

# AVIATION CO<sub>2</sub> REDUCTIONS



STOCKTAKING SEMINAR  
TECHNOLOGY · OPERATIONS · SUSTAINABLE AVIATION FUELS



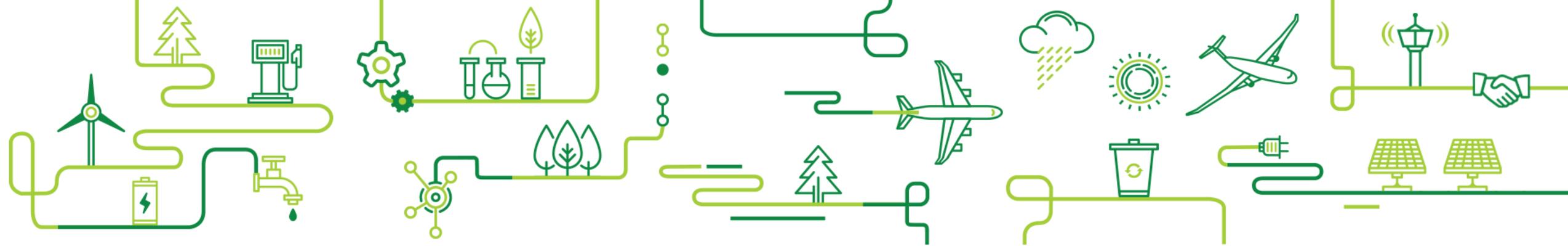


# Enabling a green aviation transition

## Mohammed Boutouba

Project Portfolio Manager - Green Aviation and Industrial Efficiency – Consortium for Research and Innovation in Aerospace in Quebec (CRIAQ)





## CRIAQ : a network of innovators

*Mission:* To increase the competitiveness of the Aerospace Industry by stimulating Business Innovation through collaborative R&D

170+ completed and ongoing projects

\$200 M+ in total value for completed and ongoing projects

3500+ academics, researchers, students and industrial specialists

185+ patents / licences filed



Basic research

**Applied research**

**Demonstrations**

Product development, manufacturing, in service, end of life



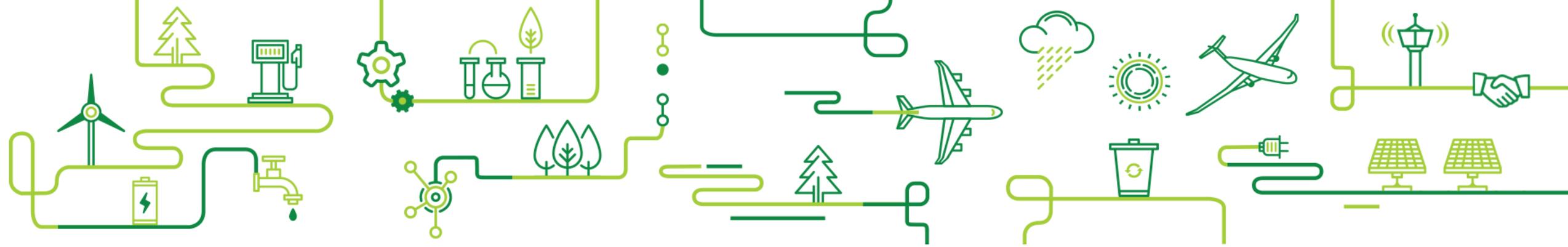
**DRONES & AUTONOMOUS VEHICLES**



**ENERGY EFFICIENCY AND HYBRID DRIVE**



**ARTIFICIAL INTELLIGENCE AND DATA ENHANCEMENT**



## CRIAQ Projects and GHG Reduction

### HEPOS : Parallel-hybrid Electric Propulsion Optimization for Regional Turboprop Aircraft

- Develop key knowledge to explore and optimize parallel hybrid electric propulsion for regional turboprop aircraft, both single and multi-engine. The goal is to reduce aircraft fuel consumption while presenting a much more realistic option than fully electric aircraft for conventional missions in the near future.

### DHESST : Development of a High-Efficiency Small Scale Turbogenerator

- Develop an inverted ceramic turbine and its related technologies for integration into a clean, lightweight and efficient turbogenerator. The goal is to reduce greenhouse gas emissions by providing a microturbine that combines the efficiency of diesel engines with the power density of gas turbines.

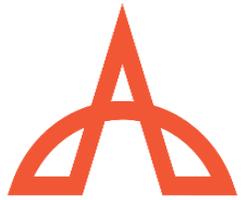
INNOV-R  
Program

# CRIAQ and the Green Transition for the Aviation Sector

## Technology

Contributing to the global effort in the fight against climate change :  
Opportunities for collaboration

- High Power density electric motor
- Hybrid Propulsion Demo Project
- Energy Storage System
- Hydrogen Storage and Fuel Cell
- Energy Efficient Aircraft Configurations
- Hybrid Electric Aircraft Testbed
- Sustainable Mobility Systems Virtual Demonstrator



### C R I A Q

CONSORTIUM FOR RESEARCH AND INNOVATION IN AEROSPACE IN QUÉBEC

For more information, or to contact us for a project idea, visit <https://criaq.aero>

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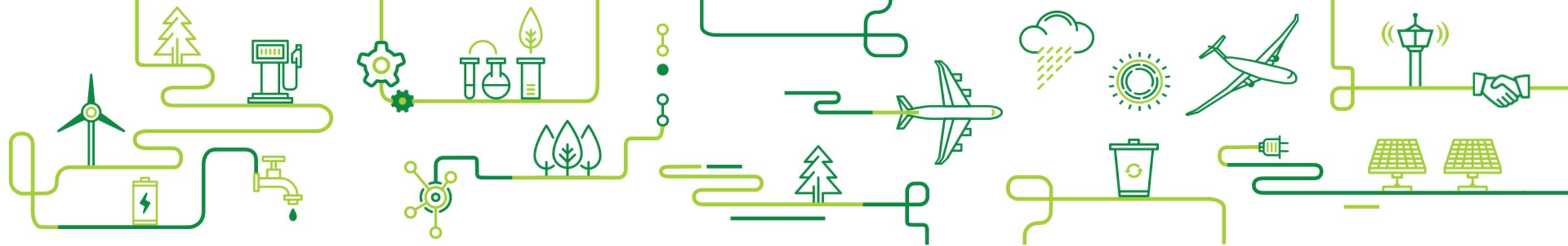
	<b>CO<sub>2</sub> reductions per flight</b>	<b>NA</b>
	<b>Level of finance required</b>	<b>10%-20% by industry</b>
	<b>Timeframe</b>	<b>2020-2023</b>
	<b>Main challenges</b>	<b>-37.5% GHG emissions by 2030</b>

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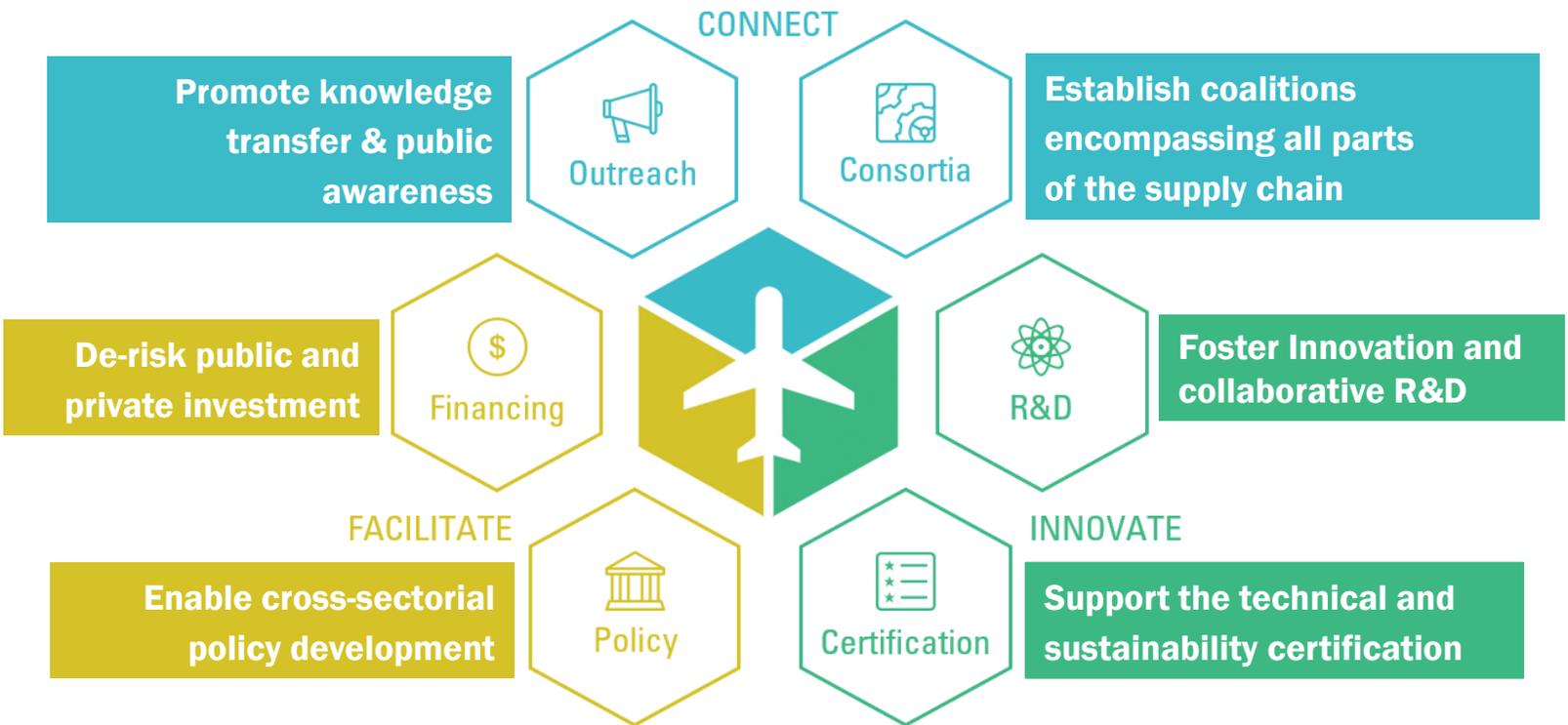
## Malek Kacem

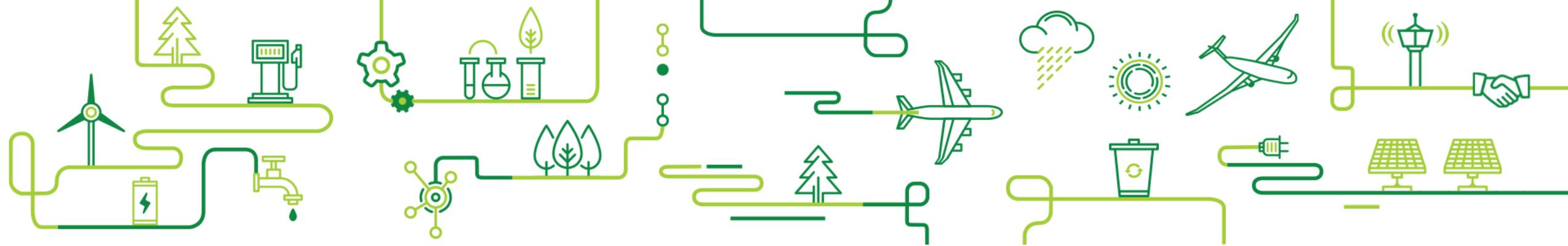
Project Manager and Business development, Green Aviation Research and Development Network in Canada (GARDN)





# Strategic areas for SAF development





Green Aviation  
Research & Development  
Network

Groupement Aéronautique  
de Recherche et Développement  
en eNvironnement

For more information, visit <https://gardn.org>

For a question or comment, please don't hesitate to reach out at [malek.kacem@gardn.org](mailto:malek.kacem@gardn.org).



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# Thank You



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Headquarters  
Montréal

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North Atlantic  
(EUR/NAT) Office  
Paris

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(APAC) Sub-office  
Beijing

Middle East  
(MID) Office  
Cairo

Asia and Pacific  
(APAC) Office  
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