



# *Republic of Cabo Verde*

## *Country Progress Update*



Second Phase of the ICAO Assistance Project with the EU Funding :  
*“Capacity Building for CO<sub>2</sub> Mitigation from International Aviation*

**3 to 5 April 2023**  
**Harare, Zimbabwe**



**Arlindo Borja - Focal Point**  
**Armando Veiga - Alternate**



## Agenda

1. Use of the Aviation Environmental System (AES)
  - ❖ Data collection and Monitoring
  - ❖ Submission of Monthly CO<sub>2</sub> Reports to ICAO
2. Mitigation Measures – Implementation Progress
  - ❖ Measures already in place
  - ❖ Measures that started as a result of the project
  - ❖ Measures that are scheduled to be implemented in the short term
3. Major challenges related to the implementation of mitigation measures



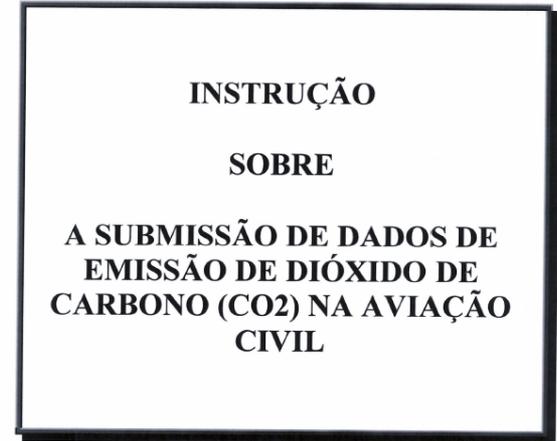
# 1. AVIATION ENVIRONMENTAL SYSTEM (AES)

## ❖ Data collection and Monitoring

For data collection, CAA established the obligation with the Instruction nº01/AEC/2023 for national airline operators to submit (by 15th of each month) data related to CO2 emissions in order to monitor the implementation of the action plan to reduce CO2 emissions. This Instruction is applicable to all national airline operators engaged on the transport of passengers, cargo and mail on commercial flights (domestic and international).

INTERNATIONAL CIVIL AVIATION ORGANIZATION ✈  
ENVIRONMENTAL PROGRAMME  
FORM ENVI

Date: 14/03/2023  
Last name: DUARTE  
First name: ELVIO  
Email: elvio.duarte@caboverdeairlines.com  
Data provider: TCV



Flight number	Date of departure	Airline	Origin	Destination	Aircraft	Seats available	Passengers carried	Payload available (Kilogrammes)	Freight carried (incl. express) (Kilogrammes)	Mail carried (Kilogrammes)	Scheduled	Fuel consumed (Litres)	APU usage time (Minutes)	Taxi time (Minutes)
a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
613	02/01/2023	TCV	GVNP	LPPT	B737-700	120	63	14781	0	0	1	2344		11
613	02/01/2023	TCV	GVSV	LPPT	B737-700	120	118	14781	0	0	1	10224		9
607	02/01/2023	TCV	LPPT	GVNP	B737-700	120	86	14781	0	0	1	11222		18
606	04/01/2023	TCV	GVNP	LPPT	B737-700	120	115	14781	0	0	1	11721		12
611	04/01/2023	TCV	LPPT	GVSV	B737-700	120	53	14781	420	36	1	10100		20
612	05/01/2023	TCV	GVSV	LPPT	B737-700	120	117	14781	0	0	1	11097		11
607	05/01/2023	TCV	LPPT	GVNP	B737-700	120	96	14781	0	303	1	13471		12
606	06/01/2023	TCV	GVNP	LPPT	B737-700	120	117	14781	0	0	1	10599		11
607	06/01/2023	TCV	LPPT	GVAC	B737-700	120	118	14781	0	734	1	11845		11
607	06/01/2023	TCV	GVAC	B737-700	120	50	14781	0	0	0	1	1870		10
608	07/01/2023	TCV	GVNP	GVAC	B737-700	120	0	14781	0	0	1	1496		11
608	07/01/2023	TCV	GVAC	LPPT	B737-700	120	115	14781	0	0	1	11097		10
607	07/01/2023	TCV	LPPT	GVNP	B737-700	120	79	14781	57	0	1	10723		10
606	08/01/2023	TCV	GVNP	LPPT	B737-700	120	116	14781	0	0	1	12119		10
611	08/01/2023	TCV	LPPT	GVSV	B737-700	120	70	14781	147	139	1	10414		12
7201	08/01/2023	TCV	GVSV	GVNP	B737-700	120	0	14781	0	0	0	1870		8

INSTRUÇÃO N.º  
01/AEC/2023

Aprovação

Abraão Santos Lima  
Presidente Conselho Administração

19/01/2023

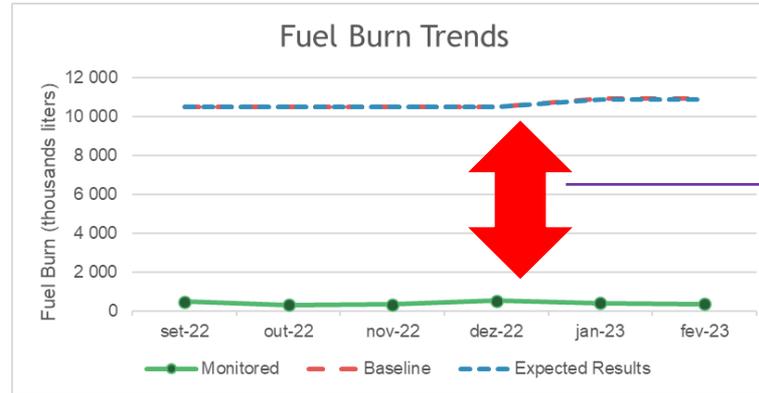
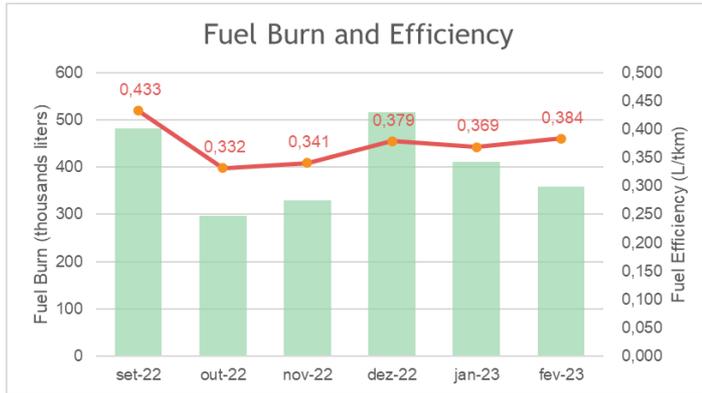
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## ❖ Submission of Monthly CO2 Reports to ICAO

According to the Instruction n°01/AEC/2023 , the CAA submits the report of CO2 emissions to ICAO on monthly basis. The emission report for January 2023 shows that there were 37 international flights with a CO2 emission of 1,040 (t), RTK of 1.115.548 (tkm), fuel burn 411,387 (l), with and fuel efficiency of 0.369. However, compared with to February emission report, there were 32 international flights with a CO2 emission of 909 (t), RTK of 936 334(tkm), fuel burn 359 545 (l), with and fuel efficiency of 0.384.

MONTH-TO-MONTH	fev-23	jan-23	% CHANGE	6 MONTHS TREND
RTK (tkm)	936 334	1 115 548	↓ -16%	
FUEL BURN (L)	359 545	411 387	↓ -13%	
CO2 EMISSIONS (t)	909	1 040	↓ -13%	
FUEL EFFICIENCY (L/tkm)	0,384	0,369	↑ 4%	



- Updated our State Action Plan with TACV data from 2022
- Use ICAO Methodology
- Calculate a new baseline
- Calculate a new expected results



## 2. Mitigation Measures – Implementation Progress

### ❖ Measures already in place

**MM3** - Publication of authorization for the planning of direct routes in the FPL in SAL FIR (Aircraft can fly in SAL FIR from entry point direct to exit point, without intermediates point).

- Completed. The authorization was published for planning direct routes in the FPL in SAL FIR (Aircraft can fly in SAL FIR from the direct entry point to the exit point, with no intermediate point)

**MM4** - Implementation of PBN SID and STAR procedures at Praia and Sal international airports.

- Completed. Procedures approved by the CAA, waiting for AIP publication scheduled for October 2023

**MM5** - Design and implementation of CCO procedures at all international airports (2019-2022).

- Completed. Procedures CCO Praia and Sal airport to be published. However, São Vicente and Boa Vista airport still without procedures.

**MM6** - Design and implementation of CDO procedures at all international airports (2019-2022).

- Completed. Procedures CDO Praia and Sal airport to be published. However, São Vicente and Boa Vista airport still without procedures.



## 2. Mitigation Measures – Implementation Progress

### ❖ Measures that started as a result of the project

**MM8** - Full replacement of conventional lighting by LED in buildings and facilities of all the international airports

- ASA and CVH started the process of replacing conventional lighting by LED.

**MM11** - Replacement of obsolete AC equipment (R22) with modern and more efficient equipment in all the international airports of Cabo Verde (2021-2025)

- In the process to replace all obsolete AC equipment at all airports.

**MM12** - Placement of motion sensors for lighting control in all WCs at the international airports São Vicente and Boa vista Airport.

- Completed in Boa Vista airport and 80% in São Vicente Airport.

**MM13** - Change the internal procedures regarding disembarkation with the aid of buses, prioritizing the embarkation on foot by managing the stands closest to the terminals- CVH

- Measure in place since December 2022 by Cabo Verde Handling (CVH) in partnership with ASA.

**MM15** - Acquisitions of Ground Support Equipment cleaner fuels, namely electric GSE

- CVH Purchased 2 electric forklifts for Praia and Sal airport and intend to buy 3 electric tractors in 2023.



## 2. Mitigation Measures – Implementation Progress

### ❖ Measures that are scheduled to be implemented in the short term

**MM1** - Conduct a feasibility study to assess the potential alternative fuel in Cabo Verde.

• Ministry of Energy and CEDEAO funding have in place a study to develop a Nacional Bioenergy Action Plan for Cabo Verde. This study includes potential alternative fuel in the country.

**MM2** - RNP4 implementation in the Europe/South America (EUR/SAM) corridor.

• There will be a EUR SAM corridor meeting scheduled for April 24th to 26th in Madrid – Spain for discussion.

**MM7** - Adaptation of Taxiway B for medium/large aircraft for the São Vicente airport.

• It will start with the airport concession. The concession contract has already been signed with VINCI AIRPORT and It's currently in the transitory phase.

**MM9** - Installation of photovoltaic panels in Boa Vista, Praia and São Vicente airports.

It will start with the airport concession. The concession contract has already been signed with VINCI AIRPORT and It's currently in the transitory phase.

**MM10** - Wind park at Sal airport (2024-2026)

• It will start with the airport concession. The concession contract has already been signed with VINCI AIRPORT and It's currently in the transitory phase.

**MM14** - Replacement of vehicles (Follow-me, VIP terminal and maintenance) by electric vehicles at Boa Vista, Praia and Sal airports.

It will start with the airport concession. The concession contract has already been signed with VINCI AIRPORT and It's currently in the transitory phase.



## Installation of photovoltaic panels

### ENERGIA RENOVÁVEL - AEROPORTO DA PRAIA

LOCALIZAÇÃO



**ANZ**  
AEROPORTOS  
DE PORTUGAL

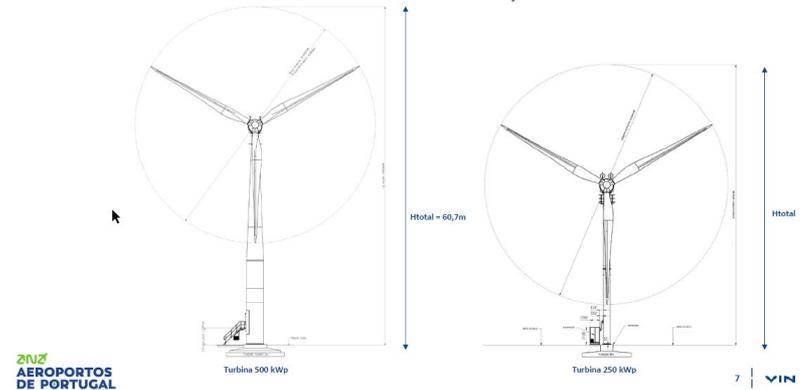
**VINCI**  
ENERGIA

Parameters	Value
Installed power	500 kwp
Estimated annual production	840 Mwh/year
Annual consumption	3500 Mwh/year

## Wind park

### ENERGIA RENOVÁVEL - AEROPORTO DO SAL

AEROGERADOR – PROPOSTA REFERENCIAL A CONFIRMAR NO PROJETO DE EXECUÇÃO



Parameters	Value
Installed power	750 kwp
Estimated annual production	575 Mwh/year
Annual consumption	867 Mwh/year
Turbine 1	250 kwp
Turbine 2	500 kwp



### Installation of photovoltaic panels

#### ENERGIA RENOVÁVEL - AEROPORTO DA BOAVISTA

LOCALIZAÇÃO



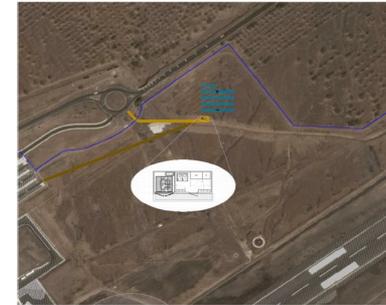
**ANZ**  
AEROPORTOS  
DE PORTUGAL

Parameters	Value
Installed power	346 kwp
Estimated annual production	574 Mwh/year
Annual consumption	867 Mwh/year

### Installation of photovoltaic panels

#### ENERGIA RENOVÁVEL - AEROPORTO DE SÃO VICENTE

LOCALIZAÇÃO



**ANZ**  
AEROPORTOS  
DE PORTUGAL

Parameters	Value
Installed power	195 kwp
Estimated annual production	344 Mwh/year
Annual consumption	335 Mwh/year



### 3. Major challenges related to the implementation of mitigation measures

Possible challenges a short term is the concession of airports in the implementation of mitigation measures.





ICAO

North American  
Central American  
and Caribbean  
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Mexico City

South American  
(SAM) Office  
Lima

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Central African  
(WACAF) Office  
Dakar

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North Atlantic  
(EUR/NAT) Office  
Paris

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(MID) Office  
Cairo

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Southern African  
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THANK YOU