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PROGRESS OF SUSTAINABLE AVIATION FUELS (SAF) PILOT IN CHINA

(Presented by China)

EXECUTIVE SUMMARY

Sustainable Aviation Fuels (SAF) is an alternative aviation fuel made from renewable raw materials or waste materials. It needs to pass airworthiness certification and sustainable certification and serves as sustainable substitute for fossil fuels. For the international aviation industry to achieve carbon neutrality, the widespread application of SAF with full lifecycle carbon reduction or carbon negative is one of the most effective approaches. The development of SAF involves the coordination of multiple fields such as raw material supply, production technology, infrastructure, and policy systems. It requires balancing technical feasibility, economic efficiency, and environmental sustainability to achieve commercialization and large-scale application in an orderly and gradual manner. The resource endowments of different countries will lead to diversification of their respective industrial development approaches. Based on each country's energy structure, industrial foundation, and emission reduction requirements, it is essential to avoid the negative effects brought by radical promotion. It is necessary to research and construct a suitable technical roadmap and industrial ecosystems to avoid systemic risks brought by the promotion of a single solution. China launched the SAF pilot in September, 2024, systematically advancing practical research on key aspects such as the fuel supply, quality certification, carbon reduction assessment mechanism, and policy coordination mechanism, aiming to provide practical experience for the global aviation industry and jointly promote the achievement of global aviation sustainability goals.

<i>Strategic Goals:</i>	This working paper relates to the Strategic Goal – <i>Aviation is Environmentally Sustainable</i>
<i>Financial implications:</i>	Promote the economic enhancement of sustainable aviation fuel applications
<i>References:</i>	

¹ English and Chinese versions provided by China

1. INTRODUCTION

1.1 China launched the application of (Sustainable Aviation Fuels) SAF pilot on September 19, 2024, which was carried out in two phases. In the first phase, 12 flights from Air China, China Eastern Airlines and China Southern Airlines, departing from Beijing Daxing International Airport, Chengdu Shuangliu International Airport, Zhengzhou Xinzheng International Airport and Ningbo Lishe International Airport, regularly refuel SAF. This phase focuses on SAF supply systems, fuel quality monitoring, and flight data monitoring, aiming to establish and improve relevant working processes. The first phase of the pilot ended on February 28, 2025, with the safety and reliability of SAF application, work coordination, and process effectiveness fully verified. It actively promoted SAF production capacity layout, support policy research, and standard platform construction, laying a solid foundation for subsequent SAF industry development and large-scale application.

1.2 Starting from March 19, 2025, the second phase of the SAF pilot continued, further expanding the pilot scope based on the first phase. All domestic flights of domestic airlines departing from Beijing Daxing International Airport, Zhengzhou Xinzheng International Airport, Chengdu Shuangliu International Airport and Ningbo Lishe International Airport are regularly refuelling with SAF using the 'Book and refuelling'² pattern, focusing on verifying the effectiveness of 'Book and refuelling', with policy research, cost optimization, and certification system construction, to accelerate the formation of the SAF market.

1.3 In addition, in order to promote the application and promotion of SAF, international cooperation of SAF related areas, including trade cooperation, infrastructure construction, and standard mechanism mutual recognition, is also one of the key tasks of China's SAF pilot.

2. DISCUSSION

2.1 The development of SAF involves the coordination of multiple fields, such as raw material supply, production technology, infrastructure, and policy system, requiring a balance of technical feasibility, economic efficiency, and environmental sustainability. The common challenges faced by the global aviation industry in promoting the development and large-scale application of SAF are high application costs and lack of diversity in raw materials and production technologies.

2.2 The resource endowments of different countries will directly lead to diversification of their respective industrial development approaches. Based on each country's energy structure, industrial foundation, and emission reduction requirements, it is essential to avoid the negative effects brought by radical promotion. It is necessary to research and construct suitable technical roadmap and industrial ecosystems to avoid systemic risks brought by the promotion of a single solution.

2.3 To address the key issues hindering the development and large-scale application of the SAF industry, and to establish a development roadmap and industrial ecosystem in light of national conditions, China's SAF pilot has conducted research in the following aspects.

2.3.1 Strengthen research on supportive policies. Considering the structure of the SAF industry chain, price structure, and existing policies, and taking into account factors such as emission reduction effectiveness and industry affordability, research has been conducted to build an autonomous SAF pricing

² Book and refuelling: A limited number of airports provide physical SAF supply. Based on the total amount of physical supply, airlines are able to purchase (consume) SAF without considering physical delivery and claim related emission reductions.

mechanism. Proposals have been made for supportive policies, such as fiscal and tax incentives, cost relief, and import-export trade, to promote industrial development. The goal of blending ratios suitable for China's conditions has been proposed, with gradually forming a SAF policy system.

2.3.2 Pilot 'Book and refuelling' pattern. Fully utilizing the integrated national operation function of centralized procurement, storage, and supply of aviation fuel in China's civil aviation, China is promoting the implementation of 'Total Quantity Control' for SAF nationwide and developing a centralized registration system to ensure traceability and verifiability of data throughout the entire process. These measures aim to improve supply efficiency, reduce supply costs and in-process emissions.

2.4 An Innovative SAF safety management scheme has been implemented to ensure Sustainable Aviation Fuels (SAF) quality and safety through airworthiness certification. A complete regulatory framework covering fuel specifications, production, and supply chain has been established across the entire value chain. As of July, airworthiness certification has been granted to four SAF producers: Sinopec Zhenhai Refining & Chemical, Henan Junheng, Shandong Sanju, and Zhejiang Jiaao, with certified production capacity reaching 600,000 tons annually. Throughout pilot applications, rigorous supervision of both production and supply enterprises has been enhanced to guarantee SAF operation safety in demonstration projects.

2.5 Research has been carried out in the field of sustainable certification as follows.

2.5.1 Regarding the issue of significant deviations in assessment results caused by the use of different models and processing approaches for ILUC and CLCA, research on a full life cycle emission assessment model oriented to the entire industrial chain has been conducted, thereby ensuring that the sustainability assessment of SAF is more accurate and faster.

2.5.2 For lack of consideration to the traceability and quantitative assessment of carbon sequestration effects of by-products from SAF production, research on carbon sequestration modelling and their contribution to SAF full life cycle emission modelling have been conducted, expected to greatly support the implementation of carbon offsetting mechanism.

2.5.3 Through research on SAF full life cycle emission modelling, the data collection and analysis process have been optimized, data quality and sustainability standards are improved, and the efficiency of sustainability certification are enhanced.

2.5.4 In terms of calculation methods and models for life cycle emissions, carbon footprint accounting model based on the hydroprocessing technology of esters and fatty acids has been constructed³, and aviation fuel carbon footprint accounting database construction has initiated to support the visibility, traceability, and credibility of accounting results.

2.5.5 Efforts are being stepped up to advance the development of a sustainability certification system and an operation system for aviation fuels. The formulation of system documents has been initially completed and passed for expert reviewing, and a lifecycle traceability information system for SAF is being established based on technologies such as big data and blockchain.

³ *Greenhouse Gases – Quantification Requirement and Method of Product Carbon Footprint - Aviation Fuel - Part 1: General Principles (MH/T 6138.1-2025)* and *Greenhouse Gases - Quantification Requirement and Method of Product Carbon Footprint - Aviation Fuel - Part 2: Synthesized Paraffinic Kerosine from Hydroprocessed Esters and Fatty Acids (MH/T 6138.2-2025)*

3. CONCLUSION

3.1 China's SAF pilot has sent positive signals to the global civil aviation market, further stimulating market demand for SAF and motivation for production investment, effectively expanding SAF production scale and promoting cost reduction. Through the pilot, China has initially studied and proposed a policy system, certification standards, supply models and development goals that suit its national conditions and resource endowment characteristics, contributing new solutions for the diversified development of global SAF.

3.2 In the future, China will focus on key issues that hinder the development and large-scale application of the SAF industry. By improving the policy system, enhancing the diversity of SAF production technologies, optimizing production capacity layout, reducing the costs of SAF production and application, and exploring and improving supply models and emission reduction assessment mechanisms, China will provide diversified solutions to promote the achievement of global aviation sustainable development goals.

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