International Civil Aviation Organization

MIDANPIRG/22 & RASG-MID/12 Meetings

(Doha, Qatar, 4 – 8 May 2025)

Agenda Item 7: Any other Business

CLEARED FOR TAKEOFF: THE INTRODUCTION OF SAF IN SAUDI ARABIA

(Presented by Saudi Arabia)

SUMMARY

This paper outlines APSCO's & GACA pioneering role in advancing Sustainable Aviation Fuel (SAF) deployment in Saudi Arabia, supporting Vision 2030 and Net Zero 2060 goals. In response to the projected tripling of aviation emissions by 2050, Saudi Arabia joined ICAO's CORSIA framework, with mandatory compliance beginning in 2027. APSCO, alongside GACA, achieved a major milestone by delivering and storing the first certified SAF supply at Red Sea International Airport (RSI) in October 2024.

The SAF, sourced from HEFA-SPK and certified under ISCC-EU standards, maintained a high greenhouse gas savings rate of 91.5% after accounting for minimal shipping emissions. APSCO implemented a strict segregation model to maximize lifecycle emissions reductions, supported by its SAF Quality Manual.

While APSCO explores local SAF production, challenges such as regulatory differences and restrictions on used cooking oil commercialization persist. The meeting is invited to discuss scaling SAF deployment nationwide and enhancing sector collaboration.

Action by the meeting is in paragraph 3

REFERENCE

- **THE ARABIAN PETROLEUM SUPPLY COMPANY (APSCO). (2024).** ***APSCO SAF QUALITY MANUAL (INTERNAL DOCUMENT).***
- **ICAO. (2019).** ***CORSIA IMPLEMENTATION ELEMENTS.*** **RETRIEVED FROM HTTPS://WWW.ICAO.INT/ENVIRONMENTAL-PROTECTION/CORSIA/PAGES/DEFAULT.ASPX**
- **ISCC SYSTEM GMBH. (2023).** ***ISCC EU CERTIFICATION SYSTEM FOR SUSTAINABLE BIOFUELS.*** **RETRIEVED FROM HTTPS://WWW.ISCC-SYSTEM.ORG/**

1. INTRODUCTION

1.1 Aviation and transportation emissions are major contributors to climate change, with projections suggesting that aviation-related emissions could triple by 2050 compared to 2015 (up to a four-fold rise versus 2018 in some scenarios).

1.2 In response, governments —including Saudi Arabia—have introduced policies to support the transition to cleaner fuels. Saudi Arabia's participation in ICAO's Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) underlines its commitment to decarbonizing aviation, with CORSIA's mandatory (second) phase beginning in 2027.

1.3 In alignment with Saudi Arabia's Vision 2030 and Net Zero 2060 targets, the Arabian Petroleum Supply Company (APSCO) & GACA led a landmark initiative by successfully delivering and storing the first supply of SAF at Red Sea International Airport (RSI) in October 2024. This achievement marked a historic milestone for the Kingdom, positioning it as an early mover in the regional aviation sector's decarbonization efforts and setting a tangible foundation for achieving greener skies.

2. DISCUSSION

The Sustainable Supply Chain and Quality Assurance

2.1 APSCO's comprehensive strategy involved sourcing HEFA-SPK–based SAF, utilizing sustainable feedstocks such as used cooking oil (UCO) and animal-fat residues. The SAF supply chain adhered strictly to ISCC-EU standards, ensuring full traceability and environmental compliance from production to point of delivery. The fuel was loaded at Terminal Ghent, Belgium, into ISO containers under tightly controlled conditions.

2.2 To minimize the environmental impact associated with transport, APSCO strategically opted for large-vessel shipping, maximizing container capacity per voyage and thereby reducing the relative shipping emissions per container. For the initial SAF delivery, shipping emissions were estimated at only 0.0167 kg CO_2 per liter, resulting in a very minor adjustment to the overall sustainability profile. The original greenhouse gas (GHG) savings of 92% compared to conventional fossil jet fuel were marginally reduced to 91.5% after accounting for shipping activities. This negligible 0.5% reduction further underscored APSCO's commitment to optimizing sustainability across the entire supply chain while ensuring the successful delivery of certified SAF to Red Sea International Airport.

2.3 The operational implementation at RSI was reinforced by APSCO's internally developed SAF Quality Manual, a comprehensive guide ensuring that every batch of SAF met or exceeded ASTM D7566 and ASTM D1655 specifications. This manual sets out rigorous inspection, sampling, storage, and handling protocols designed to preserve the integrity of SAF across multiple handling stages, safeguarding both performance and environmental benefits.

Operational Model and Impact Assessment

2.4 APSCO implemented a strict segregation model for SAF handling at Red Sea Airport, ensuring that sustainable aviation fuel was stored, managed, and delivered completely separate from conventional jet fuel. This approach enables airlines to claim the full life-cycle emissions reductions associated with each liter of SAF consumed, without the need for administrative balancing against fossil fuel volumes. By adopting a dedicated segregation strategy, APSCO reinforced its commitment to maintaining the highest standards of traceability, environmental integrity, and regulatory compliance, fully aligning with the expectations of both airlines and international sustainability frameworks.

2.5 The environmental and economic impacts of APSCO's first SAF deployment at Red Sea Airport were profound. Over the initial five-year period, the SAF supplied was projected to avoid more than 31,559 tonnes of CO_2 emissions, substantially supporting Saudi Arabia's decarbonization objectives. Moreover, the integration of electric refueling vehicles and solar-assisted infrastructure at RSI further enhanced emissions reductions, establishing the airport as a model for sustainable aviation hubs in the region.

2.6 Beyond direct emissions savings, APSCO's SAF initiative contributed to broader national goals by promoting energy diversification, reducing dependency on subsidized fossil fuels, and advancing Saudi Arabia's position as a global leader in sustainable innovation. The project embodied a clear manifestation of the Kingdom's Vision 2030 commitment to renewable energy, environmental stewardship, and sustainable economic growth.

Local SAF Production Initiative and Standards Challenge

2.7 In parallel with these achievements, APSCO is actively studying the development of a local Sustainable Aviation Fuel production facility within Saudi Arabia. This strategic project aims to localize SAF manufacturing by leveraging domestic feedstocks and advanced refining technologies, further strengthening the Kingdom's energy-diversification agenda.

2.8 A significant challenge facing sustainable aviation fuel lies in the absence of globally harmonized standards for SAF production and certification. Variations between regulatory frameworks—where a fuel specification approved in one region, such as the United States, may not align with European or other international requirements—create complexities that must be carefully managed to ensure broad acceptance and marketability of SAF. Additionally, in the local context, the existing ban on the commercial sale of used cooking oil (UCO) in Saudi Arabia presents a further obstacle, limiting access to a critical feedstock that is widely used in the production of internationally certified SAF. Overcoming these regulatory and feedstock sourcing challenges will be essential to supporting the sustainable growth of SAF supply within the Kingdom.

2.9 Despite these challenges, APSCO remains committed to advancing sustainable aviation-fuel solutions and positioning Saudi Arabia as a global leader in clean-energy innovation.

2.10 The successful implementation and operational deployment of SAF at Red Sea International Airport reflect Saudi Arabia's forward-thinking approach to aviation sustainability. APSCO's comprehensive strategy, including rigorous environmental compliance, optimized transportation logistics, and robust operational standards, lays a solid foundation for the Kingdom's sustainable aviation future. This initiative supports national decarbonization goals and demonstrates Saudi Arabia's readiness for global leadership in sustainable aviation

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

a) note the significant achievement in sustainable aviation fuel deployment at Red Sea International Airport;

b) discuss opportunities for regional collaboration and further development of sustainable aviation initiatives; and

c) agree on recognizing and supporting similar sustainability efforts within the region.

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