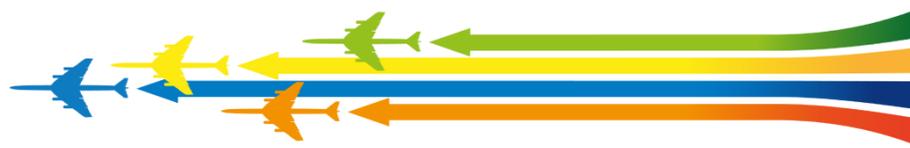




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ICAO Global Aviation Partnerships on Emissions Reductions (E-GAP)

BIOjet Abu Dhabi: Flight Path to Sustainability, The Roadmap

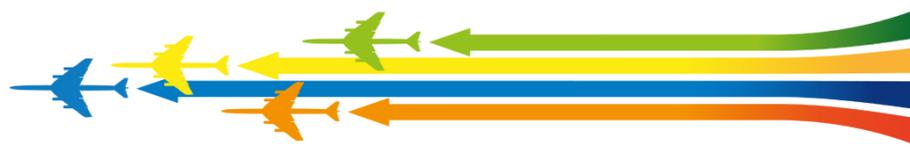
Eng. Maryam Al Balooshi

UAE



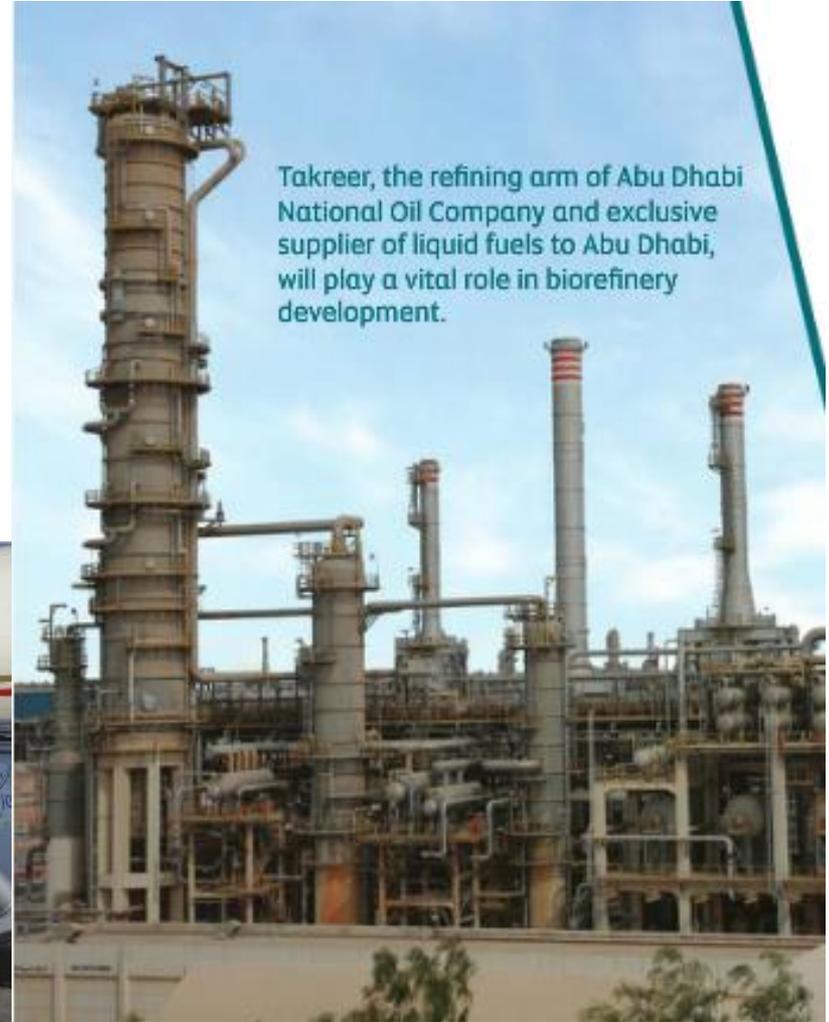
Background:

- Etihad Airways, Boeing, Takreer (the Abu Dhabi National Refining Company), Total, and the Masdar Institute of Science and Technology joined forces to develop a framework for a sustainable aviation biofuel industry in the UAE.
- BIOjet Abu Dhabi was announced one day after Etihad Airways conducted a demonstration flight with a Boeing 777 powered in part by the first UAE-produced aviation biofuel from an innovative plant biomass-processing technology.



Background:

- the biofuel for the flight was made from plant based diesel provide by Amyris, which is partly owned by TOTAL, and refined to jet fuel standard at the Takreer Research Centre.
- the partners worked with the GCAA to gain permission for this flight

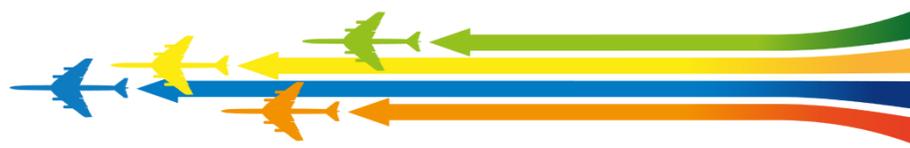




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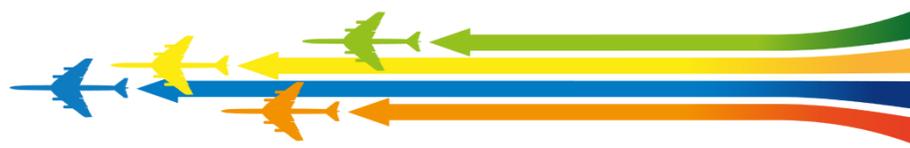
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Roadmap Structure:

The Roadmap outlines the actions needed to develop a commercially viable alternative aviation fuel industry:

1. The reasons behind the decision to support and drive a sustainable alternative fuel industry.
 - The strong sustainability commitments of Abu Dhabi and the UAE coupled with the commitments of aviation industry; and
 - The industry has set ambitious environmental goals, including its aim for carbon neutral growth after 2020.



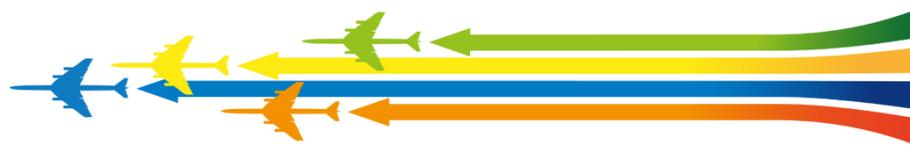
Entities that were engaged in the roadmap report;

- Abu Dhabi National Oil Company Distribution
- Department of Economic Development
- Center for Waste Management (Tadweer)
- Department of Transport
- Environment Agency Abu Dhabi
- Etihad Airways
- Emirates Wildlife Society in association with WWF
- **General Civil Aviation Authority**
- Masdar – Special Projects Unit
- Masdar Institute of Science and Technology
- Ministry of Environment and Water
- Ministry of Foreign Affairs
- Regulation & Supervision Bureau
- Roundtable on Sustainable Biomaterials
- Takreer
- Total
- The Boeing Company
- Urban Planning Council



Cont-Roadmap Structure:

2. The need to follow strict sustainability credentials such as those laid down by Sustainable Aviation Fuel Users Group and the Roundtable on Sustainable Bioenergy.
3. The emergence of alternative fuels for aviation—how the industry has collaborated and moved rapidly to have a number of technology pathways approved to produce aviation fuel.



Cont-Roadmap Structure:

4. Feedstock opportunities in Abu Dhabi with the report identifying three potential sources;

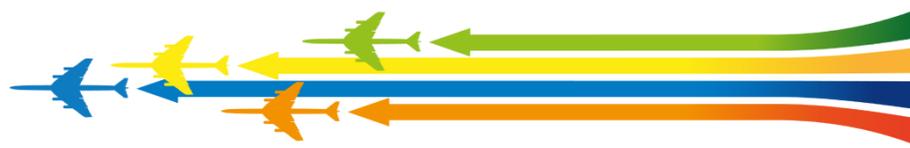
- seawater energy and agriculture system (Masdar Project)
- Municipal solid waste; and
- Biomass from existing legacy forest areas.



Cont-Roadmap Structure:

5. Conversion technologies; recognising the need for pre-processing steps such as oil extraction from plants, and the subsequent conversion processes to eventually produce a fuel that meets the jet fuel specification.

6. The need for policy implements is suggested, to assist in ensuring a competitive industry and provides some examples of how policy mechanisms have assisted biofuel projects elsewhere.



Conclusions:

- The next step for BIOjet Abu Dhabi is to address the actions recommended in the roadmap (www.etihad.com/CSR).
http://resources.etihadairways.com/etihadairways/images/E_Book/html/Biojet_AbuDhabi_English.html#24
- To work with existing stakeholders and expanding to others who can assist or influence the journey into the commercial development of a new innovative industry.



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UAE Partners multiplying environmentally sustainable aviation action



United Arab Emirates



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GENERAL CIVIL AVIATION AUTHORITY



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وزارة الخارجية
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Government of Sharjah
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مطار الفجيرة الدولي
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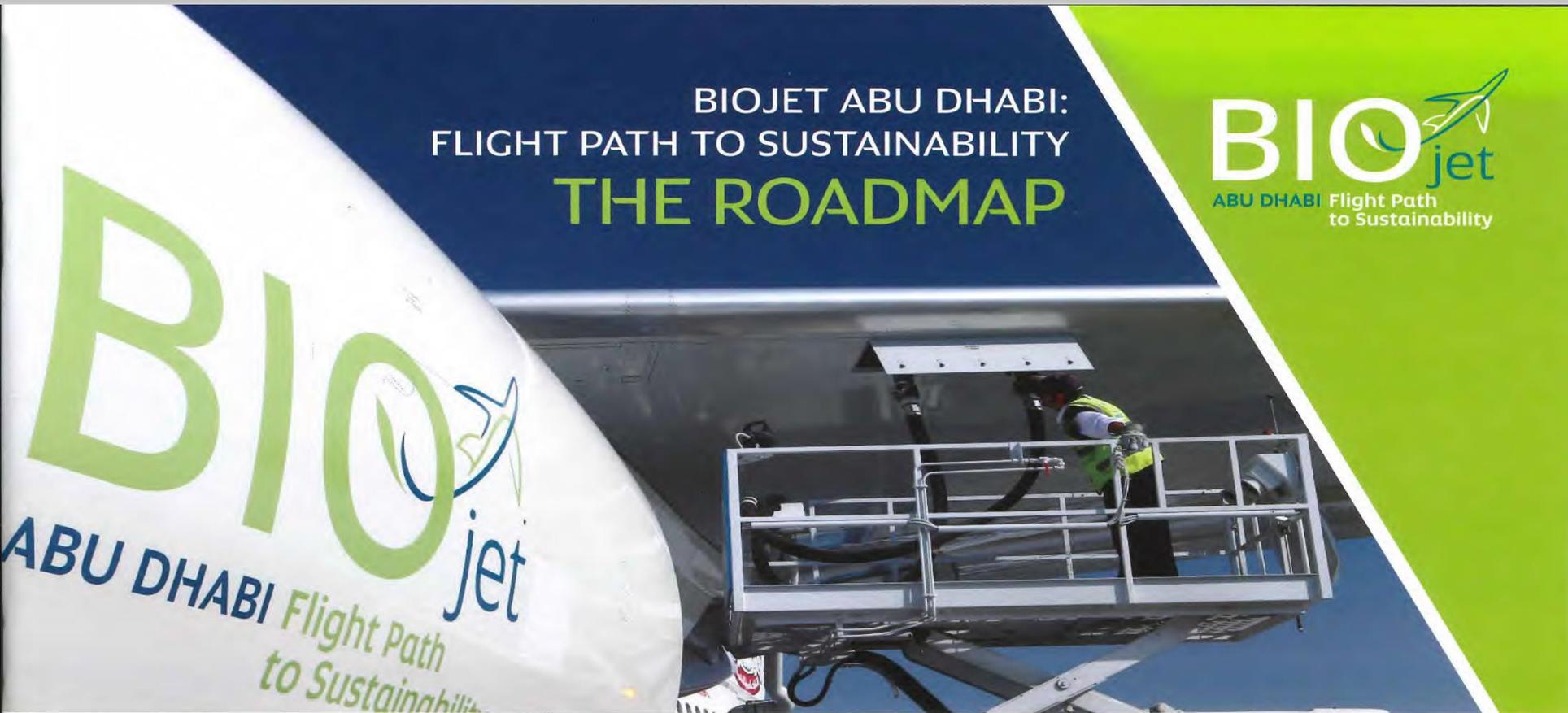
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BIOJET ABU DHABI: FLIGHT PATH TO SUSTAINABILITY THE ROADMAP



ICAO Global Aviation Partnerships on Emissions Reductions (E-GAP) Seminar
ICAO Headquarters, Montréal, 16 to 17 September 2015

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