ENVIRONMENTAL BULLETIN OF KOS "IPPOKRATIS" AIRPORT (KGS)

Reference year 2022

Fraport Regional Airports of Greece B S.A.

Issue year: 2023

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1. INTRODUCTION

1.1. Location

"Ippokratis" airport of Kos is located in the homonym island of the Dodecanese, near the settlement Antimacheia, at a distance of 27km to the west of the capital of Kos island.

1.2. Administration

The airport administratively belongs to the Municipal Unit of Herakleides of the Municipality of Kos, of the homonym Regional Unit that belongs to the Region of South Aegeon.

1.3. Environmental licensing

Approved Environmental Terms	
E.T. Decision Reference number	68597/24.06.1999
E.T. Amendment Decision Reference Number	106859/08.08.2006
	197968/03.05.2012
	6126/16.03.2018
	81952/5566/05.08.2022

1.4. Airport Basic Data

Airport name IATA / ICAO	KGS / LGKO
Airport location – Airport Reference Point (ARP)	Latitude: 36° 47' 41" N Longitude: 27° 05' 28" E
Altitude	125.66m
Number of runways	1
Operation hours (summer)	00:01 – 24:00
Operation hours (winter)	00:00 – 23:59

Runways	**Length/Width**			**Code**	
Runway	2,390 x 45m			14/32	
Full length of parallel taxiway	N/A				
Number of taxiways	4				
Apron capacity	A	B	C	D	E
	-	-	6	-	2
Employees	**High season (31.08.2022)**			**Low season (30.11.2022)**	
Fraport Greece (FG) employees	43			34	
Employees of other companies	1.253			523	

Terminal	
➢ Total area (m^2)	23.012

Other buildings and service/storage areas	
➢ RFF Station (m^2)	1.470

Parking Areas	
Car parking spaces	239
Bus parking spaces	35
Taxi parking spaces	50

1.5. Airport facilities

1.5.1. Fuel Handlers

Number of fuel handler companies	
Number of fuel handler companies operating at the Airport	2

Installations inside the airport	EKO	GISSCO	HAFCO
Environmental Management System (EMS)	YES	YES	Not operating at the airport

1.5.2. Ground Handlers

Number of ground handler companies	
Number of ground handler companies operating at the Airport	3

Installations inside the airport	SKYSERV	SWISSPORT	GOLDAIR
Environmental Management System (EMS)	YES	YES	YES

2. TRAFFIC DATA STATISTICS

2.1. Annual Traffic Data

Annual Traffic Data for the year 2022	
Overall Annual Air Traffic Movements[1]	21.475
Percent of increase or decrease in relation to the previous year	51,2%
Annual passenger traffic	2.791.590
Percent of increase or decrease in relation to the previous year	77,3%
Annual cargo transferred (tn)	86
Percent of increase or decrease in relation to the previous year	-22,9%

Aircraft types	
Prevailing aircraft types for domestic flights	
Aircraft type	**No. of flights**
AT76	1.264
A320	815
AT45	678
AT72	360
AT75	280
A32A	259
DH8D	216
A20N	89
A319	58
C550	36
Other	443
Prevailing aircraft types for international flights	
Aircraft type	**No. of flights**
B73H	4.472
A320	3.949
B738	2.728
A32A	1.051
7M8	1.014
A319	824
A321	590
A32B	323
A20N	322
B753	174
Other	1.530

[1] Military and training flights not included.

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	3.958
Air traffic movements daily average number during the month with highest traffic	127

2.3. Low season traffic data

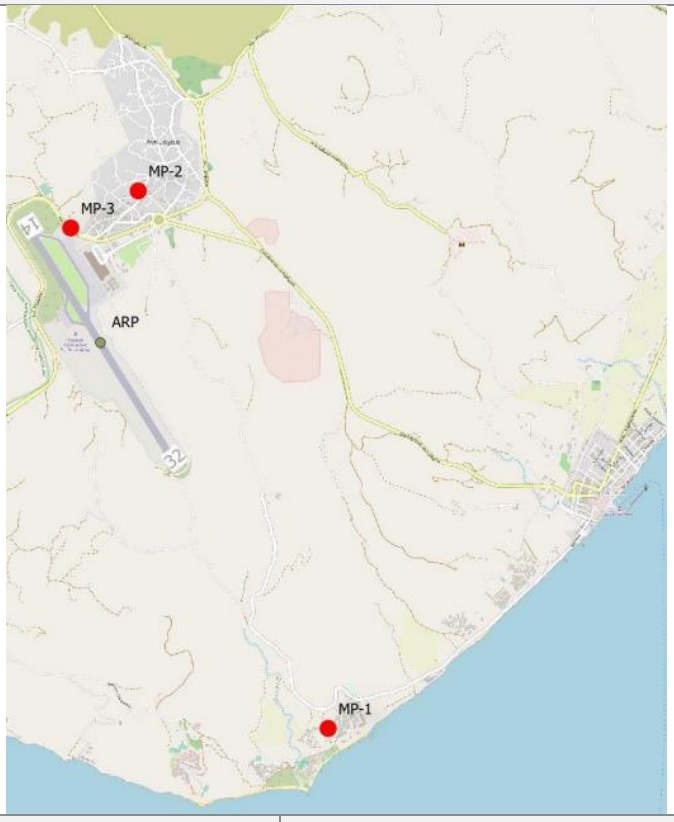
Low season traffic data (October-May)	
Lowest traffic month	January
Air traffic movements during the month with lowest traffic	306
Air traffic movements daily average number during the month with lowest traffic	10

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

Measurement points



Measurement points coordinates	**Measurement points description**
Position 1: 36° 46' 52" N 27° 08' 34" E	Kardamaina area, to the south-east of the runway.Affected by arrivals RWY 32 and departures RWY 14
Position 2: 36° 48' 26" N 27° 05' 42" E	Antimachia area, east of RWY 16/34 on a school roof. Affected by arrivals RWY 14 and departures RWY 32
Position 3: 36° 48' 15" N 27° 05' 17" E	Antimacheia area, to the northeast of the runway 16/34 at a sport court. Affected by arrivals RWY 14 and departures RWY 32.
Measurement period	28.07.2022 – 29.07.2022
Noise indicators	L_{den}, L_{night}

Summary of measurement results
Noise levels are monitored according to the airport's monitoring program and new approved environmental terms. No exceedance of noise indicators levels L_{den}=70 dB(A) and L_{night}=60 dB(A) was observed.

3.2. Noise levels calculation based on noise simulation software

Aircraft noise levels calculation based on noise simulation software	NO
Software used: N/A	
Noise indicators and respective contours calculation: N/A	
Noise contours: N/A	

Summary of results:
According to environmental terms, there is no obligation for noise simulation software this year.

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

Measurement points

Measurement points	Measurement points description
Position 1	At a distance of less than 500 meters, in the school yard
Position 2	Antimacheia Settlement, at a distance of approximately 1.3 km, to the north-east of the airport.
Measurement period:	08.03.2022 - 28.03.2022 18.07.2022 - 03.08.2022 08.11.2022 - 23.11.2022
Pollutants measured:	PM_{10}, $PM_{2,5}$, NO_2, SO_2, C_6H_6, O_3, CO

Summary of measurement results:
Air quality is monitored according to the airport's monitoring program and new environmental terms. No exceedance of the air quality limits was observed, only PM_{10} for 1 day in position 2.

4.2. Air pollutants emission and dispersion modelling

Calculation of air pollutants concentrations based on an emission and dispersion modelling software	NO
Software used: N/A	
Pollutants concentrations and respective contours calculation: N/A	

Summary of results:
According to environmental terms, there is no obligation for air pollutants emission this year.

5. WASTE MANAGEMENT

Waste	Collection	Management/Disposal
Recyclables (paper, plastic, metals, glass)	Separate collection by the Municipality of Kos	Disposal at material recovery facility for recycling
Residues (Mixed Waste) and Bulky Waste	Collection by the Municipality of Kos.	Disposal in landfill

Notes:

1. Regarding the different categories of the MSW (recyclables, mixed waste, bulky waste), the Airport Users handle their waste together with Fraport Greece B (central management).
2. Regarding the "alternative management' waste categories (Waste lubricant oil WLO, WEEE, etc.):
   i. Waste Lubricant Oil (WLO): Collection and management by authorized collector "CYTOP S.A."
   ii. Waste Electrical & Electronic Equipment (WEEE): Collection and management by alternative management system "Appliances Recycling S.A."
   iii. Accumulators: Collection and management by alternative management system "Re-Battery S.A."
   iv. Small batteries: Collection and management by alternative management system "AFIS S.A."
   v. Used tires: Collection and management by alternative management system "ECOELASTIKA S.A."
3. The total quantities of the hazardous waste further to the above-mentioned and produced at the airport, are managed by licensed private companies which have a contract with Fraport Greece B, according to the provisions of the legislation in force.
4. The total quantities of the produced waste by category resulting from all activities of the airport, the collectors and final recipients, are recorded by Fraport Greece B and submitted in the Electronic Waste Registry of the Ministry for Environment and Energy via the Annual Waste Producer Report according to the provisions of the legislation in force.

6. ECOSYSTEM AROUND THE AIRORT

6.1. Flora-Fauna

Flora	
Are there protected zones of vegetation/habitats in the broader airport area?	YES
(if YES) Short description: Kos Airport "Ippokratis" is near to the Natura 2000 sites: • GR4210008 Kos: Akrotirio Louros - Limni Psalidi - Oros Dikaios - Alyki - Paraktia Thalassia Zoni (Area: 10,124.10ha) • GR4210027 Kos: Limni Psalidi – Alyki (Area: 432.89ha).	
Fauna	
Are there protected species of fauna/birds in the broader airport area?	YES
(if YES) Short description: Kos Airport "Ippokratis" is near to the Important Bird Area GR166: Mount Dikaios, lake Psalidi and Alyki lagoon, Kos (Area: 9,108.18ha). The protected bird species that have been observed at Kos airport since April 2017 are presented below: Bonelli's eagle (*Aquila fasciata*), Collared pratincole *(Glareola pratincola),* Eurasian stone-curlew *(Burhinus oedicnemus),* European roller (*Coracias garrulous),* European turtle-dove *(Streptopelia turtur),* Lapwing (*Vanellus vanellus),* Lesser kestrel *(Falco naumanni),* Long-legged buzzard *(Buteo rufinus),* Marsh harrier *(Circus aeruginosus),* Masked shrike *(Lanius nubicus),* Montagu's harrier *(Circus pygargus),* Pallid harrier *(Circus macrourus),* Red-footed falcon *(Falco vespertinus*), Rüppell's warbler (*Curruca ruppeli*), Short-eared owl (*Asio flammeus*), White stork *(Ciconia ciconia).*	

7. WILDLIFE HAZARD MANAGEMENT

Wildlife strikes and wildlife hazard management measures	
Wildlife species that suffered a strike	**Strikes (%)**
Corvids	71%
Small passerines	29%
Wildlife strike risk mitigation measures:	
The presence and behavior of wildlife species at Kos airport is monitored in regular intervals, daily, from dawn to dusk. Some of the wildlife control methods applied at Kos airport are: distress calls (bioacoustics), digital sounds, anti-bird laser, etc. Preventive long-term actions that are mainly related to habitat management measures (e.g. grass cutting, water body management) are also taken to further reduce the presence of species constituting a risk to flight safety. In addition, a NOTAM is published and regularly updated.	

8. CULTURAL HERITAGE

Have new cultural heritage properties been discovered during the reporting period?	NO
(if YES) 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)	
Total annual electric energy consumption (in Kwh)	4.446.866

9.2. Fuel consumption

Fuel consumption		
Number of FG vehicles at the airport	18	
Total annual fuel consumption	Diesel (lt)	16.705,53
	Unleaded gasoline (lt)	663,24

9.3. Heating oil or natural gas consumption

Heating oil or natural gas consumption	
Total annual heating oil consumption (lt)	-*
Total annual heating natural gas consumption (m^3)	N/A

**Heating and air conditioning is performed via heat pumps*

9.4. Fuel consumption for generator

Fuel consumption	
Total annual consumption (lt)	237,57

9.5. Water consumption

Water consumption	
Total annual consumption (m^3)	26.314

10. GREENHOUSE GAS EMISSIONS & CARBON FOOTPRINT

Greenhouse gas emissions that were included in the carbon footprint calculation are the CO_2 emissions included in scope 1 & 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)
	2022
Direct emissions form heating fuel (scope 1)	0,0
Direct emissions from fuel used for fleet vehicles (scope 1)	46,2
Direct emissions from fuel used for generators (scope 1)	0,6
Indirect emissions from refrigerants (scope 1)	0,0
Indirect emissions from electricity consumption (scope 2)	1.867,8
Total (t)	**1.914,6**
Kg CO_2 /passenger	**0,69**

Notes:

Fraport Greece B is 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 ACA (Airport Carbon Accreditation), Level-1

11. HUMAN COMSUMPTION WATER MONITORING PROGRAM

Human consumption water quality	
Water supply (public water network or airport's boreholes)	Municipal Water & Sewage Company (DEYA) of Kos
Is sampling of the airport's water network performed?	YES
(if YES) Sampling frequency:	Quarterly
Summary of results: The results of the microbiological and chemical analyses show that the parameters analyzed 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)		
Area	**Collection/treatment/disposal**	**[YES/NO]**
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

Rainwater quality	
Is sampling of the airport's rainwater performed?	YES
(if YES) Sampling frequency:	Yearly
Parameters analyzed: pH, conductivity,TSS, DO, NO_3, NO_2, Oil & grease, BOD, COD, Total Petroleum Hydrocarbons (TPH), PAHs, BTEX, Heavy metals,PCBs, Detergents	
Summary of results:	
Surface rainwater quality is monitored according to the airport's monitoring program. Due to the absence of designated recipients and relevant national quality limits for surface rainwater, the Environmental Health & Safety Guidelines of the International Finance Corporation (IFC) are adopted. Surface rainwater monitoring for 2022, was not performed.	

13. GROUNDWATER AND/OR SOIL AND/OR SOIL GAS MONITORING

Groundwater and/or soil and/or soil gas quality	
Is sampling of the airport's groundwater and/or soil and/or soil gas performed?	YES
(if YES) Sampling frequency:	Yearly
Parameters analyzed: TPH, BTEX, MTBE (groundwater) and Volatile hydrocarbons, aliphatic, aromatic and chlorinated (soil gas)	
Summary of results:	
Groundwater quality is monitored according to the airport's monitoring program from boreholes managed by Fraport Greece. Groundwater monitoring for 2022 was not performed. According to the approved environmental terms, monitoring of groundwater and air from the Fuel Handlers is not foreseen for the year 2022.	

14. SEWAGE TREATMENT AND DISPOSAL

Sewage	
Sewage network to the municipal waste water treatment plant (WWTP)	YES
Autonomous airport's waste water treatment plant (WWTP)	NO

Blue water
Collection and disposal: Collection in watertight tank and disposal to the municipal sewage network.

Waste water treatment plant description (where applicable) *Description of characteristics and condition of the airport's WWTP including possible problems. Type and frequency of the effluent quality measurements.*	
Degree of treatment of airport's WWTP	N/A
Treatment method	N/A
Disposal of treated wastewater	N/A
Sludge disposal	N/A
Sampling frequency of WWTP effluent	N/A
Parameters analyzed	N/A
Summary of quality of WWTP effluent	N/A