



**WORKING PAPER**

**ASSEMBLY — 41ST SESSION**

**EXECUTIVE COMMITTEE**

**Agenda Item 17: Environmental Protection – International Aviation and Climate Change**

**DOMESTIC AND INTERNATIONAL ROLES OF ROADMAPS FOR PROMOTING  
DECARBONISATION OF AVIATION**

(Presented by Japan)

**EXECUTIVE SUMMARY**

Decarbonization of international aviation will be needed to meet the temperature limit of the Paris Agreement and prevent irreversible climate change. As such, Japan has been promoting urgent action to reduce international aviation CO<sub>2</sub> emissions. To accelerate these actions, Japan has made various efforts as follows.

- establishment of roadmaps for promoting decarbonisation of aviation;
- amendment of the Civil Aeronautics Act; and
- organizing public-private councils for decarbonization in the aviation sector.

Alongside this, ICAO has several initiatives to support developing countries through the ACT-CORSIA program, etc. Japan expects that the current ACT-SAF programme will also continue to support a global long-term aspirational goal (LTAG), which is expected to be adopted at this Assembly Session. Japan believes that sharing of each State's best practices, including Japan's efforts, will be helpful for Member States to make efforts for decarbonization to achieve a global LTAG.

**Action:** The Assembly is invited to:

- a) note the contents of this working paper;
- b) encourage Member States to share experiences of efforts for decarbonization through ICAO's initiative such as the ACT-SAF program; and
- c) encourage Member States to participate in the ACT-SAF programme.

<i>Strategic Objectives:</i>	This working paper relates to Strategic Objective – <i>Environmental Protection</i> .
<i>Financial implications:</i>	Not applicable
<i>References:</i>	Doc 10140, <i>Assembly Resolutions in Force (as of 4 October 2019)</i> Doc 10178, <i>Report of the High-level Meeting on the feasibility of a Long-Term Aspirational Goal for international aviation CO<sub>2</sub> emissions reductions (HLM-LTAG)</i>

## 1. INTRODUCTION

1.1 CO<sub>2</sub> emissions from the international aviation are equivalent to those from all sectors in Germany or South Korea, and need to be addressed appropriately. The Paris Agreement stipulates to pursue limit the average temperature increase to within 1.5°C and the Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report (AR6) indicates that achieving zero CO<sub>2</sub> emissions by 2050 could limit the average temperature increase to within 1.5°C and reduce the frequency of natural disasters. Proper actions for tackling climate change are necessary. Therefore decarbonization of international aviation will be needed to meet the temperature limit of and prevent irreversible climate change.

1.2 At the 37th Session of the ICAO Assembly in 2010, the global aspirational goal in international aviation of a 2% annual fuel efficiency improvement through 2050 and carbon neutral growth from 2020 onwards was adopted. To achieve this goal, the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) was adopted at the 39th Session of the ICAO Assembly in 2016, and ICAO Annex 16, Volume IV, which stipulates SARPs to implement CORSIA, was adopted in 2018. In addition, based on the discussion at the CAEP LTAG-TG in accordance with Assembly resolution A40-18, a long-term aspirational goal will be discussed and is expected to be adopted at the 41st session of the ICAO Assembly.

1.3 Japan fully supports ICAO's environmental efforts, and from the point of view that decarbonization in international aviation is an urgent issue, Japan has been promoting urgent action to reduce international aviation CO<sub>2</sub> emissions. In Japan, CORSIA's Monitoring, Reporting and Verification (MRV) system was introduced for aeroplane operators in accordance with relevant SARPs adopted in 2018 and also the carbon offsetting requirements were introduced in 2020 by amending its domestic regulations as a voluntary participating State. In addition, the target for decarbonization in the field of domestic aviation have been established in a Japanese domestic comprehensive plan against global climate change.

1.4 This working paper introduces Japan's efforts, including the establishment of roadmaps for promoting decarbonization of aviation and the target of Sustainable Aviation Fuel (SAF) deployment as a concrete action, and discusses contributions to ICAO's effort for decarbonization of international aviation.

## 2. JAPAN'S EFFORT IN THE DECARBONIZATION OF AVIATION

### 2.1 Establishment of roadmaps for promoting decarbonization of aviation

2.1.1 In order to contribute to ICAO's actions for decarbonization and maintain an international aviation network, it is imperative to accelerate relevant actions for reductions of CO<sub>2</sub> emissions. To discuss solutions between the government and industries, Japan established the Study Group on CO<sub>2</sub> Reduction in the Aircraft Operation Sector to consider emission reduction measures from the following three approaches in March 2021.

- a) introduction of new technologies into aircraft and equipment;
- b) improvement of flight operation by renovating air navigation service; and
- c) promotion of the introduction of SAF.

2.1.2 After intense discussions at the committee, three roadmaps for technology, operations and SAF, including each future work plan and schedule were agreed and published in December 2021. The roadmaps promote smooth and steady progress of work to proceed various actions of decarbonization in the aviation sector, which have to be taken by stakeholders and their timeline. Moreover, while huge amounts of investment are required, it is anticipated to attract investments to the aviation sector by clarifying a certain schedule of decarbonization actions.

2.1.3 The roadmap for introduction of new technologies related to aircraft and equipment is shown in Fig.1 of the Appendix. In this roadmap, development of safety standards including international standardization are proceeding in order to promote early introduction of new technologies related to electrification, hydrogen-powered aircraft and weight reduction/optimization.

2.1.4 Figure 2 of the Appendix shows the roadmap for improvement of flight operations by renovating air navigation services. Japan will take measures that improve efficiency in each operational phase and totally optimize the flow of air traffic for reducing CO<sub>2</sub> emissions and responding to the increase of air traffic in the future as well.

2.1.5 The roadmap for promotion of the introduction of SAF is shown in Figure 3 of the Appendix. It is essential to promote the use of SAF to develop, manufacture and deploy domestically produced SAF in a prompt manner, therefore, Japan has taken relevant actions to build supply chains to utilizing SAF including imported SAF in domestic/international aviation. In addition, the committee set a concrete target for volume of SAF usage to steadily promote supply, which is "replacing 10% of the fuel consumption by the Japanese airlines with SAF by 2030". In Japan, projects for SAF production by oil companies have been officially announced one after another from the beginning of 2022, and it should be pointed out that establishment of concrete numerical target regarding SAF by State has promoted projects by oil companies.

## 2.2 **Promotion of actions in accordance with roadmaps**

2.2.1 In order to promote actions towards decarbonization of aviation in these three fields, in accordance with these roadmaps, it is required that not only the aviation sector but also various stakeholders from the public and private sectors make efforts collaboratively. To enhance the relationship between stakeholders and promote necessary actions, Japan established private-public councils in each field in 2022. Stakeholders from both public sector (relevant ministries and agency) and private sector (manufacturer, air-carriers etc.) join the private-public councils and they discuss issues to implement decarbonization actions of each field collaboratively.

## 2.3 **Other effort: amendment of the Civil Aeronautics Act, etc.**

2.3.1 In addition to the above mentioned actions, the Japanese Civil Aeronautics Act and other legislation were amended in June 2022. It stipulated that the Minister of Transport establishes the Basic Policy for decarbonization in the field of aviation based on this amendment. In the Basic Policy, a target for decarbonization in aviation and actions to be taken by stakeholders are included. The Japanese aeroplane operators and airport administrators may establish their own Decarbonization Plan in accordance with the Basic Policy and acquire Ministerial approval that results in promotion and facilitation of effort for decarbonization by various stakeholders. Japan promotes further decarbonisation in aviation by utilizing this framework as well.

### **3. ICAO'S INITIATIVE TO ASSIST IN DECARBONIZATION AND JAPAN'S CONTRIBUTION TO IT**

3.1 In light of the basis that aircraft is able to fly across national borders and can be registered under any State, it is necessary that decarbonization of international aviation is achieved collectively and each State works collaboratively. To realize this, assistance, especially for developing countries, is essential. Based on these points of view and non-discrimination principles of ICAO, ICAO has been implementing capacity building activities for the decarbonization of international aviation through Assistance Capacity-building and Training for CORSIA (ACT-CORSIA). Japan fully supports ICAO's initiative for capacity building activities regarding decarbonisation and has been providing technical assistance to six countries through the ACT-CORSIA Buddy Partnership program.

3.2 Regarding a long-term aspirational goal (LTAG), which is expected to be adopted at this Assembly session, support for developing countries toward achieving an LTAG continue to be essential. In this regard, the necessity of support and a cooperation program dedicated to a LTAG, in order to share information on the best practice and provide guidance, were described in the conclusion of LTAG-HLM, which was held this July.

3.3 As part of this effort, ICAO launched Assistance, Capacity-building and Training for Sustainable Aviation Fuels (ACT-SAF) on 1 June 2022, in order to assist States to develop their potential in SAF development and deployment. Japan would like to actively contribute to the ACT-SAF programme. Moreover, it is mentioned that the ACT-SAF program should be extended to the ACT-LTAG programme in the conclusion of LTAG-HLM.

3.4 Japan recognizes that Japan's efforts for establishment of a roadmap and collaborative work involving the non-aviation sector mentioned in section 2.1.5 and 2.2 could be useful examples for other States, which intends to extend development and deployment of SAF. ICAO mentions the importance of the State Action Plan as a tool to monitor each State's progress of decarbonisation. Japan's roadmap and relevant experience could be useful examples when each State establishes or revises its State Action Plan. Also, Japan recognizes that utilization of its experience regarding other efforts toward decarbonization may be helpful when other States implement work for decarbonization in the aviation sector. Japan would like to contribute to the decarbonization of the overall aviation sector through activity such as sharing experiences and knowledge through ACT-SAF and so on.

### **4. CONCLUSION**

4.1 In order to implement decarbonization in the aviation sector, the establishment of a roadmap is beneficial in light of the promotion of stakeholders' efforts, and especially participation of the non-aviation sector stakeholders and attraction of investments are anticipated as well.

4.2 Moreover, sharing such knowledge and experience of each State with other States is beneficial for implementing decarbonization in the aviation sector, especially in implementing works toward achievement of a LTAG in light of capacity building activities.

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APPENDIX

JAPAN'S ROADMAPS FOR PROMOTING DECARBONIZATION OF AVIATION

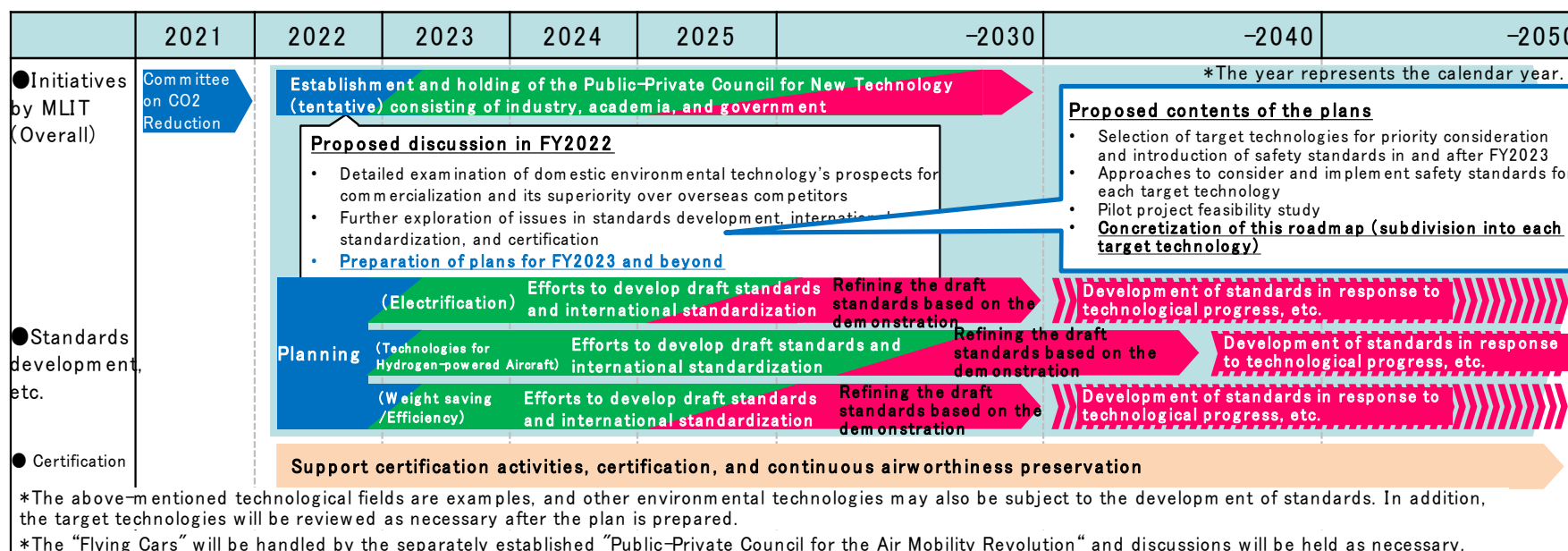


Fig.1 Roadmap for introduction of new technologies into aircraft and equipment



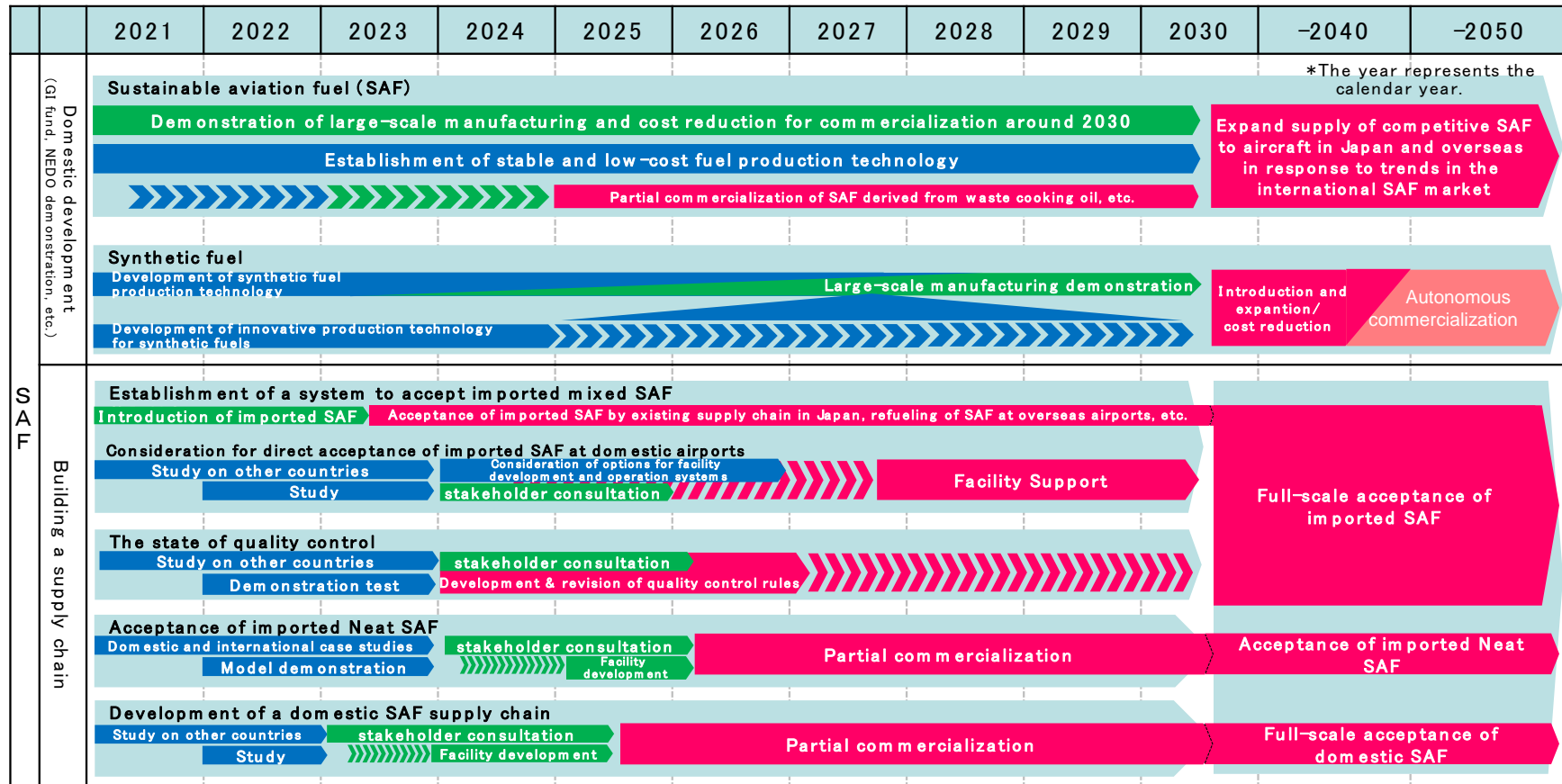


Fig.3 Roadmap for promotion of the introduction of sustainable aviation fuel (SAF) (Part I)

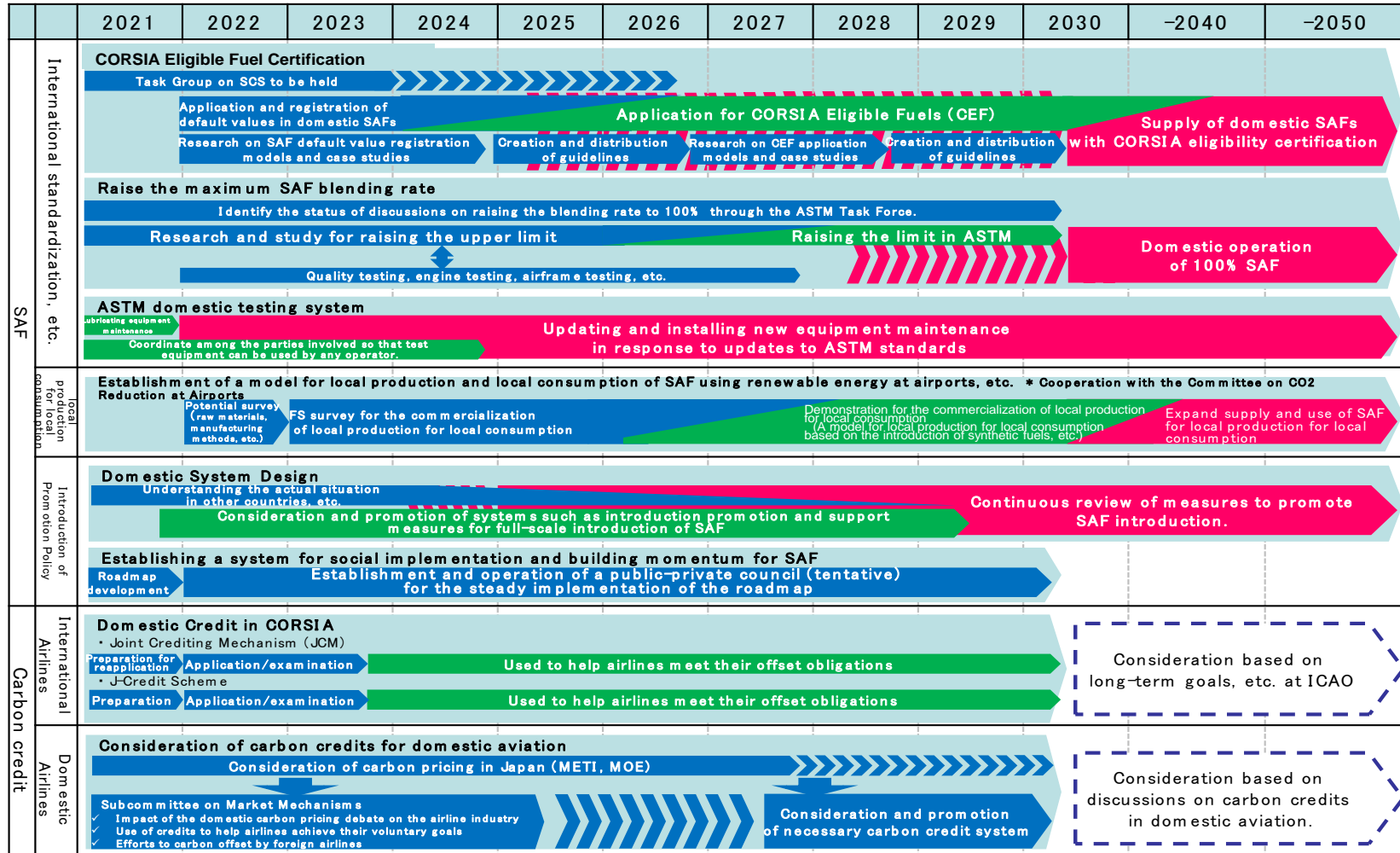


Fig.3 Roadmap for promotion of the introduction of sustainable aviation fuel (SAF) (Part II)