

SOLOMON ISLANDS ACTION PLAN TO REDUCE CO₂ EMISSIONS FROM INTERNATIONAL AVIATION

Initial Issue
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**Civil Aviation Authority
of Solomon Islands**

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FOREWORD BY DIRECTOR OF CIVIL AVIATION

Mr. Tao Ma
Regional Director
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Asia & Pacific Regional Office
United Nations Specialized Agency
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Dear Mr. Ma

RE: STATE ACTION PLAN ON CO₂ EMISSIONS – SOLOMON ISLANDS

I am pleased to submit the Initial Issue of State Action Plan for the reduction of carbon emissions, IAW ICAO Resolution A39-2. The SAP forms an integral part of the broader sustainable development priorities and objectives of Solomon Islands and seeks to support sustainable growth of international aviation.

As a PSIDS, Solomon Islands contributions to international CO₂ emissions is very minimal however we are susceptible to the impacts of climate change at catastrophic scale through recurring natural disasters.

However, as a member state and participant in the global aviation system, the SAP outlines how the country's efforts and priorities will be implemented by the state and industry to ensure ICAO's global LTAG can be realised.

As part of our development agenda, Solomon Islands is committed to continuous investment in new aircraft technology and green airport initiatives for a start. New CO₂ reduction initiatives will be adopted as the state progresses and adapts its Plan.

Yours sincerely



Brian Halisanau
Director of Civil Aviation

EXECUTIVE SUMMARY

This initial action plan provides an overview of the major endeavours undertaken and planned by the Solomon Islands to reduce CO₂ emissions from international aviation. The Solomon Islands is committed to mitigating the carbon footprint of its civil aviation industry while simultaneously enhancing safety and efficiency. The development of this State Action Plan adhered to the methodology set forth by the International Civil Aviation Organization (ICAO).

Recognizing the repercussions of global warming, the Solomon Islands have earnestly strived to decarbonize the aviation sector through measures such as, purchasing of New Aircraft (A320) and new glass cockpit twin otter Aircraft.

Building upon the accomplishments thus far, the SAP establishes a goal for reducing CO₂ emissions from aviation activities. This goal aligns with the ICAO's global aspirational goals for the international aviation sector, which include a 2% annual fuel efficiency improvement through 2050 and carbon-neutral growth from 2020 onwards, and a long-term global aspirational goal (LTAG) of net-zero carbon emissions by 2050.

This action plan is a living document, subject to continual evaluation and updates in accordance with the ICAO Assembly Resolution A41-21: Consolidated statement of continuing ICAO policies and practices related to environmental protection - Climate change. The Solomon Islands remain resolute in its commitment to implementing ICAO's environmental protection programs by promoting greener aviation practices.



Figure 1. Honiara International Airport

Section 1 – Introduction

1.1 Background

This Action Plan describes the circumstances of civil aviation activities in Solomon Islands and its key stakeholders that have initiated some efforts to reduce CO2 emissions in aviation. In addition, this Action Plan describes the mitigation measures selected by the National Action Plan Team to address CO2 emissions reduction in international aviation at the national level. The projection of the trends of CO2 emissions with and without the implementation of these measures is also described, reflecting the positive impact of these initiatives on the carbon footprint of the national aviation sector in Solomon Islands. These mitigation measures focus mainly on:

- a) Aircraft technology improvement
- b) Operation improvement
- c) Sustainable Aviation
- d) Market base measure

Furthermore, these initiatives represent Solomon Islands' contribution towards the achievement of the global aspirational goals set by the ICAO. At its 41st Session in 2022, the ICAO Assembly reaffirmed the two global aspirational goals for the international aviation sector of 2 per cent annual fuel efficiency improvement through 2050 and carbon-neutral growth from 2020 onwards, as well as adopted a collective long-term global aspirational goal (LTAG) of net-zero carbon emissions by 2050. It also answers ICAO's call to its Member States during its 41st Assembly (2022) to submit voluntary States' Action Plans to communicate on the progress towards the environmental goals set by ICAO and, where appropriate, request assistance in implementing these plans.

1.2 Contact Information

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Section 2 – Solomon Islands’ Civil Aviation

2.1 Civil Aviation Overview

Air Operators

Air Operators	ICAO	IATA	Type of Operations
Solomon Airlines	AGGH	SOL	Schedule, Non-Scheduled, Domestic, International
Helicopter Support		VH-EGH	Charter Basis

Airport Operators

The table below is aimed at detailing the data of the airport operators in (Solomon Islands) in order to frame the aviation work under the perspective of the airport operators’ side

Airport Operators	Airport Names and Cities	Domestic/International
MCA/SIACL	Honiara International, Honiara	International
MCA/SIACL	Munda International Airport	International/Domestic
MCA/SIACL	Gizo Airport	Domestic
MCA/SIACL	Lata Airport	Domestic
MCA/SIACL	Sege Airport	Domestic
MCA/SIACL	Kirakira Airport	Domestic
MCA/SIACL	Suavanao Airport	Domestic
MCA/SIACL	Fera Airport	Domestic
MCA	Others	Manage the airports

Air Navigation Service Providers

Air navigation services provided in (Solomon Islands) include Air Traffic Services; Communications, Navigation, and Surveillance (CNS), Meteorological Service (MET), and Search and Rescue (SAR), Aeronautical Information Services.

Air Navigation Service Providers	Type of Service
SIACL	Part 172 (ATS- AFIS & FIS) & Part 175 partly (NOTAMS)
Solomon Islands Meteorological Services	Part 174 (Meteorological Services)
Aero path New Zealand	Part 175 (AIP Services), Part 173, Instruments Calibrations
AIRWAYS New Zealand	Part 171 (CNS)
Air services Australia	Part 172 ATS (Upper Airspace, Oceanic Control)

Numbers of passenger from 2022 until current year

It is estimated that the number of passengers (international) in 2022 are 104,832.

Section 3 – Baseline Scenario

3.1 Methodology and data gathering

The baseline scenario describes the historical evolution of fuel consumption, CO₂ emissions, and traffic in the Solomon Islands as well as the expected future evolution in the absence of measures. As the availability of data (annual RTK and annual international fuel consumption from international flights) is very limited, the Environmental Benefit Tool (EBT) version v2.8.2 is used to support the process of defining a baseline scenario, estimating the quantifiable benefits resulting from the selected mitigation measures, and generating the estimated expected results.

Based on the available data, Method A (the State has a current fleet size of 10 aircraft or less) was selected when using the EBT. In addition, the following inputs are collected and used to develop the baseline:

- Baseline year: 2022
- International RTK: 20,774,000 Tonne-Kilometres
- International fuel burn: 6185.99 Tonnes
- Number of aircraft used for international flights: 2 aircraft
- Annual RTK growth: 5.8 %

3.2 Baseline

The following table and chart provide an estimated baseline of fuel consumption and CO₂ emissions for international flights for the years 2022 to 2050.

For the definition of “international flight” used in this document, reference is made to the ICAO methodology (all international flights operated by all air carriers registered in the state)

Baseline Scenario

Year	International RTK(000)	International Fuel Burn (Tonnes)	Efficiency (Fuel Burn RTK)
2022	20,774.00	6,186.00	0.298
2023	20,774.00	6,186.00	0.298
2024	20774.00	6,186.00	0.298
2025	24,236.33	7,217.00	0.298
2026	24,236.33	7,217.00	0.298
2027	24,236.33	7,217.00	0.298
2028	27,698.67	8,248.00	0.298
2029	27,698.67	8,248.00	0.298
2030	31,161.00	9,279.00	0.298
2031	31,161.00	9,279.00	0.298
2032	34,623.33	10,310.00	0.298
2033	38,085.67	11,341.00	0.298
2034	38,085.67	11,341.00	0.298
2035	41,548.00	12,372.00	0.298
2036	45,010.33	13,403.00	0.298
2037	45,010.33	13,403.00	0.298

2038	48,472.67	14,434.00	0.298
2039	51,935.00	15,465.00	0.298
2040	55,397.33	16,496.00	0.298
2041	58,859.67	17,527.00	0.298
2042	62,784.33	18,558.00	0.298
2043	65,784.33	19,589.00	0.298
2044	69,246.67	20,620	0.298
2045	72,709.00	21,651.00	0.298
2046	76,171.33	22,682.00	0.298
2047	79,633.67	23,713.00	0.298
2048	83,096.00	24,744.00	0.298
2049	86,558.33	25,775.00	0.298
2050	90,020.67	26,806.00	0.298

Table 1. Baseline Scenario for International Flight

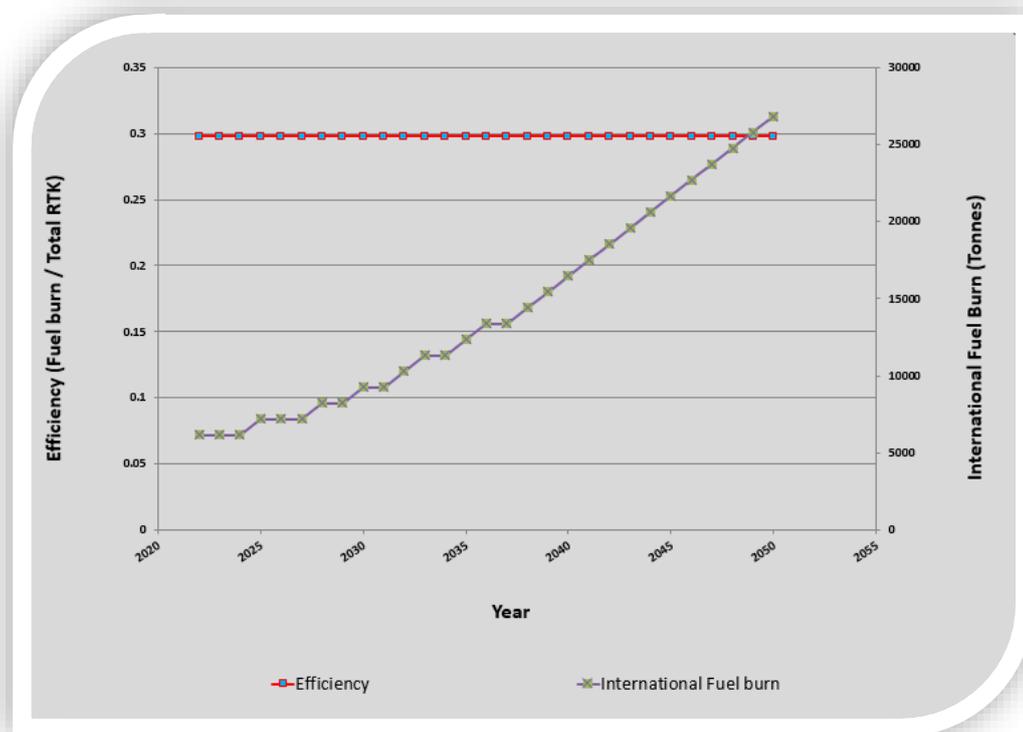


Figure 2. Graph of Baseline Scenario for International Flight

As shown above, it was identified that fuel consumption will be around 31,161.00 tonnes in 2030 and around 90,020.67 tonnes in 2050, which is about 0.3 % of 2022 fuel consumption.

Section 4 – Selection of Mitigation Measures

There are four (4) groups of emission reduction measures implemented by the Solomon Islands aviation stakeholders, so called the ICAO basket of measures. These include the aircraft technology improvement, operational improvements, sustainable aviation fuels, and market-based measures, as follows:

4.1 Aircraft Technology Improvement

Purchase of new aircraft (A320 & DHC6 Twin Otter Glass Cockpit) – It is expected that the new aircraft can improve efficiency and contribute significantly to the reduction of fuel consumption. The environmental benefit of the purchase of the new aircraft has already been incorporated in the “expected results” of this action plan that estimated using the EBT tool.

4.2 Operational Improvement

Operational improvements in aviation encompass a range of strategies and technologies aimed at enhancing the efficiency, safety, and overall effectiveness of air travel. Accordingly, the potential operational improvements measures could be implemented by Solomon Islands include:

- a. **Minimizing weight** – weight reduction in aviation is critical as it directly impacts fuel consumption. Every kilogram saved can translate into significant fuel savings over time. Digitalize the aircraft manual is one of the examples can be done by the Solomon Islands’ aircraft operators to reduce their operational weight.
- b. **Minimizing delay** – delays in aviation can stem from various factors, including weather, air traffic congestion, technical issues, and logistical problems. Airlines, airports and air navigation service providers should work on streamlining operations. This involves a robust coordination between different stakeholders, efficient ground handling, improved ATM system, and the use of predictive analytics to anticipate and mitigate potential issues.
- c. **Use of High-Power Light emitting Diode (LED)** at the airports to replace the conventional lighting system – LEDs offer more energy-efficient, have a longer lifespan, and provide better illumination. It contributes to cost savings and environmental benefits due to reduced energy consumption and lower maintenance requirements. In addition, LEDs can offer more flexibility in terms of lighting control and design, allowing airports to adjust lighting levels based on needs, enhancing visibility for pilots and ground staff.

4.3 Sustainable Aviation Fuels

Solomon Islands is in the course to support the development and deployment of the sustainable aviation fuels (SAF). However, due to limited resources, Solomon Islands would take a first step in promoting capacity building for its personnel and related industry to gain more knowledge on sustainable aviation fuels (SAF) development process and requirement – joining ICAO assistance, capacity-building, and assistance on SAF (ACT-SAF)

4.4 Carbon Offsetting and Reduction Scheme for International Aviation (CORSA)

Voluntary participation in the carbon offsetting and Reduction Scheme for International Aviation (CORSA).

Climate change is a global problem, which requires global efforts. The CORSA is a global scheme for the global international aviation industry. The more States join the CORSA, the more emissions are covered by the offsetting requirements of the Scheme and the higher its environmental effectiveness becomes. Each participating State brings ICAO closer to meeting its global aspirational goal of carbon neutral growth.

For a State that does not have an operator attributed to it (and therefore does not incur compliance cost), participation in the scheme adds routes operated by foreign operators between the State and other participating States, increasing the total emissions coverage of CORSA. For States with a particular interest in eco-tourism, participation in CORSA offers the added benefit of making air connections to the rest of the world more environmentally friendly.

The Solomon Islands has joined the ACT-CORSA program to receive support for the implementation of CORSA.



Section 5 – Expected Results

By implementing the mitigation measures as described above, including: aircraft technology improvements, operational improvements, sustainable aviation fuels, and CORSIA, it is estimated that the total fuel and CO₂ savings are as follow

EXPECTED RESULTS : CO₂ SAVINGS				
Year	Annual CO₂ emissions before implementation of mitigation actions (Tonnes)	Annual CO₂ emissions after implementation of mitigation actions (Tonnes)	Annual CO₂ savings (Tonnes)	Change CO₂ savings (%)
2022	19,547.76	19,547.76	0.00	0.00
2023	19,547.76	18,456.76	1,091.00	-5.58
2024	19,547.76	18,456.76	1,091.00	-5.58
2025	22,805.72	21,714.72	1,091.00	-4.78
2026	22,805.72	21,714.72	1,091.00	-4.78
2027	22,805.72	21,714.72	1,091.00	-4.78
2028	26,063.68	24,972.68	1,091.00	-4.19
2029	26,063.68	24,972.68	1,091.00	-4.19
2030	29,321.64	28,230.64	1,091.00	-3.72
2031	29,321.64	28,230.64	1,091.00	-3.72
2032	32,579.60	31,488.60	1,091.00	-3.35
2033	35,837.56	34,746.56	1,091.00	-3.04
2034	35,837.56	34,746.56	1,091.00	-3.04
2035	39,095.52	38,004.52	1,091.00	-2.79
2036	42,353.48	41,262.48	1,091.00	-2.58
2037	42,353.48	41,262.48	1,091.00	-2.58
2038	45,611.44	44,520.44	1,091.00	-2.39
2039	48,869.40	47,778.40	1,091.00	-2.23
2040	52,127.36	51,036.36	1,091.00	-2.09
2041	55,385.32	54,294.32	1,091.00	-1.97
2042	58,643.28	57,552.28	1,091.00	-1.86
2043	61,901.24	60,810.24	1,091.00	-1.76
2044	65,159.20	64,068.20	1,091.00	-1.67
2045	68,417.16	67,326.16	1,091.00	-1.59
2046	71,675.12	70,584.12	1,091.00	-1.52
2047	74,933.08	73,842.08	1,091.00	-1.46
2048	78,191.04	77,100.04	1,091.00	-1.40
2049	81,449.00	80,358.00	1,091.00	-1.34
2050	84,706.96	83,615.96	1,091.00	-1.29

Table 2. Expected Results: CO₂ Savings

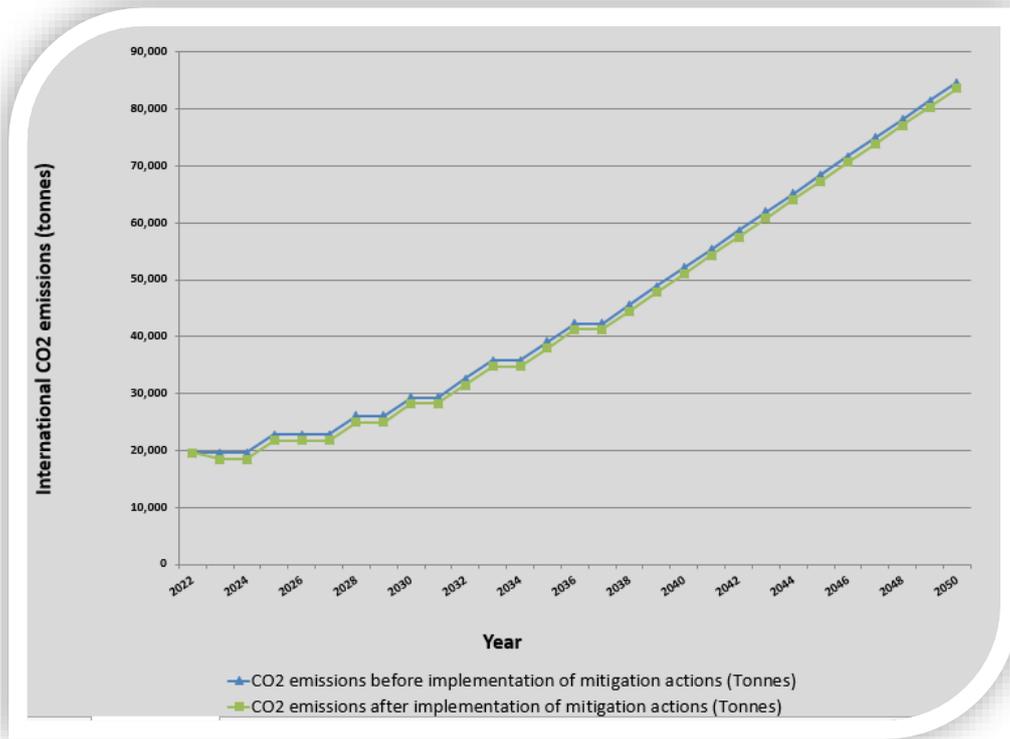


Figure 3. CO2 emissions baseline vs after implementation of mitigation measures

The table and figure above provide a graphical representation of these results and compare them to CO2 emissions before and after the measures are implemented. It was found that the potential cumulative CO₂ savings in 2050 will reach about 30,548 tCO₂ emissions.

Section 6 – Assistance Needs

Solomon Islands face significant room for enhancement when it comes to maximizing their efforts to reduce CO2 emissions from the aviation sector. Achieving this objective will necessitate assistance in various forms, including capacity building, knowledge exchange, and collaborative projects encompassing policy and implementation. Several types of assistance required as per the Solomon Islands’ action plan comprise:

- a) Advancement of eco-friendly aviation technology;
- b) Capacity reinforcement aimed at sustainable aviation fuel development, coupled with the sharing of implementation insights;
- c) Addressing navigation and airport system management challenges;
- d) Financial support to facilitate the development of sustainable aviation fuels;
- e) Other related areas of assistance.



Figure 4. Honiara International Airport