Japan's Efforts to Introduce SAF

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Introduction

With carbon neutrality by 2050 becoming a world trend in global warming countermeasures, Japan has also declared its commitment to achieve carbon neutrality by 2050 and adopted new greenhouse gas (GHG) reduction targets.

To achieve that, Japan is taking action on various fronts: Japan has participated CORSIA from the beginning and is currently working on measures to further reduce aviation CO_2 emissions.

In addition, Japan chaired a Long-term global aspirational goal Task Group working to develop ICAO's Long-term global aspirational goal (LTAG) for international aviation, which was adopted at the 41st ICAO Assembly as the LTAG aiming for carbon neutrality by 2050.

Japan has set a goal of using 10% SAF of its aviation fuel consumption by 2030, and will continue to steadily work toward this goal, while at the same time striving to foster public understanding and promote international cooperation.

Air Transportation Business Decarbonization Promotion Plan

In order to decarbonize aviation, it is important to support airlines' proactive and planned decarbonization efforts, and JCAB is working to certify an "Air Transportation Business Decarbonization Promotion Plan" based on the Civil Aeronautics Act and other laws.

In January 2024, the two plans of the ANA Group and the JAL Group were first certified, followed by the plans of AIRDO and SKYMARK in November 2024 and March 2025, respectively. The certification process for other airlines is being gradually advanced.

JCAB will support the preparation of plans by airlines to promote the decarbonization of the air transport industry, follow up on the progress of the plans, and steadily promote initiatives to promote the introduction of SAF.

The Public-Private Council for Promoting the Introduction of SAF

In the efforts to reduce CO_2 emissions in the aircraft operation sector, the need to comprehensively and multilaterally examine the direction of Japan's efforts in the aircraft operation sector from the perspective of green recovery, with a view to the future introduction of various technologies and energy sources.

Accordingly, Japan established a study group on CO_2 reduction in the aircraft operation sector. This study group has been analysing the direction of medium to long-term efforts to reduce CO_2 emissions through three approaches:

1. Introduction of new technologies in aircraft and equipment
2. Improvement of flight operation methods by upgrading air traffic control procedures
3. Promotion of the introduction of SAF

To further discussion on promotion of the introduction of SAF, the Public-Private Council for Promoting the Introduction of SAF was established in April 2022. The council is working with private sector such as airlines and oil companies, to discuss ways to promote the introduction of SAF.

Consideration of support and regulations to expand the supply of domestic SAF

In the "Sector-Specific Investment Strategies" developed in December 2023, an investment strategy for SAF was also outlined. The strategy identifies two key directions:

4. Establish a system capable of ensuring sufficient SAF production capacity and a reliable supply chain for feedstocks (including "development import"), enabling the stable supply of SAF at internationally competitive prices.
5. Develop technologies that enable SAF supply, avoiding limitations on feedstocks and technologies, and maximizing the use of domestic and international resources in consideration of feedstock constraints and other factors.

In order to increase the use and supply of SAF, efforts have been made to develop "support measures" through capital investment subsidies using Japan Climate Transition Bonds and tax credits for SAF manufacturers, and "regulations and systems" for the supply side, such as setting supply target volumes in the Act on the Sophisticated Methods of Energy Supply Structures.

A variety of initiatives for promoting SAF

To achieve the goal of replacing 10% of fuel used by domestic airlines with SAF by 2030, JCAB is engaged in a variety of initiatives.

JCAB provided support for the registration and certification of CORSIA-eligible fuel feedstocks, and in 2024, based on a proposal from Japan, non-standard coconut was officially incorporated in ICAO documentation as a new feedstock in the CORSIA framework.

In addition, the General Incorporated Foundation Nippon Kaiji Kyokai (ClassNK) has been approved by ICAO as the third body in the world and the first in Japan to certify sustainability for CORSIA-eligible fuels.

Besides, JCAB worked on developing guidelines to visualize CO_2 emission reductions through the use of SAF for aviation users such as passengers and shippers, and on promoting understanding of efforts to decarbonize aviation among aviation users and others by holding symposiums.

FIGURE 1: ACT FOR SKY partners.

Private sector initiatives

- **Voluntary Organization to Promote SAF in Japan**

  ACT FOR SKY was established in 2022 as a voluntary organization by private sector. Purpose of ACT FOR SKY is to establish SAF entire supply chain in JAPAN including feedstocks, production and off-take.

  Initial members were 16 companies such as airlines, engineering firms, oil companies and various kinds of sector. Membership has been increased to 45 companies and Tokyo metropolitan government as of April 2025.

  ACT FOR SKY members (Figure 1) meet regularly to share the latest information about SAF with inviting experts in various fields. In December 2024, ACT FOR SKY organized the first symposium to announce the activities of ACT FOR SKY members. More than 650 people attended, including online.

In 2025, ACT FOR SKY has achieved a great milestone: members of ACT FOR SKY have started SAF production and completed a SAF supply chain in Japan.

ACT FOR SKY continues to expand SAF supply chain in JAPAN in order to contribute decarbonization of the aviation industry. For more detail information, see ACT FOR SKY's website.[1]

FIGURE 2: Cargo transported under the SAF Flight Initiative being loaded onto an ANA freighter.

- **ANA Group initiatives to decarbonize aviation**

ANA is promoting a variety of initiatives to decarbonize its operations. In recent years, ANA has especially been focusing on taking a pioneering approach to the use of SAF.

One example is the SAF Flight Initiative (Figure 2), the first program of its kind in Asia.

This program responds to requests from companies seeking decarbonized logistics and travel solutions, and aims to reduce CO_2 emissions by collaborating with other entities sharing this goal.

ANA is also working with other airlines, in order to build momentum for decarbonization in the airline industry, and to send a strong signal about the demand for SAF. In October 2021, ANA took initiative and released a joint report with JAL entitled "Toward Virtually Zero CO_2 Emissions from Air Transportation in 2050" to raise awareness and promote the understanding of SAF.

Achieving future decarbonization of aircraft will require understanding and cooperation, not only through public-private partnerships, but also through the active use of decarbonization services by aircraft users. ANA is committed to supporting the growth of both the aviation industry and decarbonization, and to contributing to the growth of society as a whole.

- **JAL Group initiatives to decarbonize aviation**

SAF is the key to incorporate carbon neutral in the aviation industry. Airlines are also making efforts to procure SAF, however, the volume and price are major hurdles for SAF enhancement.

In order to clarify the responsibility of the aviation transport provider and user, the GHG Protocol defines Scope1 and Scope 3 emissions.

This means that aviation carbon reduction should be incorporated not only by Scope 1 emitters, but also together with Scope 3 users (by all the related stakeholder's cooperation (Figure3).

Some mandatory authorities and private initiatives (Task Force on Climate-related Financial Disclosures (TCFD), International Sustainability Standards Board (ISSB), Science Based Targets initiative (SBTi), etc.) are requesting disclosure of those emissions. Additionally, there are requests from aviation users to identify their emission and proof of their contribution to carbon reduction.

FIGURE 3: JAL Sustainable Challenge Flight.

1 https://actforsky.jp/

To comply with those users' requests, JAL started a program to issue "Certificates" to those customers who use aviation transport and contribute CO_2 reduction by SAF, to recognize and prove their contribution to CO_2 reduction, which also works to share SAF cost with customers.

So far, more than 10 companies, mainly freight forwarders, are participating in the program. Airlines continue to work together with society to reduce aviation's carbon emissions.

- **Introduction of SAF at Cosmo Oil**

In December 2024, Cosmo Oil, together with JGC Holdings and REVO International, completed the construction of a SAF plant at the premise of Cosmo Oil Sakai Refinery. This project is Japan's first SAF large-scale project and is subsidized by the New Energy and Industrial Technology Development Organization (NEDO).

Large-scale production will begin in the spring of 2025, and SAF will be supplied to consumers, mainly airlines. This has realized the building of a domestic SAF supply chain.

Also, Cosmo Oil also set a goal of supplying 300,000 kiloliters of SAF annually by 2030. As the next SAF production project, Cosmo Oil, together with Mitsui & Co., Ltd., is planning to commercialize SAF production using bioethanol (Alcohol to Jet) as feedstock at the premise of Cosmo Oil's Sakaide Distribution Terminal, aiming for an annual production of 150,000 kiloliters annually. This project was also selected for a government subsidy in February 2025.

Furthermore, Cosmo Oil is considering importing SAF from overseas in order to establish a stable SAF supply system in the future.

- **The development of SAF supply chain at ENEOS**

ENEOS is taking a great initiative of establishment of both a stable energy supply system and of a carbon-neutral society. As a part of the challenges, ENEOS is developing an integrated SAF supplying system, from feedstock procurement to in-house refining and sales.

In concrete, ENEOS is planning to convert a SAF refinery from an existing refinery in Wakayama. ENEOS especially recognize the collection of feedstock as the most important challenge, so ENEOS is collaborating with the local governments and used cooking oil (UCO) suppliers to establish a collecting network.

ENEOS had also already imported SAF molecule (Figure 4) and started SAF supply for demonstration and pre-marketing purpose in 2024. ENEOS supplied not only physical SAF to airlines but also environmental attributes of Scope 3 emissions to airline users.

Through these activities, ENEOS is doing the best to promote of SAF and contribute to the acceleration in decarbonization of the aviation industry.

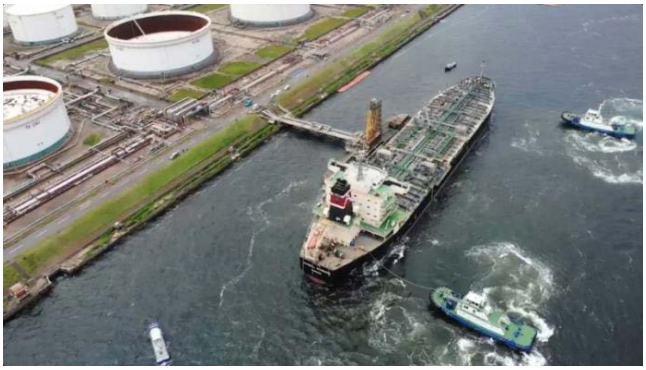

FIGURE 4: The arrival of the SAF import vessel at the ENEOS Kashima Refinery dock.

Conclusion

CORSIA is the only decarbonization scheme in international aviation, and Japan will continue to take measures in accordance with the ICAO framework, including CORSIA.

In addition, toward to increase the use and supply of SAF, JAPAN will work to ensure international collaboration and promote international cooperation.