

Aircraft Engine and Sustainable Aviation In Africa

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Aviation and Emission

The Aviation industry is generally agreed to produce about 2.5% of all CO₂ emissions by human activities. Realizing the need to continue the important contribution of aviation to economic development of nations without harming the environment further, the aviation industry has set itself a target of net zero carbon emission by year 2050. To achieve this, the industry has anchored this objective on four pillars namely, technology, operational improvements, Infrastructure and offset and market-based measures. Of these options available to reduce the impact of fossil fuel use in air transport, Sustainable Aviation Fuels (SAF) holds the highest potential, at least in the short to medium terms, based on available technologies. It is projected that SAF will contribute about 65% of the target with a short-term target of 10% SAF inclusion by 2030.

Aircraft Engines Leading The Way To Decarbonization

With the use of SAF, as other technologies, the role of engine manufacturers is amplified. Pratt & Whitney, a leading engine manufacturer says to "help reduce aviation's dependence on fossil-based fuels", it is "advancing the use of Sustainable Aviation Fuels (SAF), while also developing novel technologies to support alternative, zero carbon fuels, like hydrogen." All Pratt & Whitney engines are currently compatible with 50% SAF according to the engine manufacturer. Over the years, the efficiency of aircraft engines has improved by over 20% compared to the engines they are replacing. Rolls Royce says "By the end of 2023, all our Trent and Business Aviation commercial aero engine types will be proven compatible with 100% SAF. We have pledged to achieve net zero carbon in our operations by 2030 and play a crucial role in enabling the sectors in which we operate reach net zero by 2050. Our new products will be compatible with net zero operation by 2030 and all our products will be compatible with net zero by 2050, in line with our UN Race to Zero commitment. "

Other technologies that are being pushed by engine manufacturers include use of hydrogen fuels. This according to experts holds much prospects for emission reduction hence the attention it is receiving from engine manufacturers. The technologies are years in coming but will be a step game changer in aviation's emission reduction.

African Airlines in Drive For Fleet Renewal

Though Africa still has one of the oldest average aircraft fleets at 17 years, African airlines have embraced newer technology to cut maintenance cost and to improve customer perception, convenience and attractiveness. Many airlines on the continent have embraced newer technologies which promise lower emissions. Nigeria's Overland Airways recently acquired brand new Embraer 175 making it the only operator of the aircraft type in Nigeria. Air Peace, Ethiopian Airlines, Air Tanzania, Uganda Airlines, Angola Airlines, EgyptAir and Rwandair amongst others. have been involved in fleet renewal with more recent technologies. This is already leading to emission reduction by African airlines and this trend is bound to continue in the coming years.

African Aviation and Sustainable Aviation

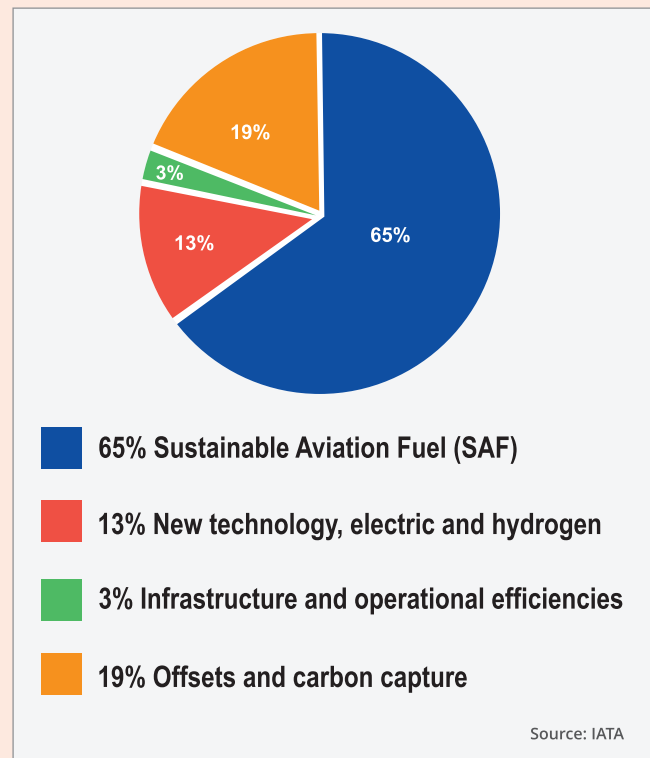
One major challenge for African aviation industry in keying into the emission reduction scheme is the belief that Africa is not a polluter, with some arguing that it is not time to talk about Sustainable Aviation Fuels in Africa. Speaking to Aviation & Allied Business in November 2023, Mr. Chamsou Andjorin, of the African Aviation Industry Group, says Africa "cannot stay away from that" and must be part of the solution. Mr. Abderahmane Berthe, Secretary General of African Airlines Association says he does not agree with this view as "Aviation is global" and Africa must play its role in reducing carbon emission.

African aviation is also growing with the industry projected to double by year 2040. According to Boeing, "Africa's commercial jet fleet will more than double over the next 20 years to 1,550 aircraft." Boeing says "African aviation traffic has recovered at a strong pace in 2023 led by pent-up demand and economic growth driven by higher global commodity prices. African airline flights are currently 8% above pre-pandemic levels. Africa's above global average, long-term annual economic growth of 3.4%, combined with increasing rates of urbanization and a growing middle-class population, will continue to drive Africa's long-term traffic demand. "Economic and growth Initiatives such as the African Continental Free Trade Area and Single African Air Transport Market are expected to further stimulate trade and intra-regional connectivity."

In addition, Africa's major international destinations are in Europe, meaning that many airlines in Africa would be caught up by regulations from other jurisdictions if the continent's airlines do not respond. At the launch of Kenya Airways SAF flight in 2023, the CEO OF Kenya Airways Allan Kilavuka said "From 2025, all aircraft departing from European airports will be required to incorporate a proportion of SAF. As a result, KQ is positioning itself to take advantage of sustainable aviation fuel momentum in accordance with the direction indicated by the European Union with the ReFuelEU Aviation regulation that sets the targets for mixing traditional fuels with increased amounts of more sustainable fuels." However, for many African airlines, who have their plates full already with economic sustainability issues, environmental sustainability has just come to add another layer of challenge.

Challenges of SAF Adoption in Africa

While it is imperative for Africa to join the SAF initiative, many challenges remain. Cost is an issue. Chief Executive Officer of Asky, one the leading airlines in West and Central Africa, Mr. Esayas W. Hailu calls for support for Africa in SAF adoption and ensuring the reduction of price of SAF as SAF is costlier than fossil fuel and this may pose a disincentive for many African carriers. SAF availability is also a major limitation. A Forbes report in 2023 says "The International Aviation Transport Association estimates that airlines will need 120 billion gallons of SAF annually to meet their



environmental targets. The estimated production of SAF in 2022 was 75 million gallons." A rough estimation will put Africa's annual SAF requirement at over 2.5billion gallons annually based on the current market size of aviation in the continent which is put at 2%.

Though SAF is a drop-in replacement for fossil fuel, the huge capital infusion required for production and infrastructure to support SAF production means Africa requires collaboration, assistance in terms of attracting investment in the sector. Calls for sustainable aviation fuel policy across the continent is germane. It is only a matter of time before SAF inclusion and other measures to reduce emission kick in globally. Africa should be ready.

Conclusion

Aircraft engines will continue to play leading roles in the efforts to reduce aviation's emission globally and in Africa. But in Africa, there is need to continue the investment in new aircraft technology as well as improving the air traffic and navigation on the continent. SAF adoption is an area African leaders need to pay attention to by putting in place the enabling environment to attract the needed investment in SAF production. In terms of prospects, it is generally recognized that Africa holds immense potential for SAF production. Therefore, Africa has to be intentional in the investment and siting of SAF production across the continent to ensure that it is not lopsided. There can be no doubt that the continent can play a major role in the SAF value chain. ▣