

**61ST CONFERENCE OF
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AGENDA ITEM 4: AIR NAVIGATION

**JAPAN'S EFFORTS ALIGNED WITH NATIONAL AIR
NAVIGATION PLAN (CARATS2040)**

(Presented by Japan)

INFORMATION PAPER

SUMMARY

Japan established its National Air Navigation Plan (Collaborative Actions for Renovation of Air Traffic Systems / CARATS2040), with 2040 as the target year, in June last year. In line with the CARATS2040, Japan has been implementing various initiatives aimed at achieving sustainable air transportation and other goals. This paper provides an overview of some of these initiatives.

JAPAN'S EFFORTS ALIGNED WITH NATIONAL AIR NAVIGATION PLAN (CARATS)

1. INTRODUCTION

1.1 Japan established CARATS (Collaborative Actions for Renovation of Air Traffic Systems), its national air traffic plan, in 2010 with a target year of 2025, and has been taking a wide range of initiatives, including the reorganization of domestic air traffic control airspace, the introduction of data communications, the upgrading of communication, navigation, and surveillance technologies and information systems, as well as operational improvements leveraging these technologies.

1.2 Since the establishment of CARATS, the environment surrounding Japan's air traffic system has undergone significant changes. These include the growth in aviation demand, shifts in air user preferences due to the COVID-19, diversification of airspace usage needs, increasing demand for decarbonization, evolution of digital technologies, the progression of demographic challenges such as declining birthrate and aging population, growing instability of international situation, and the intensification and increased frequency of natural disasters.

1.3 To respond effectively to these changes in circumstances, we formulated a new CARATS (CARATS2040) last June, with 2040 as the target year.

https://www.mlit.go.jp/koku/carats/rdk40188/wp-content/uploads/2026/04/CARATS2040_EN.pdf

2. DISCUSSION

2.1 CARATS2040 is committed to promoting various initiatives aligned with the following six strategic directions.

1) Enhancement of safety and security measures

- Monitoring and detection of hazardous situations using technologies such as image and voice recognition
- Mutual surveillance between aircraft using ADS-B
- Safety measures that take into account emerging air mobility

2) Realization of trajectory-based operations (TBO) for optimal aircraft operations

- Transition to time-based operations
- Pre-flight and real-time trajectory adjustment

3) Realization of sustainable air transport

- Introduction of fuel-efficient flight procedures
- Improvement of flight operations based on decarbonization promotion plans

4) Effective use of airspace to accommodate diversified air mobility

- Increase airspace capacity through optimization of ATC resource allocation, etc.
- Flexible routing to meet operator needs
- Establishment of operational rules, etc. that account for the characteristics of emerging air mobility

5) Enhancement of resilience

- Enhancement of CNS resilience

- Early recovery through information sharing following an incident

6) Strengthening international cooperation and promoting overseas deployment

- International traffic flow management
- Realization of TBO and overseas deployment of air traffic control and CNS systems

2.2 With regard to 3) Realization of sustainable air transport, we have been working to improve flight operations through measures such as the advancement of air traffic control systems, with the goal of achieving carbon neutrality by 2050. Specifically, we have committed to steadily advancing the various initiatives currently being implemented under CARATS2040, such as increasing flexibility in selecting flight routes with minimal detours and in choosing altitudes and routes for each phase of flight—including enroute, departures and arrivals, and airport operations. Furthermore, we are advancing initiatives to enhance the air traffic management system in order to achieve optimal aircraft operations.

2.3 In addition, to further promote the widespread adoption of decarbonization initiatives among domestic air carriers, we have been furnished with the case studies of measures currently implemented by these air carriers. Combining these with initiatives undertaken by Japan Civil Aviation Bureau, as the air navigation services provider, we have formulated the “Decarbonization Booklet for Operational Improvements”, which brings together effective measures for reducing CO2 emissions. This booklet introduces representative examples of effective CO2 reduction measures, primarily categorized by phases such as pre-departure, in-flight, and descent. The first edition is available on the CARATS website. Through the CARATS2040 framework, we will progressively update the content.

2.4 In parallel, we are committed to promoting research and development and human resource development, which are vital foundations for the six initiatives outlined above.

2.5 As part of these initiatives, we organized the “CARATS2040 Promotion Forum” and the “CARATS2040 Challenge Competition” last November. The former provided a forum for collaboration among Industry, Academia, and Government, featuring keynote speeches by an academic expert and research presentations by institutes, while also promoting broader awareness of the CARATS2040 initiative. The latter was a competition in which students submitted ideas to contribute to the developments of the air navigation sector and then gave presentations on their proposals. At its first forum and competition, research findings related to operational optimization were shared by Japanese institutes and other organizations, and students also presented ideas for improving operational efficiency. It is important to identify the latest insights, trends in technological developments, and market needs through exchanges and interactions with universities, institutes, and other organizations. Accordingly, we will continue to organize these events.

2.6 In this IP, we have outlined several initiatives aligned with CARATS2040, particularly those aimed at improving flight operation. Through the PDCA cycle in line with this national plan, we remain committed to strengthening safety and security measures, while also aiming to realize Trajectory Based Operations and sustainable air transport, as well as enhancing the effective use of airspace and resilience. Furthermore, we will endeavor to forge convenient and sustainable air traffic systems with safety as our top priority, under international collaboration and cooperation.

3. ACTION BY THE CONFERENCE

3.1 The Conference is invited to note the information contained in this Paper.