Civil Aviation
Authority of Zimbabwe

ZIMBABWE'S ACTION PLAN FOR CO_2 EMISSION REDUCTION FROM INTERNATIONAL AVIATION

December 2021

This State Action Plan was developed under the *Second Phase of the ICAO Assistance Project - Capacity Building for CO_2 Mitigation from International Aviation – Development of ICAO States' Action Plans for 10 States.*

ICAO

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PREAMBLE

Air travel has been one of the pillars that supports the economy of Zimbabwe. For example, many tourists depend on air transport to travel across the world to visit Zimbabwe. Cargo, which in the past year has included vaccines to fight the COVID-19 pandemic, is flown to Zimbabwe. Fresh produce and other types of cargo have also been exported to other countries in the world using air transport.

Despite the benefits to the economy, air travel produces carbon dioxide emissions. This State Action Plan (SAP) expresses how the parties in good faith, intend to reduce the emissions of carbon dioxide from aviation activities.

The SAP is a product of various stakeholders in the aviation industry and does not impose unreasonable obligations on any party. It is not intended to negatively impact any aviation operator's ability to do business in Zimbabwe.

The Zimbabwean Government reserves the right to develop and implement appropriate regulatory and other measures to achieve climate change goals. This State Action Plan does not restrict the stakeholders from taking further actions relating to carbon dioxide emissions.

echingosho ..... 28/01/2022 .....

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Date

Abbreviations

ACZ	Airports Company of Zimbabwe
AGS	Aviation Ground Services
ATM	Air Traffic Management
CAAZ	Civil Aviation Authority of Zimbabwe
CO2	Carbon Dioxide
CORSIA	Carbon Offsetting and Reduction Scheme in International Aviation
DANTS	Directorate of Air Navigation and Technical Services
EU	European Union
EBT	Environmental Benefits Tool
GSE	Ground Support Equipment
ICAO	International Civil Aviation Organisation
LED	Light Emitting Diode
NAPT	National Action Plan Team
NHS	National Handling Services
PBN	Performance Based Navigation
RTK	Revenue Tonne Kilometre
SAP	State Action Plan
SARPs	Standards and Recommended Practices
SID	Standard Instrument Departure
STAR	Standard Instrument Arrival

Acknowledgements

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The Authority also acknowledges the financial and technical support of the Phase II ICAO-EU Assistance Project on Capacity Building for Reduction of CO2 Emissions from International Aviation. Zimbabwe has benefited a lot from the support that was received in training personnel, researching on mitigation measures and suggestions on implementing the mitigation measures to reduce CO2 emissions in international aviation.

The ICAO Secretariat also played an important role in facilitating the assistance from the EU funded programme as well as providing unending guidance at every stage of the project. That is truly appreciated. Special mention goes to the ICAO consultants without whose guidance and support this SAP would not have been possible.

Finally, the commitment of the CAAZ staff, and especially the focal points, is much appreciated.

About the ICAO Capacity Building Project

With the goal of assisting States in their efforts to mitigate CO2 emissions from international aviation, and to ensure that all States have the capacity required to develop their Action Plans and implement mitigation measures, ICAO launched in 2013 the first phase of the Assistance Project Capacity building for CO2 mitigation from international aviation, in partnership with the European Union (EU). The project successfully supported 14 States in Africa and the Caribbean, and met all its expected results, exceeding the initial targets by its completion in 2019.

Building on this successful partnership, ICAO initiated the second Phase of its Assistance Project with the European Union funding. The Project seeks to contribute to the mitigation of CO2 emissions from international civil aviation in the selected States by implementing capacity building activities to support the development of low carbon air transport and environmental sustainability. The EU's overall Action under this second phase involves three Areas of Activities, with ICAO responsible for Area of Activity 1, funded at 1.5 million, and focusing on the Preparation and/or update and implementation of ICAO's State Actions Plans.

Since 2020, ICAO has officially kicked off the implementation of the Second Phase entitled "Capacity Building for CO2 Mitigation from International Aviation-Development of ICAO States' Action Plans for 10 States", planned to be carried out until October 2023, and providing support to five States from the Eastern and Southern African Region (Botswana, Madagascar, Rwanda, Seychelles and Zimbabwe), and five from the Western and Central African Region (Benin, Cabo Verde, Côte d'Ivoire, Mali, and Senegal).

For more information, visit

https://www.icao.int/environmental-protection/Pages/ICAO_EU_II.aspx

1. POINTS OF CONTACT

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2. EXECUTIVE SUMMARY

This action plan provides an overview of the primary initiatives of the Civil Aviation Authority of Zimbabwe (CAAZ) in partnership with the Zimbabwean aviation industry and other Zimbabwean Government Departments to reduce carbon dioxide emissions from international aviation in Zimbabwe. CAAZ is committed to managing the carbon footprint of Zimbabwean aviation industry while simultaneously enhancing its safety and efficiency. ICAO methodology was used in preparation of this State Action Plan.

Recognizing the effects of global warming, Zimbabwe has been sincerely exerting efforts to minimize the aviation's carbon footprint through measures such as, but not limited to, air traffic improvements, airport initiatives as well as aircraft emissions reduction measures.

Taking into account achievements to date, the SAP sets a goal to reduce CO2 emissions from aviation activities, which is expected to contribute to global efforts in line with the broad international consensus in line with ICAO Doc 9988. To help reach this goal, the SAP identifies five key measures that are expected to have the greatest environmental impact:

- Aircraft related technology development
- Improved ATM and Infrastructure use
- Operational improvements
- Market based measures
- Airport improvements

The SAP is a living document that will be constantly reviewed through:

- Regular meetings of the NAPT and aviation stakeholders
- Annual reporting on the progress towards achieving the SAP's target
- A review of the SAP within three years

This plan is supported with funding from the ICAO-EU Assistance Project Phase II, on Capacity Building for CO2 Mitigation from International Aviation. Zimbabwe is committed to continuing the implementation of concrete actions towards a greener aviation.

3. INTRODUCTION

Zimbabwe is a landlocked country located in Southern Africa. It shares borders with Zambia to the North-West, Mozambique to the East, South Africa to the South and Botswana to the South-West.

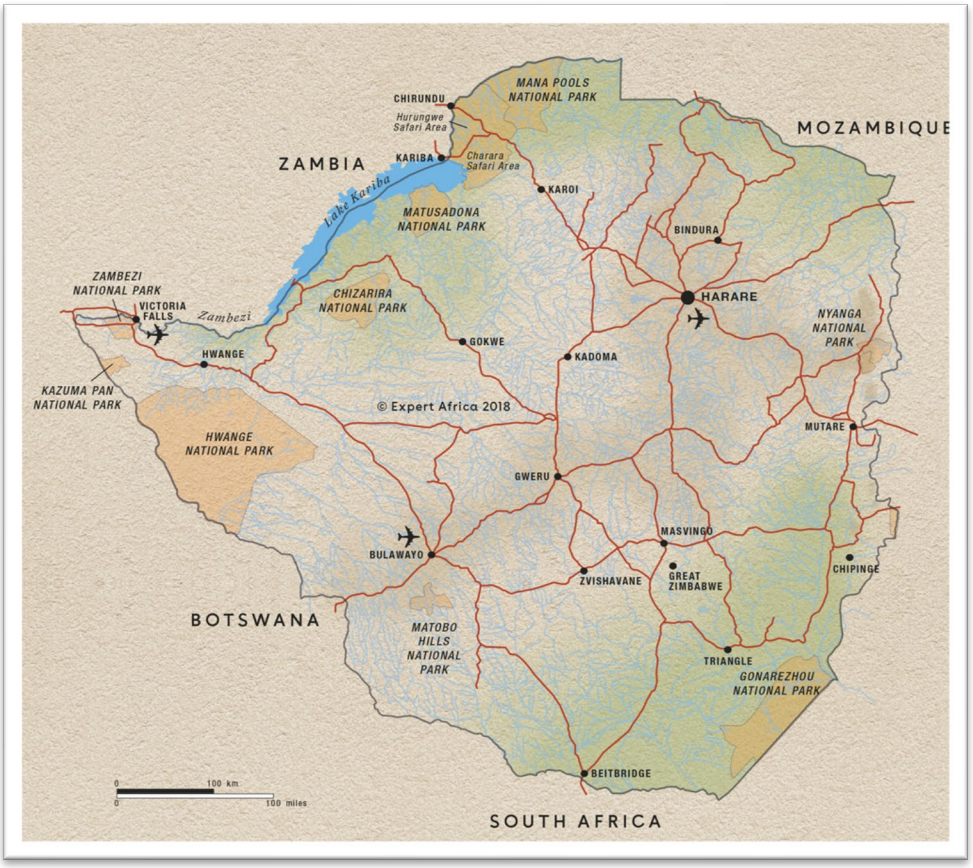

Figure 1 - Map of Zimbabwe

Table 1- Facts about Zimbabwe

Zimbabwe Facts
Capital city: Harare
Population: 14.86 million *(World Bank 2020)*
Location: Borders Zambia, Mozambique, Botswana and South Africa
Climate: Tropical; moderated by altitude; rainy season (November to March)
Area: 390,580 sq km Water: 3,910 sq km Land: 386,670 sq km
Gross Domestic Product: $16.93 billion *(World Bank)*
CO2 emissions: 0.85 metric tons per capita *(World Bank)*

Table 1- Facts about Zimbabwe

Zimbabwe is home to the Mighty Victoria Falls, locally known as Mosi-oa-Tunya - The Smoke That Thunders. It is one of UNESCO's Seven Wonders of the World. Apart from tourism, agriculture and mining are some of the activities that support the Zimbabwean economy.

To support the tourism, agriculture and mining industries mentioned above, the country is connected through a network of roads, rail, and air transport. There are eight (8) airports located in Harare, Bulawayo, Victoria Falls, Masvingo, Buffalo Range, Kariba and Hwange.

4. BACKGROUND: NATIONAL CIVIL AVIATION SECTOR

The civil aviation sector is under the control of the Ministry of Transport and Infrastructural Development. It oversees the whole transport sector in Zimbabwe. The environment and climate change portfolio is under the Ministry of Environment, Climate, Tourism and Hospitality Industry. The fuel and energy portfolio is managed by the Ministry of Energy and Power Development.

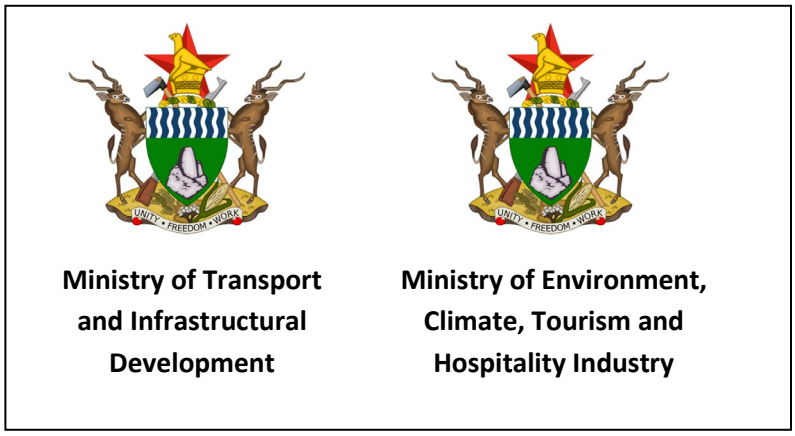

Figure 2 - Government of Zimbabwe Logos

The safety regulation of the aviation sector is managed by the Civil Aviation Authority of Zimbabwe (CAAZ). Until 2020, the safety regulator, CAAZ, was also responsible for operation of the airports in Zimbabwe. However, following a recommendation from ICAO, the airports management was separated from the regulator. The regulator now focuses on safety and security regulation of the aviation industry in Zimbabwe. Such an arrangement removes the potential conflict of interest that existed when the regulator was also an operator.

Figure 3 - Civil Aviation Authority of Zimbabwe Logo

The Airports Company of Zimbabwe (ACZ) operates eight (8) airports located in Harare, Bulawayo, Victoria Falls, Masvingo, Buffalo Range, Kariba, and Hwange. The main airports where scheduled international flights operate are; Robert Gabriel Mugabe International Airport in Harare, Joshua Mqabuko Nkomo International Airport in Bulawayo, and Victoria Falls International Airport. These three airports receive scheduled services from among themselves as well as regional and international flights. The RG Mugabe International Airport has one of the longest runways in the region at 4,725 metres. The other five airports are used by mainly private and general charter aviation operators to access the tourist resorts in those areas.

Figure 4 - Aerial view of RG Mugabe International Airport

Even though the CAAZ was split to separate the airports service provider and the regulator, the air navigation services provider remained as a directorate within the CAAZ. The Directorate of Air Navigation and Technical Services (DANTS) is responsible for providing air traffic management and air traffic services in the state.

Two local airlines are currently certified to provide scheduled services in Zimbabwe. These are Air Zimbabwe and Fastjet Zimbabwe. They provide services to the three international airports in Zimbabwe, namely, Robert Gabriel Mugabe International Airport in Harare, Joshua Mqabuko Nkomo International Airport in Bulawayo and Victoria Falls International Airport. They also connect passengers to regional destinations like Johannesburg in South Africa and Dar es Salaam in Tanzania with direct flights.

Figure 5 - Air Zimbabwe Boeing 767 aircraft

Figure 6 - Faastjet Embraer 145 aircraft

Several foreign operators also service the three main international airports and connect these to both regional and international destinations. Some of the foreign airlines that fly to Zimbabwe include Emirates, Ethiopian Airlines, Qatar, Kenya Airways British Airways, Rwandair, South African Airways, South African Airlink, Air Tanzania and Mozambican Airlines.

Charles Prince Airport on the western outskirts of Harare is home to a number of private charter operators. These provide air connectivity to the airports not serviced by the scheduled airlines and the many airstrips dotted around the country and mainly in or near the wildlife parks.

Figure 7 - Charles Prince Airport

The three international airports are serviced by two ground handling organization namely National Handling Services (NHS) and Aviation Ground Services (AGS). Although the companies handle both passengers and cargo, NHS specializes in passenger services while AGS specializes in cargo services.

Figure 8 - National Handling Company of Zimbabwe check-in counters

Aviation fuel is provided by Puma and a consortium called Harare Airport Fueling Service. The consortium is made up of all the major fuel supplies in Zimbabwe who share the infrastructure at the airport while selling fuel to the operators. Both Avgas and Jet-A1 are available at all the international airports.

4.1 Air Traffic Movements

Tables 1 and 2 show the number of passengers on international flights that used the Zimbabwean airports. The 2020 figures were greatly affected by the restrictions brought about by the COVID-19 pandemic. It is hoped that the passenger and flight movements will begin improving beyond the 2019 figures since many would have received the COVID-19 vaccination.

International passenger movements 2019	
Month	**Passengers**
January	119,194
February	89,852
March	98,845
April	112,961
May	98,664
June	94,169
July	104,854
August	129,174
September	109,522
October	101,574
November	93,243
December	120,759
Total	**1,272,811**

Table 2 - International Passenger Movements 2019

International aircraft movements 2019	
Month	**International Flights**
January	1,976
February	1,735
March	2,088
April	2,064
May	2,161

June	2,125
July	2,281
August	2,252
September	2,084
October	2,073
November	1,848
December	2,010
Total	**24,697**

Table 3 - International Aircraft Movements 2019

5. NATIONAL ACTION PLAN TEAM

The National Action Plan Team (NAPT) is composed of representatives from the CAAZ, DANTS, airlines, ACZ, Ministries responsible for Transport and Environment, ground handling companies and fueling companies. The President of the NAPT is the Director-General of CAAZ. He is deputized by the Director of Flight Safety and Standards of CAAZ.

Figure 9 - Organisations represented in the NAPT

The NAPT was formed through Decision No. 1/CAAZ/SAP/18/2/2021 by the Director-General of CAAZ on the 18th of February 2021 (See Annex 2). Through that decision, the NAPT was assigned the roles of development of the state action plan, raising awareness to all stakeholders on activities to reduce CO2 emissions in international aviation and development of the implementation plan.

The members of the NAPT were nominated by their respective organizations and were tasked with contributing ideas that would help to reduce the emissions of carbon dioxide within their sector. Five meetings were held at the NAPT level, while numerous meetings were conducted at sub-sectoral level where specific actions related to that sector were discussed.

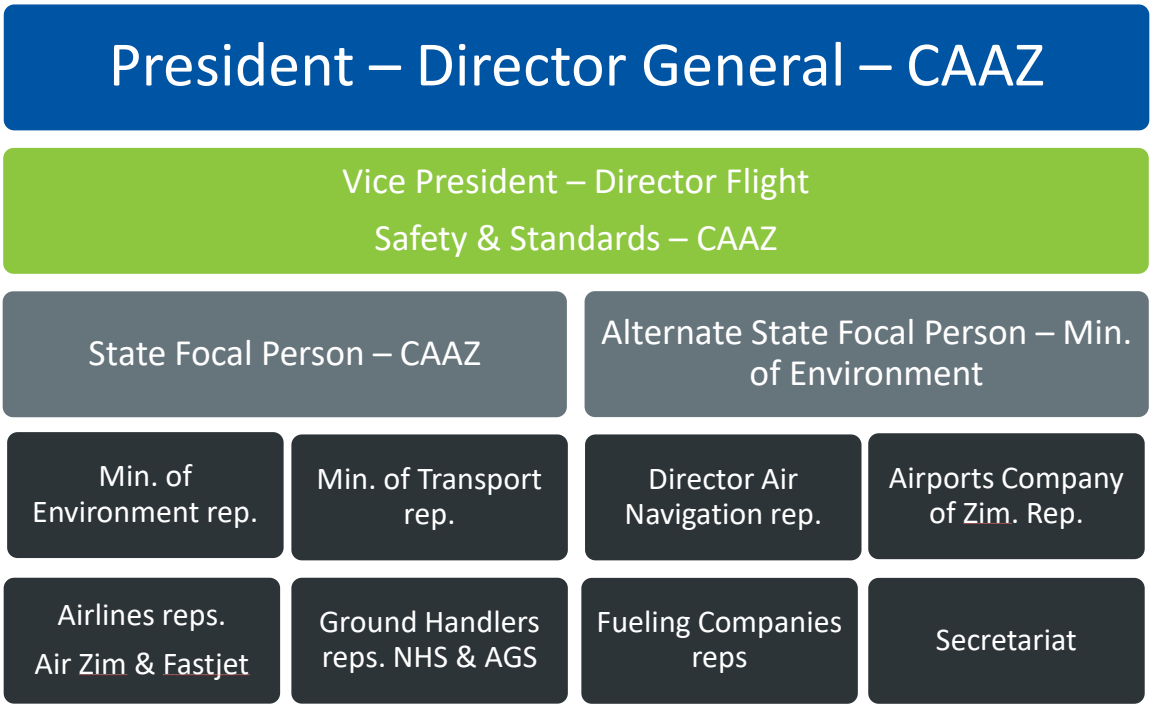

Figure 10 - NAPT structure

6. BASELINE FOR CO2 EMISSIONS IN INTERNATIONAL AVIATION

The baseline scenario is intended to reasonably represent the fuel consumption and traffic that would occur in the absence of action to reduce CO2 emissions. It was calculated according to the methodology given into the ICAO Doc 9988.

6.1. Data Collection

Definition of international flights

Zimbabwe followed the ICAO methodology for accounting of CO2 emissions. The State reports the CO2 emissions from international flights operated by aircraft registered in Zimbabwe. An international flight is defined as the operation of an aircraft from take-off at an aerodrome in Zimbabwe and landing at an aerodrome of another state or its territories. Therefore, the fuel data that was collected was from two local airlines, Air Zimbabwe and Fastjet, and for their international flights only.

Definition of Time Horizon and intermediate years

Fuel data was collected for the years 2018 and 2019. However, only the fuel data for the year 2019 was used to calculate the baseline. Accurate data from previous years could not be obtained while 2020 data was affected by the suspension of international flights to/from Zimbabwe due to the COVID-19 pandemic. Inclusion of such 2020 data in the determination of the baseline would have affected its accuracy.

The year 2050 was selected as the time horizon for the determination of the baseline.

Historical fuel consumption

The table below displays the total fuel consumption for international flights in litres and kilogrammes and the resultant CO2 emissions for local Zimbabwean airlines in the year 2019.

- The density of fuel 0.8 kgs/litre
- The mass of CO2 is 3.16 kgs of CO2 per kilogramme of fuel

Year	Total Fuel (Litres)	Total Fuel (KGs)	Total CO2 Emissions (KGs)
2019	13,108,638.39	10,486,910.71 (10,486.9 tons)	33,138,637.85 (33,138.6 tons)

Table 4 - Fuel Usage 2019

The RTK for the year 2019 was 14,982,924. It was calculated according to the formular given into the ICAO Doc 9988 and using also the Environment Benefit Tool (EBT). It is determined by dividing the payload in tonnes by the total distance flown in the same period.

The fuel efficiency is a ratio of the fuel used in litres to the RTK and was calculated as 0.70. It will be assumed that the fuel efficiency will remain constant in the absence of any mitigating measures.

Air transport activity growth forecast

Based on the ICAO Circular 333, the forecast air transport activity (RTK) growth for the African region is 4% per annum.

The summary of the historical fuel consumption and CO2 emissions for Zimbabwe that are used in this State Action Plan are:

2019 Fuel Consumption (Litres)	13,108,638.39 Litres
2019 Fuel Consumption (KGs)	10,486,910.71 KGs
2019 CO2 Emissions	33,138,637.85 KGs
RTK	14,982,924
Fuel efficiency	0.70
Number of aircraft	8
Air transport growth estimate	4%

Table 5 - Summary of Fuel Usage Data

6.2. Calculation method

The EBT provided by ICAO to assist states in determine environmental benefits was used to calculate the baseline value for Zimbabwe.

Each of the two Zimbabwe operators has less than 10 aircraft in its fleet. Therefore, Method A of the EBT was used.

6.3. Results

The baseline obtained for CO2 emissions up to 2050 is depicted in tabular and graphical formats in the following tables. According to these tables, in the absence of mitigating measures, CO2 emissions from international aviation will grow from 33,138.64 tonnes in 2019 to 107,700.57 tonnes of CO2 in 2050, which represents an increase of 225% in 30 years.

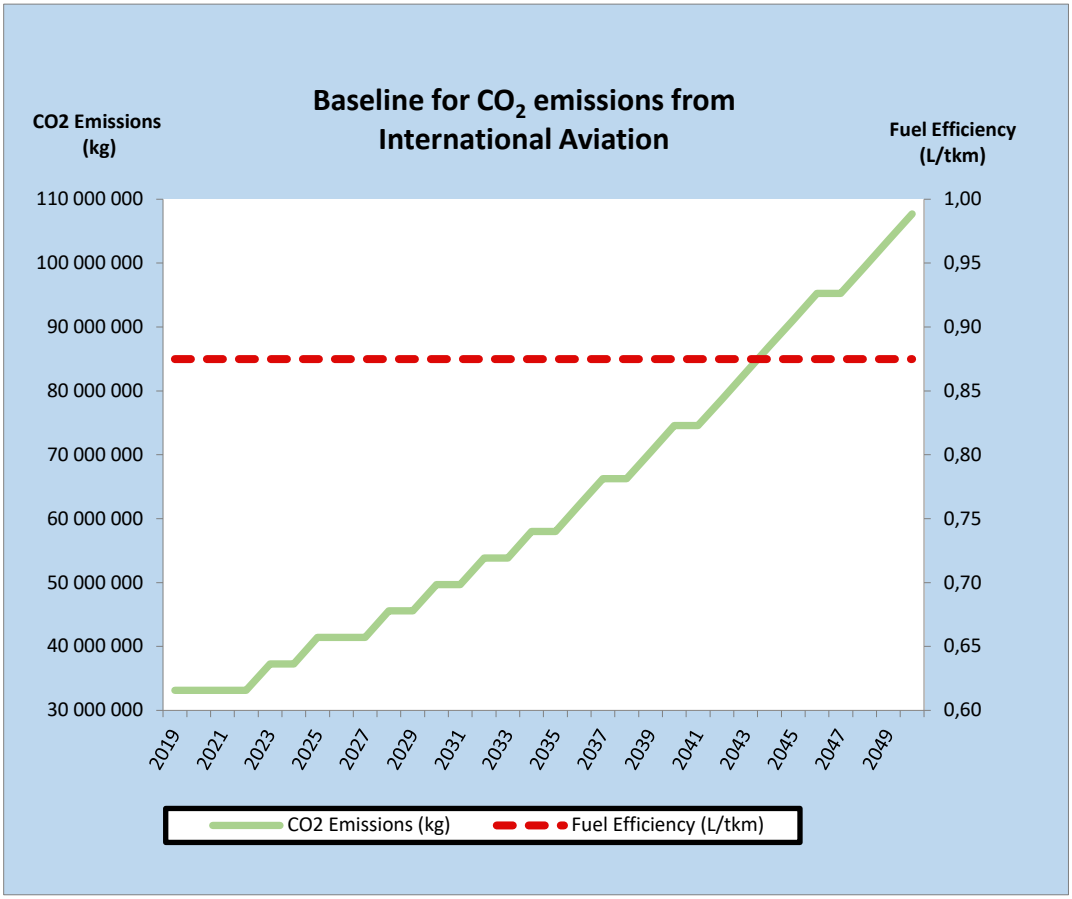

Figure 11 - Baseline for CO2 emissions

Year	International RTK ('000)	International Fuel Burn (Tonnes)	Efficiency (Fuel Burn/RTK)	CO2 Emissions (Tonnes)
2019	14,982.92	10,486.91	0,87	33,138.64
2020	14,982.92	10,486.91	0,87	33,138.64
2021	14,982.92	10,486.91	0,87	33,138.64
2022	14,982.92	10,486.91	0,87	33,138.64
2023	16,855.79	11,797.77	0,87	37,280.95
2024	16,855.79	11,797.77	0,87	37,280.95
2025	18,728.66	13,108.64	0,87	41,423.30
2026	18,728.66	13,108.64	0,87	41,423.30
2027	18,728.66	13,108.64	0,87	41,423.30
2028	20,601.52	14,419.50	0,87	45,565.62
2029	20,601.52	14,419.50	0,87	45,565.62
2030	22,474.39	15,730.37	0,87	49,707.97
2031	22,474.39	15,730.37	0,87	49,707.97
2032	24,347.25	17,041.23	0,87	53,850.29
2033	24,347.25	17,041.23	0,87	53,850.29
2034	26,220.12	18,352.09	0,87	57,992.60
2035	26,220.12	18,352.09	0,87	57,992.60
2036	28,092.98	19,662.96	0,87	62,134.95
2037	29,965.85	20,973.82	0,87	66,277.27
2038	29,965.85	20,973.82	0,87	66,277.27
2039	31,838.71	22,284.68	0,87	70,419.59
2040	33,711.58	23,595.55	0,87	74,561.94
2041	33,711.58	23,595.55	0,87	74,561.94
2042	35,584.44	24,906.41	0,87	78,704.26
2043	37,457.31	26,217.28	0,87	82,846.60
2044	39,330.18	27,528.14	0,87	86,988.92
2045	41,203.04	28,839.00	0,87	91,131.24
2046	43,075.91	30,149.87	0,87	95,273.59
2047	43,075.91	30,149.87	0,87	95,273.59
2048	44,948.77	31,460.73	0,87	99,415.91
2049	46,821.64	32,771.59	0,87	103,558.22
2050	48,694.50	34,082.46	0,87	107,700.57

Table 6 - Estimated CO2 Emissions

7. SELECTED MITIGATION MEASURES

This section explores the mitigation measures identified in Zimbabwe to reduce CO2 emissions from international aviation. It first provides an overview of the national experience with sustainable fuels ambitions and landscape in the State that could be leveraged to support the transition to a sustainable aviation. It further presents the measures quantified in this Action Plan. The selected mitigation measures are described in more detail in Annex 1.

7.1. Overview of Zimbabwe's experience with sustainable fuels

Zimbabwe has a subtropical climate with many local variations. The southern areas are known for their heat and aridity, parts of the central plateau receive frost in winter, the Zambezi valley is also known for its extreme heat and the Eastern Highlands usually experience cool temperatures and the highest rainfall in the country.

In pursuit of sustainability and environment protection in the energy sector, the Government of Zimbabwe embarked on various projects to produce sustainable fuels. The main focus was on Biodiesel and Ethanol with Jatropha and Sugar cane as feedstocks respectively.

- **Biodiesel from Jatropha**

Jatropha (Jatropha curcas) was introduced into Zimbabwe in the 1940s and can grow well in all parts of the country except forest prone and water-logged areas. A high concentration of Jatropha is in the drier warm north-eastern districts of the country, in Mutoko, Uzumba-Maramba-Pfungwe (UMP) and Mudzi in Mashonaland East Province. These areas are all characterized by well-drained soils with good aeration and low nutrient content.

Commercial exploitation of the plant started in 2005 when the Government of Zimbabwe launched the National Biodiesel Project (NBP) and Finealt Engineering Pvt Ltd (FE) was designated the Special Purpose Vehicle (SPV) to spearhead research and production of biodiesel production using jatropha

seed as raw material. Awareness on growing jatropha as a cash crop for biodiesel production is now widely known through the country through FE's efforts. Sustainable and effective jatropha production technologies have been developed by FE.

Feedstock Production FE has started developing a 6000ha commercial estate in Nyakadecha in Mudzi district. FE is implementing a hybrid jatropha production model that combines production from Company-owned estate (Nyakadecha) and out-grower scheme. It is envisaged that the hybrid feedstock generation model is effective in balancing the trade-offs between the interests of rural communities (out-growers), investors and national development. Mutoko, Mudzi and UMP out grower farmers are supplying about 250 tons of Jatropha every year This model allows for easy control of feedstock quality, quantity and diseases outbreaks. The Company owned estate also allows for research or breeding, and creates employment for rural communities.

Bio-diesel Production All Jatropha harnessed from out growers and FE plantations is transported to and stored at Mutoko in readiness for Biodiesel production at the Plant Site. The production Plant's current capacity is 3000 litres per day. Jatropha seeds are sieved to remove foreign objects. The seeds are then pressed using an oil pressing machine to get oil and jatropha cake.

The pressed oil collects in a sedimentation tank where oil and sediments separate. The oil is further filtered using a filter press to obtain clean oil. A methoxide catalyst (Methanol and KOH) is prepared in the catalyst preparation tank, KOH being 10% mass of methanol. The clean oil and catalyst are reacted in the pump agitated reactor where biodiesel is produced through trans etherification reaction which takes about an hour. The reaction mixture is then pumped into settler tanks where phase separation by gravity takes place for about 24hrs resulting in biodiesel on top and crude glycerin below. Biodiesel is then passed into an intermediate tank for temporal storage and to allow further settling out of residual glycerin. Samples of biodiesel are then taken for quality testing and once the biodiesel meets standard specifications, it is then pumped to the main storage tanks ready for use.

- **Ethanol from sugar cane**

Ethanol has been produced in Zimbabwe for over 40 years, for both alcohol and transportation fuel purposes and our local fuel contained ethanol blends of between 10-25% from the 70's up until the late 90's. This blending was introduced to alleviate fuel shortages and high petrol prices and production only ceased due to drought in Lowveld and a crash in the international oil price. All cars in the county during this 20-year period ran on an ethanol blend of up to 25% with no compatibility issues. The Green Fuel Ethanol Project was awarded National Project Status by the Government of Zimbabwe due to the significant benefits it brings to the country which include job creation and employment in agriculture and technology, Clean, renewable fuel at the pump, Fuel Security, foreign currency savings, balance of trade, Cheaper, local fuel.

Green Fuel's plant was established in 2011 and its first ethanol manufactured that year. Zimbabwe has a long history of viable sugar cane production in the Lowveld, and ethanol from sugar cane has been used as a fuel extender (blend) for over 40 years.

The introduction of sugarcane and highly mechanized farming techniques resulted in 3,500 hectares under cultivation in Middle Sabi (with a target of 9,500 hectares) and approximately 6,000 hectares in Chisumbanje (with a target of 36,000 hectares provided that investment is made available). Within an 18-month period, the Macdom (Chisumbanje) and Rating (Middle Sabi) Estates were transformed into successful sugarcane estates. As a result, significant investment was made into the infrastructure of the estates, including pump houses, roads and buildings.

As such, all land that the Chisumbanje Estate occupies (currently around 9,375 hectares) falls within and under the ambit of the BOT held with ARDA and within the 40,000-hectare concession that is under a valid lease agreement between ARDA and the Rural District Council.

⇒ **Ethanol Use in Zimbabwe**

The Green Fuel Ethanol Project was awarded National Project Status by the Government of Zimbabwe due to the significant benefits it brings to the country. Job creation and employment in agriculture and technology – The

ethanol project currently employs over 3,000 people and this will only increase as the project expands. State of the art harvesting techniques have also been introduced and all local employees have been trained by experts from Brazil, ensuring that new skills are introduced into, and kept within the country. With the investment, it was initially projected that 36,500 fully trained, local Zimbabweans could be employed by 2025.

Fuel Security, foreign currency savings, balance of trade – The use of ethanol provides Zimbabwe with fuel security by offering a reduced reliance on imported petroleum products. This, in turn, reduces the trade deficit with domestic ethanol production, replacing petroleum imports. Ethanol is an import replacement product – this essentially means that the foreign currency usually used to purchase petroleum product from foreign oil companies remains in Zimbabwe, thereby improving Zimbabwe's current liquidity challenges. With every percentage of increased ethanol use, Zimbabwe improves its fuel security by being less affected by oil price fluctuations. At a blended rate of 20% (E20), approximately US$3,8 million per month will remain in Zimbabwe, replacing imported fuel.

Clean, renewable fuel at the pump – The use of ethanol in the place of unleaded petrol decreases harmful greenhouse gas emissions by up to 90%. In particular, it significantly reduces CO2 emissions because it uses materials (i.e. sugarcane plants) that absorb CO2 during the growing process. Most recent studies have shown a positive energy balance for ethanol of between 23 and 40 percent.

Cheaper local fuel – Ethanol is sold at a significantly cheaper price than petrol, which means that blending will reduce the cost of fuel at the pump. These savings offer consumers more spending power as the money remains within Zimbabwe.

Increased Rural Development/Community Growth – The Chipinge district was considered one of the least developed in Zimbabwe, nicknamed 'Mugowa' (semi-desert). Extremely low incomes and dryland farming have historically fueled migration into South Africa. With massive job creation brought on by the project, over $2 million is now injected into the local

community each month as salaries, rent, transport and procurement. Banks and cell phone towers have opened in Checheche – a growth point that has applied for town status due to the ethanol project. Local businesses are thriving and social services such as healthcare facilities, roads, churches and schools are being refurbished and revived. In addition, 10% of all land cultivated for sugarcane is developed by Green Fuel and distributed to small-scale farmers for their own use. On completion, this will equate to a total of 5,000 hectares of flood irrigation for smallholders in Middle Sabi and Chisumbanje. More than 10,000 families will benefit from this investment of approximately $50 million.

- **CHALLENGES**

Over the years, Finealt Engineering Pvt. Ltd has been pursuing the out-grower scheme where it was purchasing jatropha feedstock from the communities in Mutoko, Mudzi and UMP. Although the purchased quantities of the feedstock could meet the R&D demands of the NBP, there were not enough for commercial biodiesel production purposes. Lack of Funding and Technology has also negatively impacted the production of Bio Diesel in Zimbabwe.

Although the ethanol project has been largely successful in Zimbabwe, lack of capacity has also affected the project and the Government has had to continually review downwards the mandatory petrol blending requirements because of ethanol shortage.

- **ZIMBABWE'S READINESS FOR SUSTAINABLE AVIATION FUELS**

Zimbabwe has the capacity to move towards SAFs building on the existing infrastructure, research and experience already acquired through ethanol and Jatropha. Being an agro economy and having favorable climate and geology, Zimbabwe has the capacity to increase production of feedstock for both jatropha and ethanol to meet future SAF requirements. This of course needs to be supported by adequate funding and technical support.

7.2. Technology and Standards

The State can reduce the amount of CO2 that is emitted during flights by adopting a policy to encourage aircraft operators to replace their fleet with newer and more modern aircraft. Modern technologies which are fuel efficient are utilized in the construction of newer aircraft. For example, latest models of turbine engines have a higher by-pass ratio when compared to older models which have a low by-pass ratio if any. The airframe construction is relatively lighter since the introduction of composite materials in aircraft construction. The newer aircraft have been retrofitted with computerized avionics systems which are compact and much lighter in weight when compared to the older systems. The resultant is reduced fuel consumption per the same routes and while passenger and cargo loads are increased.

Generally, many operators in the region have been dependent on second-hand aircraft that would have been retired by the huge international airlines as the purchase price or lease fees of the newer aircraft is prohibitive. The State will look into financing assistance to enable the upcoming airlines in Zimbabwe to acquire a more modern fleet.

7.3. Improved ATM and Infrastructure use

The Directorate of Air Navigation and Technical Services has implemented Performance Based Navigation (PBN) operations on about half of the routes in Zimbabwe. The rest still utilize conventional navigation. Implementation of PBN routing in the whole airspace will permit flexible routes and increased fuel savings by the operators.

The Victoria Falls Airport has procedures for both SID and STAR and is awaiting training of controllers and full implementation of the system. The current upgrade of the Robert Gabriel Mugabe International Airport will include the implementation of the SID and STAR procedures. It is envisaged that implementation of these will reduce the en-route fuel burn.

7.4. Operational improvements

The two local airlines, Air Zimbabwe and Fastjet, will implement measures to improve the efficiency of their operations. These will include possible introduction of single engine taxi, reducing the use of flaps for take3-off and landing. Zimbabwe's airports have some of the longest runways in the region and operators will aim to minimize the use of thrust reversers during landing.

Implementation of these measures will require research to determine recommendations from the aircraft manufacturers as well as train the crews on the implementation of such measures to reduce the fuel burn.

7.5. Market-based measures

The State aims to voluntarily participate in CORSIA. It is anticipated that CORSIA will mitigate CO2 emissions by compensating elsewhere, the effects of CO2 emissions. The State will encourage all operators to voluntarily participate in this program so as to offset CO2 emissions generated in international aviation.

Zimbabwe targets to offset at least 20% of the CO2 produced in international civil flight by the local airlines. CORSIA represents the largest mitigating measure that Zimbabwe aims to implement in the fight to reduce CO2 emissions.

7.6. Airport Improvements

Two airports, JM Nkomo and Victoria Falls were upgraded in the past few years. The upgrades included installation of LED in the offices and parts of the runway. The airport buildings now have larger windows which take advantage of the ever-available sunlight in this part of the world.

Since Zimbabwe has sunshine all year round, a possible further improvement is the installation of solar glass windows on the existing airport buildings as well as solar farms to provide the bulk of electrical needs at the airport. Solar

glass windows can be installed to existing windows by fitting them with photovoltaic glazing. The solar energy captured by the solar cells is converted to renewable electricity and can be used to power electrical appliances. In addition, there are huge tracts of appropriate land around all the airports where solar farms could be installed. The drawback though, could be high initial investment cost to install the solar systems when compared to the seemingly cheaper electricity from the national grid. The Airports Company of Zimbabwe will require financial assistance to implement solar systems at the airports.

In addition, the ground handling companies propose to implement measures to enhance GSE management. These measures will include replacement of diesel-powered tractors and tugs by those that use cleaner energy fuel or electricity, and by minimizing the distances travelled by the GSE through the designation of parking areas that are close to the aircraft parking.

8. EXPECTED RESULTS: FUEL SAVINGS

The implementation of the mitigation measures selected by Zimbabwe will lead to the reduction of an average **15,462 tonnes of CO2 emissions** from international aviation per year.

This quantification was performed using both a State methodology and ICAO's rule of thumb.

The expected results over the baseline horizon are depicted in the table below. The following figure provides a graphical representation of these results and compares the fuel burn before implementation of mitigation measures to the fuel burn after the implementation of the mitigation measures.

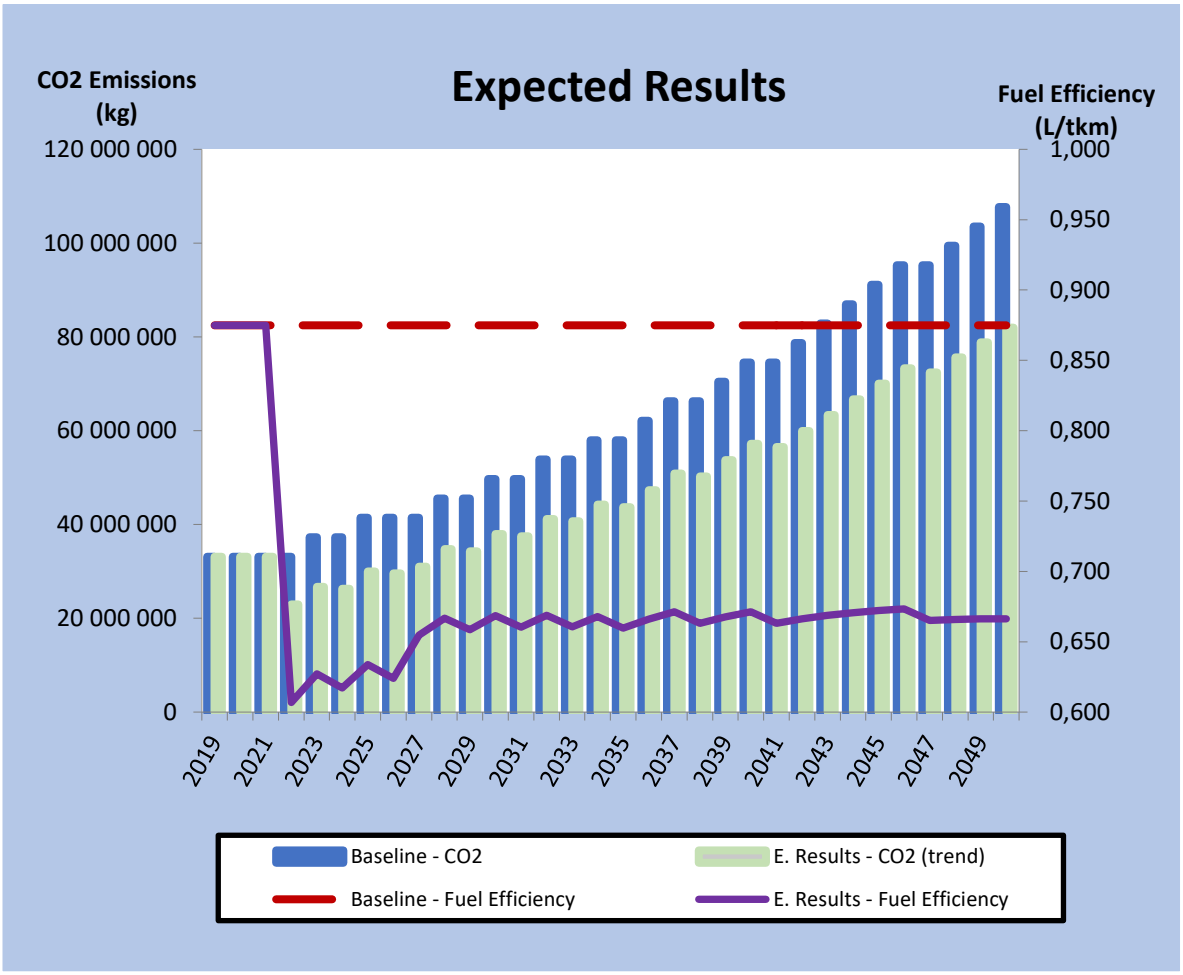

Figure 12 - Expected results: Fuel savings

Year	**Annual Fuel burn before implementation of mitigation actions** (Tonnes)	**Annual Fuel burn after implementation of mitigation actions** (Tonnes)	**Annual Fuel savings** (Tonnes)	**CO2 Saving** (Tonnes)
2019	10,486.91	10,486.91	0.00	0.0
2020	10,486.91	10,486.91	0.00	0.0
2021	10,486.91	10,004.11	482.80	1,525.6
2022	10,486.91	7,273.76	3,213.15	10,153.6
2023	11,797.77	8,456.10	3,341.68	10,559.7
2024	11,797.77	8,322.43	3,475.35	10,982.1
2025	13,108.64	9,494.28	3,614.36	11,421.4
2026	13,108.64	9,349.70	3,758.93	11,878.2
2027	13,108.64	9,810.24	3,298.39	10,422.9
2028	14,419.50	10,989.17	3,430.33	10,839.8
2029	14,419.50	10,851.96	3,567.54	11,273.4
2030	15,730.37	12,020.12	3,710.25	11,724.4
2031	15,730.37	11,871.71	3,858.66	12,193.4
2032	17,041.23	13,028.23	4,013.00	12,681.1
2033	17,041.23	12,867.71	4,173.52	13,188.3
2034	18,352.09	14,011.63	4,340.46	13,715.9
2035	18,352.09	13,838.01	4,514.08	14,264.5
2036	19,662.96	14,968.31	4,694.64	14,835.1
2037	20,973.82	16,091.39	4,882.43	15,428.5
2038	20,973.82	15,896.09	5,077.73	16,045.6
2039	22,284.68	17,003.85	5,280.84	16,687.4
2040	23,595.55	18,103.48	5,492.07	17,354.9
2041	23,595.55	17,883.80	5,711.75	18,049.1
2042	24,906.41	18,966.19	5,940.22	18,771.1
2043	26,217.28	20,039.44	6,177.83	19,521.9
2044	27,528.14	21,103.19	6,424.94	20,302.8
2045	28,839.00	22,157.06	6,681.94	21,114.9
2046	30,149.87	23,200.65	6,949.22	21,959.5
2047	30,149.87	22,922.68	7,227.19	22,837.9
2048	31,460.73	23,944.45	7,516.28	23,751.4
2049	32,771.59	24,954.67	7,816.93	24,701.5
2050	34,082.46	25,952.85	8,129.60	25,689.6

Table 7 - Expected Results After Implementing Mitigation Measures

9. ROADMAP FOR THE IMPLEMENTATION OF MITIGATION MEASURES

Zimbabwe plans to implement all the selected mitigation measures to reduce CO2 emissions in international aviation by 2026. To some degree, has already started implementing some of the mitigation measures to reduce CO2. The state is at an advanced state to voluntarily participate in CORSIA before the end of the first half of 2022. A solar farm is under construction very close to Victoria Falls Airport, while lights for runway markings have been converted to solar power.

The table below details the implementation roadmap of this state action plan:

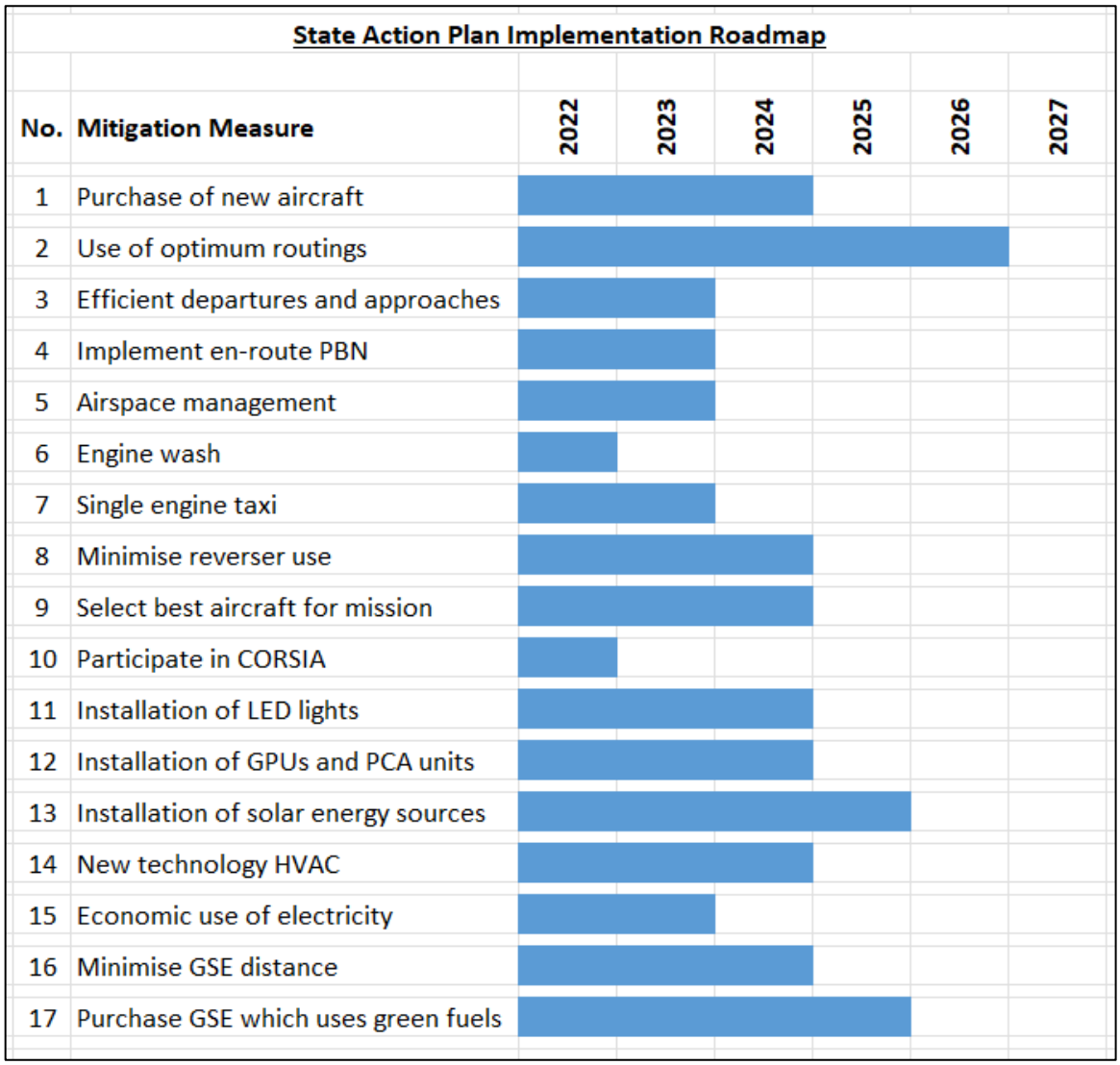

Figure 13 - State Action Plan Implementation Roadmap

10. ASSISTANCE NEEDS

Zimbabwe will require assistance in the following areas:

- Since this is the first time that the State will be implementing measures to reduce carbon emissions in international aviation, it will be beneficial to provide step by step assistance as was provided during the development of the SAP. There is need for assistance to develop specific operating regulations based on the ICAO SARPs in Annex 16. Regulations will provide a sound legal basis to encourage aviation stakeholders to implement the mitigation measures recorded in the SAP.

- As an area that has not been receiving much attention within the local aviation industry, there is need to provide comprehensive training to all the stakeholders on the benefits and methods of implementing the mitigation measures on reduction of CO2 emissions. The state will benefit from assistance that can be made available to train the various stakeholders.

- Many of the proposed mitigation measures require a huge financial outlay for them to be realized. For example, the airports are currently operating using electricity from the national grid. That national electricity grid infrastructure is already in place and airports benefit from a prioritized electricity supply system. The introduction of alternative cleaner sources of energy like solar, will require investments in solar panels, battery banks and so forth which were likely not a priority for those organisations. Assistance with financing for such projects will be required if they are to be taken on board.

ANNEX 1 – MITIGATION MEASURES

List of selected mitigation measures

No	Keyword	Description	Start date	End date	Expected results	Stakeholders	Cost	Assistance needs	Required actions	Fuel savings per year
	Technology Standards									
1	Purchase of new Aircraft	Older aircraft use more fuel for the same distance travelled than newer aircraft. Further, selection of more efficient aircraft can reduce the fuel consumption per given flight. The airlines in Zimbabwe use a Boeing 737-200 and Embraer 145 respectively. Replacement of these aircraft with newer aircraft will reduce the fuel consumption and subsequently the carbon emissions. The airline which uses the B737-200 proposes to purchase newer versions of the B737 and the airline which uses ERJ145 proposes to replace the aircraft with Bombardier Q400 aircraft which have turboprop engines. These aircraft will ensure reduced carbon dioxide emissions into the atmosphere.	2022	2024	**482.8 tons of fuel = 482.8 * 3.16 = 1,525 tons CO2**	Air Zimbabwe and Fastjet	One B737-800 = $82m and 3*new Q400s *$27m = $81m. The total replacement cost will be $163m	Financing	Replace current fleet with newer and more economic aircraft	**482.8 tons of fuel = 482.8 * 3.16 = 1,525 tons CO2**
	Sustainable Aviation Fuels									
2	Feasibility studies	Conduct a feasibility study to evaluate the capacity to move towards SAFs building on the existing infrastructure and encourage and promote their use of in aviation sector	2022	2023	**N/A**	CAAZ Min of Energy & Min of Env	TBD	Funds & Technical support	Technical expertise	N/A

	Improved ATM and infrastructure use									
3	3.1 a(iv) Improve the use of optimum routings	Introduce flexible flightable routes. Introduction of routes that are requested by the operator based on his/her fuel saving calculations.	2022	2026	reduced flight time	DANTS Aircraft operators		No		
4	Improve fuel efficient departure and approach procedures	This mitigating measure aims to introduce PBN SID and PBN STAR. SID and STAR procedures will reduce restrictions during climb and descend. The procedures will allow continuous climb and descend and reduce the amount of fuel used in those phases of flight. All international airports in Zimbabwe are currently utilizing ATC clearances for climb or descend. These procedures have too many restrictions which result in increased fuel burn. The current status of the three international airports in Zimbabwe is as follows: (1) FVFA - Charts and procedures were developed. There is need for training the ATC staff on application of the procedures. (2) FVJM - The GNSS procedures and charts are outstanding. Once those are developed, training will need to be provided for the ATC staff. (3) FVRG - The GNSS procedures and charts are outstanding. Once those are developed, training will need to be provided for the ATC staff.	2022	2023	STAR = 63.7 **tons** ---------- For SID = **27.3 tons** ---------- Total = **91 tons of fuel = 287.6 tons of CO2**	DANTS and aircraft operators	Training for FVFA = $25k, Implementation of procedures and training for FVRG and FVJN = $70k. Total = **$95,000**	Yes	Financing the charting of the remaining airports and training of ATC personnel	STAR = 63.7 **tons** ---------- For SID = **27.3 tons** ---------- Total = **91 tons of fuel = 287.6 tons of CO2**
5	Fully utilize airspace capabilities (en-route PBN)	The Zimbabwean airspace currently has 50% of the airspace as PBN routes. The remaining 50% is still conventional and requires the aircraft to follow predetermined waypoints	2022	2023	**39.36 tons of fuel = 124.38**	DANTS aircraft operators	Training for ATC - $25k Charting - $30k	Yes	Training of ATS Provider personnel,	**39.36 tons of fuel = 124.38**

		which increases the distance travelled. The PBN routes are mainly in the upper airspace. The routes allow the aircraft to navigate by using non ground based routes which are more accurate and allow a more direct routing.			**tons of CO2**				financing for the charting	**tons of CO2**
6	Airspace management	Coordination of activation and deactivation of military airspace	2022	2023	reduction of restricted airspace	DANTS Civil and military				
	More efficient operations									
7	Engine wash	The air which is sucked into an aircraft engine is full of contaminants in the form of dirt, oil, soot and other impurities in the air. These contaminants gradually build up in the compressor and reduce its efficiency and ultimately increase fuel consumption. Regular engine washing prevents accumulation of these contaminants and improves the engine efficiency as well as reduce fuel consumption.	2022	2022	**25.91 tons** of **fuel =81.88 tons of CO2**	Air Zimbabwe and Fastjet	Purchase of compressor wash equipment for current fleet = $10k	Yes	Financing for the purchase of the compressor wash equipment	**25.91 tons** of **fuel =81.88 tons of CO2**
8	Single engine taxi	The use of one-engine-out taxi techniques is on the rise as one means to reduce fuel burn. By shutting down a single engine of the aircraft when it lands, airlines can reduce carbon emissions produced by a considerable margin.	2022	2023	**86.35 tons of fuel = 272.87 tons of CO2**	Air Zimbabwe and Fastjet	Training of crews on single engine taxi - $20k	yes	Researching on single engine taxi operations for the aircraft type, training of crews on single engine taxiing, verifying with	**86.35 tons of fuel = 272.87 tons of CO2**

									equipment manufacturers if aircraft are certified for single engine taxi	
9	Minimizing reversers use	The airports in Harare and Victoria Falls have some of the longest runways in Southern Africa. Such long runways allow the pilot to bring the aircraft to a halt without depending on thrust reversers which accelerate the engine to maximum power in-order to reduce speed. Other non-fuel dependant braking systems e.g., flaps and spoilers can be used to reduce the aircraft speed upon landing.	2022	2024	**62.42 tons of fuel = 197.25 tons of CO2**	Air Zimbabwe and Fastjet	training of crews on minimized reverser usage	$20k	Implement procedures for crews to reduce thrust reverser use especially in Harare and Victoria Falls	**62.42 tons of fuel = 197.25 tons of CO2**
10	4 c Selecting aircraft best suited to the mission	The smallest aircraft owned by the Zimbabwean airlines has a capacity for 50 passengers. Yet there are some routes where the passengers are may be less than that figure. Airlines will save fuel when they select aircraft where the load factors justify the use of the selected equipment. The airlines could also benefit by consolidating flights or code-share partnerships especially on routes which they both operate, and passenger numbers are generally low. Such an arrangement will ensure that those payloads are maximized per specific quantity of fuel	2022	2024	Reduced carbon emissions per passenger	Air Zimbabwe and Fastjet	nil	no	Code share agreements between airlines flying the same route, purchase of new aircraft in some cases	
	5. Market Based Measures									

11	5 a Voluntary inclusion in CORSIA	The State and the airline operators to join the CORSIA programme	2022	2022	**2,097.4 tons of fuel = 6,627.7 tons of CO2**	Air Zimbabwe and Fastjet	1 Training= $10,000.00 2. Verification fees=$10,00.00	Yes	1. Train personnel on CORSIA. 2. Select department to take ownership of program. 3. Document organizational procedures. 4. Develop CO2 Emissions Report. 5. Select and approve verification body. 6. Submit verified CO2 Emissions Report to the CAAZ.	**2,097.4 tons of fuel = 6,627.7 tons of CO2**
	7. Airport Improvements									
12	7 a (i) Airfield improvements	For FVRG in Harare, the runway lights operate for 24 hours a day. For FVFA they operate for 12 hours except for those times when special airport opening times are requested. For FVJN, they operate for 14 hours. These lights have historically been halogen lights which draw huge currents. Replacement of these halogen lights with	2022	2024	CO2 savings = 0.4 * 1,726,307 kwh * 0.0003 = **207 tons of CO2**	Airport operators	US$1,5m	No	Replacement of halogen runway lights at FVRG, FVJN and FVFA with LED lights	CO2 savings = 0.4 * 1,726,307 kwh * 0.0003 = **207**

		LED lights will greatly reduce the electrical consumption attributed to the runway lights.								**tons of CO2**
13	7 a (v) Airfield improvements	Aircraft are fitted with auxiliary power unit to provide electrical and pneumatic needs when the main engines are shut down. However, the auxiliary power unit uses fuel from the aircraft and adds to the aircraft's fuel usage per flight. Airlines could benefit by using existing ground power units connected to the airport's electrical supply and pre-conditioned air supply rather than use the APU. The APU may be switched on for the taxi to the gate and switched off once the ground sources are connected to the aircraft. This minimizes APU usage to about 20% of the time on the ground.	2022	2024	Fuel savings = 0.75 hr * 0.106 tons * 3,640 FC = **289 tons of CO2**	airport operators, ground handlers, airlines	US$1m	Yes	Investment in ground power units and PCA units. It is also necessary to use GPUs and PCAs that utilize clean energy otherwise whatever gains were made by minimizing the use of APUs are negated. Revision of procedures by the airlines to minimize the use of APUs	Fuel savings = 0.75 hr * 0.106 tons * 3,640 FC = **289 tons of CO2**
14	7 b (i) clean sources of energy	The airports depend on the national electrical grid for its electrical energy demands. About 50% of national power plants are powered by coal. Whenever the airports experience power cuts, standby diesel generators are used to power the airports. On average, power cuts are experienced about 5% of the	2022	2025	Fuel savings = 5,791,030 * 0.0003 = **1,737 tons of CO2**	Airport operator ANS Provider	Harare solar farm - US$1,2m Bulawayo solar farm - US$480k Victoria	Yes	Feasibility study Designing of solar farms, purchase, and installation	Fuel savings = 5,791,030 * 0.0003 =

		time. Since the State has sunshine most of the time in the year, and the airports have vast tracts of open spaces, of solar glass windows can be constructed to replace at least the 55% of the power needs which are provided by non-clean energy sources.					Falls solar farm - US$1,08m Total cost = **US$2,76m**		of equipment,	**1,737 tons of CO2**
15	7 b (ii) Infrastructure design	Installation of new technology for HVAC control and new building designs	2022	2023	reduced energy use	Airport operator		Yes	Designing of HVAC systems and training of staff	
16	7 b (iii) Reduce energy demand	Switching off of unnecessary lights, promote use of stairs than lifts and use of lights with motion sensors	2022	2023	reduced energy use	Airport operator	US$5,000	Yes	Training of staff. Conduct awareness seminars to sensitize staff on energy conservation.	
17	7 c (i) Enhance Ground Support Equipment	Much of the ground handling equipment (tow trucks, loaders, service vehicle etc.) run from diesel fuel. In the year 2019, for 27 pieces of GSE, 68,000 liters of diesel were used. The GSE services both domestic and international flights. Coordination between airport operators and ground service providers can be implemented to park aircraft at positions where minimum travel of GSE is achieved. Further, by adopting lean management planning, the GSE providers can ensure that their GSE travel the minimum distance for the provision the	2022	2024	reduced carbon emissions by the GSE	Ground handlers	US$20k	Yes	Training of airport and ground handling staff on lean management.	Fuel savings = 57.8 tons * 0.20 * 2.28 = **26.36 tons of CO2**

		required service. It is estimated that such activities will reduce the fuel used by 20%.								
17	5.1 d (i) Conversion of GSE	Much of the ground handling equipment (tow trucks, loaders, service vehicle etc.) run from diesel fuel. In the year 2019, for 27 pieces of GSE, 68,000 liters of diesel were used. To reduce CO2 emissions, ground handlers are encouraged to replace at one half of their GSE with those that use cleaner fuels. This will reduce the carbon emissions by at least half. Each ground service operator should include reduced carbon emissions as a factor to consider when replacing its ground service equipment.	2022	2025	reduced carbon emissions by the GSE	Ground handlers	US$1,2m	Yes	Replacement of diesel powered GSE with those that use cleaner fuels.	Fuel savings = 57.8 tons * 0.20 * 2.28 = **26.36 tons of CO2**

ANNEX 2 – Decision to Create the NAPT

Attachment 2

Civil Aviation
Authority of Zimbabwe

3rd Level, International Terminal Building
Robert Gabriel Mugabe International Airport
Harare

Tel: 263-24 -2585073-88
Fax: 263-24 -2585096
E-mail: directorgeneral@caaz.co.zw
Office of the Director General

DECISION NO 1/CAAZ /SAP CO_2/18/2/2021 ON THE CREATION OF THE COMMITTEE IN CHARGE FOR THE DEVELOPMENT OF THE ACTION PLAN ON CO_2 EMISSIONS REDUCTION FOR ZIMBABWE

THE ACTING DIRECTOR GENERAL

- Given the Constitution of Zimbabwe
- Given the Convention relating to International Civil Aviation signed on December 7, 1944 in Chicago, in its Annexes particularly Annex 16 on Environmental Protection
- Given the Civil Aviation Act [Chapter 13:16] on the organization and functioning of the Civil Aviation Authority of Zimbabwe, together with its subsequent amendment
- Given the Resolution no A37-19 of ICAO asking member states to draw up an action plan for activities to reduce CO_2 emissions
- Given the ICAO letter no REF.:ENV 8/1.1 of 13 November 2020

Considering the service requirements,

DECIDES

Section 1: The present decision relates to the creation of the Committee in charge of developing the Action Plan on CO_2 emissions reduction for Zimbabwe, in short "the Committee"

Section 2: The Committee is responsible for:
- Raising awareness to all stakeholders (Air Operators, Airport Operators, Air Navigation Services Providers, Ground Handlers, Fuel Providers, Ministry of Environment, Climate Change, Tourism and Hospitality Industry, Ministry of Transport and Infrastructural Development) on activities to reduce CO_2 emissions
- Developing the 2021-2023 three-year Plan for CO_2 emissions reduction in accordance with the Standards And Recommended Practices (SARPs) of Annex 16 to the aforementioned Chicago convention.

Section 3: Assisted by a Technical Secretariat, the Committee is made up of the statutory members designated below:

- President: Director-General of CAAZ
- Vice-president: Director – Flight Safety and Standards of CAAZ
- State Focal Person on CO_2 Emissions
- Alternate State Focal Person on CO_2 Emissions

Adv. T. P. Gambe (Chairman); Mr N. Mushangwe (Vice Chairman); Mrs M. J. Mazhude (Member); Ms L. Masuka-Dumwa (Member); Mr T. N. Zunzanyika (Member); Ms S. N. Takawira (Member); Dr O. Muvingi (Member) *Mrs B. Muzangaza (A/Director General)

CONFIDENTIAL

- Members:

  - a representative of the Ministry of Environment, Climate Change, Tourism and Hospitality Industry
  - a representative of the Ministry of Transport and Infrastructural Development
  - Director of Air Navigation and Technical Services
  - a representative of the Airports Company of Zimbabwe
  - a representative of Air Zimabwe
  - a representative of Fastjet Zimbabwe
  - a representative of National Handling Services
  - a representative of Aviation Ground Services
  - a representative of Fuel Providers

Section 4: Headed by the State Focal Person, the Technical Secretariat is responsible for:

- the organization of committee meetings
- the keeping of documents and archives of the committees; and
- All other missions entrusted to him by the President of the committee.

The constitution of the committee and the Technical Secretariat is established by a decision of the Director-General.

Section 5: The President of the committee may call on any person depending on his or her skills on the issues on the agenda to take part in the work of the committee and the Technical Secretariat in an advisory capacity.

Section 6: The Committee's operating expenses are borne by the budget of the Civil Aviation Authority of Zimbabwe (CAAZ).

Section 7: The Committee has until 31 March 2022 to submit the Action Plan for CO2 emissions for transmission to the ICAO.

Section 8: The Director of Finance is responsible for the availability of the budget of this committee to allow it to fulfil its mandate.

B. Muzangaza (Mrs.)
Acting Director-General

18/02/2021
Date