

**SURINAME
STATE ACTION PLAN
TO REDUCE
CIVIL AVIATION
CO₂ EMISSIONS**

2024-2027

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1. BACKGROUND INFORMATION AND CONTACTS

1.1 Contact Information

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The Republic of Suriname is located in northern South America between French Guiana to the east and Guyana to the west. The southern border is shared with Brazil and the northern border is

the Atlantic coast. Suriname is the smallest sovereign state in terms of area and population in South America and the most forested country in the world with 93% forest cover

1.2 Overview of Suriname International Aviation

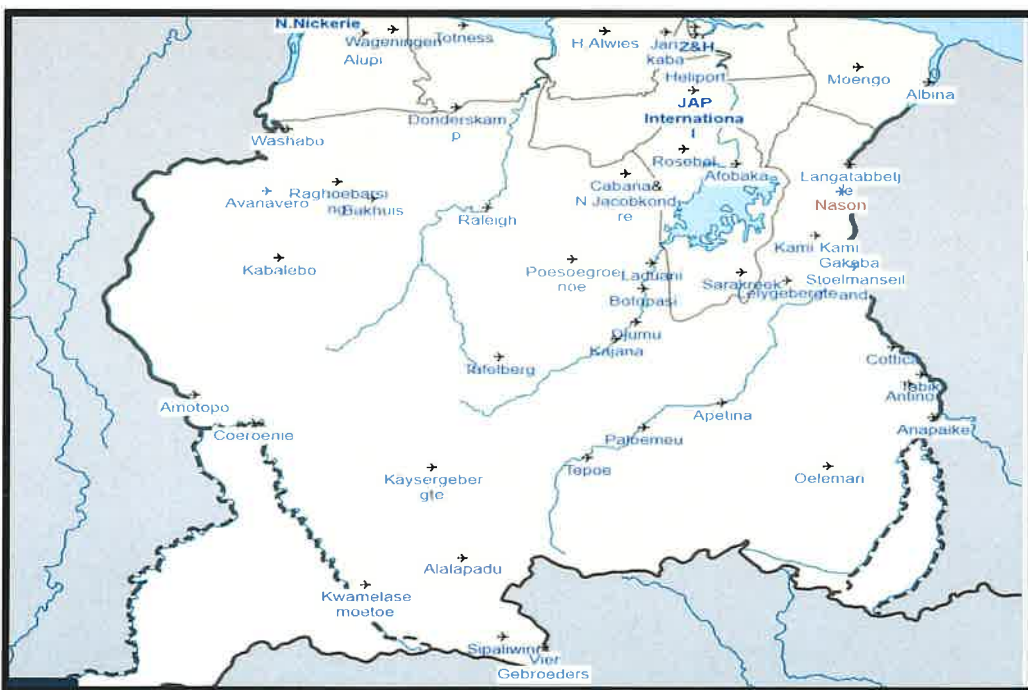
Civil Aviation Safety Authority Suriname was established by State decree of 12 May 1997. On 28.02.2002 the act on safety and security of Civil Aviation in Suriname was approved by the Parliament and enacted on 12 March 2002. Responsibility for regulation of civil aviation is under CASAS, which reports directly to the Ministry of Transport

The Civil Aviation Safety Authority of Suriname (CASAS) is composed of 6 departments 1) Aerodromes (AGA), Air navigation services (ANS), Airworthiness (AIR), Aviation Security (AVSEC)m Flight Operations 8OPS) and Personnel licensing (PEL)

At present, Suriname has three carriers operating internationally: Surinam airways, Flyallways and Gum Air. The first two airlines operate mainly within the Caribbean and South America region while Gum Air operates mainly between Guyana and Suriname

Suriname experienced a rapid progress over the past years as evidenced with the increasing number of operators attributed to Suriname and operating internationally. For the purpose of the specific document, data considered for the baseline and for the mitigation measure context will reflect the emissions and the expected trends of two airlines. The ratio of such a decision lies within the transposition of CORSIA MRV APPLICABILITY FILTER within the State Action Plan to distinguish which data from the airline will be considered based on the total annual CO2 emissions for the flights operated internationally.

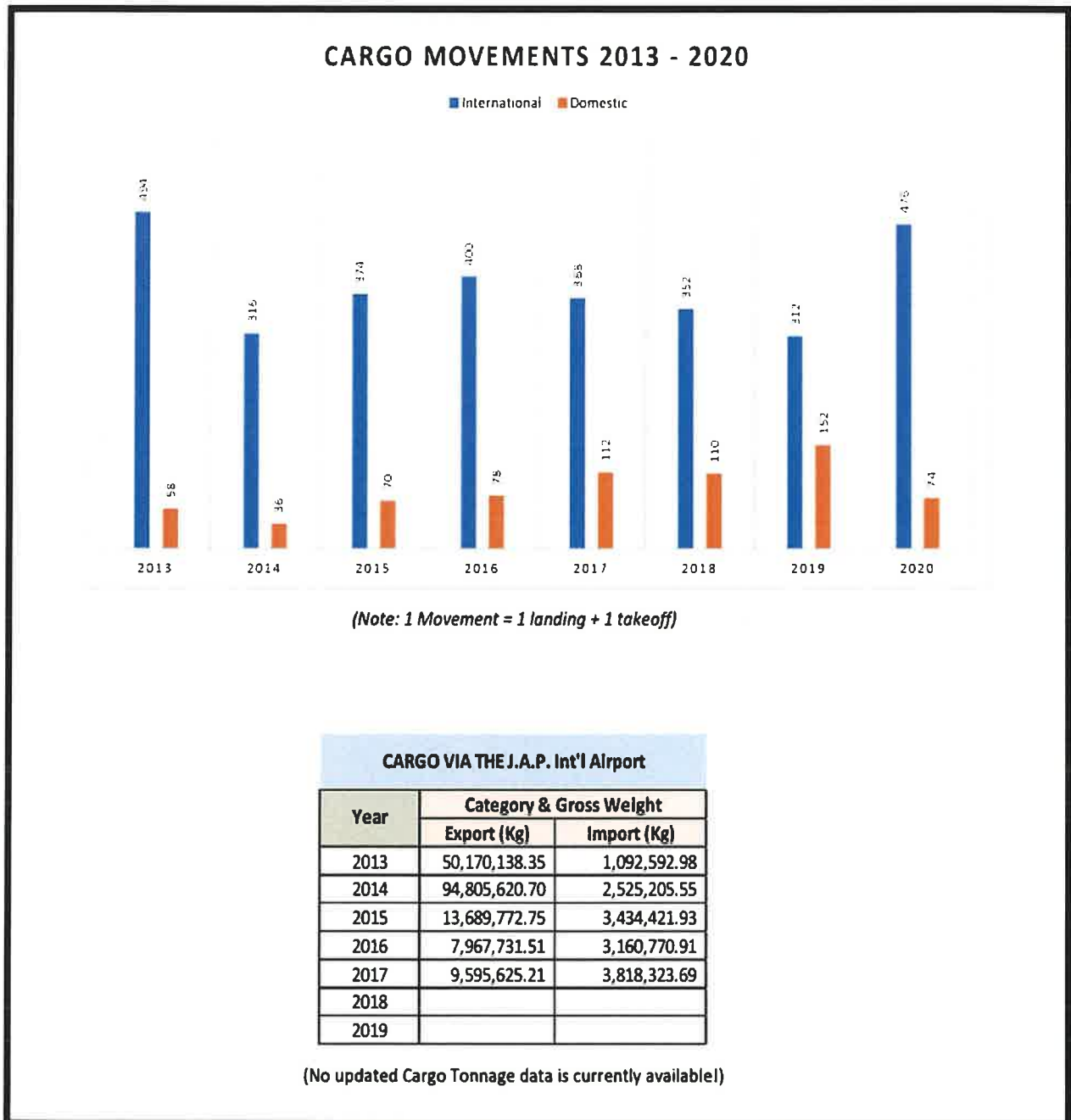
Considering the geographical configuration of Suriname, airports and airstrip are critical infrastructure to connect the different parts of the country. Below a map illustrating the airports and the airfields in Suriname

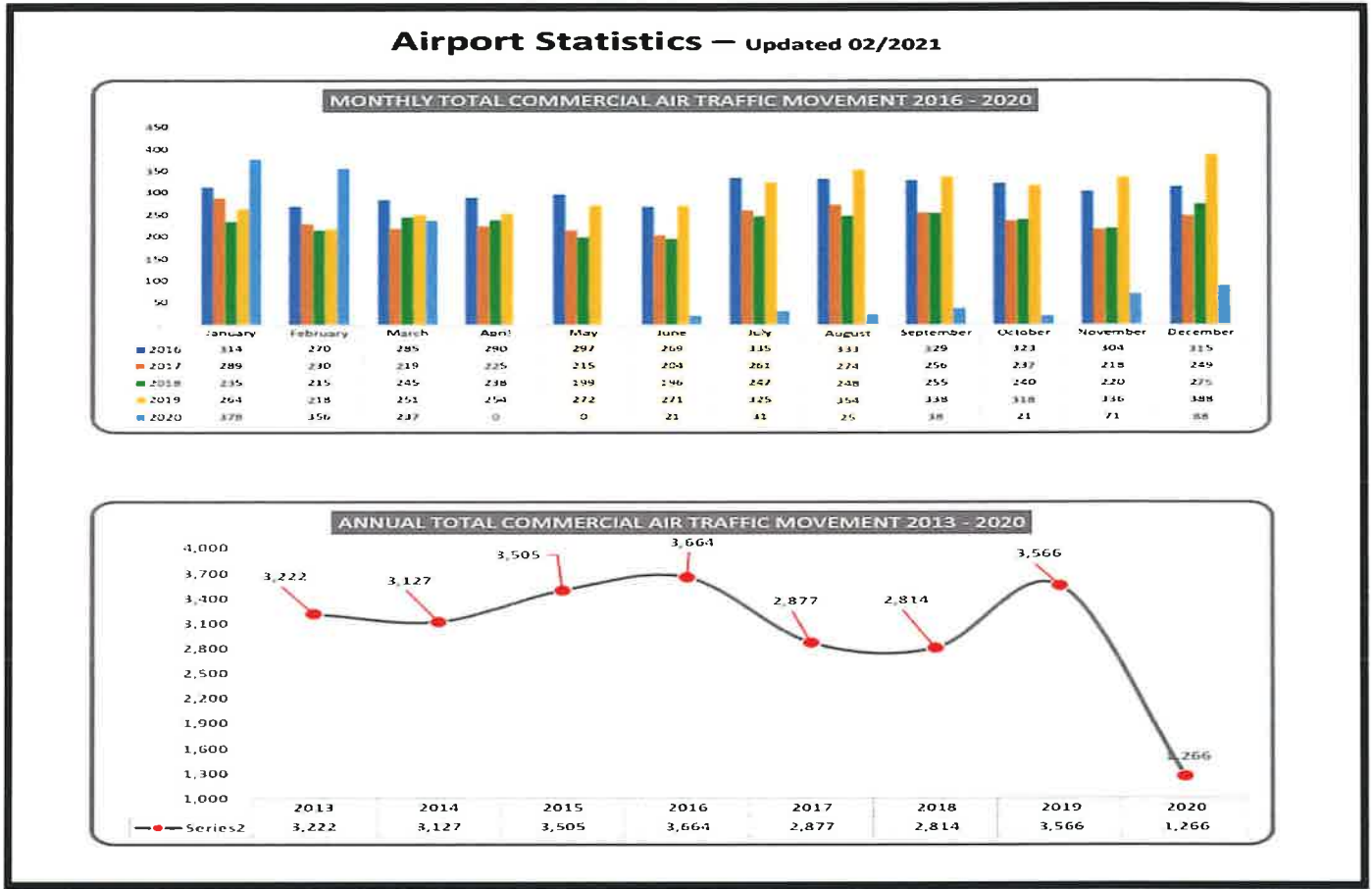


The main airports with scheduled services with commercial airlines are the followings

Location	District	ICAO Code	IATA Code	Name of the airport
Paramaribo	Paramaribo	SMZO	ORG	Zorg en Hoop Airport
Paramaribo	Paramaribo	SMJP	PBM	Johan Adolf Pengel International Airport

Based on statistical data available, below an illustration through graphics of the trends of passengers and cargo at Johan Adolf Pengel International Airport





The number of passengers from 2022 to 2023 divided per domestic and international operations were the following

Year of reference	Number of passengers (international)	Number of passengers (domestic)
2022	416,091	122
2023	464,271	246

The 2022 and 2023 data provided by the airport authority shows the beginning of the recovery post COVID in the passenger data. It is not possible to compare with the previous data due to lack of cargo movement information at the moment of compiling the present document. Further information will be provided in SAP n.2

Following a capacity building session of all State Action Plan affected stakeholders eased by the assistance of the EU CORSIA AFRICA AND CARIBBEAN project to discuss the draft State Action plan (March 2024), the representative from the Ministry of Transport attending the workshop raised the importance of submitting the first State Action Plan to ICAO to outline the work that the State has been doing to assist ICAO in reaching its aspirational goal of carbon neutral growth from 2020 and net zero by 2050. Recognizing the importance of such work, the ministry of transport recognised the role of CASAS in taking the lead in the creation of SAP working group and in shaping the document aligned with the readiness of Suriname stakeholders. Being the first SAP



for Suriname, the state is well aware of the progress to be considered in the future, especially on the statistical data to be used for the calculation of the SAP baseline. It is expected that thanks to the creation and official formalisation of the SAP working group more and more accurate data, specifically the ones needed for the baseline purposes, will be available for the SAP. 2. Indeed, airlines were requested to submit their ICAO Forms annually starting with 2024 data.

1.3 Regulatory Structure of Aviation Industry in Suriname

On 28 February 2002 the Act on Safety and Security of Civil Aviation in Suriname was approved by parliament and subsequently enacted on 12 March 2002.

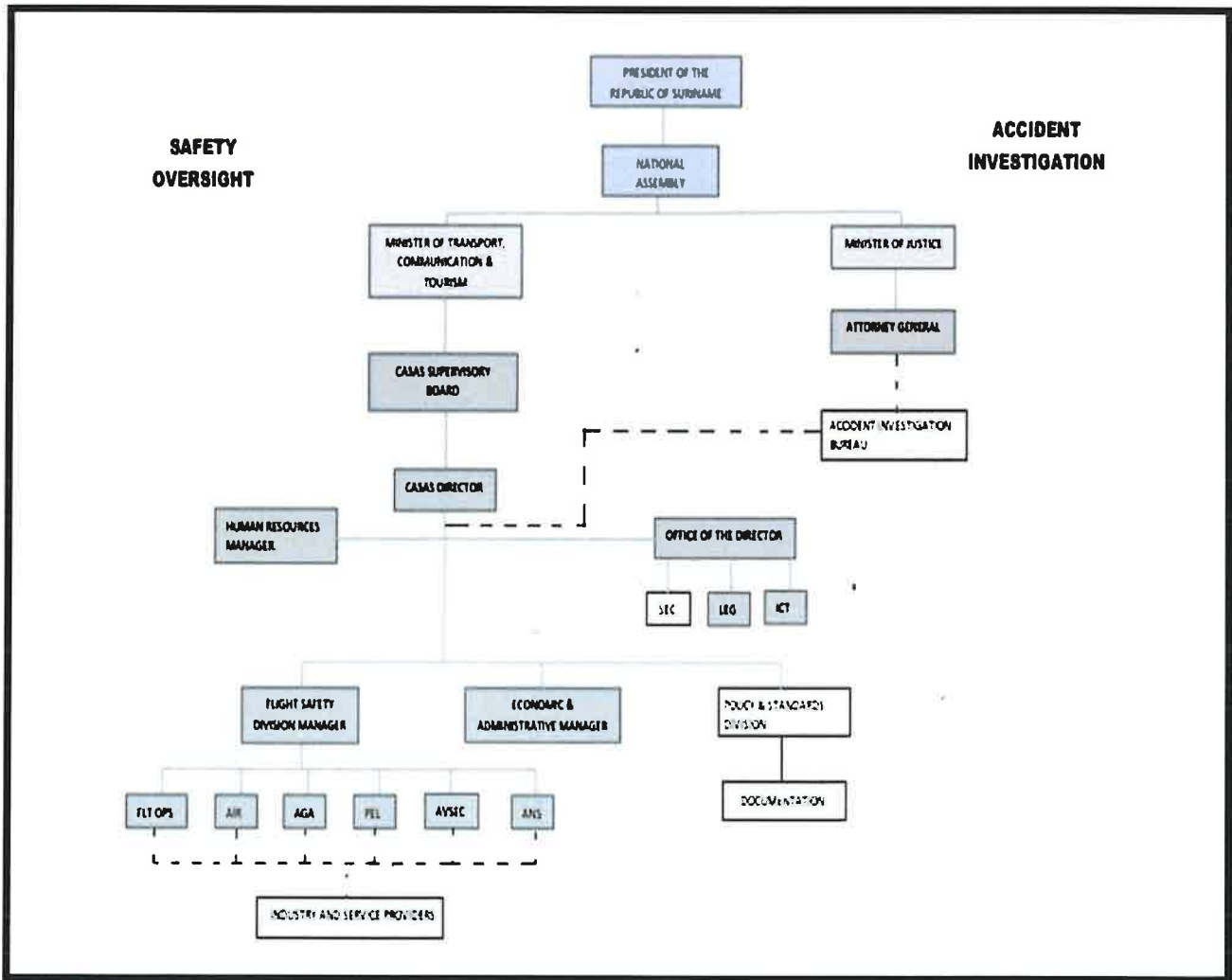
In line with the technical nature of the Authority’s duties and responsibilities, CASAS has the availability of technically qualified personnel to fulfil its duties

The objective of the CASAS is to ensure safety and security in civil aviation in Suriname. This can be achieved not only by conducting safety oversight audits outlined in a continued surveillance program but through random checks as well.

The Authority moreover has an organizing, regulatory and advisory role with regard to policy matters.

The ICAO more and more advocates the establishment of self-supporting entities of which the CASAS is a good example.

Below the illustration of CASAS organigram to outline the role and responsibility of each division



1.4 Environment/climate change in Suriname

Despite Suriname being exempted from the CORSIA applicability due to the socio- economic criteria, Suriname volunteered CORSIA since 2021.

1.5 Analysis of stakeholders in the aviation sector

1.5.1. Details of airlines

Currently, airlines registered in Suriname operating international routes are as follows:

AIRLINES	IATA	ICAO	CALL SIGN
Suriname airlines	PY	SLM	SURINAM
Flyallways	8W	EDR	BIRDVIEW
Gum Air		GUM	GUMAIR

New operators seem to be ready to start operating in the near future.

1.5.2 Airports

Johan Adolf Pengel International Airport (IATA: PBM, ICAO: SMJP), also known as Paramaribo-Zanderij International Airport, is an airport located in the town of Zanderij, 45 km south of Paramaribo. It is Suriname’s main international gateway operated by Airport Management, Ltd./ NV Luchthavenbeheer

The airport just started to look at the environmental dimension within their operations and they are exploring opportunities to work to reduce the source of their fossil fuel solutions within their energy balance to reduce CO2 emissions as part of SAP co benefits.

1.5.3 Air Navigation Service Provider

The ATS units OF SURINAME are directly under the HEAD of Civil Aviation Department Suriname (CADSUR). Its main goal is to ensure safe, efficient and orderly movement of air traffic operating within

PARAMARIBO FIR under its jurisdiction. The role and responsibility of CADSUR are described below

- HEAD OFFICE: The head office is in charge of the operations of the Air Traffic Services under the direct supervision of the HEAD of CADSUR. In general, this office is involved with respect to:

- a. The general organization concept of ATC;
- b. The conduct of enquiries, the supervision of local surveys and the inspection of ATS units;
- c. The Rules of the Air and Air Traffic Management. Aeronautical Information Publications, ATC Instructions, ATS personnel qualifications.

-The direction of this office is covered by a Chief Air Traffic Services, who will in particular:

- a. Concern himself with the short, medium- and long-term planning of Air Traffic Services and navigational aids;
- b. Participate in meetings organized for the Air Traffic Services at national and/or international level;
- c. Draw up the general guidelines for letters of agreement;
- d. Take part in air traffic accident enquiry board within the organizational structure of CADSUR.
- e. Assign personnel to work in teams with due regard to leaves and their individual qualification and prepare duty rosters as to ensure an effective manning of operating positions.

-ATC UNITS: Aerodrome Control Towers

- PENGEL Aerodrome Control Tower (SMJP) provides combined Aerodrome Control Service and Approach Control Service together with flight information service and alerting service within the control zone and Terminal Control

Aerodrome Control Service and Approach Control Service separately.

- ZORG en HOOP Aerodrome Control Tower (SMZO) provides only Aerodrome Control Service together with flight information service and alerting service within the control Zone under its jurisdiction.

- NICKERIE Tower (SMNI), which provided Air Traffic Services within its control zone in the past, has now been downgraded. However, flights to and from SMNI receive flight information service provided by PARAMARIBO CONTROL (ACC). Any upgrade in services and/or equipment and facilities will be promulgated by Notam/AIC.

-Area Control Centre /Unit

Paramaribo Control provides Area Control Service, flight information service and alerting service within its area of responsibility. This unit is also the Search and Rescue (SAR) Point of contact (SPOC).

1.6 Trends of the aviation sector in Suriname

The COVID Pandemic of 2020/21 hit Suriname hard with extreme travel restrictions during this period. It now remains to be seen how the industry can re-establish itself with pre-pandemic levels of growth.

This is discussed further in Section 2 as we try to establish a baseline based on historic data and predict a business as usual (BAU) scenario up to 2030.

2. BASELINE AND EXPECTED RESULTS

Trend in Air Traffic Statistical data and GHG Estimation

As prescribed by ICAO Doc 9988, States must report fuel consumption and traffic through Statistical Air Transport Reporting Form M — *Fuel Consumption and Traffic — International and Total Services, Commercial Air Carriers* on an annual basis.

Unfortunately, at the current time, no data has been submitted by Surinam airlines using the ICAO Statistics forms. Such a work is expected for SAP n. 2 and actions have been already taken by CASAS in such direction

The current baseline has been created based on data provided by the airlines for the period 2022-2023 from the CORSIA CERT exercise. Of the two airlines that data was provided for, both of them seem to have verified CERT Emission Reports for 2023.

The data used to construct this baseline is partial as Form M will be processed for the SAP N.2. The quality of the resulting baseline also suffers from the fact that the period covers the time between the end of the COVID-19 pandemic, when air traffic globally was significantly impacted and the number of operations during 2020, 2021 and 2022 could not be considered at all typical.

The following table, which follows the recommended ICAO format, has been populated with aggregated data from the CERT emissions reports. Only the data “CO2 emissions in Tonnes” (F) has been transposed.

Year	Fuel Burnt (FB)		RTK	FB/RTK		CO ₂ Emission
	(LIT)	Tonnes	0 0 0 (Tonne×km)	LIT/RTK	kg/RTK	Tonnes
	[A]	[B]	[C]	[D] = [A]/[C]	[E] ([B]/[C])/1000 =	[F] = [B] x 3.16
2022 ¹						23892.00
2023 ²						70045.55

Development of Business-as-usual Scenario (expected results)

As only CERT Emission Report data was available, it was not possible to have an understanding of the historic RTK growth. RTK data is an important historical statistic to understand and predict future demand.

¹ This value integrates only data from 1 airline as the second one was not under the CORSIA MRV applicability in 2022

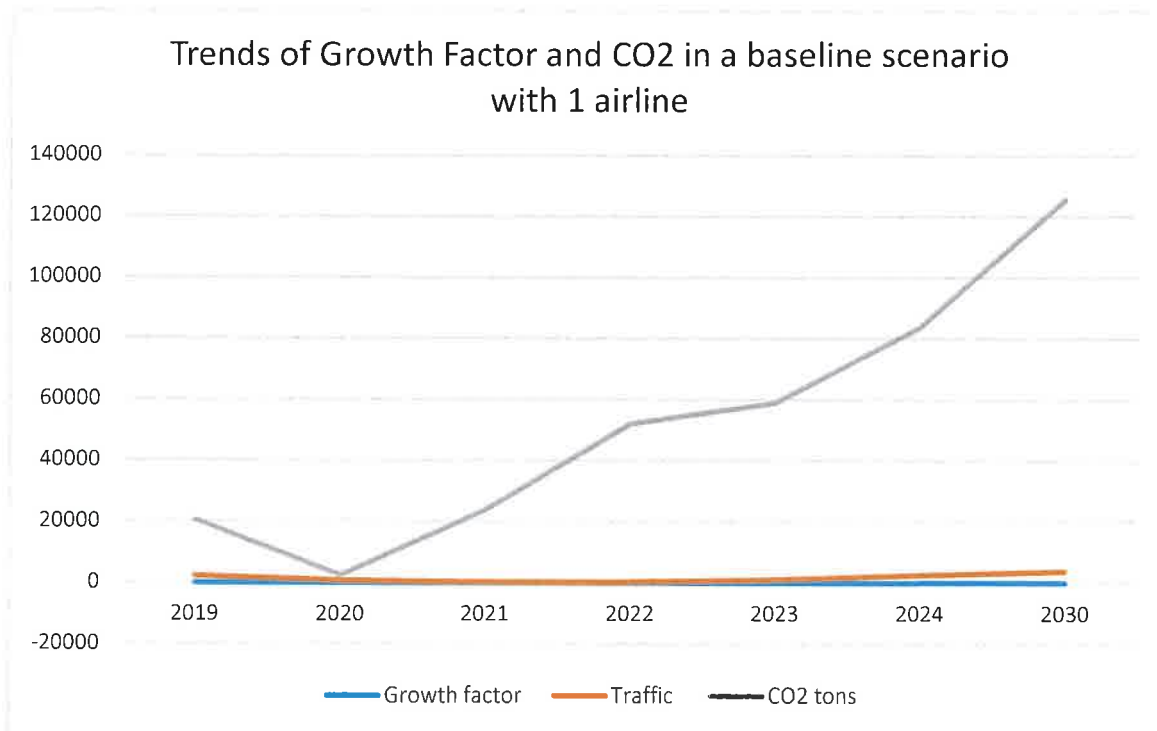
² This value considers data for 2 airlines as both airlines were under the CORSIA MRV applicability in 2023 and therefore data was extrapolated from CORSIA ER as verified by the VB and then crossed checked for the reporting exercise by CASAS

A further weakness (for the moment) is the assumption about the level of operations in the future. Indeed, we have only one year of verified data for both airlines and this does however give some idea about the relative number of operations compared with the pre COVID time in 2019. For the two airlines where data was available, 2022 traffic was below the trend for one of them. 2023 data outline the recovery after COVID- 19 pandemic despite not aligned with the pre COVID forecast as per 2019

For 2023, the traffic of one airline was around 50% less than the one registered in 2019 traffic, despite the value is still not representative of the growth, it is used to stress that the industry is growing despite the very small dimension of the state. At the moment of preparing SAP n.1, end of 2024, traffic is growing and it is expected that the value of 2019 will be exceeded (around 0.16% higher in a more optimistic scenario and in a negative one the value for 2024 will be the same as of 2019)

It can be seen from the uncertainties discussed above, that real data for operations and RTK is essential for managing carbon emissions. Steps are now being taken (through the workshop in March 2024 with the assistance of the EU CORSIA AFRICA AND CARIBBEAN project) to ensure that in future, all airlines operating internationally will report their fuel and RTK via the standard ICAO Statistics Forms (A, C & M).

It can be observed, that even with this optimistic scenario, predicted CO2 emissions in 2030 will be around 0,40 % compared to the one of 2019. However, it shall be noted that this prediction reflects only the information of one airline and will be updated in SAP n. 2 based on the Forms



3. MITIGATION MEASURES

The template for mitigation measures was presented during the workshop organised in March 2024 and validated by the different SAP affected stakeholders. Such a validation process allowed the airlines and the ANSP to check with their commercial department and top management the mitigation measures that will realistically be implemented in the 3-year SAP cycle from the submission of SAP n. 1 to its update and submission of SAP n. 2

As stressed by ICAO during the A41, Suriname's SAP stakeholders prioritised the selection of those measures with measurable indicators

Indeed, after discussions with operational stakeholders, including internationally operating airlines and airport, as well as the ANS, a number of mitigation measures have been identified that could be expected to deliver CO2 savings in the next few years.

The review cycle of the SAP is normally taken to be around every 3 years and the period from 2025-2027 is proposed to be the scope for this mitigation measure part within SAP

Progress and monitoring will be conducted annually by CASAS

A summary of the mitigation measures is presented here and details follow in the pages after:

	Mitigation Measure	Basket of Measures Category	Stakeholder
1	Single Engine Taxi	Operational Improvements	Airline
2	Reduce Contingency Fuel on board	Operational Improvements	Airline
3	Implementing APU economy mode (for specific type of aircraft and specific routes)	Operational Improvements	Airline
4	CORSIA	Market Based Measures	CASAS, Airlines



Title	Implementing Single Engine Taxiing Taxi-IN and Sustainable Taxi Out procedure
Description	<p>The objective of this measure is to reduce the carbon emission during the taxi operations.</p> <p>Focusing on Flight Operations</p> <p>Fuel-efficient procedures are constantly studied and applied in operations whenever possible: Flight plan precision, Speed adjustments and Optimized procedures, Landing configurations, and, on the ground, taxiing with one engine off</p> <p>Total Surinam Airways flights: Baseline 2019: Total CO2 emissions estimated [tonnes]:71.882 Total Flights: 3.620 Total passengers 221.350</p>
Category-	Operational improvements
Measure	<p>Application of SETI to reduce fuel burn and CO2 emissions</p> <p>-potential fuel savings per aircraft type when taxiing with one engine off. (example A320- 5 kg/min saved fuel; B737-5 kg/ min saved fuel)</p>
Action	<p>-SOP to be prepared for pilots to consider SETI</p> <p>-To Reduce fuel-burn during taxi in</p> <p>-potential fuel savings per aircraft type when taxiing with one engine off.</p>
Start Date	1 Jan 2025
End Date	
INDICATOR	% of application of SETI (in) leading to a reduction of CO2 emissions
BASELINE	
EXPECTED BENEFITS IN TERMS OF CO2 REDUCTION	Tons of CO2 saved per increased in the SETI application rate



Date of full implementation	1 Jan 2026
Reference to existing legislation	
List of stakeholders involved	Surinam Airways
After three-year compliance period: REPORTING OUTPUTS in terms of CO2 reduction	

Title	Reduced Contingency Fuel (RCF) Procedure
Description	Currently 5% contingency fuel is routinely uplifted, and it is proposing that this could be reduced to 3%. This could be influenced by the State specific regulations.
Category-	Operational improvements
Measure	Reduced contingency fuel from 5% of the planned trip fuel to 3% of the planned trip fuel.
Action	Cooperating airlines will look at the regulatory situation for each state where they operate and try to request change to 3% where applicable. Situation as well needs to be clarified for Suriname.
Start Date	2025
End Date	
INDICATOR	% application of 3% contingency fuel (as a % of total operations)
BASELINE	
EXPECTED BENEFITS IN TERMS OF CO2 REDUCTION	<ol style="list-style-type: none"> Fuel Savings: By carrying a reduced amount of contingency fuel, aircraft can operate with less weight, leading to improved fuel efficiency and reduced operating costs. Environmental Impact: Reduced fuel consumption translates into lower greenhouse gas emissions, contributing to a more sustainable aviation industry. <p>For outbound international flights from PBM to AMS by Airbus A340 or B777, it is estimated that the aircraft will burn 478 kg less fuel and will emit 1,510 kg less CO2 per flight.</p>
Date of full implementation	n/a
Economic cost	Other than for CORSIA purposes, this 3% contingency fuel can prove to be financially beneficial to the airlines, since they can reduce fuel costs too.



	In the case of Surinam Airway's, the implementation of this fuel policy for their routes from PBM-AMS will be considered
Reference to existing legislation	In Europe, stage 3 air traffic flow management (ATFM) has already been implemented. This system is key to supporting the implementation of the reduced contingency fuel program. This supports even more the implementation of this 3% contingency fuel program for outbound international flights to Europe
Legislation is proposed	
Compliance	
Assistance needed	Yes
List of stakeholders Involved	Surinam Airways
After three-year compliance period: REPORTING OUTPUTS in terms of CO2 reduction	

Title	Implementing APU economy mode.
Description	The objective of this measure is to reduce the APU usage to reduce carbon emissions during APU operations (compared to the baseline). Based on the manufacturer manuals, airline policy and SOP on the use the APU economy mode in designated international flights will be drafted
Category-	Operational improvements.
Measure	Implementation of the use of APU economy mode.
Action	Activation of the APU economy switch in specific routes (define the routes)
Start Date	2025
End Date	Not determined.
INDICATOR	% Of operations where APU economy mode is applied.
BASELINE	2024 (use of APU for the specific route...add the routes for comparison with the future)
EXPECTED BENEFITS IN TERMS OF CO2 REDUCTION	0.5 % CO2 reduction in the first year of implementation.
Date of full implementation	
Economic cost	
Currency	
Reference to existing legislation	
Legislation is proposed	
Compliance	
Assistance needed	Training to the flight crew.
Amount of assistance needed	Non
Currency for financial assistance	N/A



List of stakeholders involved	Flyallways
After three-year compliance period: REPORTING OUTPUTS in terms of CO2 reduction	
Title	CORSIA MRV and OFFSETTING
Description	Suriname despite exempted from CORSIA as per it's to socio, economic and aviation criteria, opted to volunteer the CORSIA mechanism. For this reason, a regulation was drafted, AOs attributed to Suriname were trained on how to work with MRV and how to work with offsetting. Benchmarking what was done by Guyana, CASAS is in discussion with the ministry of environment in charge of forestry to see if possible to explore "forestry" opportunities for CORSIA eligible programmes for the CORSIA first phase
Category-	Market Based Measure
Measure	CORSIA MRV+ offsetting
Action	MRV annually plus offsetting at the end of the 3 year CORSIA compliance period. Now looking already at the CORSIA first phase as no offsetting at the end of the CORSIA pilot phase
Start Date	2021
End Date	2035
INDICATOR	Application of offsetting formula SGFxCO2 emissions for the flights subject to offsetting for the AOs attributed to Suriname
BASELINE	
EXPECTED BENEFITS IN TERMS OF CO2 REDUCTION	Total CO2 emissions offset aligned with the formula and to be used to recalibrate/reshape the net zero scenario pathway by 2050
Date of full implementation	
Economic cost	
Currency	
Reference to existing legislation	Transposition of ICAO Annex 16, Volume IV, second edition into CASAS regulation
Legislation is proposed	
Compliance	
Assistance needed	

Amount of assistance needed	Non
Currency for financial assistance	N/A
List of stakeholders involved	CASAS and AOs attributed to Suriname with offsetting requirements

The cumulative benefit linked to the implementation of mitigation measures can't be quantified as these measures are entirely new and for some of them the percentage of application on the flights operated shall be still quantified.

4.CONCLUSIONS

Suriname and CASAS are still in the process of collecting accurate data to be able to progress with the first shaping of net zero scenario by 2050 where all category of measures will be considered based on the specificity and special circumstances of Suriname and its aviation industry.

This document is aimed to represent the first try to formalise on a paper what was discussed for the first time in March 2024 during a workshop organised by CASAS in assistance with the EU CORSIA AFRICA AND CARIBBEAN project.

CASAS is fully aware that in 8 months is not realistic to be able to quantify and forecast what will happen in the coming three years, by 2030 and by 2050 especially considering all the uncertainties linked to post COVID 19 recovery. In this spirit and under these circumstances, CASAS opted to submit the first SAP to ICAO despite some key elements are still missing like the RTK well aware that such a gap will be filled in by the SAP n. 2 where information from statistical forms will be used. At the same time, considering the special circumstances of Suriname and the readiness of its stakeholders, CASAS opted to consider only those mitigation measures which will be realistically implemented in the coming three years to be able to have quantified results in terms of reduced CO2 emissions to be used for SAP n. 2

CASAS is well aware of the hard work needed to keep a proper track and monitor the implementation process of each measure and has developed a working group to progress towards this direction

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CASAS