Aviation Administration & US EPA AERMOD</p>	
<p>Pollutants concentrations and respective contours calculation: PM₁₀, NO_x, SO_x, C₆H₆</p>	
 <p>PM10</p> <p>NOx</p>	



SOx



Benzene

Summary of results:

Air quality is monitored according to the airport's monitoring program.

No exceedance of the air quality limits was observed.

It is noted that the simulation of the ozone cycle is a difficult procedure the results of which are greatly dependent from the meteorological conditions and solar radiation data used in the photochemical model. The simulation of the specific pollutant is not possible.

5. WASTE MANAGEMENT

Waste management		
Waste	Collection	Management/Disposal
Municipal solid waste	Collection and emptying of garbage bins by an FG contractor inside the airport	Collection and management by the company PERME HELLAS S.A.
Recyclables	Under development due to lack of local municipal or private infrastructures	Under development due to lack of local municipal or private infrastructures
Used oils	Collection by licensed collector "Cytop S.A."	Collection and management by licensed collector "Cytop S.A."
Electric & electronic waste	Collection by alternative management system "Appliances recycling S.A."	Collection and management by alternative management system "Appliances recycling S.A."
Accumulators	Collection by alternative management system "Re-Battery S.A."	Collection and management by alternative management system "Re-Battery S.A."
Small batteries	Collection in special bins of the company AFIS S.A. inside the airport	Collection and management by alternative management system "AFIS S.A."
Used tires	Collection by alternative management system "ECOELASTIKA S.A."	Collection and management by alternative management system "ECOELASTIKA S.A."

Notes:
<ol style="list-style-type: none"> 1. Ground handlers and fuel handlers manage all the categories of waste they produce independently 2. The total quantities of the produced waste by category resulting from all activities of the airport are recorded by Fraport Greece B and submitted in the Electronic Waste Registry via the Annual Waste Producer Report as provided for by the applicable legislation.

6. ECOSYSTEM AROUND THE AIRPORT

6.1. Flora-Fauna

ECOSYSTEM AROUND THE AIRPORT	
Flora	
Are there protected zones of vegetation/habitats in the broader airport area? [YES/NO]	NO
(If YES) Short description:	
Fauna	
Are there protected zones of fauna/birds in the broader airport area? [YES/NO]	YES
(If YES) Short description:	Numenius arquata (Curlew) Burhinus oedicnemus (Stone curlew)

6.2. Ecologically fragile areas

The nearest area is the Wildlife Sanctuary "Kremasti (Paradeisiou)" with code K700 that is adjacent to the airport. The nearest area of the Natura 2000 network is SAC "Rhodes: Profitis Ilias – Epta Piges – Petaloudes – Remata" (GR4210006), located at a distance of approximately 7km from the airport.

7. WILDLIFE HAZARD MANAGEMENT

Wildlife hazard management	
Extent of the problem (bird species):	Birdstrikes
<i>Tyto alba</i> (Owl)	2
<i>Passeridae</i> spp. (Passeroidea)	1
<i>Buteo buteo</i> (Buzzard)	1
<i>Falco tinnunculus</i> (Kestrel)	1
<i>Corvus cornix</i> (Crow)	1
<i>Streptopelia decaocto</i> (Collared dove)	1
<i>Pluvialis apricaria</i> (Golden plover)	2
<i>Circus aeruginosus</i> (Marsh harrier)	1
<i>Columba livia</i> (common pigeon)	8
<i>Coturnix coturnix</i> (Quail)	1
<i>Philomachus pugnax</i> (Ruff)	2
<i>Passer domesticus</i> (House sparrow)	1
<i>Hirundinidae</i> spp. (swallow)	9
<i>Motacilla alba</i> (White wagtail)	2
<i>Motacilla flava</i> (Yellow wagtail)	1
Adopted measures :	
<p>The following reports have been submitted to the Department of Airports Operation (D3/B) of the Hellenic Civil Aviation Authority:</p> <ol style="list-style-type: none"> 1. "Wildlife hazard risk identification and management, Fraport Regional Airports of Greece A S.A., Reference period: 11 April-31 December 2017" 2. "Wildlife hazard risk identification and management, Fraport Regional Airports of Greece B S.A., Reference period: 11 April - 31 December 2017" <p>In these reports, information is included for the following:</p> <ul style="list-style-type: none"> • Bird and other animal species management is done by FG in all airports with the exception of Aktion and Chania airports where wildlife hazard management belongs to the Hellenic Air Force • Birdstrikes or other species strikes on aircrafts data refer to the period between April 11-December 31 2017 • Birdstrikes or other species strikes on aircraft risk evaluation (strikes indicator is taken under account (birdstrikes number to the total ATMs) • Wildlife hazard management measures 	
Reference year summary results:	
<p>The number of strikes of birds or other animals to aircrafts cannot reduce the population of even endangered species, since only a limited number can be involved in a strike event (stochastic events). The loss of a limited number of animals cannot change the population status of the species.</p>	

8. CULTURAL HERITAGE

Have new cultural heritage properties been discovered during the reporting period? [YES/NO]			NO
<i>(if YES)</i> Details provided in the table below:			
Location	Date of discovery	Type of discovery	Additional protection measures taken

9. RESOURCES CONSUMPTION

9.1. Energy consumption

Energy consumption (monthly electric energy consumption, in Kwh)	
MONTH	Kwh
January	432,590.03
February	368,368.70
March	369,867.75
April	417,613.13
May	1,228,635.23
June	1,349,061.90
July	1,597,103.78
August	1,681,826.93
September	1,517,217.75
October	1,072,892.93
November	501,134.85
December	447,935.18
Total annual electric energy consumption (in Kwh)	10,984,248

9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	15	
Number of firefighting vehicles at the airport	4	
Total annual fuel consumption	Diesel (lt)	21,340.85
	Unleaded gasoline (lt)	353.01

9.3. Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	80,006.00
Total annual heating natural gas consumption (m ³)	-

9.4. Water consumption

Water consumption	
Period	Consumption [m ³]
January – March	12,083
April - June	22,104
July - September	48,655
October - December	-
Total annual consumption	82,842

10. GREENHOUSE GAS EMISSIONS & CARBON FOOTPRINT

Greenhouse gas emissions that were included in the carbon footprint calculation are the CO₂ emissions included in scope 1 & scope 2 of the GHG protocol:

- Scope 1: Direct GHG emissions that occur from sources that are owned and/or controlled by the airport.
- Scope 2: Indirect GHG emissions from the generation of purchased electricity, steam, heat or cooling consumed by the airport.

SOURCE FLOWS	TOTAL CO ₂ EMISSIONS (t)
	2018
Direct emissions from heating fuel (scope 1)	213.5
Direct emissions from fuel used for fleet vehicles (scope 1)	36.9
Direct emissions from fuel used for firefighting vehicles (scope 1)	20.9
Direct emissions from fuel used for generators (scope 1)	12.2
Indirect emissions from electricity consumption (scope 2)	6,689.4
Total (t)	6,972.9
Kilos CO₂/ passenger	1.25

Notes:

Fraport Greece B committed to the monitoring, management and reduction of its airports carbon footprint. In order for this target to be achieved:

- Direct and indirect carbon emissions from all the emission sources in the airports' boundaries are calculated and reported, based on the GHG Protocol (scope 1 & 2)
- The airport is certified according to ISO 14064 regarding greenhouse gas emission by an independent certification body
- The airport is planned to be certified according to ACA (Airport Carbon Accreditation)

11. HUMAN CONSUMPTION WATER MONITORING PROGRAM

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Municipal Water & Sewage Company (DEYA) of Rodos
Is sampling of the airport's water network performed? [YES/NO]	YES
(if YES) Sampling frequency:	Quarterly
Summary of results: The results of the microbiological and chemical analyses show that the parameters analysed as regards the airport's water network are within the legislative limits defined by the Ministerial Decision Γ1 (δ)/ΓΠ οικ. 67322/ GG 3282 B/19-9-2017 regarding the quality of human consumption water.	

12. RAINWATER

RAINWATER (collection, treatment disposal and recipient)		[YES/NO]
Area	Collection/treatment/disposal	
Apron and manoeuvring area	Collected in drainage ditches leading to the sea	YES
Other runoffs (runway etc.)	Collected in drainage ditches leading to the sea	YES
Treatment of rainwater by oil-separator		NO

13. GROUNDWATER MONITORING PROGRAM

Groundwater quality	
Is sampling of the airport's groundwater performed? [YES/NO]	YES
(if YES) Sampling frequency:	According to the frequency specified by the ETs.
Parameters analysed: pH, Conductivity, DO, TPH, BTEX, Heavy metals,	
Summary of results: Groundwater quality is monitored according to the airport's monitoring program. Due to the low level of the aquifer it was not possible to take underwater samples.	

14. SEWAGE TREATMENT & DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	NO
Autonomous airport's waste water treatment plant (WWTP)	YES
Short description: The airport waste water is collected via an integrated sewerage network and taken to the WWTP within the airport.	
Blue water	
Collection and disposal: Collection in a tank on the site of the WWTP and disposal within the WWTP of the airport for further treatment.	
Waste water treatment plant description (where applicable)	
<i>Description of characteristics and condition of the airport's WWTP including possible problems. Type and frequency of the effluent quality measurements</i>	
Degree of treatment of airport's WWTP	Secondary treatment
Treatment method	Prolonged ventilation
Disposal of treated wastewater	WWTP of Municipal Water & Sewage Company (DEYA) of Rodos
Sludge disposal	Landfill
Sampling frequency of WWTP effluent	Monthly
Parameters analysed	BOD, COD, SS, TN,TP, T. Coliforms, E.Coli, pH, Residual Cl ₂
Summary of quality of WWTP effluent	The WWTP effluent observes the limits set out in JMD 5673/400/1997