

LanzaTech

RECYCLES CARBON TODAY FOR A CLEANER TOMORROW



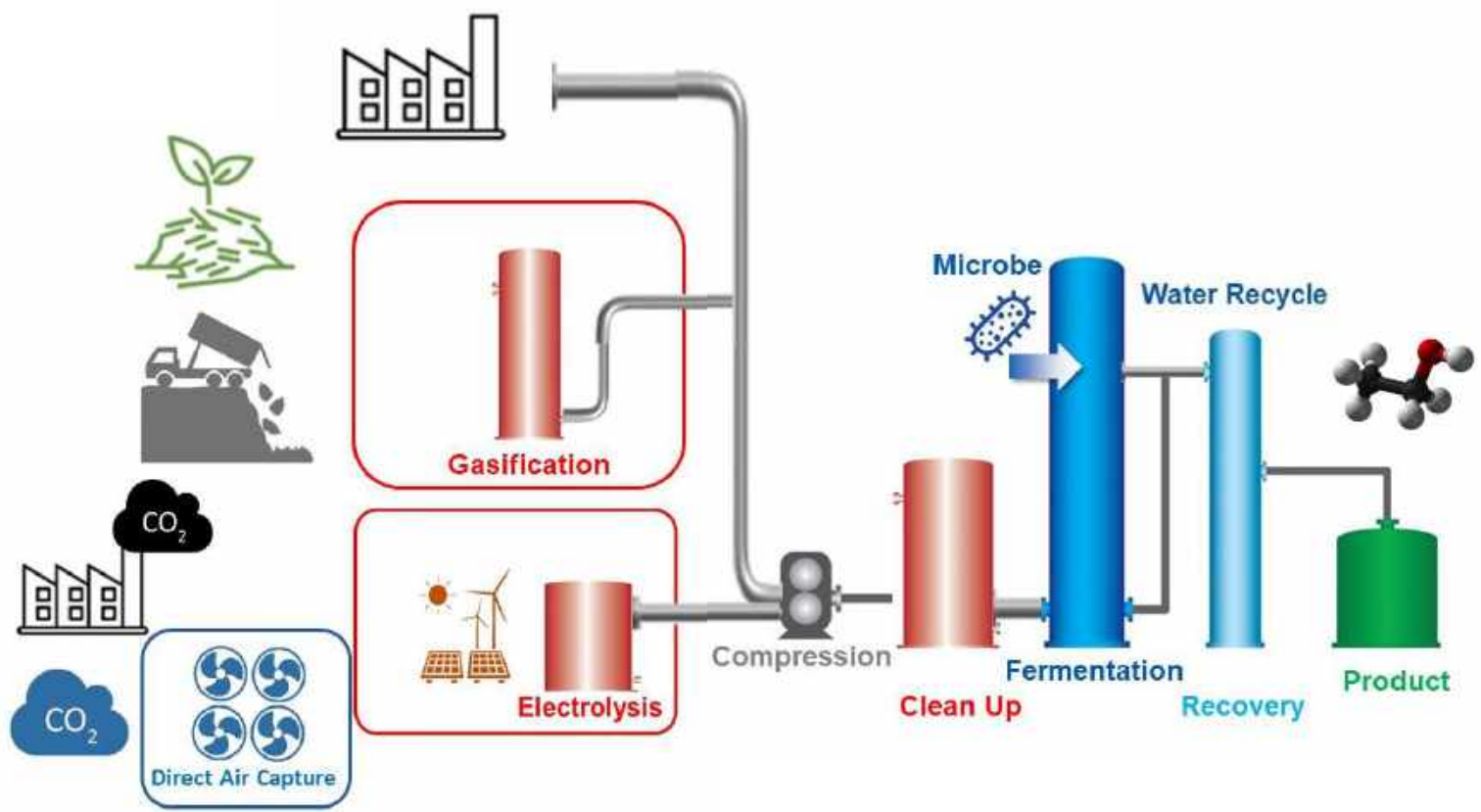
**Energy can be
carbon free**



**(Aviation) fuel
needs carbon**



**Chemicals for
everyday products
need carbon**



Microbe 1.0



Jet Fuel



Packaging



Fuel Blend

Ethanol

Microbe 2.0



MEG



Acetone



IPA



Production Levels that Enable Profitability



CapEx per Liter of ~\$0.85



Gas BTU Value



Payback Period 3-5 Years

**50 million liters of ethanol
> 70,000 tones of CO₂ mitigated**

Ethanol Build Out



45M lpy
Gasified Biomass



ArcelorMittal
80M lpy
Steel Off Gas



首钢朗泽
Shougang LanzaTech

60M lpy
Ferroalloy Off Gas



60M lpy
Steel Off Gas



41M lpy
Refinery Off Gas



SEKISUI
624k lpy
Gasified MSW



64M lpy
Ferroalloy Off Gas



IndianOil

**Accessing all global carbon waste
~2T liters ethanol**

Excellent Substrate Building Block of the Future



RSB
Resources
Sustainable
www.rsb.org



首钢朗泽
Shougang Langyuan



FEDERAL AVIATION
ADMINISTRATION



BOEING



DEFENSE ADVANCED
RESEARCH PROJECTS AGENCY



SINOPEC



遠東新世紀
FAR EASTERN NEW CENTURY



U.S. DEPARTMENT OF
ENERGY
Energy Efficiency &
Renewable Energy



Pacific
Northwest
NATIONAL
LABORATORY

virgin atlantic



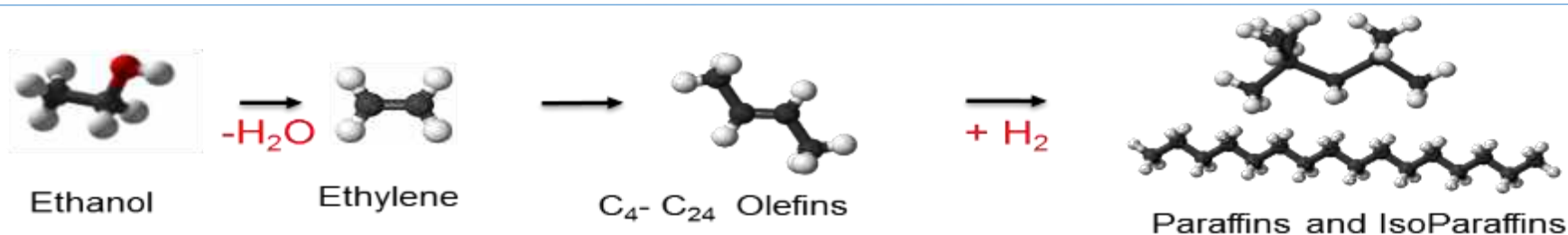
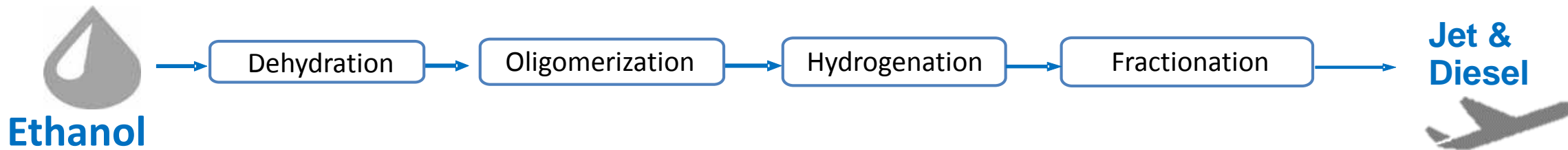
INDIA GLYCOLS LIMITED



HSBC

CarbonSmart™

Alcohol-to-Hydrocarbons



Alcohol-to-Jet: Progress



- ✓ 15,000 liters Jet
- ✓ 2,000 liters Diesel

Waste Gas Ethanol from RSB Certified Facility
Grain Ethanol



Greater than 90% Lower Contrails and Soot Particles
4 Flights



National Research Council Canada

Conseil national de recherches Canada

LanzaTech



MITSUI & CO.



U.S. DEPARTMENT OF ENERGY

Tech License / \$\$\$

LanzaJet



10M Demo



30M gpy



30M gpy



30M gpy



ASTM INTERNATIONAL

April 1, 2018

D7566 ATJ SPK Annex A5

✓ Ethanol feedstock

✓ Final blend ratio to max 50%

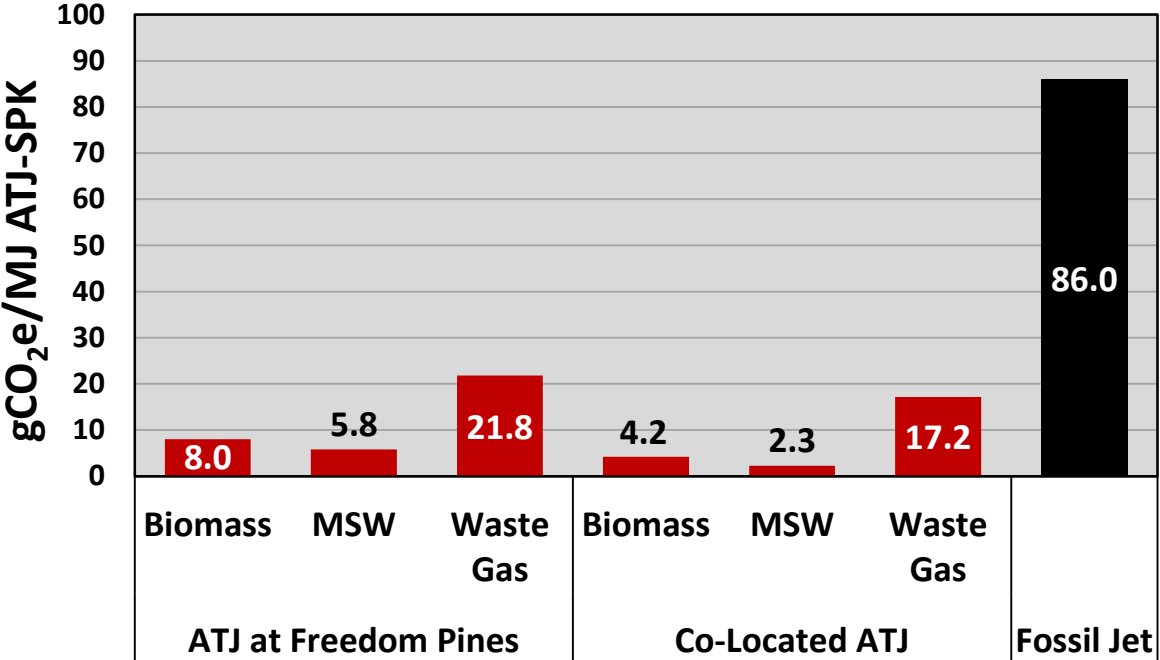


October 3rd 2018 First Commercial

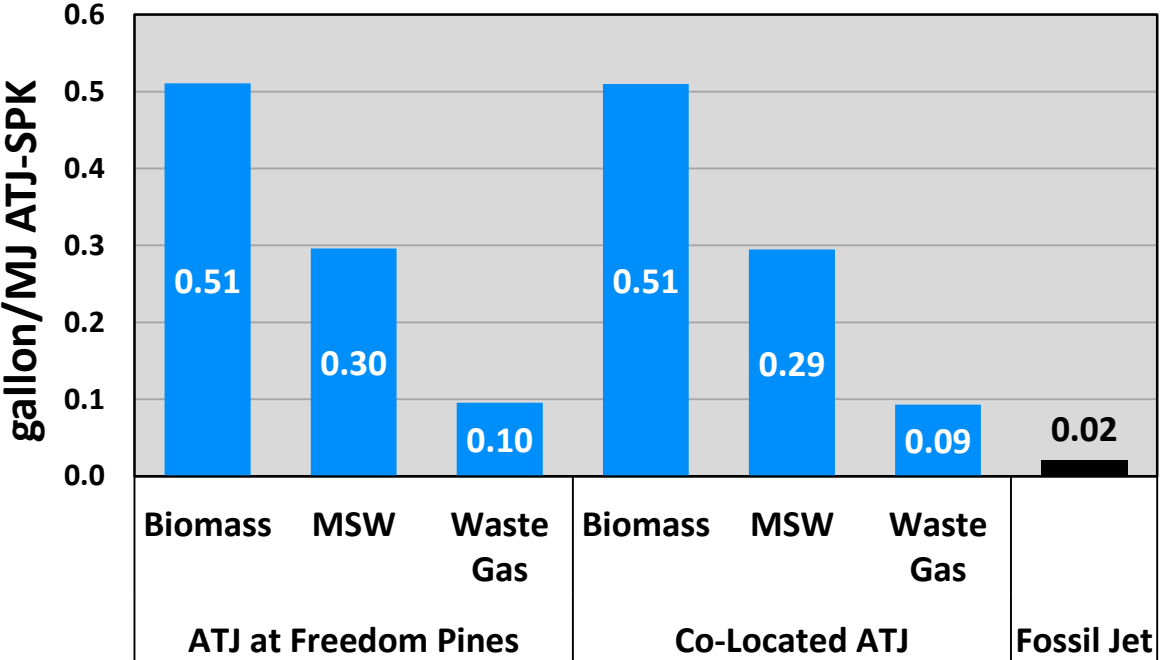


LanzaTech ATJ-SPK from LanzaTech Ethanol: Sustainability Profile

GHG Emissions by Source and Location

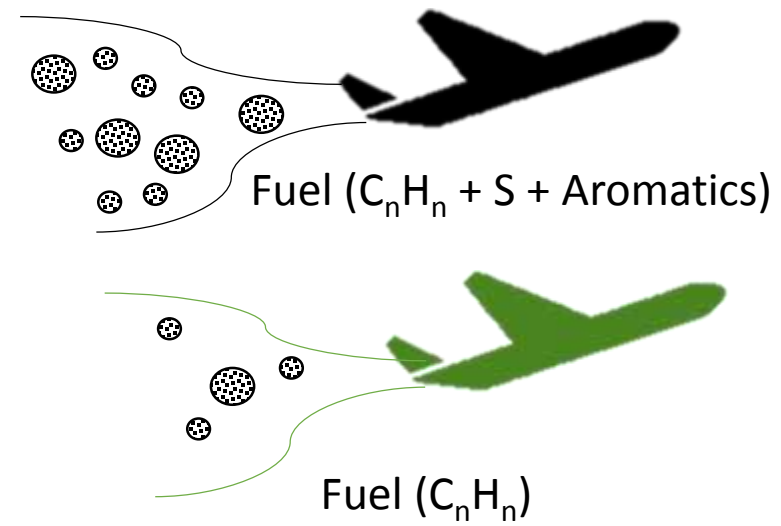
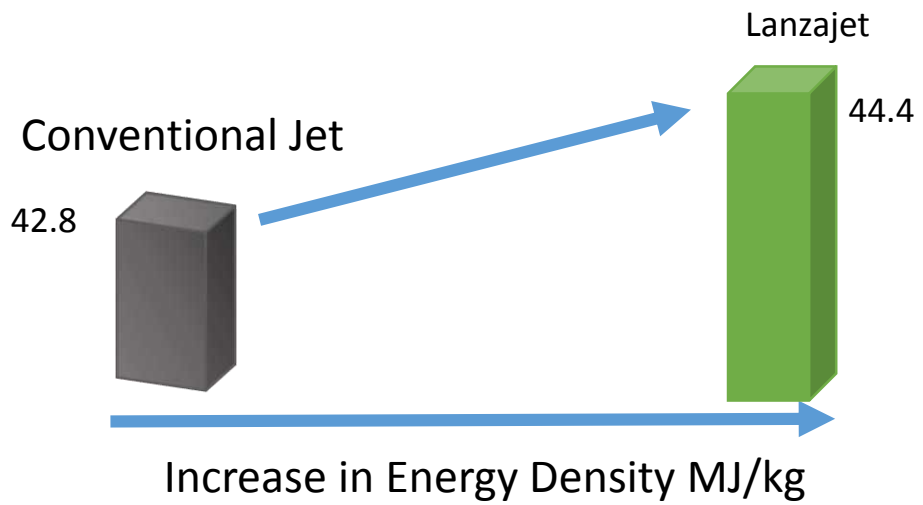
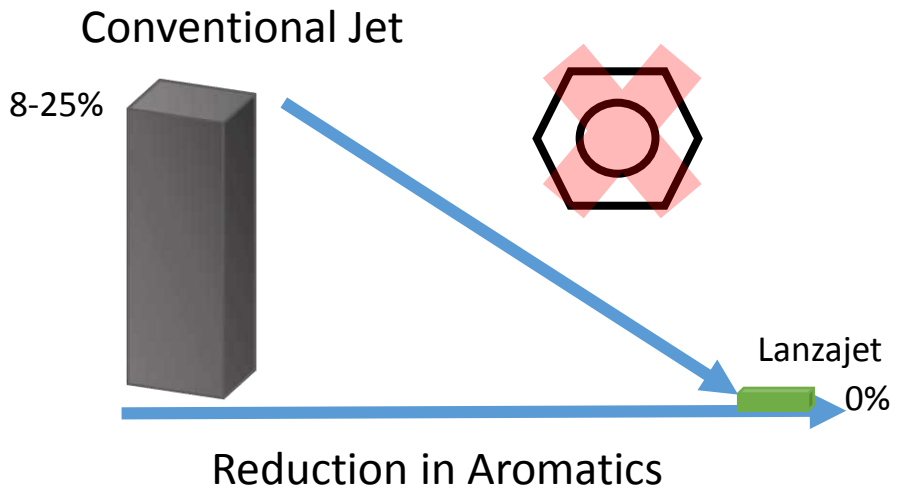
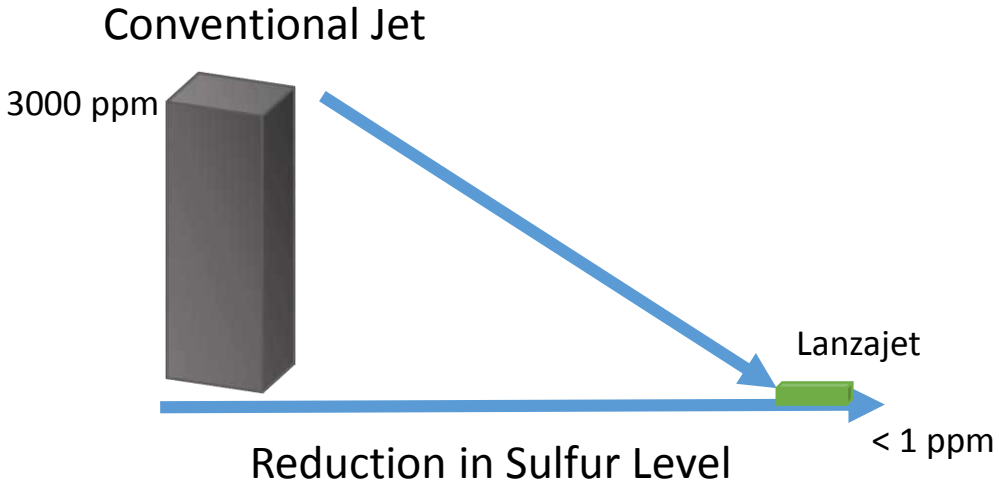


Water Impact by Source and Location



**Ethanol from Recycled Carbon
Delivers Significant Sustainability Benefits**

Sustainable Aviation Fuel Benefits



Why Ethanol-Based Alcohol-to-Jet?

*Diverse Ethanol
Technologies*



*Abundant, Regionally-Appropriate
Resources*



*Ideal Feedstock
for
Global
Sustainable Aviation Fuel
Production*



Agricultural Residues



Municipal Solid Waste



Steel Mills Offgas



Refinery Offgas

Distributed Feedstock Opportunity: Option to Centralize Conversion



With Unlimited Sources of Ethanol the Sky's the Limit!

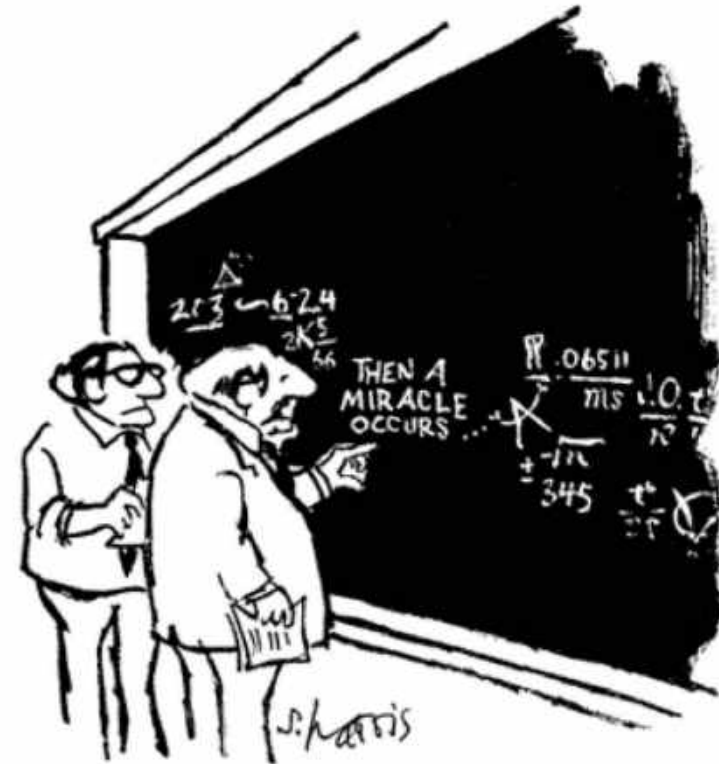
We must adopt technology neutral position
and support all solutions.

We must collaborate to address
environmental concerns and get recycled
carbon, including Power-to-X, fuels and
chemicals to market quickly.

We must develop new financing mechanisms
to accelerate scaling and deployment.

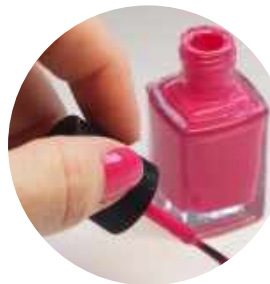
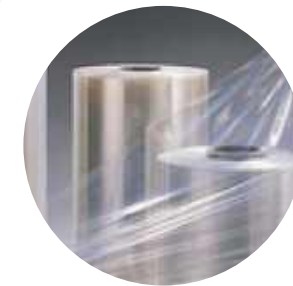
We must fail quickly and move on.

***Policies, Definitions and Funding Drive or Block the Build
Out of Disruptive Technologies***

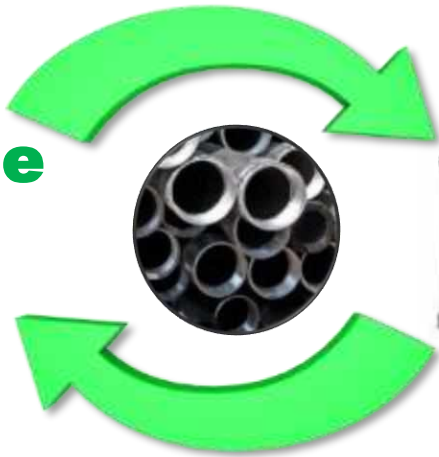


"I think you should be more explicit here in
step two."

Putting Carbon in the Circular Economy



Recycle



Make

