LanzaTech

Becoming CarbonSmart

Creating the New Carbon Economy

Disclaimers

Certain statements in this presentation (the "Presentation") may be considered forward-looking statements. Forward-looking statements generally relate to future events or LanzaTech NZ, Inc.'s (the "Company") future financial or operating performance. For example, statements concerning the following include forward-looking statements: the potential success, cost and timing of the Company's technology platform development activities; the potential attributes and benefits of the Company's technology platform; the Company's ability to compete with other companies currently marketing or engaged in the development of similar technologies; the size and growth potential of the markets for the Company's technology and the Company's ability to serve those markets; the rate and degree of market acceptance of the Company's technology; and the Company's ability to expand its business. In some cases, you can identify forward-looking statements by terminology such as "may", "should", "expect", "intend", "will", "estimate", "anticipate", "believe", "predict", "potential" or "continue", or the negatives of these terms or variations of them, or similar terminology. Such forward-looking statements are subject to risks, uncertainties, and other factors which could cause actual results to differ materially from those expressed or implied by such forward-looking statements. These forward-looking statements are based upon estimates and assumptions that, while considered reasonable by the Company and its management, as the case may be, are inherently uncertain. New risks and uncertainties may emerge from time to time, and it is not possible to predict all risks and uncertainties. Factors that may cause actual results to differ materially from current expectations include, but are not limited to, various factors beyond management's control, including general economic conditions and other risks, uncertainties and factors associated with companies, such as the Company, that are engaged in developing proprietary carbon capture technology; changes to environmental laws and regulations; changes to ethanol regulation; and overall business and economic conditions affecting the global carbon capture, utilization and storage industry. Nothing in this Presentation should be regarded as a representation by any person that the forward-looking statements set forth herein will be achieved or that any of the contemplated results of such forward-looking statements will be achieved. You should not place undue reliance on forward-looking statements in this Presentation, which speak only as of the date they are made and are qualified in their entirety by reference to the cautionary statements herein. Except as required by law, the Company undertakes no duty to update these forward-looking statements.

Energy Can Be Carbon Free

Chemicals & Fuels Need Carbon

Where That Carbon Comes From Will Define Our Climate Future


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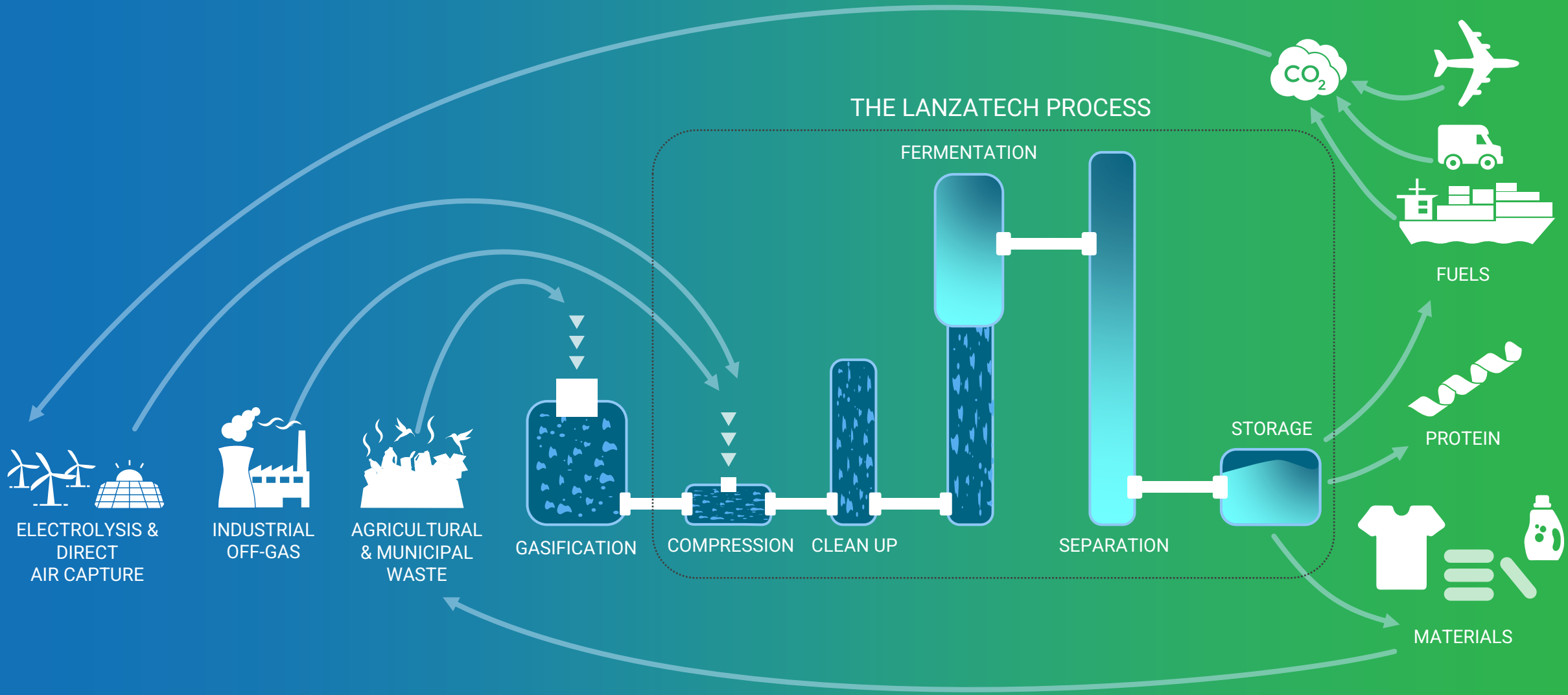
T-1783

LanzaTech's Transformation Process



15+ Year Journey

Laboratory
2005

Pilot
2008

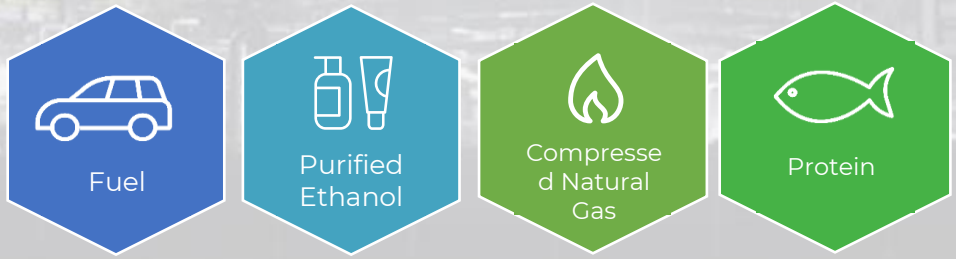
Demonstration
2012

- ✓ Industrial emissions to ethanol
- ✓ Second commercial plant operating April 21

Commercial Scale 2018

RSB

>150,000 tons of carbon dioxide avoided



First European Plant, Gent, Belgium

ArcelorMittal

64,000 Metric Tons Bio-Ethanol
Expected to mitigate>350,000 Metric Tons CO_2 a year

This project is co-funded by the European Union

CINEA

Steelanol
Fueling a sustainable future

Multiple Plants, Feedstocks and Products!

2 Commercial Plants Operating, 7 Plants Scheduled to Complete Construction in 2022, and 7 Additional Plants in Engineering

Operating

Construction

Engineering

Feedstocks Represented

Steel and Ferroalloy Gas | MSW | Refinery Gas | Biomass | Biogas

Regions Represented

North America | Europe | Asia | Oceania

Partner Investment

~$800 million

Estimated Total Installed Capacity[1]

~600,000 mtpa (200 million gpy)

Anticipated Carbon Captured Annually[1]

~1,000,000 tonnes

Source: LanzaTech management. [1] Represents capacity and carbon captured by all plants above.

Added Hydrogen Increases Carbon Capture

		H_2:CO Ratio	Carbon Efficiency
CO	$6\ CO + 3\ H_2O \rightarrow C_2H_5OH + 4\ CO_2$	0:1	33.3%
CO + H_2	$3\ H_2 + 3\ CO \rightarrow C_2H_5OH + CO_2$	1:1	66.7%
CO + H_2	$4\ H_2 + 2\ CO \rightarrow C_2H_5OH + H_2O$	2:1	100%
CO + H_2 + CO_2	$5\ H_2 + 1\ CO + 1\ CO_2 \rightarrow C_2H_5OH + 2\ H_2O$	5:1	100%
H_2 + CO_2	$6\ H_2 + 2\ CO_2 \rightarrow C_2H_5OH + 3\ H_2O$	1:0	100%

Multiple avenues to reach 100% carbon capture

Gas fermentation can flexibly add green H_2 to tailor carbon capture

Ethanol: A Starting Point for Multiple Pathways

Building Block of the Future

Getting Sustainable Aviation Fuel (SAF) to Scale

LanzaJet

LanzaTech

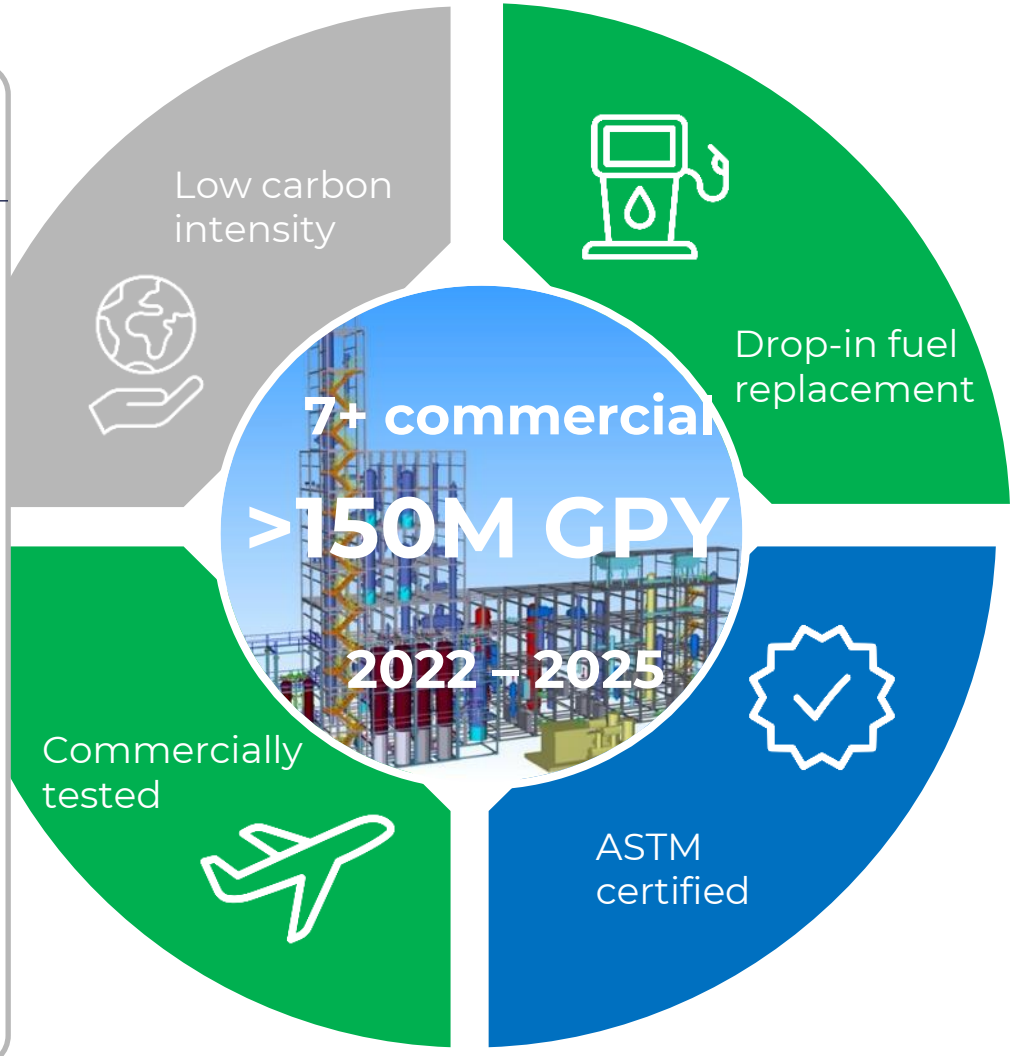
SUNCOR

MITSUI & CO.

BRITISH AIRWAYS

ANA

U.S. DEPARTMENT OF ENERGY

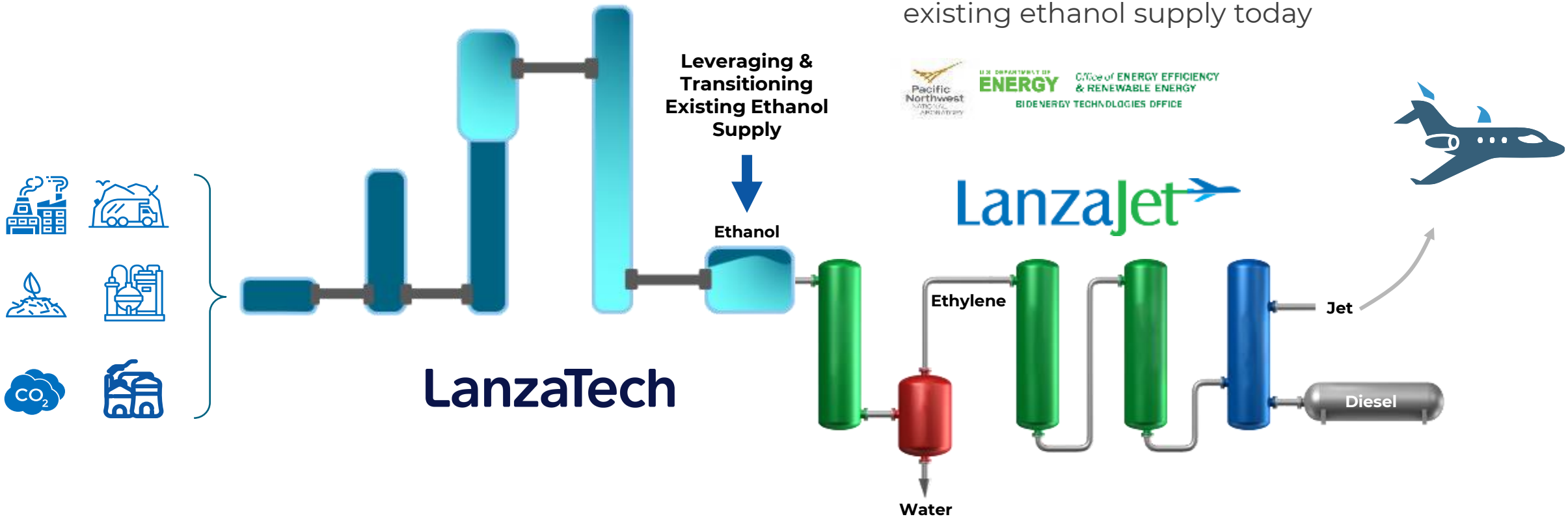


Carbon Emissions to Sustainable Aviation Fuels

Abundant, Waste-based Feedstock + **Low-Cost Process** =

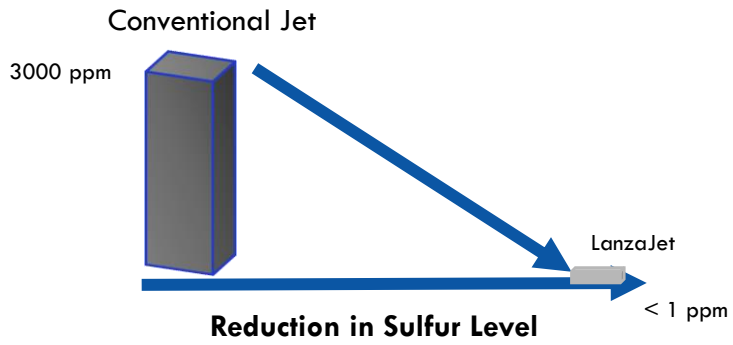
Competitive Waste-to-SAF Solution

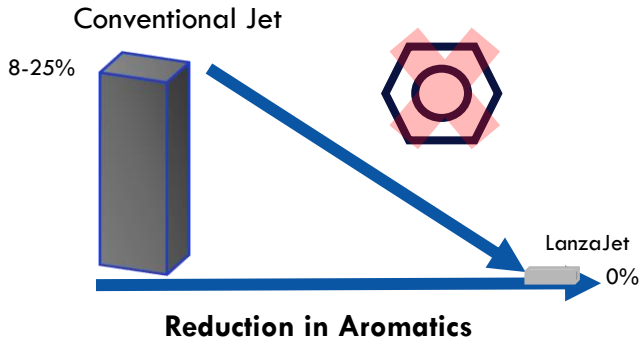
With opportunity to utilize existing ethanol supply today

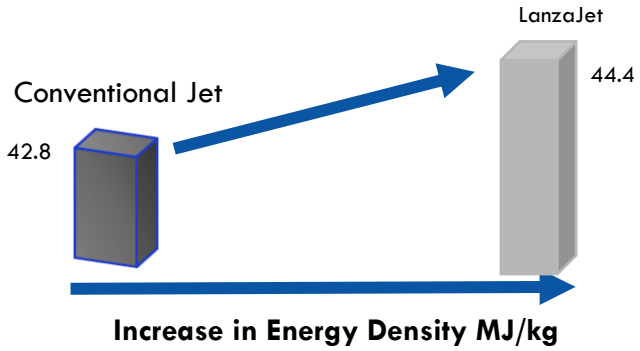


Source: LanzaTech Management

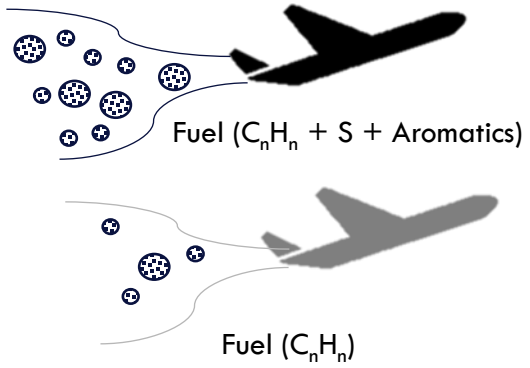
LanzaJet SAF Results in Significant Sustainability Benefits When Compared to Conventional Jet Fuel







Fuel properties measured by AFRL, UDRI, SwRI during ASTM Fit for Purpose process



In-flight emissions measured by National Research Council Canada during instrumented flights using LanzaJet SPK

Ethanol: A Starting Point for Multiple Pathways

Building Block of the Future

lululemon

Unilever

L'ORÉAL

mibelle GROUP

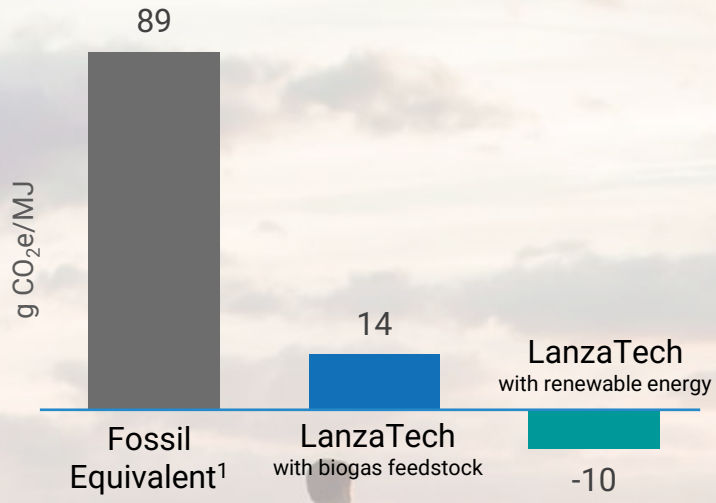
MIGROS

ZARA

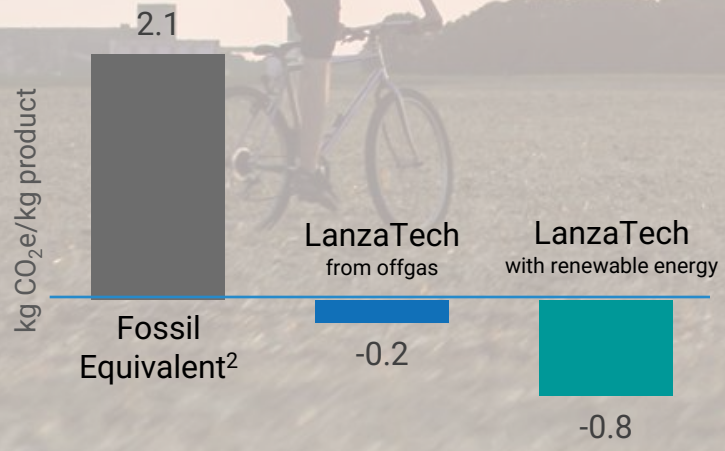
dm

LanzaTech Offers Carbon Negative Products Today With Inevitable Improvement Over Time

Sustainable Aviation Fuel
With LanzaJet Process



Monoethylene glycol (MEG)
As a chemical intermediate



Renewable Energy

Further reduces carbon intensity of LanzaTech process and products

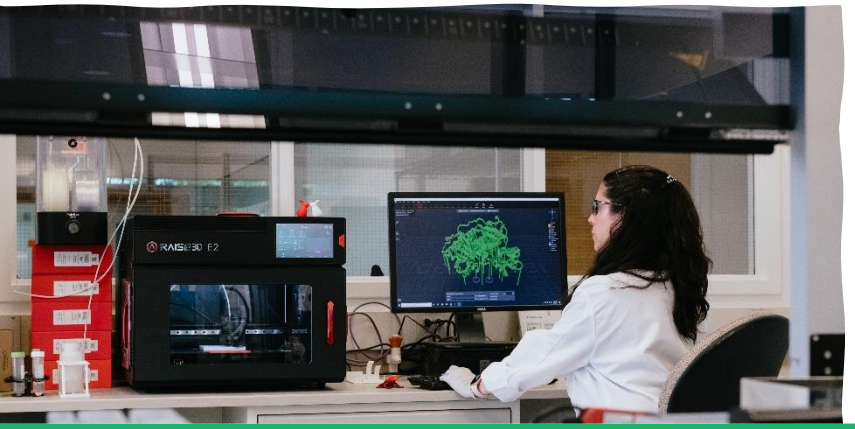
Carbon Negative Feedstocks

Enable increasingly negative product carbon intensity

Net Zero Economy

Enabled by LanzaTech products

[1] ICAO Sustainable Aviation Fuels Guide, Version 2, December 2018, Page 6; [2] The ecoinvent database, version 3

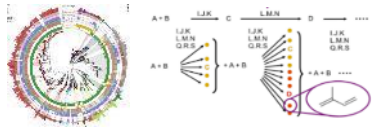


Programming Microbes

State-Of-The-Art Synthetic Biology Platform

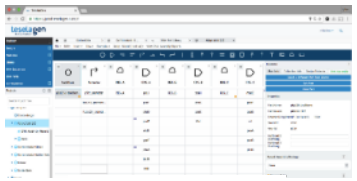
Discovery

- *Sequence/Knowledgebase*
- *Retrobiosynthesis*



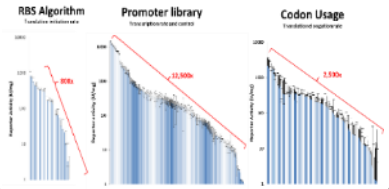
Computer-Aided Design

- *BioCAD*



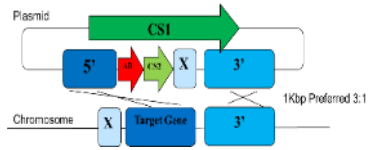
Genetic Parts

- *Reporters, Markers*
- *Promoters, Terminators*
- *RBS, Codon Usage algorithms*



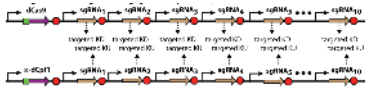
Genetic System

- *DNA transfer*
- *Modular plasmids*
- *Homologous recombination, CRISPR*



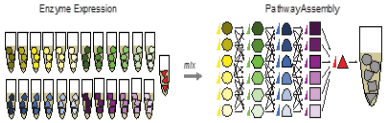
Advanced Toolbox

- *Multiplexing*
- *Genome-wide*
- *Genetic circuits*



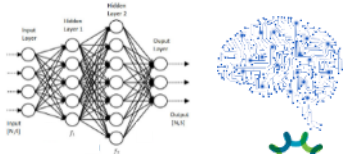
Rapid Prototyping

- *Cell-free protein synthesis*



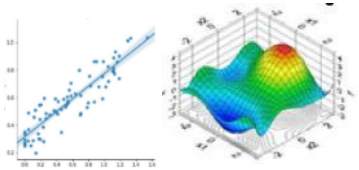
AI

- *Machine Learning*



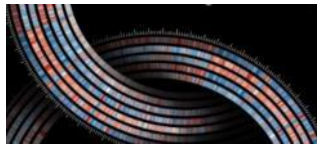
Modelling

- *Genome-scale*
- *Kinetic*
- *Technoeconomic*



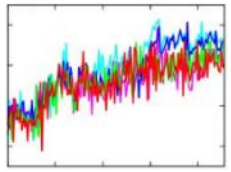
Systems Biology

- *Multi-Omics*
- *Enzymology*



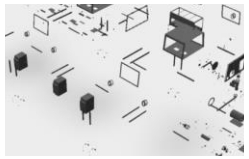
Automated Strain Evolution

- *Automated Strain Evolution*



Automated Strain Engineering

- *Anaerobic Biofoundry*



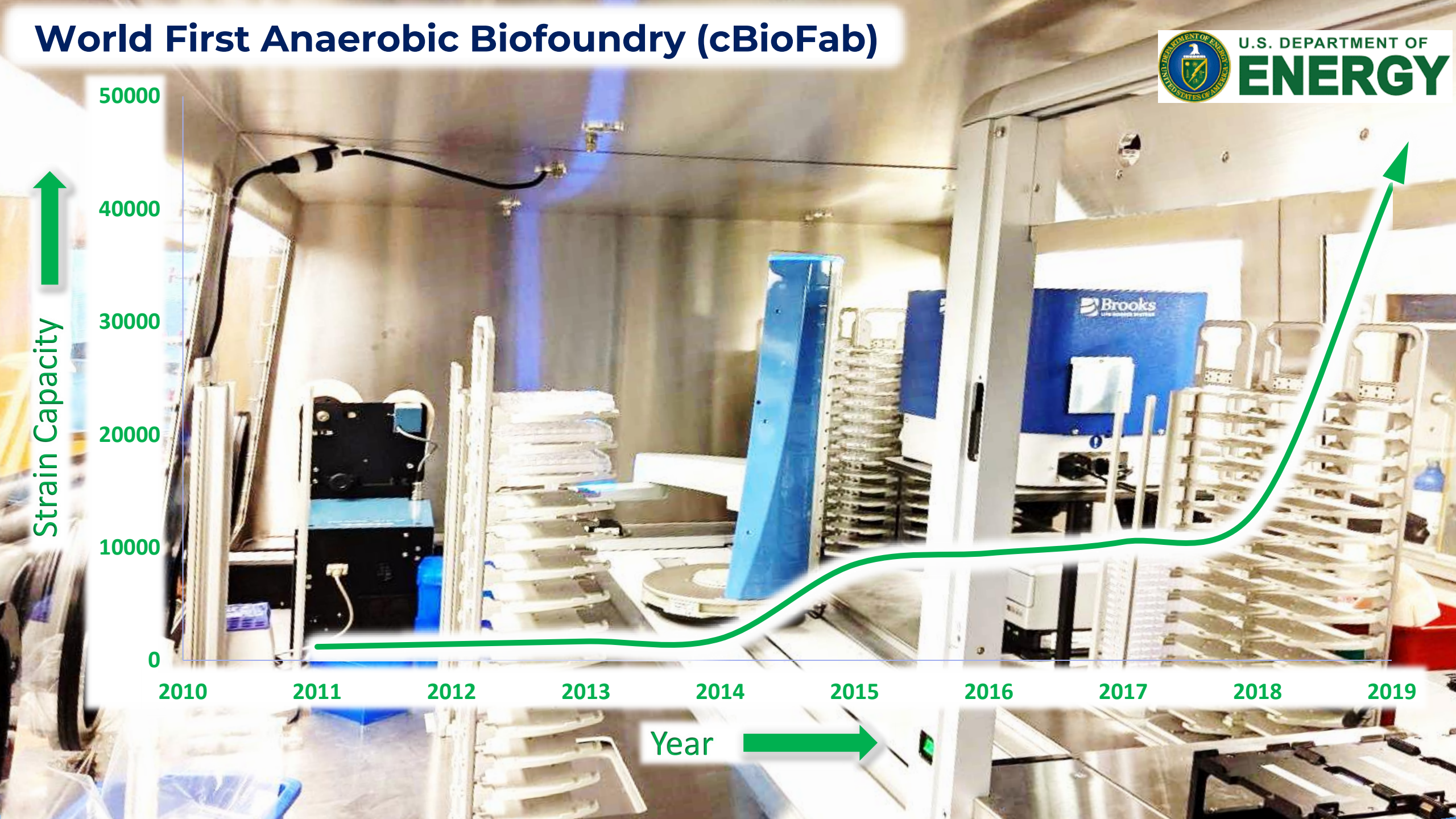
Miniaturization

- *Microfluidics*

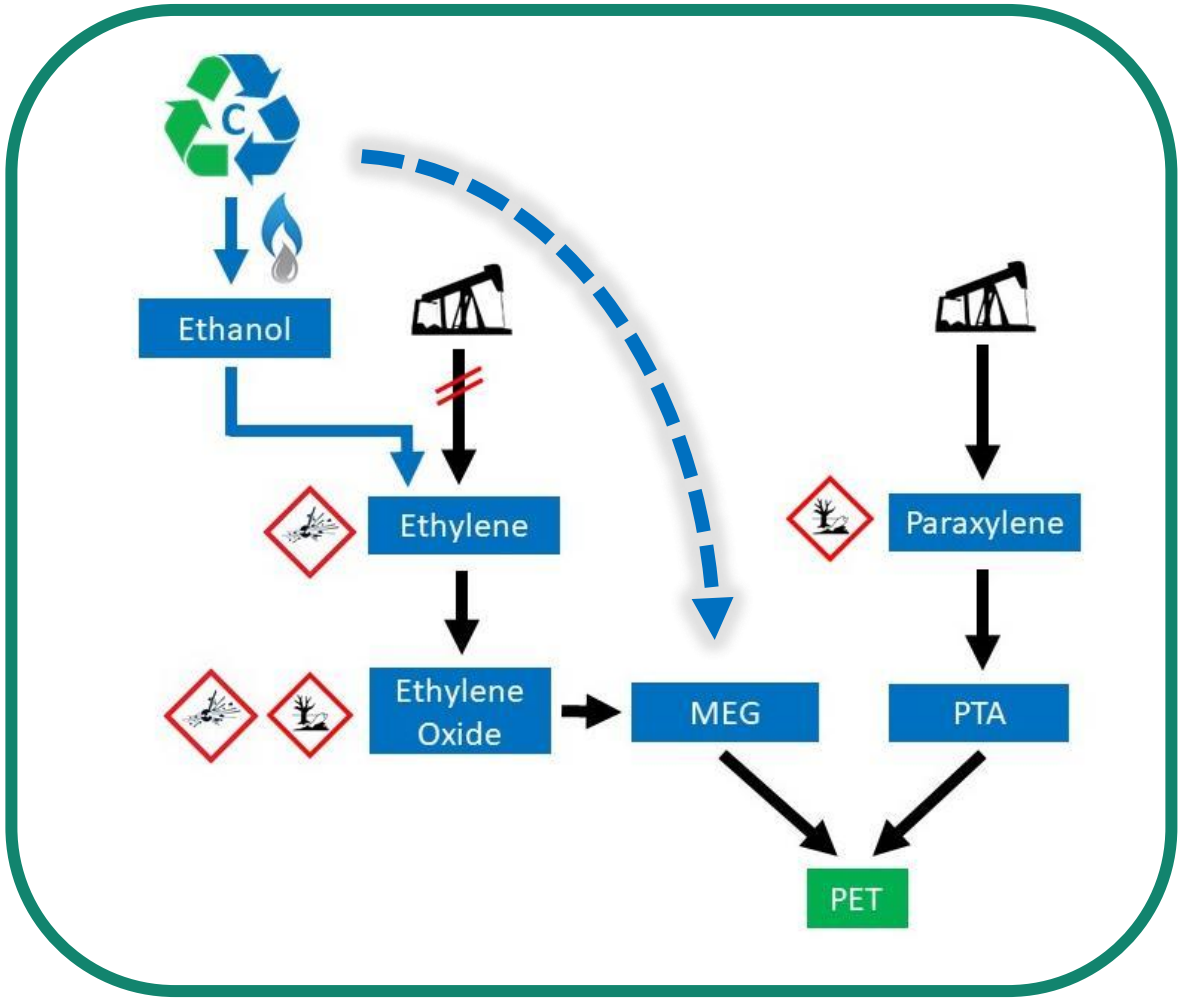
12 years ago, gas-fermenting acetogens were considered genetically inaccessible

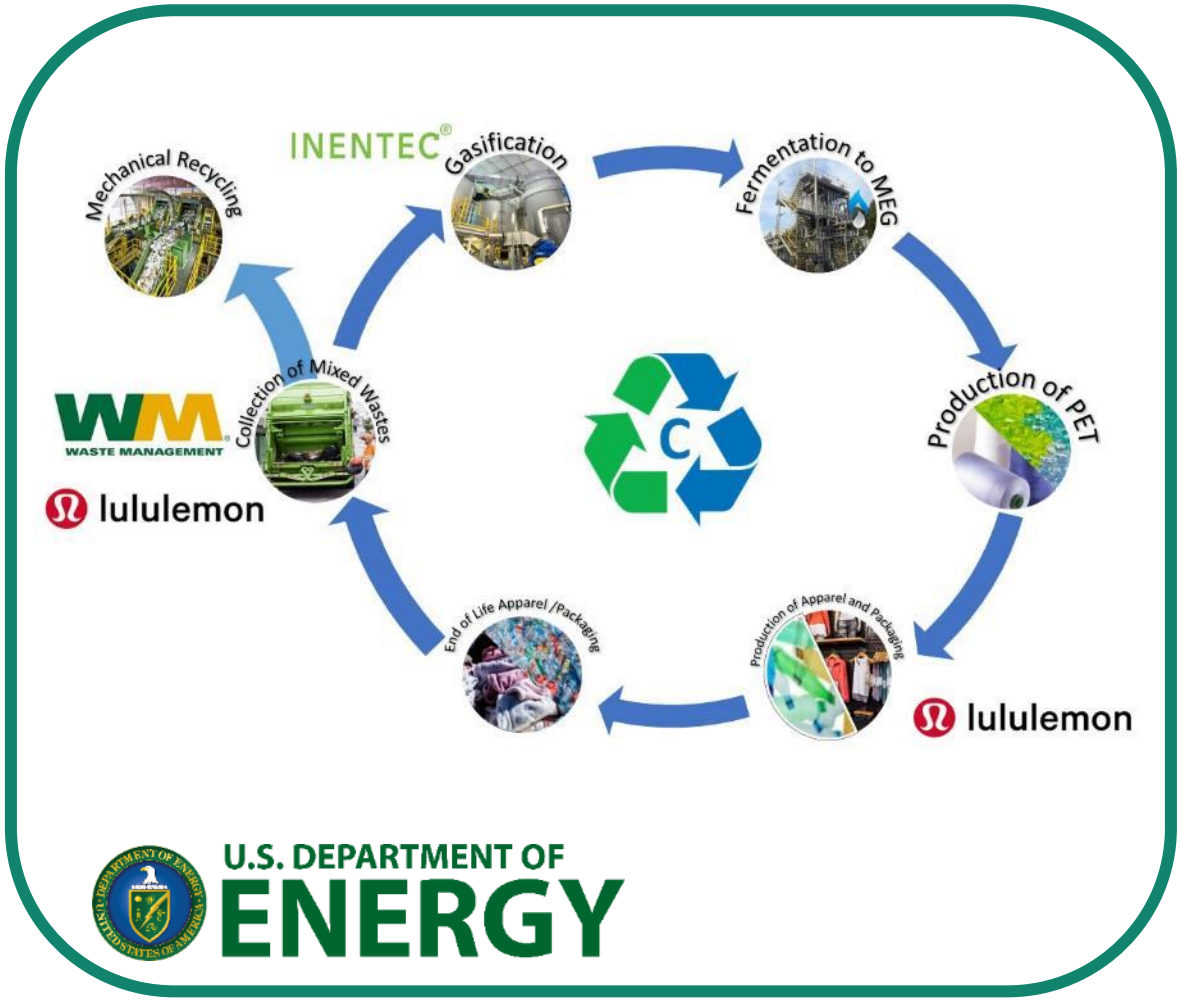
Today, a suite of tools across the development cycle have been developed

World First Anaerobic Biofoundry (cBioFab)



PET in the Circular Economy





MEG

Acetone

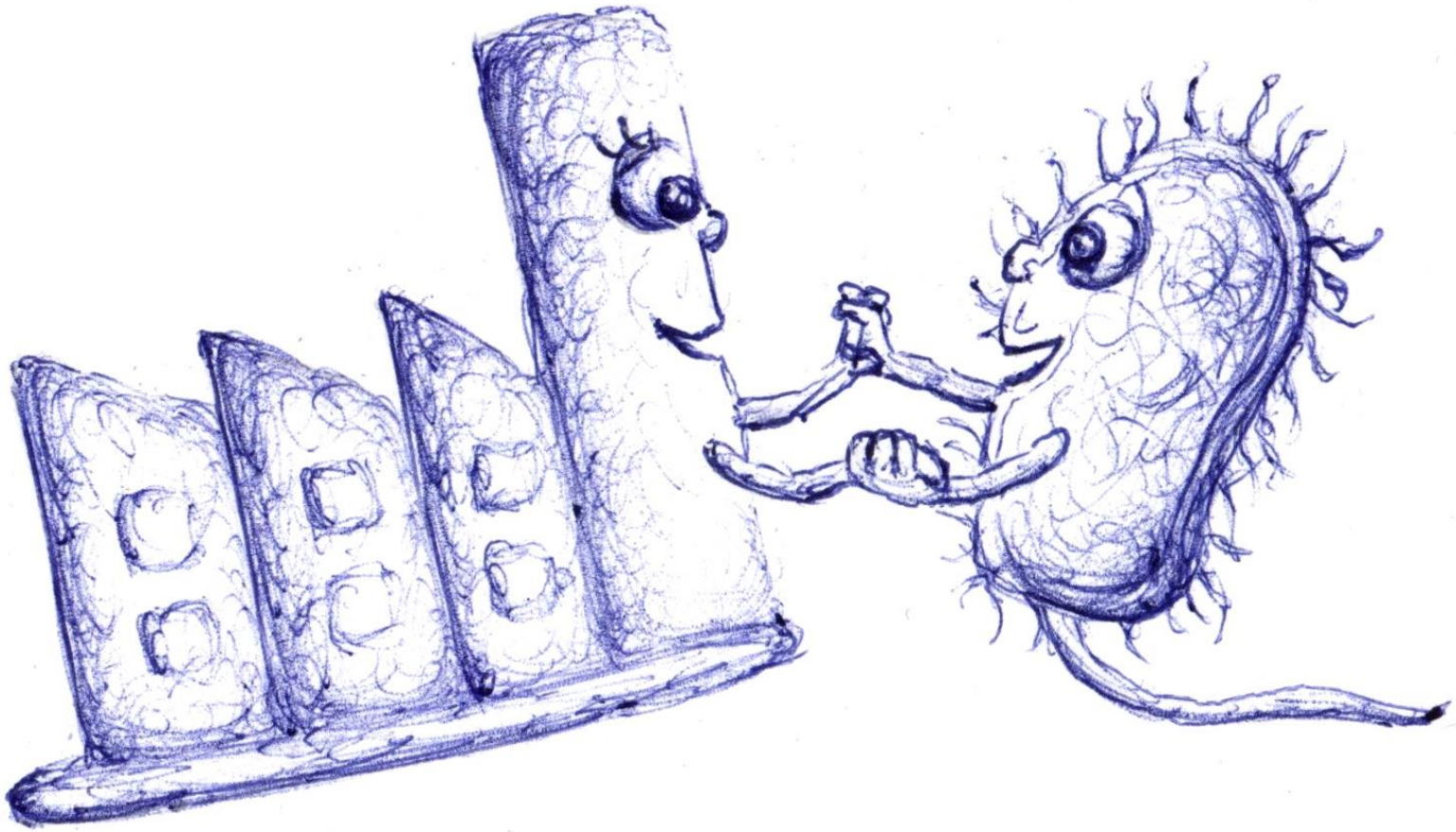
IPA

Direct Production Reduces Costs & Footprint

LanzaTech

Being Mad Without Going Crazy!!

Do Something Crazy!
Steel Mills and Microbes… a Match Made in Heaven



What was said:

1992	All gas fermenting acetogens make acetate as their sole product
2000	Gas fermentation of CO/H_2 is inherently mass transfer limited preventing commercial use
2009	Gas fermenting acetogens are genetically inaccessible
2016	The complexity of working with anaerobic acetogens is too high for high-throughput engineering to become possible
2019	Other than acetate or ethanol it is impossible to make any other product at high selectivity through anaerobic gas fermentation

Predictions are simply extrapolations of the past…

…innovation expands the 'art of the possible'

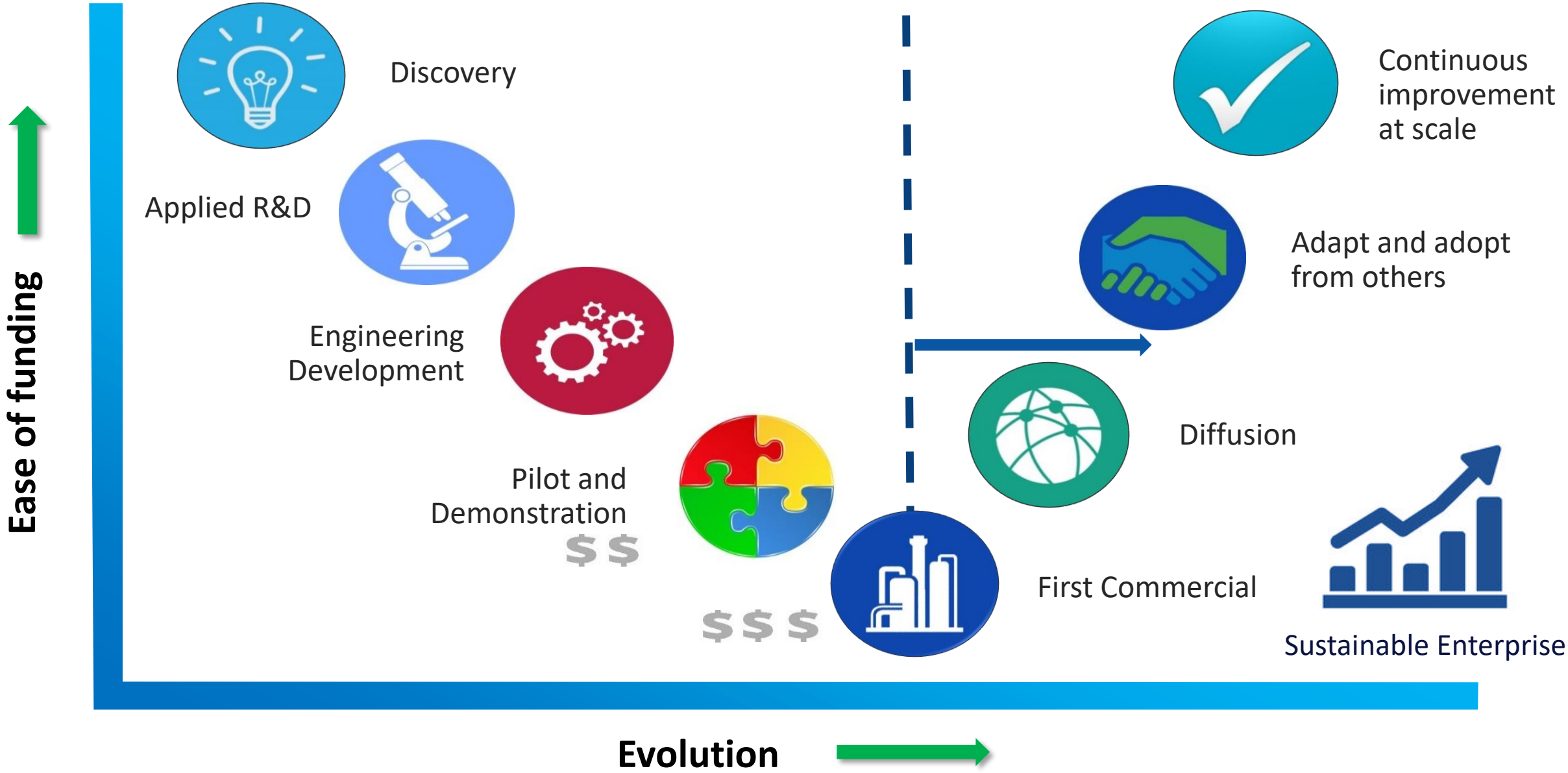
…today's 'unimaginable' is tomorrow's 'conventional wisdom.'

Make The World Your Lab!

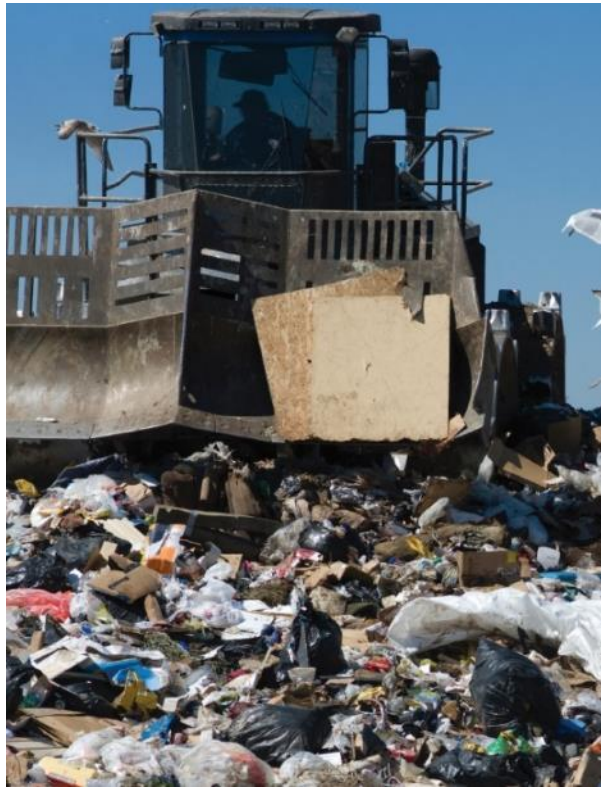
Multiple Demo plants at various scales; 100,000 operating hours

CELEBRATING **17** YEARS

Have Patience!



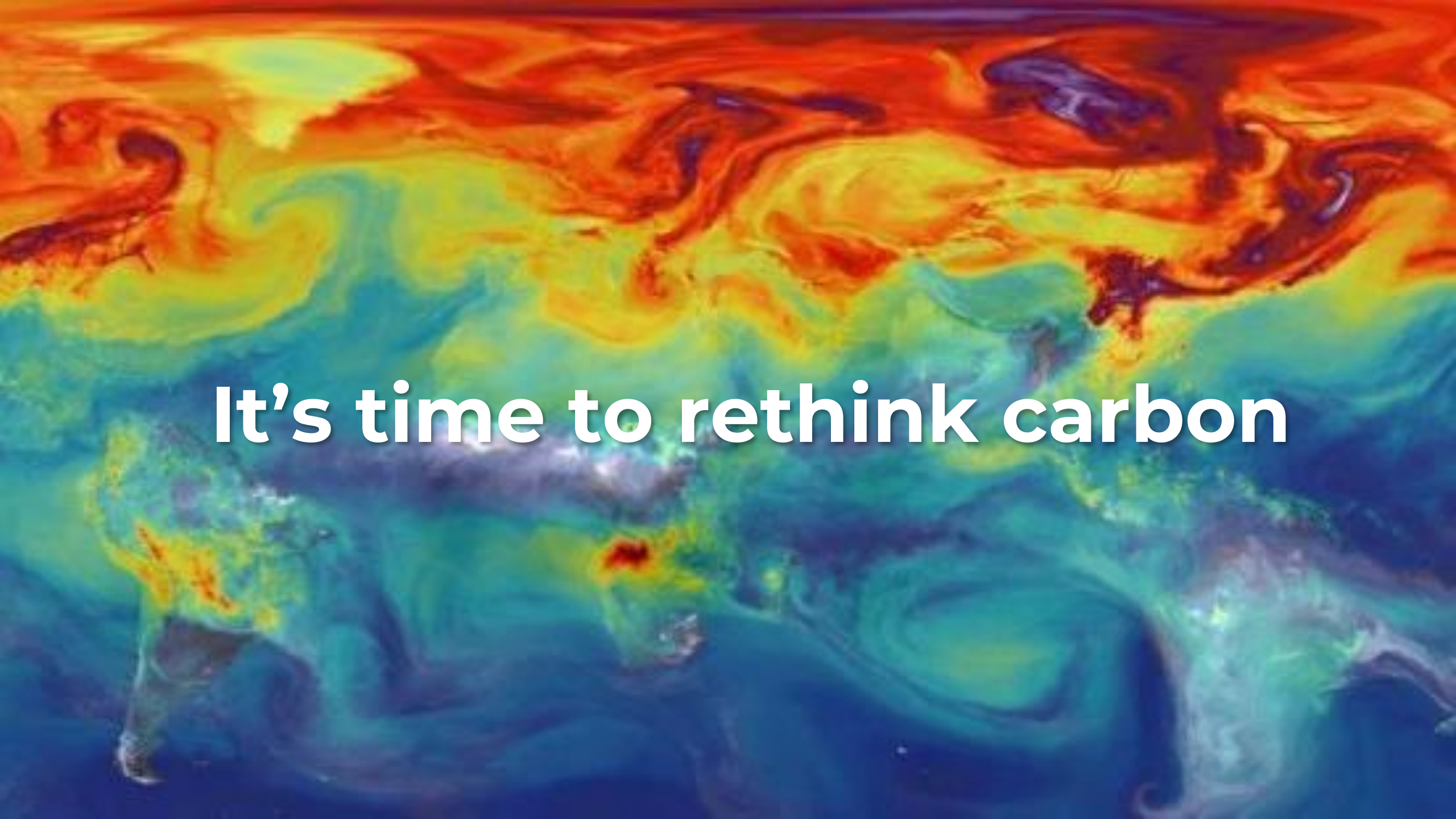


Every waste resource

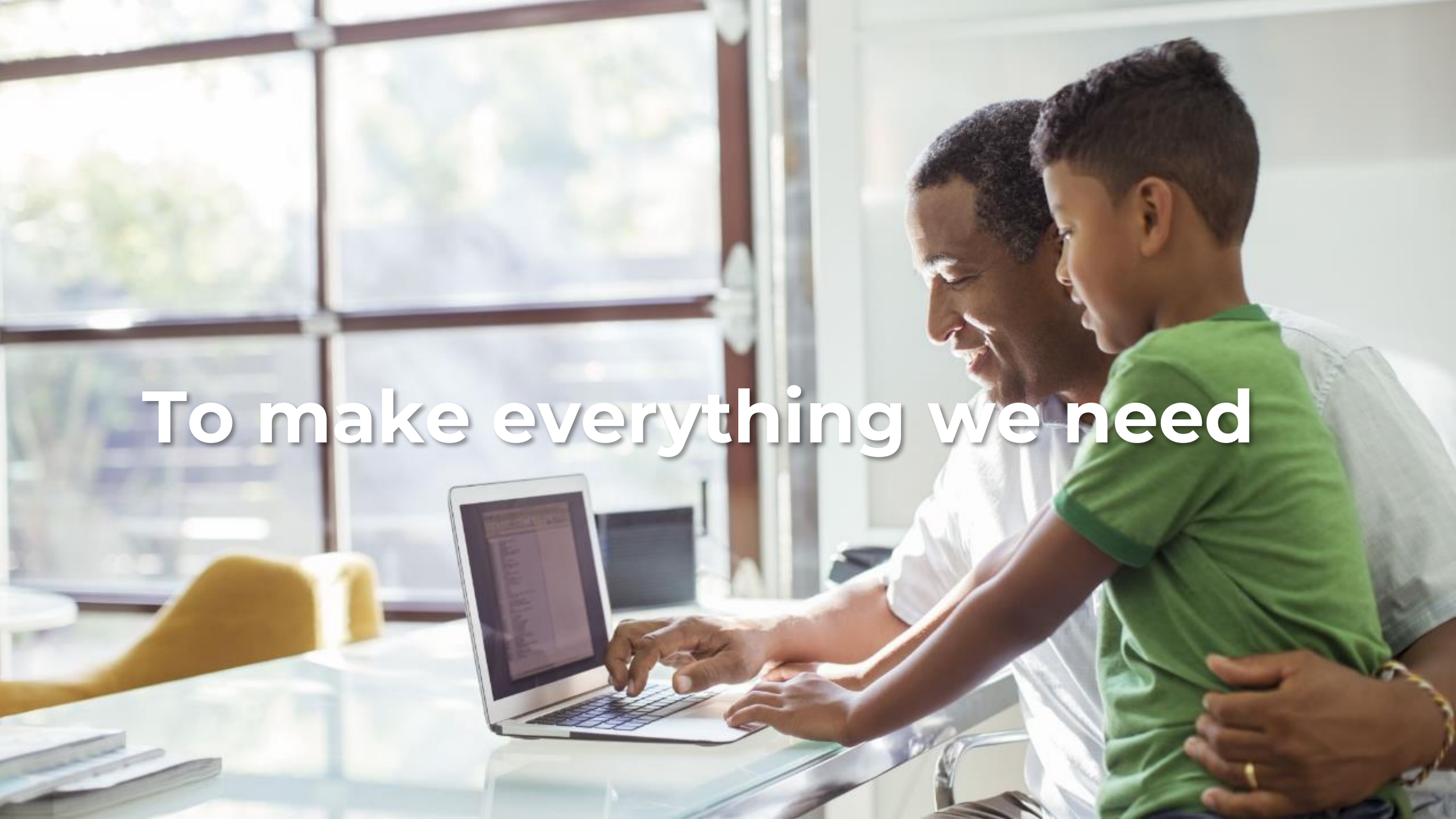
Including CO_2


Can become the things
we use in our daily lives


It’s time to rethink carbon


Rethink refining


Harness biology


To make everything we need


The first cosmetic plastic bottle made
from industrial carbon emissions.
L'OREAL
OMO
奥妙
Potz
GLAS-VITRES
Plus
3.50
3.90
Sarasay

Welcome to the Post Pollution Future

LanzaTech