

Cleaner technologies other than SAF

Session 4: Financing the roadmap

Deploying the 2050 vision on SAF, LCAF and Cleaner Energies for Aviation

Agenda



00 Airports of Tomorrow (AoT)

01 Battery-electric and hydrogen projects in the region

02 Policy Toolkit to Accelerate Uptake of Electric and Hydrogen Aircraft

03 Key take-aways



Airports of Tomorrow

The Forum's flagship aviation
decarbonization initiative

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Airports of Tomorrow

An initiative of the World Economic Forum in partnership with ACI World

Infrastructure



Energy Hubs

Future energy needs



Resilience

Climate adaptation



Smart & Circular

Operational efficiency

Sustainable Aviation Fuels (SAF)



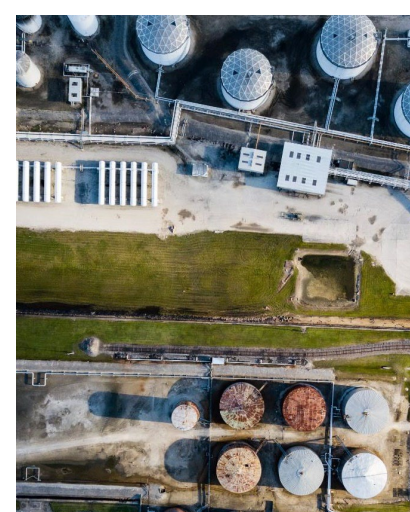
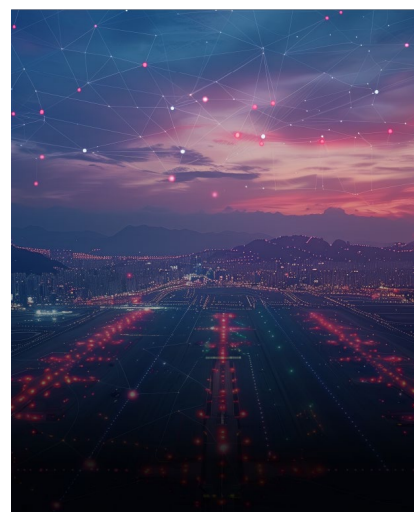
Supply scaling

Overcoming barriers



Financing

De-risking investment



AoT Ecosystem

Advisory Partner



International Organizations



Financing



OEMs & New Propulsion



Airports



Infrastructure, Engineering & Construction



Energy Producers



Carriers



Airport Service Providers



Battery-electric and hydrogen

NACC / SAM region

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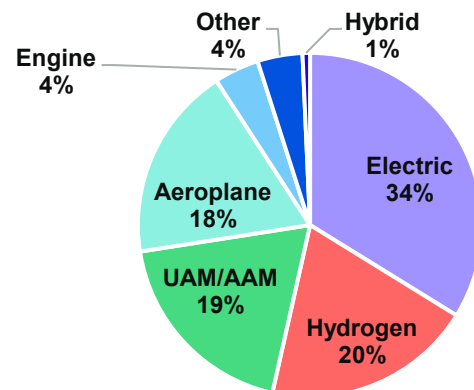


Battery-electric and hydrogen projects

While there's a good momentum worldwide, most of efforts concentrate in EU and NA

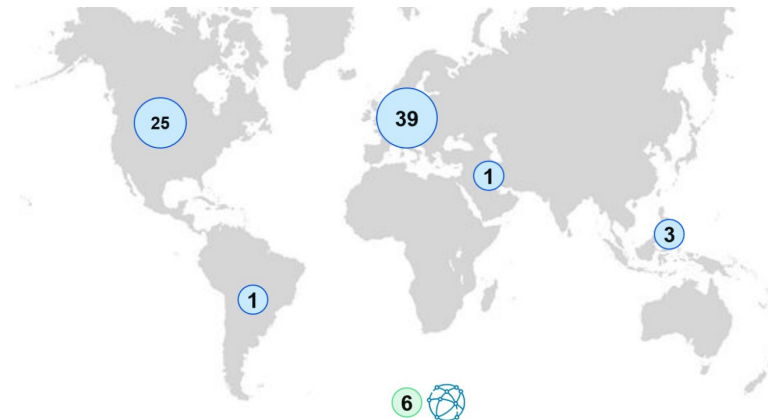
54%

Worldwide projects are related with battery-electric & hydrogen techs



1 out of 75 5 MOUs

Battery-electric & hydrogen projects developed in Central & SAM



NAM Feasibility studies on H₂ airports

Montréal, Vancouver, Toronto (CAN)
Houston, Atlanta (USA)

ACI-America has 348 members

- 72 ACI-LAC ([source](#))
- 276 ACI-NA ([source](#))

How is America transitioning to Clean H₂?

[Read the full report here](#)

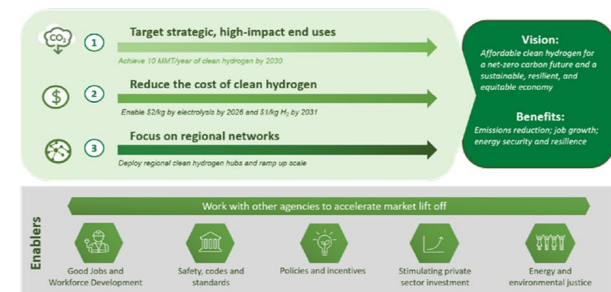
LATAM countries

-  **Argentina:** Is prioritizing clean hydrogen production technologies, expecting to create 13,000 jobs by 2030 and 82,000 by 2050
-  **Brazil:** The Brazilian government committed to investing approx. BRL 200 million per year by 2025 into clean hydrogen R&D
-  **Chile:** Expects to have 5 GW of electrolysis capacity operating or under development by 2025 and 25 GW by 2030
-  **Colombia:** Is actively expanding its clean hydrogen economy with six potential hubs operational by 2050, 28 projects at various stages of development and three operational
-  **Mexico:** Expects 51,000 tonnes of hydrogen demand by 2025 driven by refining and petrochemical activities
-  **Panama:** Partnered with the Dominican Republic to support energy resources and optimize hydrogen transportation between the two countries
-  **Uruguay:** Signed an agreement with Germany to share knowledge and technical capacities for renewable energy sources and alternative fuels

[Read the full program here](#)

United States of America

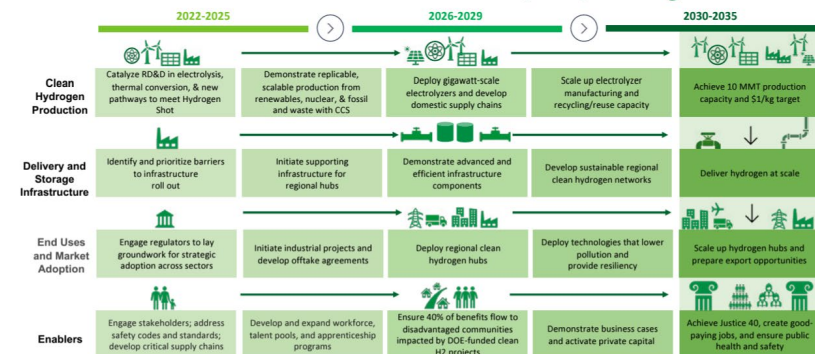
Strategies and Enablers to Achieve the Clean Hydrogen Vision



Opportunities

- Clean Hydrogen Production**
 - 10 MMT by 2030
 - 20 MMT by 2040
 - 50 MMT by 2050
- Greenhouse Gas Reduction**
 - 10% reduction economy-wide
- Economic Impact**
 - 100,000 new direct and indirect jobs by 2030

Actions and Milestones for the Near-, Mid-, and Long-Term



Sustainable propulsion requires new infrastructure

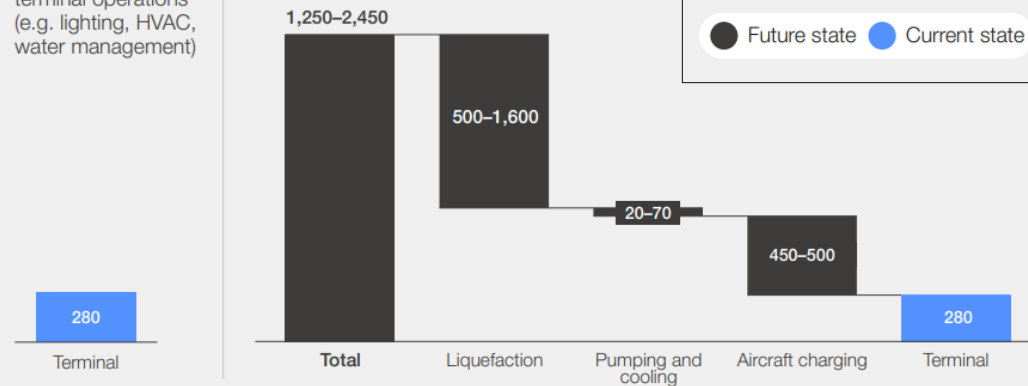
Airports could consume 5-10 times more electricity

Electricity consumption

Electricity consumption at a typical intercontinental hub, GWh per year

Current state:
airports consume electricity for terminal operations (e.g. lighting, HVAC, water management)

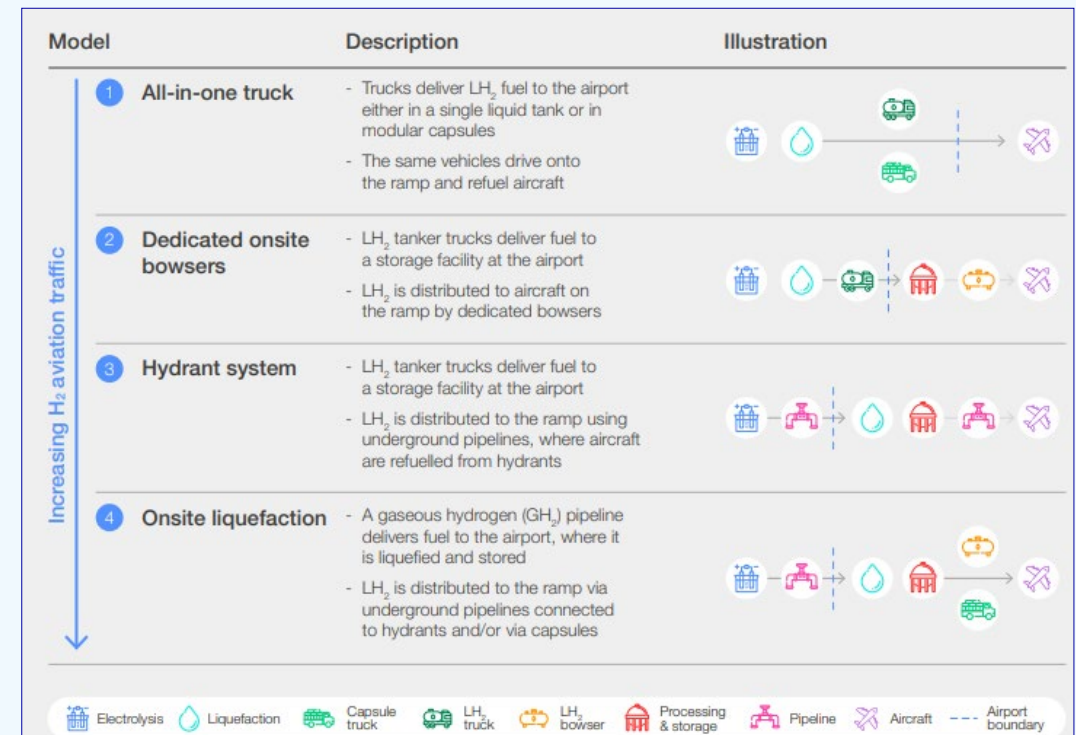
Future state: airports could consume 5-10 times more electricity to support alternative propulsion



- New infrastructure value chains for sustainable aviation
- Land requirements for clean energy could be generated onsite

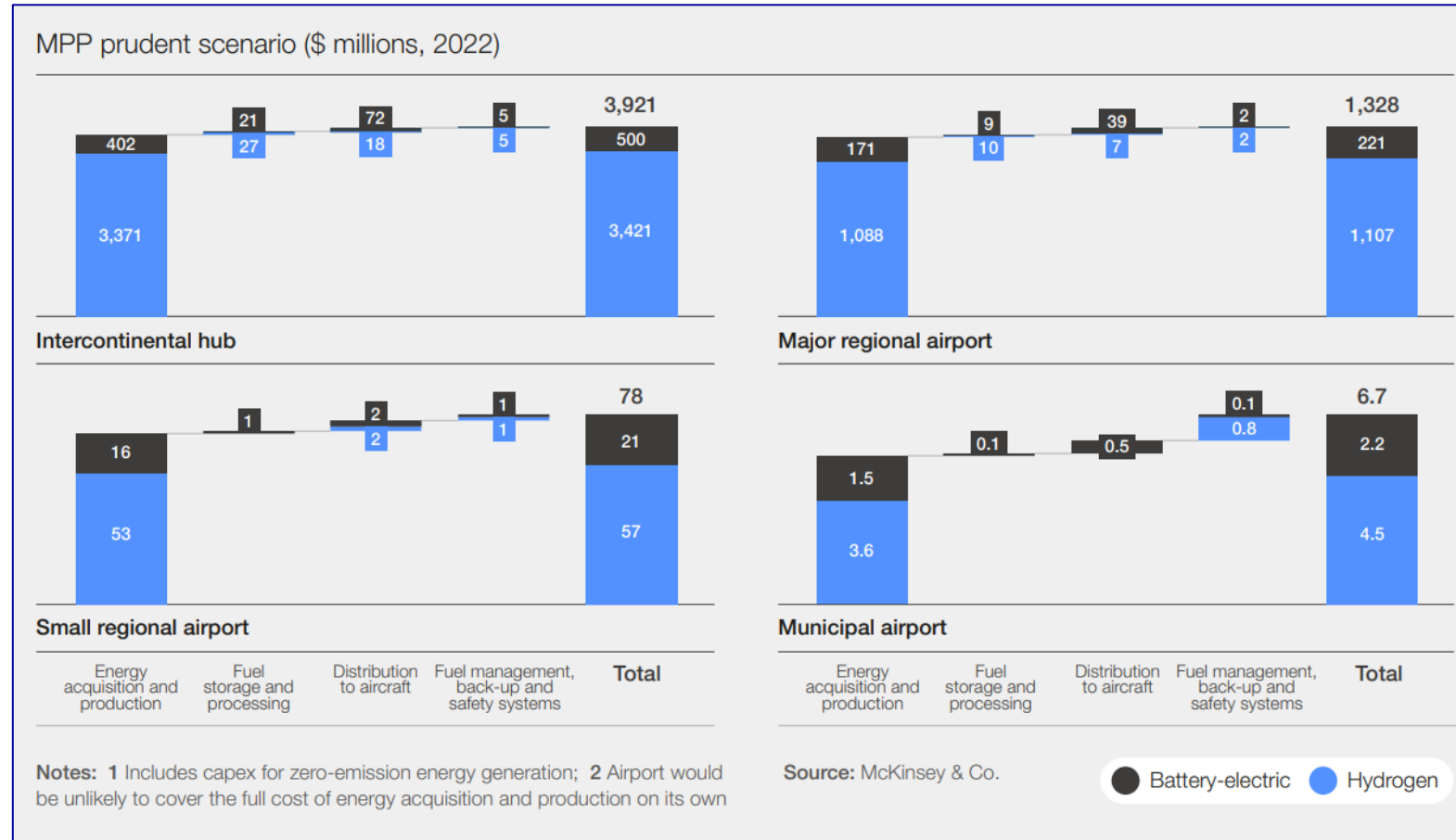
Solution will depend on increasing traffic and airport size

Liquid hydrogen distributions



By 2050, novel propulsion could require \$700bn-\$1.7tn

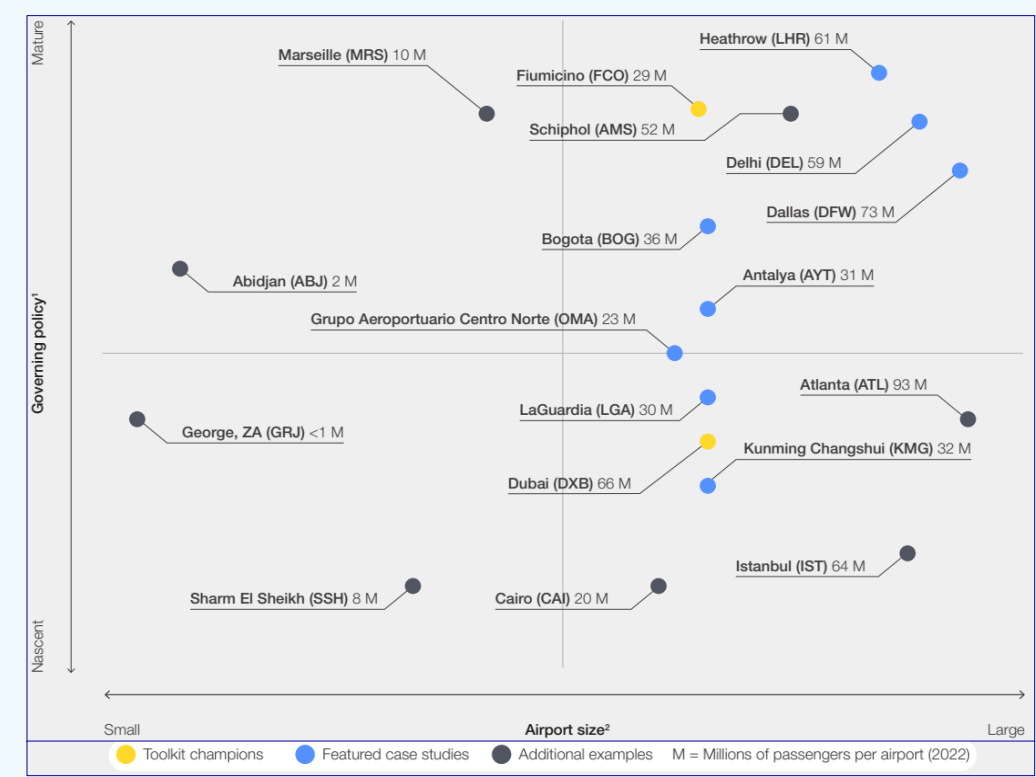
Approximately 10% of this investment will be for on-airport infrastructure



Financing a multi-fuel scenario for airports

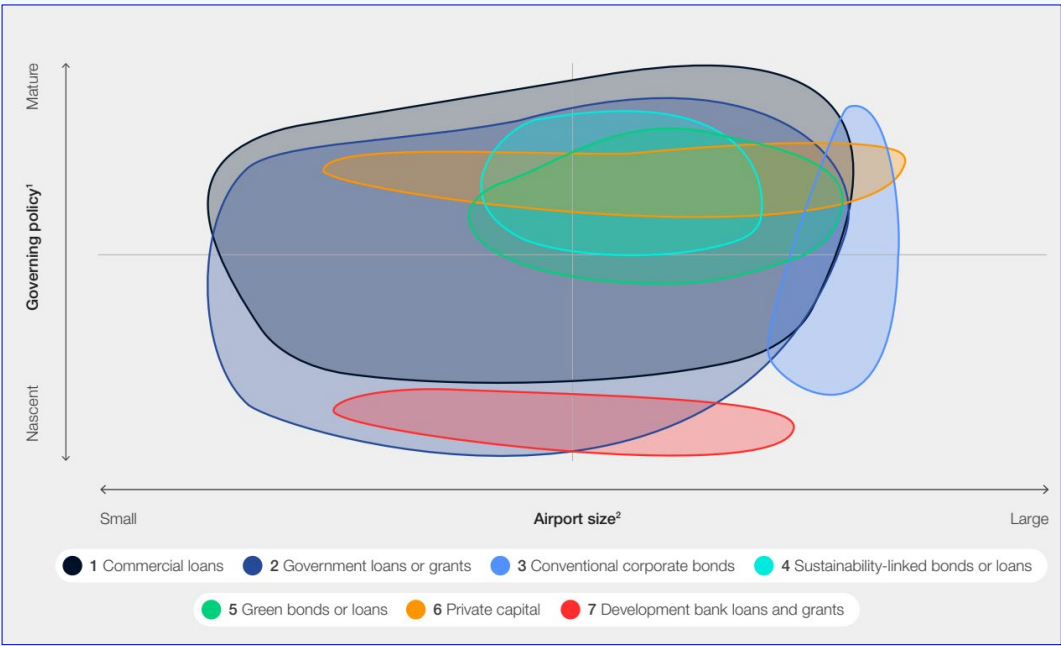
Main drivers behind current decarbonization projects

Government policy and airport size



Financing infrastructure, operations and energy transition

Funding sources groups



Government Policy Toolkit

To Accelerate Uptake of Electric and
Hydrogen Aircraft

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Governments can play a key role

Three priority areas



Frame a net-zero aviation strategy

Delivering net-zero aviation by 2050 requires states to frame strategies suited to national circumstances.



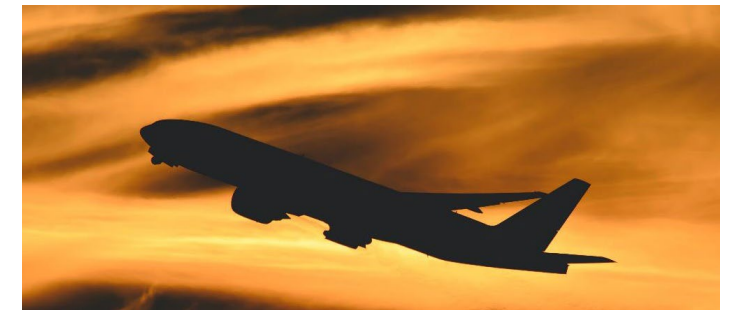
Create an enabling environment

States should support R&D, ensure access to infrastructure, update regulations and collaborate to accelerate alternative propulsion.



Accelerating uptake

Governments can accelerate zero-emissions aviation through subsidies, economic instruments, mandates and fostering public confidence.



Financial measures for battery-electric and hydrogen

Support the adoption of new technologies to address cost differentials and increase competitiveness.



Carbon pricing

Reduce demand for fossil fuel by raising the price of kerosene-based fuel and encourage sustainable alternatives (EU's Emissions Trading Scheme)



Support with capital costs

Supporting operators with the capital costs of purchasing new alternative propulsion aircraft or retrofitting existing aircraft (example: EVs.).



Carbon markets

Market-based measures could incorporate additional benefits for early adopters (like carbon credits) for emissions avoided during a period.



Landing and navigation fees

Airports and air navigation service providers to set fee structures that incentivize lower-carbon flying, while reviewing weight-based navigation fees.



Subsidies for alternative fuels

Subsidies or tax breaks on green hydrogen and renewable electricity used for aviation, reducing the price for operators.



Passenger levies

Passengers travelling on novel propulsion aircraft could pay a lower rate of passenger departure tax or air passenger duty.

Key take-aways

Collaboration opportunities

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Building the next steps for aviation decarbonization

A decarbonization technology-agnostic approach must be settled from the beginning.

A balanced strategy



Significant and additional investment is required to build zero-emission propulsion.

Develop the ecosystem



National, regional, and global government policy alignment is key to achieve global targets

Open for collaboration





Additional Slides

Cleaner technologies other than SAF

2024 Pillars of Work

Cross-Pillar Advisory Partner: ACI World



Infrastructure



1

Energy Hubs

New infrastructure needs for hydrogen and battery electric aircrafts



2

Resilience

Maintaining safe, secure and sustainable operations amid a changing climate



3

Smart & Circular

Digitalization tools to optimize airports' operations



4

Supply scaling

Overcoming regional barriers to scaling SAF worldwide



5

Financing

De-risking SAF investment by connecting public & private actors

Knowledge Partners

McKinsey & Company

Champions

مطارات دبي
DUBAIRPORTS

AIRBUS

AtkinsRéalis

Knowledge Partners

AtkinsRéalis

Champions

SOFIA
AIRPORT

ferrovial

Knowledge Partners

ARUP

Champions



industry.AI



AtkinsRéalis
مطارات دبي
DUBAIRPORTS

Knowledge Partners

KEARNEY

Champions

AIRBUS

EcoCeres

world energy



European Bank
for Reconstruction and Development

mundys
improve moving life

Initiative overview



Useful material

- 00 [The purpose \(one pager\).](#)

- 01 [The community and activities \(slide deck\).](#)

- 02 [Airports of Tomorrow website](#)

- 03 [CEOs join forces to transform airports](#)

- 04 [From passenger hubs into energy hubs](#)

- 05 [What's coming? Calendar of activities](#)

Latest reports

- March 2024 [Scaling Up Sustainable Aviation Fuel Supply: Overcoming Barriers in Europe, the US and the Middle East](#)

- Nov 2023 [Financing The Airports Of Tomorrow: A Green Transition Toolkit](#)

- July 2023 [Target True Zero: Government Policy Toolkit to Accelerate Uptake of Electric and Hydrogen Aircraft](#)

- June 2023 [Sustainable Aviation Fuels: Offtake Manual](#)

- April 2023 [Target True Zero: Delivering the Infrastructure for Battery and Hydrogen-Powered Flight](#)

- July 2022 [Target True Zero: Unlocking Sustainable Battery and Hydrogen-Powered Flight](#)