AFRAA factsheet and call to action on decarbonisation pathway to net zero emissions

Introduction

Reaching net zero emissions means removing an equal amount of CO_2 from the atmosphere as we release into it. Put simply, net zero applies to a situation where global greenhouse gas emissions from human activity are in balance with emissions reductions. At net zero, carbon dioxide emissions are still generated, but an equal amount of carbon dioxide is removed from the atmosphere as is released into it, resulting in zero increase in net emissions. The expected carbon emissions on a 'business as usual' trajectory over the 2021-2050 period is approximately 21.2 gigatons of CO_2. Success in mitigating net emissions will require the coordinated combined efforts of the entire aviation industry (airlines, airports, air navigation service providers, manufacturers) plus significant government support.

Global initiatives

At the 77th IATA Annual General Meeting in Boston, USA, on 4 October 2021, a resolution was passed by IATA member airlines, committing to achieving net-zero carbon emissions from their operations by 2050. This pledge brings air transport in line with the objectives of the Paris Agreement to limit global warming to scenarios below 2.0°C. Having agreed to a Long Term Aspirational Goal (LTAG) on climate at the 41st Assembly of the International Civil Aviation Organization (ICAO) in October 2022, governments now share the same target for aviation's decarbonisation.

The key elements of the emissions reduction strategy are:

- The use of Sustainable Aviation Fuel (SAF), sourced from feedstocks that do not degrade the environment or compete with food or water;
- Investment in new aircraft technology, including radical new aerodynamic and alternative propulsion (electric or hydrogen) solutions;
- Continued improvement in infrastructure;
- Operational efficiency, with particular focus on improved air traffic management;
- The use of approved offsets, including carbon capture and storage technology.

Global milestones toward net zero

The table below by IATA illustrates a potential set of estimated milestones towards net zero, including the mix of abatement measures ('pathways') and some actions envisaged.

Milestones towards net zero

Date	Amount of CO_2 Abatement	Pathway	Action
2025	381 megatonnes (Mt) (2021-2025)	97% offsets, 2% SAF, 1% improvements above business as usual (BAU)	ICAO agree long-term goal for international aviation (2022); energy sector commits to at least 6 million tonnes SAF production; agreement of full implementation of Article of Paris Agreement
2030	979 Mt (2026-2030)	93% offsets; 5% SAF, 2% improvements above BAU	Use of 100% SAF on aircraft, ANSPs fully implement ICAO Aviation System Block upgrades to deliver fuel efficiency improvements of 0.3% by 2030
2035	1,703 Mt (2031-2035)	77.5% offsets, 17.5% SAF, 3% improvements above BAU, 2% Carbon Capture Utilization and Storage (CCUS)	Evolutionary technology achieving 30% reduction in fuel burn, electric/hydrogen aircraft for regional markets (50-100 seats, 30-90 min flights) become available
2040	3,824 Mt (2036-2040)	44.5% offsets, 40% SAF, 7.5% non drop-in fuel (new propullsion technologies), 5% CCUS, 3% improvements above BAU	Feasibility of new aircraft such as blenderwing bodies demonstrated with full-scale working prototypes, electric/hydrogen for short-haul markets (100-150 seats, 45-120 min flights) become available
2045	6,153 Mt (2041-2045)	55% SAF, 24% offsets, 10% non drop-in fuel, 8% CCUS, 3% improvements above BAU	Necessary infrastructure for new energy requirements (low carbon electricity/hydrogen) becomes available
2050	8,164 Mt (2046-2050)	65% SAF, 13% non drop-in fuel, 11% CCUS, 8% offsets, 3% improvements above BAU	Commercially viable annual SAF production of 449 billion litres available

Contribution of African Aviation towards emissions reduction

The aviation industry's focus has always been to progressively reduce emissions while accommodating the growing demand for air travel. The ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is a key initial pillar to attaining this goal. CORSIA aims to stabilise international emission levels in the short-to-medium term.

The current focus among African aviation actors is to reduce as much CO_2 as possible through investment in new and modern aircraft, operating more efficiently, and investing in smarter airport infrastructure and facilities. African airlines' commitment to sustainable environmental practices is noticeable through operational decisions and policy changes as recommended by IATA and ICAO in the following areas:

- Striving for the most efficient operations – flying more direct routes, aircraft continuous ascent and descent;
- Investing in new and modern aircraft;
- Taking measures to reduce carbon footprint;
- Introducing recycling initiatives at airline and airport facilities;
- Integrating environmental programmes into all planning and decision-making processes;
- Adapting energy and water efficient practices;
- Encouraging improvement in the performance of suppliers through the development of environmental criteria within the framework of procurement policies.

Some 17 African countries have signed up for the voluntary CORSIA emissions monitoring and reporting phase. In cooperation with IATA, Ethiopian Airlines, Kenya Airways, and South African Airways, among others launched the Carbon Offset Program that offers customers the opportunity to contribute towards offsetting the CO_2 emissions related to their flights. The money raised through these schemes is invested in re-forestation projects in the respective countries.

In Ethiopia and Kenya, Boeing is working with the airlines and governments to help develop SAF feedstock production capacity. Boeing is also working with Ethiopian Airlines to include aviation sustainability in the curriculum of the Ethiopian Aviation Academy.

In 2016, South African Airways (SAA) became the first African passenger airline to operate a flight using sustainable aviation fuel (SAF). Similar SAF-operated flights were subsequently conducted in Ethiopia and Kenya. However, the enthusiasm is difficult to sustain due to the non-availability and high cost of SAF, lack of airport infrastructure, and lack of incentives, among other challenges.

To build capacity, AFRAA, AFCAC, IATA, and ICAO have, at different times, organised workshops and seminars to inform and sensitise airlines on the environmental impact of their operations and the mitigation measures that will assure sustainability and lead to net zero emissions. These events have brought significant awareness of measure to be adopted to improve the situation and build capacity at the operational level.

African airlines' aspirations towards Net Zero Emissions

Pathway	Actions by Industry & Government	Impact on emissions	Timeline
Sustainable aviation fuel	• All airlines should investigate sustainable aviation fuel opportunities – start by doing test flights • Make substantial and bold SAF offtake agreements early • Make the case to governments and the finance community for SAF scale-up • Bring passengers and major customers on board sustainable aviation fuel financing • Develop appropriate regulatory framework • Provide incentives for investment in SAF • Scale-up areas for collaborative approaches – within industry, between industry and governments and with the research community and others • Invest in infrastructure • Better land policy to facilitate investment in feedstock	To discuss	To discuss
Technology	• Accelerate research into radical airframe designs, electric and hydrogen propulsion • Form partnerships with non-aviation technology providers • Provide incubation opportunities for new green technology start-ups • Prepare new energy requirements for electric and hydrogen aircraft • Governments to continue to fund research programmes in the sector		
Operations and Infrastructure	• Implement optimised flight profiles as air traffic volumes grow • Implement fixed electrical ground power, weight-based efficiency measures, continuous approach and departure, airport collaborative decision making, aerodynamic efficiency opportunities and assisted taxing opportunities • Collaborate to speed up investigating, testing and certification of new efficiency measures • Encourage efficiency action throughout the system • Investigate new approach technologies and procedures at all applicable airports		
Offsetting of aviation carbon footprint	• Support ICAO Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and ensure it continues to evolve • Set long-term CO_2 goal through ICAO • Do not duplicate market mechanisms • Base any domestic measures on CORSIA principles • Promote development of carbon capture and removal opportunities		

AFRAA Sustainable Aviation Fuels (SAF) Task Force

AFRAA is very much aligned with the Aviation industry and all the stakeholders on the actions to contribute towards the long-term aspirational goal (LTAG) of net-zero carbon emissions from aviation by 2050 (ICAO Resolution A41-21). By fulfilling its objectives, the SAF Taskforce will play a crucial role in advancing the sustainable aviation agenda in Africa, contributing and aligning with global efforts in reducing aviation's carbon footprint, and ensuring a greener and more resilient aviation industry for the future.

AFRAA has established in 2023 the **AFRAA Sustainable Aviation Fuels (SAF) Task Force** as a forum for Members, industry experts and stakeholders to deliberate and develop strategies for availing Sustainable Aviation Fuels (SAF) at fair prices to member airlines. The Taskforce aims to accelerate the development, deployment, and adoption of SAF within the African region to reduce greenhouse gas emissions and contribute to the sector's overall environmental sustainability.

Purpose of the AFRAA SAF Task Force

The SAF Taskforce aims to provide strategic guidance, expert recommendations, and actionable solutions to promote the sustainable growth of aviation while mitigating its environmental impact. The Taskforce will collaborate with industry stakeholders, governmental bodies, research institutions, and other relevant organisations to promote, facilitate and accelerate the adoption of SAF across all airlines in the region.

The key objectives of the SAF Taskforce include:

- Promoting public awareness and understanding of SAF to attain support from various stakeholders, including passengers, investors, and the general public.
- Identifying and evaluating the most promising SAF technologies and feedstocks, considering their environmental, economic, and social implications for Africa.
- Developing a comprehensive roadmap for the SAF sector, outlining milestones, targets, timelines and capacity building to facilitate the integration of SAF into aviation operations.
- Creating strategies to make SAF more cost-competitive and encourage its broader adoption by airlines, including exploring partnerships and incentives.
- Recommending policies, incentives, and regulatory frameworks that support the growth and commercialisation of SAF production to meet the aviation fuel needs in the region.
- Encouraging collaboration among key stakeholders, including airlines, fuel producers, airports, governments, and NGOs, to foster innovation and investment in SAF.

Focus areas of the AFRAA SAF Task Force

The SAF Taskforce will focus on the following areas:

a. SAF technologies: Evaluating various technologies for producing SAF, including but not limited to biofuels, synthetic fuels, and renewable hydrogen.

b. Feedstock assessment: Analysing the environmental sustainability and scalability of different feedstocks used in SAF production.

c. Supply chain and infrastructure: Assessing the infrastructure requirements and logistics for producing, blending, and distributing SAF in the African region.

d. Policy and regulatory framework: Review existing policies, and regulations and propose new measures that incentivise the uptake of SAF and engaging with regulatory authorities to advocate for supportive policies, and sustainability certification standards for SAF.

e. Investment and funding: Identifying funding sources and mechanisms to support research, development, and commercialisation of SAF projects in Africa.