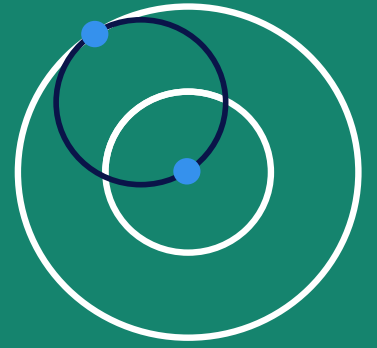


2022

# Annual Report

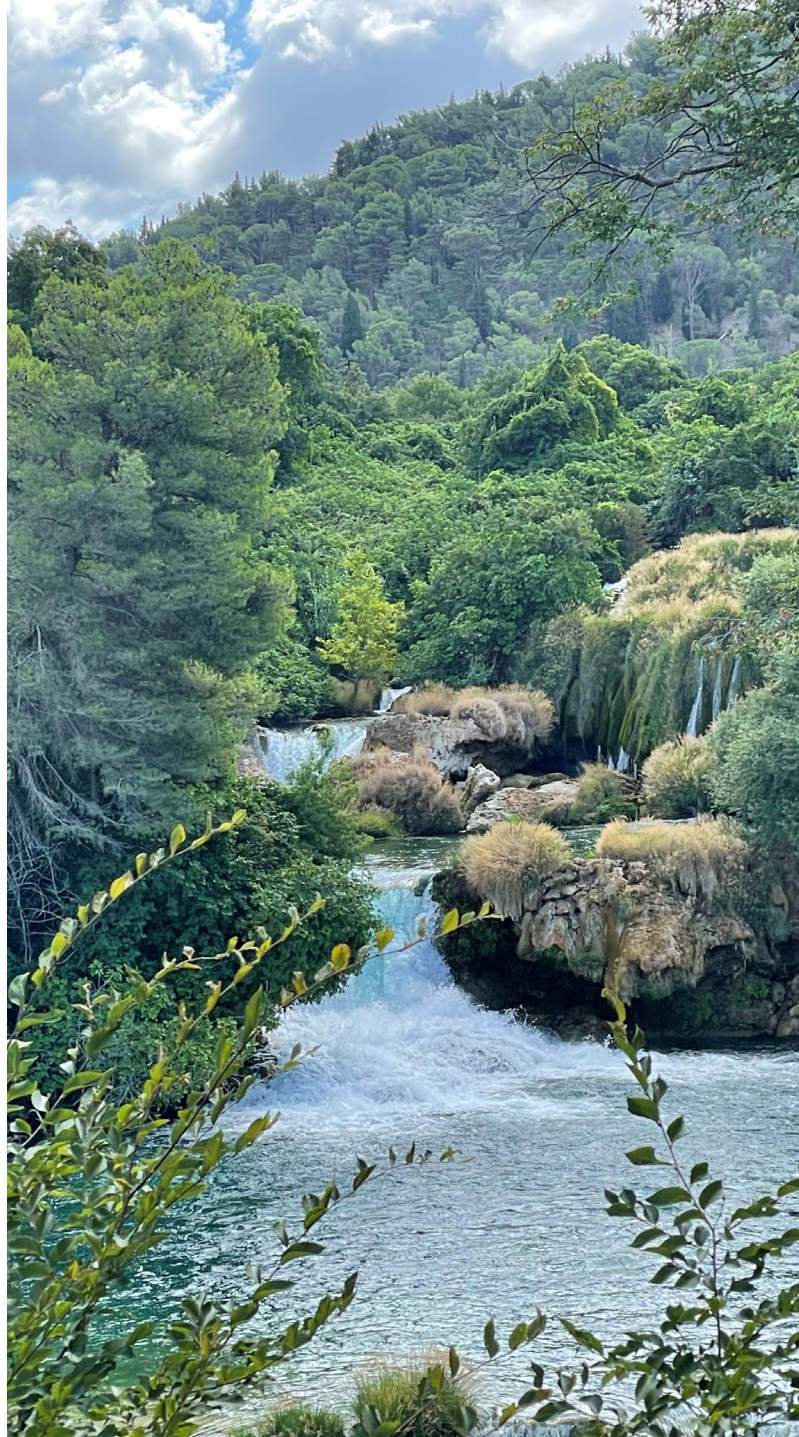
LanzaTech



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Image Credit: Erin Fry, Senior Data Engineer



This annual report contains forward-looking statements. All statements, other than statements of historical fact, included in this annual report are forward-looking statements reflecting management's current beliefs and expectations. In some cases, you can identify forward-looking statements by terminology such as "will," "anticipate," "expect," "believe," "intend" and "should" or the negative of these terms or other comparable terminology. Forward-looking statements in this annual report include, but are not limited to, statements about the initiation, timing, progress and results of our construction projects; the anticipated benefits of our biocatalysts relative to existing alternatives; the commercialization of our technology; the implementation of our business model, strategic plans for our business; the scope of protection we are able to establish and maintain for intellectual property rights covering our technology; our estimated available market opportunity; our ability to maintain and establish collaborations; our financial performance; developments relating to our competitors and our industry; and statements regarding our markets, including the estimated size and anticipated growth in those markets. These statements relate to future events or to our future financial performance and involve known and unknown risks, uncertainties and other factors that may cause our actual results, performance or achievements to be materially different from any future results, performance or achievements expressed or implied by these forward-looking statements. Except as required by law, we assume no obligation to update these forward-looking statements, even if new information becomes available in the future.

# 2022

## In Brief

LanzaTech sees a future in which our everyday products are made from recycled carbon.

In 2022, we made great strides toward that future.



3 licensed commercial facilities now operational



Received 152 granted patents and filed 215 new patent applications



2 demonstration facilities started operating



5 **new** CarbonSmart™ partnerships



2022

# A Letter From Our CEO

**Dear Friends,**

As I look back at 2022, I see many milestones—both for our shared planet and for LanzaTech as a company.

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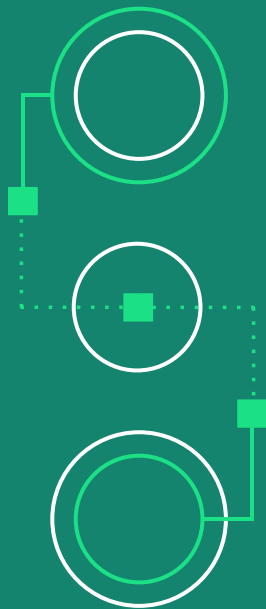
2022 witnessed the breaking of a multitude of sobering climate records: historically high temperatures, unprecedented atmospheric rivers flooding regions that had suffered years of crippling droughts, and one after another “500-year” storm. As I pen this, the Secretary-General of the United Nations, António Guterres, has issued a statement pleading for those of us in the developed world to step up and do more to “defuse the climate time bomb.”

Despite this harsh climate reality, I’m flooded with hope when I think about LanzaTech’s progress toward defusing the climate time bomb. With every passing day, our work is getting us closer and closer to a **post-pollution future**.

Our company is at the vanguard. We are working with our commercial partners to re-imagine the centuries’ old Industrial Revolution paradigm of centralized production and pollution “externalities.” LanzaTech’s Circular Climate Revolution paradigm provides a vision of resilient, distributed production—one which does not create pollution but uses it as the starting material to make the things we use every day.

This is what I mean when I say that LanzaTech is creating a **post-pollution future**. We are building a production paradigm in which the valuable goods that define “civilization” can be made from pollution.

Re-architecting the paradigm of industrial production is no small feat. In this report, I am pleased to share with you the progress we’ve made toward a better climate future over the last year and my vision for the year ahead. In my comments, I focus first on what LanzaTech is doing today—from the exciting progress the company is making in licensing industrial Carbon Capture and Transformation at scale to the partnerships we have cemented through our CarbonSmart™ business to the milestones we are achieving in lowering the carbon



footprint of air travel. Then I turn my focus to the future: as of February 2023, we are a public company. We are scaling as an organization; we are expanding our portfolio of chemical building blocks; and we are accelerating the speed of our commercial deployment.

## Safety

At LanzaTech, safety is our central operating focus. We practice a culture that prioritizes safety by beginning every meeting with a “safety moment.” Our Annual Report is no exception to this practice, so I begin with a recap of our 2022 safety performance. I am delighted to share that we completed our fourth consecutive year without a lost time injury. Globally, five employees did unfortunately sustain recordable injuries in 2022. In addition, no one was injured supporting our various field operations. Remaining vigilant on safety remains our top priority, and the entire team continues to work together to find ways to improve on our systems and protocols.

## Carbon Transformation Continues to Operate at Scale

Our licensing business achieved new milestones in 2022. The 3<sup>rd</sup> commercial facility licensing our IP, transforming emissions from the ferroalloy industry to ethanol, began operating this year. As each new facility goes live, it begins generating repeatable revenues in the “as-a-service” model.

The **Steelanol Plant** in Ghent, Belgium, at ArcelorMittal's flagship steel mill in Europe was inaugurated in December as the first European facility using our technology. This €200 million Carbon Capture and Transformation (CCT) plant is expected to start up in 2023.

In 2022, we also started commissioning the world's first refinery gas-to-ethanol facility in India.

The new waste-to-energy facility we announced with **Sekisui** started operations in Japan. This facility is 1/10th the size of a commercial-scale facility, a necessary step in the permitting process before building a full-scale commercial plant, which we expect to start operating by 2025. We are already generating revenues from this project, which will increase as we dive into design and construction services.

At a demonstration facility in Canada, we deployed our next generation bioreactor design with greater efficiency and lower operating costs. It is integrated with gasification to convert solid waste-based feedstock, such as municipal waste and forestry-residues, into ethanol and other chemicals.

As we continued to commercialize our technology with customers globally, we announced a partnership with **Brookfield Renewable**, which puts in place a system to accelerate infrastructure financing for new projects. With **Brookfield Renewable's** initial commitment of up to \$500 million, we believe this partnership will shorten the time it takes for our technology to deploy across the globe.

## The World is Becoming CarbonSmart

In 2022, we announced new partnerships with **BASF**, **Givaudan**, **Craghoppers**, and **H&M** as part of our **CarbonSmart™ Business**. We saw more products—ranging from fragrances and apparel to cleaning products and packaging—in stores and available to purchase online globally. We were also excited to share images of On Running's first CleanCloud shoe featuring EVA foam produced by LanzaTech, Technip Energies and Borealis, from ethanol from a LanzaTech facility.

Circular models of production continued to gain traction as we announced a partnership with **Bridgestone Americas** to turn old tires and post-consumer waste into ethanol and potentially butadiene, a key ingredient of new tires, creating a tire-to-tire circular system. We also announced a partnership with **Sumitomo-Riko** focused on regenerating rubber, resin, and urethane waste into isoprene, key chemical intermediate, that can be used to make a sustainable, natural rubber substitute.

Demand for CarbonSmart products with a lower carbon footprint continues to drive both consumer and licensing partner interest. Working with global brands who are embracing circular models of production continues to be tremendously exciting for the team and potential licensees. To see carbon transformation in products in stores and online shows us that the world is becoming CarbonSmart!

Image Credit: Kit McDonnell, Director of Communications





## Taking Flight: Lowering Air Travel's Carbon Footprint

We continued to make progress in sustainable aviation fuel (SAF) production. LanzaTech's Project DRAGON in South Wales received a \$30 million grant from the UK Department for Transport's Advanced Fuels Fund to support the UK advanced fuels sector in reducing near-term UK aviation emissions. Project DRAGON is the first commercial scale implementation of gas fermentation and the LanzaJet™ Alcohol to Jet (ATJ) process in the UK.

The **LanzaJet** Freedom Pines Fuels facility in Soperton, GA, the flagship commercial facility of our sister company, LanzaJet, achieved a major construction milestone in December. This plant is expected to start-up in 2023. Once complete, this facility will account for approximately 2/3 of the current SAF used in the United States.

## Synthetic Biology: Revolutionizing the Future of Supply Chains

Our scientific team adds value to LanzaTech by expanding the range of chemical building blocks our process can create (thus, expanding potential revenues in the future), decreasing the cost of operations, and increasing the efficiency of production.

In driving efficiencies and cost reductions across the platform, our scientific team continues to accelerate our ability to license and deploy our technology globally. For example, our Artificial Intelligence and Computational Biology Team is focused on training machine-learning models with the world's largest proprietary gas fermentation dataset to better understand the mechanisms behind our process and improve our predictive capabilities. These models will enhance monitoring and control systems for our customers.

In 2022, our scientists continued to expand the range of chemical building blocks available to customers using our technology. LanzaTech's platform offers customers a broad slate, from isoprene production with **Sumitomo-Riko** to direct production of mono ethylene glycol (MEG) for packaging with **Danone**.

Last year we cemented our position as a leader in carbon-negative chemical production with over 15 publications in high impact journals. In particular the story in Nature Biotechnology of **scaling up our acetone and isopropanol (IPA) process<sup>1</sup> with partners Northwestern University and Oak Ridge National Lab (ORNL)** was highly regarded. The Nature article was accessed 55,000 times and featured in over 55 news outlets.

<sup>1</sup><https://www.nature.com/articles/s41587-021-01195-w>



The highlights of our synthetic biology work in 2022 make compelling reading. Our AI tools for pathway discovery represent a significant breakthrough that will have potential lasting impacts in various sectors, from food and beverage packaging to textiles. We plan to leverage these AI tools to support customer demand for chemical production and the company's overall speed of growth in this market segment.

With team members called upon to support the US Administration and the National Academy of Science in matters around Synthetic Biology, 2022 was a strong year of progress for LanzaTech.

### Our Message Resonates

In 2022, we enjoyed seeing our momentum reflected by significant media coverage and industry interest, garnering features in over 2,500 articles and over 200 speaking engagements globally. We saw the team involved in several prominent TV segments in the United States and around the world as the only US finalist for the **Earthshot Prize**, the global environmental prize launched by Prince William and the Royal Foundation in 2020 for solutions to climate change and environmental issues. We also won **The Energy Globe Award**, a highly coveted global environmental award honoring solutions that have a real-world impact.

### Welcoming 2023

We head into 2023 in a strong position. In 2022, we nearly doubled our total revenue from the prior year and ended the year with a secure balance sheet. In February 2023, we

completed our business combination with AMCI Acquisition Corp. II and raised \$235 million in gross proceeds to become the world's first public carbon capture & transformation company. Looking ahead, I believe we have the financial resources needed to execute our business plan and a three-pronged business model to drive demand for recycled carbon from plant to product. We intend to continue expanding our global reach while investing in our technology and our team.

There is no doubt that 2022 was **transformative**. We are embarking on the next stage of our journey and every week brings new and exciting developments and results. This wouldn't be possible without the continued support of our friends, partners and of course, the entire LanzaTech team, who are dedicated to our mission of creating an equitable and just post-pollution world. We have much to be proud of but there is a lot more work to get done. **Together we will make it happen.**

**Jennifer Holmgren**  
Chief Executive Officer

@LanzaTech @TodaDogs

# Health and Safety

Safety is LanzaTech's top priority. Employee participation is critical to keeping safety at the forefront of what we do across the organization. Our "No Blame" safety culture allows everyone to engage with safety. We foster a culture and work ethic that promotes continuous systemic improvements across all company areas. Additionally, we work extensively with our partners to ensure that our technology is deployed and operated safely around the world.



## 2022 Safety Performance

In 2022, we focused on improving our existing systems and tools to address the risks and hazards we face across the business. Globally, we completed our fourth consecutive year without a lost time injury; however, this year we unfortunately had five employees sustain recordable injuries. To reemphasize safety as a top priority, our senior leadership and the Environment, Health & Safety (EH&S) team met regularly to reevaluate our systems and protocols. Our strong safety culture resulted in continued employee engagement, and we achieved year-over-year improvement in employee participation as measured by employee submissions of EHS reports and sharing of safety moments at the start of all internal meetings.

### Employee Driven EH&S Reporting

Employee-driven EH&S reporting is a critical component of our safety culture. Routine updates to our reporting process facilitate the capture of safety data to quickly and accurately identify trends while building safety intelligence. EH&S reports have directly impacted increasing productivity, lowering incident rates, and reducing costs. With the help of our Safety Committees, we are constantly reviewing data and analyzing new ways to streamline and improve this process. We are also increasingly pushing accountability for safety to everyone across the organization to foster a robust, interdependent safety culture.

### Design and Process Safety

Design and process safety are critical to our success by allowing us to identify potential risks and areas for continuous improvement. This ensures our facilities are designed, constructed, operated, and maintained in a manner that will not cause harm to employees, the community, or the environment. Within this context, compliance with regulatory standards is a priority at LanzaTech. Given our global reach and the diversity of our clients, staying current on regulations and incorporating them into our design and processes is vital to the safety and success of our operations.



# Key Events in 2022



## Commercial Plant Development Continues

Our third commercial facility, in partnership with **Beijing Shougang LanzaTech New Energy Technology, Co., Ltd. (SGLT)**, began operating in China's Ningxia Province in September 2022. This facility converts ferroalloy emissions to ethanol and has an annual capacity of about 60,000 tons.

## Materials Circularity in Japan

The new waste-to-energy facility LanzaTech announced with **Sekisui** in Japan completed commissioning and became operational. This first-of-its-kind demonstration plant is approximately 1/10th the size of a commercial scale facility and shows materials circularity in action. It is producing ethanol made from about 20 tons per day of municipal solid waste sourced from Kuji City.



## Next-Gen Bioreactor

LanzaTech announced the deployment of its next-generation bioreactor, currently operating in a demonstration-scale facility in Canada with partner **Suncor**. Utilizing gasified biomass, this project finished construction and is operational.

# Key Events in 2022

## Inauguration of ArcelorMittal Steelanol Flagship Facility

December saw the inauguration of **ArcelorMittal's** flagship Steelanol facility in Europe, considered the first of its kind in the European steel industry. A €200 million carbon capture and utilization (CCU) facility using LanzaTech's technology, this plant will help reduce CO<sub>2</sub> emissions in the ArcelorMittal steel plant in Ghent, Belgium.

Image Credit: ©Bevas-Stym.be



## Running On Clouds

Swiss sporting goods company **On** has introduced sustainable innovation to the footwear industry. In September, On revealed Cloudprime, the first-of-its-kind shoe made from CleanCloud™ EVA foam that uses carbon emissions as a primary raw material. CleanCloud is the result of a pioneering supply chain partnership including LanzaTech, **Borealis**, and **Technip Energies**.



## CEO Participated in White House Event Celebrating Biotechnology

On behalf of LanzaTech, Jennifer Holmgren was invited to **The White House** to participate in The Summit on Biotechnology & Biomanufacturing for the American Bioeconomy. She briefed the President's national economic and security advisors on the progress LanzaTech has made in leveraging biotechnology and biomanufacturing for a safe, secure, and sustainable U.S. bioeconomy.

Image Credit: Tom Dower



# Key Events in 2022



## Sustainable Beauty & Fragrances

The global beauty brand, **Coty**, announced the production of perfumes using LanzaTech carbon-captured ethanol at its manufacturing facility in Spain. This is part of a plan to integrate renewable carbon into most of its fragrance portfolio in 2023.

**Givaudan**, a global industry leader in scent and beauty, announced a research collaboration with LanzaTech to develop sustainable fragrance ingredients from renewable carbon. LanzaTech and Givaudan will work together to establish novel pathways to key fragrance ingredients used across the Givaudan portfolio.

## Recent Sustainable CarbonSmart™ PET Initiatives by Top Brands: Innovative Packaging, Clothing, and More

- **DrogerieMarkt** (dm) in Germany launched a range of packaging for their “Denk Mit” range of dish soap.
- **Zara** launched a second limited-edition clothing collection in the Spring that quickly sold out.
- **Danone** announced a collaboration to make packaging for the Mizone water line in China.
- **Craghoppers**, British outdoor and travel clothing company, made a fleece jacket and half zip from recycled carbon to be launched to the public in September 2023. This CO2RENU fleece was a winner at the 2022 ISPO Awards in Munich!
- **H&M Move** announced that a capsule collection, made in collaboration with LanzaTech, will launch in 2023.

Image Credit: Craghoppers



# Key Events in 2022

## Partnerships Promoting Material Circularity

We expanded into the automotive sector and announced an exclusive partnership with **Bridgestone Americas** to turn end-of-life tires and post-consumer waste into ethanol and potentially butadiene, a key ingredient of new tires, creating a tire-to-tire circular system that embodies end-to-end material circularity.

LanzaTech and **Sumitomo Riko Company Limited** announced they entered into a joint-development agreement to reuse rubber, resin, and urethane waste to produce a key chemical intermediate, isoprene, that can be used to make a sustainable natural rubber substitute.



(19) **United States**  
 (12) **Patent Application Publication** (10) Pub. No.: **US 2022/0372426 A1**  
 Rosin et al. (45) Pub. Date: **Nov. 24, 2022**

(54) **INTEGRATED PROCESS FOR FILTERING CONSTITUENTS FROM A GAS STREAM**  
 (71) Applicant: **LanzaTech, Inc.**, Skokie, IL (US)  
 (72) Inventors: **Richard Rosin**, Glenview, IL (US); **Jason Greene**, Arlington Heights, IL (US); **Taylor Schultz**, Chicago, IL (US)  
 (21) Appl. No.: **17817,097**  
 (22) Filed: **Aug. 3, 2022**

**Related U.S. Application Data**  
 (63) Confirmation of application No. 16,273,865, filed on Feb. 12, 2019; now Pat. No. 11,441,116.  
 (60) Provisional application No. 62/629,160, filed on Feb. 12, 2018; provisional application No. 62/656,813, filed on Apr. 12, 2018.

**Publication Classification**  
 (51) Int. Cl. (2006.01)  
**C12M 1/00** (2006.01)  
**C12M 1/34** (2006.01)  
**C12P 1/04** (2006.01)  
**C01B 3/38** (2006.01)

(52) **U.S. CL.**  
 CPC ..... **C12M 43/04** (2013.01); **C12M 29/26** (2013.01); **C12M 41/34** (2013.01); **C12M 21/12** (2013.01); **C12P 1/04** (2013.01); **C01B 3/38** (2013.01); **C12M 47/18** (2013.01); **C01B 22/0007** (2013.01); **C01B 22/03-0485** (2013.01); **C01B 22/03-0475** (2013.01); **C01B 22/10/0067** (2013.01); **C01B 22/10/0064** (2013.01); **C01B 22/10/0051** (2013.01); **C01B 22/03-043** (2013.01)

(57) **ABSTRACT**  
 The invention provides a process for producing a fermentable gas stream from a gas source that contains one or more constituent which may be harmful to the fermentation process. To produce the fermentable gas stream, the gas stream is passed through a specifically ordered series of removal modules. The removal modules remove and/or convert various constituents found in the gas stream which may have harmful effects on downstream removal modules and/or inhibitory effects on downstream gas fermenting microorganisms. At least a portion of the fermentable gas stream is preferably capable of being passed to a bioreactor, which contains gas fermenting microorganisms, without inhibiting the fermentation process.

## Constant Innovation with Over 1,250 Patents Secured

Innovation is critical to LanzaTech's progress and success in creating a post pollution future. In 2022, we received our 1,259<sup>th</sup> patent and had 565 pending patent applications, across 141 patent families in the U.S. and various foreign jurisdictions.

## Brookfield Renewable Partnership Revolutionizes LanzaTech Co-Development Strategy

LanzaTech and **Brookfield Renewable** formed a strategic partnership whereby Brookfield committed up to \$500 million of equity capital to invest in and build new commercial-scale production plants that will employ LanzaTech's carbon capture and transformation technology.



# Key Events in 2022



## New Center for Multi-Scale Synthetic Biology

A team from **Northwestern University**, **Yale University**, the **National Renewable Energy Laboratory (NREL)**, and **LanzaTech** received \$18.5 million in funding, from a \$178 million **U.S. Department of Energy** grant, for integrating cell-free systems and genome engineering to accelerate biosystems design for carbon-negative biomanufacturing.

## Notable Awards

We were widely recognized for our achievements and progress in 2022. We were named a finalist for **The Earthshot Prize 2022**, an environmentalism award presented by The Royal Foundation and Prince William. LanzaTech was the only finalist from North America. In addition, we won first place in the "Air" Category at the **23rd Annual Energy Globe Awards**. Jennifer, our CEO, was honored as the **TiE Sustainability Entrepreneur of the Year**.





2022

## Financial Overview: A Letter From Our CFO

We are publishing our 2022 Annual Report at an inflection point in LanzaTech's history. We have closed the chapter on the company's phase as a private company, and now, building on nearly two decades of work, we carry on our efforts to scale our commercial operations as a newly public company. This report reflects our performance during our final year as a private company. We celebrate the commercial achievements that led up to LanzaTech's public listing on Nasdaq in February 2023, which equipped our business with the public platform and capital needed to advance the company into its next phase of growth.

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Our core business model is capital-light and highly scalable—we license our Carbon Capture and Transformation (CCT) platform to customers and partners to help them profitably decarbonize their industrial processes using our gas fermentation process technology. This platform is compatible with a wide array of waste carbon feedstocks, allowing us to partner across industries and geographies and rapidly scale and deliver sustainable shareholder value.

As we closed out 2022, three facilities were deploying the LanzaTech platform and operating at commercial scale. In 2023, we anticipate the startup of three additional commercial scale plants, including our first commercial deployments in Europe and India.

In October 2022, we announced a strategic partnership with Brookfield Renewable that provides an initial commitment of up to \$500 million of equity capital to invest in projects LanzaTech will co-develop with Brookfield. We are proud to partner with one of the world's largest and most reputable infrastructure funds to unlock new financing sources for projects and accelerate the deployment of additional commercial-scale plants with our CCT technology.

Image Credit: Kit McDonnell, Director of Communications



In 2022, LanzaTech continued to enhance our core business model with the expansion of our CarbonSmart™ and Joint Development partnerships. Our CarbonSmart business partners with brands to provide sustainable, recycled carbon-based alternatives to materials in their existing supply chains. Expanding CarbonSmart demand drives demand for additional LanzaTech-enabled, licensee-owned production capacity and enhances the economics of those projects.

Our Joint Development business enables our partners to leverage LanzaTech's world class synthetic and computational biology resources to develop new microbial strains that will produce next generation recycled carbon chemicals in our biorefineries—thus driving more demand for biorefineries enabled by our CCT platform and expanding the total addressable market for CarbonSmart chemicals and materials.

As an innovative and purpose-driven organization, we have bold ambitions for ourselves and our impact on the circularization of the global carbon economy—impact that is directly correlated with our ability to rapidly and profitably scale our commercial operations. In 2022, we grew our total revenue by approximately 47% YoY, led by our licensing and CarbonSmart partnerships. We finished 2022 with a strong balance sheet, and, combined with the proceeds from our go-public transaction in early 2023, we believe we have the financial resources necessary to fully execute our business plan. In 2023, we expect significant top line growth, putting us on a path to turn EBITDA positive by the end of 2024.

On February 8, 2023, we successfully completed our business combination with AMCI Acquisition Corp. II

becoming LanzaTech Global, Inc. (Nasdaq: LNZA). Through the transaction, we raised \$235 million in gross proceeds, including \$185 million coming in the form of a common equity Private Investment in a Public Entity (PIPE) investment. We thank our world-class strategic and financial investors, new and old, for their confidence in and commitment to LanzaTech in what was a challenging financing environment. We believe the support evidenced throughout this process clearly exhibits the backing of and excitement for our business.

The momentum behind LanzaTech's solutions is building: more commercial plants mean more carbon being redirected from the atmosphere and less carbon being extracted from the ground. We are rapidly growing and progressing our pipeline of commercial projects that are at earlier stages of development, reflecting the increasingly strong demand in the market for our carbon abatement solutions as well as for the sustainable chemicals, fuels, and products that they produce. LanzaTech is keenly focused on execution to meet this moment and achieve the growth potential of our platform in years to come.

**Geoff Trukenbrod**  
*Chief Financial Officer*

 @geofftruk

The financial results contained in the Form 10-K filed with the SEC, reflects the operations and financial results of AMCI Acquisition Corp. II ("AMCI") for the period ended December 31, 2022, as AMCI's business combination with LanzaTech NZ, Inc. was completed on February 8, 2023, resulting in the creation of LanzaTech Global, Inc. The following financial discussion reflects that of LanzaTech NZ, Inc. for the year ended December 31, 2022, and LanzaTech Global, Inc. on a forward-looking basis. For detailed information on LanzaTech's financial results and performance, please see the separate information filed with the SEC and available at [www.sec.gov](http://www.sec.gov).

2022

# Financial Performance

As a tenacious and ambitious organization, we set bold targets for ourselves to continue to circularize the global carbon economy. In 2022, LanzaTech released commercial announcements at a rapid pace. We are fortunate to work with a diverse set of customers striving to reduce their environmental footprints and have the demonstrated support of a strong group of financial and strategic investors who share our vision for a post-pollution future.

## Continued Revenue Growth

LanzaTech's total revenue grew approximately 47% from 2021, to \$37.3 million. This growth reflected new, ongoing, and expanding licensing partnerships with our platform licensees, as well as the continued commercialization of our CarbonSmart business. Our operating expenses increased from \$61 million to \$84.7 million while our COGS were \$28.3 million, as we continued to grow our headcount and expand our technological capabilities.

As we continued to invest in scaling our technology, growing our team, and expanding our global reach, we saw our net loss increase to \$76.4 million, a 64% change from 2021. As additional projects come online in 2023 and beyond, we expect the operational leverage and capital-light nature of our platform to result in attractive and rapid improvement in margins and profitability.

## Strong Balance Sheet

Our cash and cash equivalent position at the end of 2022 was \$83 million, not including the additional ~\$155 million in transaction proceeds from our business combination completed in February 2023. We expect that this will be sufficient to fully execute our business plan without needing to raise additional capital.







## Strategy

A world leader in gas fermentation, we are enabling the valorization of waste streams and reduction of environmental pollution through our carbon capture and transformation technology. We are laying the foundation for a new circular carbon economy.



## Capital-Light Business Model

LanzaTech's capital-light, licensing business model enables us to significantly accelerate the deployment of our technology around the globe. Creating decarbonization opportunities for customers provides them with a profitable means to reach their sustainability goals. This licensing model focuses on generating recurring licensing and services fees from our commercialization efforts while our partners own and operate the facilities. This capital-light model enables us to concurrently work with several partners to build customer-owned gas fermentation facilities in parallel, accelerating the spread of our technology platform. This model is designed to generate stable, recurring revenues. We anticipate demand to compound as incremental customer plants are built and validated by our pipeline of customers.

**Drivers:** Expanding customer base accelerating repeatable technology deployment.

## Commercializing CarbonSmart

LanzaTech currently supplies the raw materials for a variety of CarbonSmart™ products at commercial scale. LanzaTech's CarbonSmart portfolio includes ethanol, PET fibers for textiles, PET resin for packaging, and ethoxylates, all based on recycled waste carbon feedstocks. LanzaTech supports the sustainability ambitions of several consumer brands, driving the circular economy by providing drop-in, recycled carbon alternatives to essential products in their supply chains. Demand is also rapidly growing. In 2022, five new CarbonSmart partnerships were announced. With three commercial facilities in operation and a robust project pipeline, we expect CarbonSmart material availability to continue to increase as new plants are commissioned. Growing material availability allows us to support our customers' growing demand as they transition to recycled carbon raw materials to achieve their ambitious sustainability targets.

**Drivers:** Increasing consumer demand and CCT plant licensing.

## Expanded Feedstocks

Our technology platform is designed to use a variety of waste feedstocks, and we have demonstrated the commercial success of gas fermentation on feedstocks from a broad array of waste. In addition to steel and ferroalloy industrial off-gases, we expanded our portfolio this year to include waste-based feedstocks (municipal solid waste ("MSW") and forestry-residues). Commercial projects using refinery off-gases, industrial and biorefinery CO<sub>2</sub>, biomass residues, and gasified mixed plastic wastes are under development. These feedstocks demonstrate the broad application of our technology and reinforce our core belief that a low-carbon future can be unlocked using available above-ground waste carbon.

**Drivers:** Growing customer mix.

## Co-Development Projects

LanzaTech and Brookfield Renewable formed a strategic partnership with an initial commitment of up to \$500 million to co-develop and build new commercial-scale production plants that employ LanzaTech's CCT technology. This partnership unlocks long-term, sophisticated infrastructure capital to invest in projects globally and validates the LanzaTech technology platform. Highlighting LanzaTech's capital-light business model, this joint development initiative creates a customer to provide much-needed supply for the massive, immediate, and rapidly growing demand from CarbonSmart and sustainable aviation fuel (SAF) customers.

**Drivers:** Increasing demand for CCT plant licensing to accelerate deployment.

*Our capital-light model enables us to concurrently work with several partners to build customer-owned gas fermentation facilities in parallel, accelerating the spread of our technology platform.*

# Growing Our Commercial Pipeline

Highlighting our near term paths to scale

**3** Commercial Plants  
**Now Operational**

**2** Demonstration Plants  
**Started Operating**

**4** Plants in  
**Construction**  
(to be completed in 2023)

**8** Commercial Plants in  
**Engineering**

## Feedstocks Represented



Steel &  
Ferroalloy Gas



MSW



Refinery Gas



Biomass



CO<sub>2</sub> + H<sub>2</sub>



Biogas



## Regions Represented

Australia  
Canada  
China  
European Union  
India  
Japan  
United Kingdom  
United States

*Numbers & figures as of 12/31/2022*



# Innovation

Innovation and technology represent the heart of our company and key to our progress and success in creating a post-pollution future. We work tirelessly to develop and improve sustainable and circular solutions, with around 65% of our personnel dedicated to innovative research, modeling, process development, and engineering.

## Important Innovations in 2022



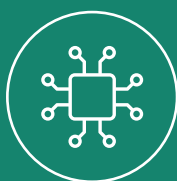
152 granted patents and 215 new patent applications filed, including grants in patent families for the production of 2,3-butanediol and polyhydroxy butyrate, for ethanol purification, and for syngas treatment.



In collaboration with Suncor, delivered our next-generation bioreactor to demonstrate increased efficiency in our process and lower production costs.



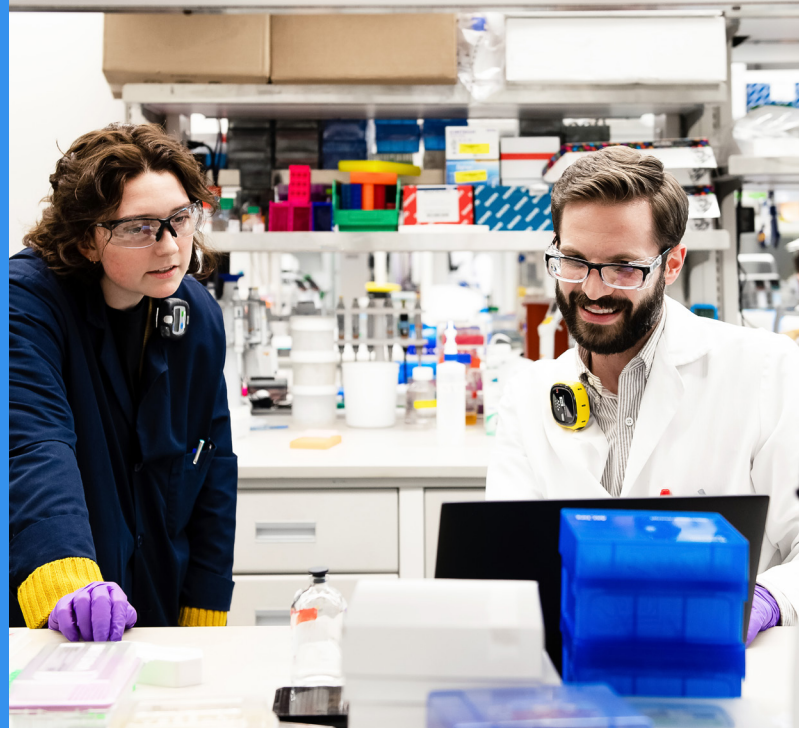
Successfully engineered specialized microbes to directly produce ethylene from CO<sub>2</sub> in a continuous process at lab scale. This achievement brings us closer to tackling one of the most significant causes of CO<sub>2</sub> emissions in the chemical industry.



Created an AI & Computational Biology Team to lead bioinformatics, modeling, and artificial intelligence work. The team's focus spans metabolic modeling for new chemical production to machine learning for improving commercial efficiency.

Image Credit: Natalie Pixopoulou, Project Development Manager

# Synthetic Biology: Revolutionizing Supply Chains



Our expertise in synthetic biology presents unique opportunities to change how supply chains source chemicals currently made from virgin fossil resources. In 2022, we announced numerous partnerships that leverage this expertise, including producing propane from recycled and renewable carbon with SHV Energy and fragrance ingredients with Givaudan. We also teamed up with Danone and a wider consortium to scale sustainable packaging production through the direct production of MEG, a key building block for PET.

We are at the forefront of carbon-negative chemical production. Today, LanzaTech can offer customers a path to many CarbonSmart™ chemicals via conversion of ethanol made from our CCT process. Looking forward, LanzaTech has demonstrated the continuous direct production of ethylene from waste CO<sub>2</sub>. As a bulk commodity chemical with a projected global market value of \$170 billion by 2030<sup>2</sup>, this development has the potential to significantly transform global chemical supply chains and improve the way our everyday goods are made.

Direct production of MEG, the key building block for PET, was also announced in 2022 as part of our partnership with Danone and a wider consortium to scale the process for sustainable packaging production.

We take our leading role in carbon-negative chemical production seriously and regularly contribute to academic literature to further advancements in the field when possible. In 2022, we published over 15 papers in high-impact journals. We received industry recognition for our recent paper in *Nature Biotechnology* on scaling up our acetone and isopropanol (IPA) process with partners Northwestern University and Oak Ridge National Lab (ORNL). Part of that work was funded through a five-year Biosystems Design program grant from the U.S. Department of Energy (DOE) Office of Science in partnership with Northwestern University, as well as grants from the U.S. DOE Bioenergy Technologies Office and collaborative awards to U.S. DOE National Laboratories.

We also were the sole corporate recipient of a highly competitive ~\$19 million BioSystems Design award from the U.S. DOE.

Our synthetic biology work has the potential to change the multi-trillion-dollar chemical market. With team members called upon to support the U.S. Presidential Administration and the National Academy of Science in matters around synthetic biology, 2022 was a strong year of progress for LanzaTech.

<sup>2</sup>Source: Market Research Future

*We are at the forefront of carbon-negative chemical production.*

# Making Products CarbonSmart

In a CarbonSmart™ world, carbon waste becomes the building block to produce nearly everything we use in our daily lives.

There are 450 million metric tons of embedded carbon in chemicals today.<sup>3</sup> LanzaTech's proven technology enables a closed-loop, circular carbon economy in which the chemicals used to make everyday products and materials are regenerated rather than relegated to landfill, ocean pollution, or emissions. These CarbonSmart chemicals offer an improved carbon footprint through the use of carbon that is recycled from waste emissions as a feedstock and transformed into chemicals through the LanzaTech process.

Currently, we have established a broad range of market applications for CarbonSmart chemicals, such as sustainable aviation fuel (SAF), PET for plastics, and polyester for fibers. CarbonSmart has enabled a portfolio of recycled carbon products—and more in development—that can integrate into existing chemical value chains. We anticipate that as more commercial facilities begin operating, we will see increased potential to penetrate additional markets.

## \$1 Trillion Addressable Market<sup>4</sup>



Potential for >1 billion tons/year of product from waste feedstocks

<sup>3</sup> Nova Institute.

<sup>4</sup> Per Grand View Research (2019), Allied Market Research (2018), The Business Research Company (2019), Technavio (2019), Fortune Business Insights (2019) and Knowledge Sourcing Intelligence (2020).

# Where Does Your Carbon Come From?

**Purified ethanol in home cleaning products:** LanzaTech's purified ethanol from steel mill off-gases is used in household cleaning products from **Mibelle Group** sold in Migros Shops in Switzerland.



**Ethanol converted into surfactants for laundry detergent:** LanzaTech's partner **Unilever** launched limited edition laundry detergents and washing up liquid, utilizing CarbonSmart™ ethanol as input for surfactant production.

**Ethanol converted into polyester for apparel and PET for packaging:** LanzaTech ethanol was utilized for conversion to ethylene and to monoethylene glycol (MEG), a building block for PET production. This compound was used to make polyester yarns and fabric for **lululemon** and **Zara** apparel collections, and to produce PET bottles for **Mibelle Group** household cleaners and cosmetic products sold in Germany and Switzerland.



# From Waste to Wing



# 10B

The aviation industry has a goal to use 10% sustainable aviation fuel (SAF) by 2030.<sup>5</sup> This translates to around 10 billion gallons of production. We are working with LanzaJet to help achieve this goal.

# ~\$30M

Grant from UK Department for Transport Advanced Fuels Fund in support of Project DRAGON.

LanzaTech has over a decade of experience scaling up, validating, and qualifying the LanzaJet alcohol-to-jet (ATJ) technology. LanzaTech completed the core technology development with **Pacific Northwest National Lab** (PNNL) with financial support from the **U.S. Department of Energy**. LanzaTech spun out **LanzaJet** in 2020 into an independent entity to accelerate the commercialization of ATJ technology. LanzaJet's ATJ technology is leveraging existing low-carbon intensity ethanol and is enabling a transition to new sources of waste-based ethanol.

The **LanzaJet Freedom Pines Fuels** facility in Soperton, GA, achieved a significant construction milestone in December 2022. The plant is expected to start-up in 2023. This facility is expected to account for approximately 2/3 of the current SAF used in the United States.

LanzaTech's SAF projects are in various stages of development in the European Union and the UK.

In September 2021, **Project DRAGON** (Decarbonising and Reimagining Aviation for the Goal of Net Zero) was formally initiated. This waste-to-SAF project received grant funding from the **UK Secretary of State for Transport** and **Innovate UK**. In December 2022 LanzaTech received an approximately \$30 million grant from the **UK Department for Transport** as part of the Advanced Fuels Fund<sup>6</sup>, to support the UK advanced fuels sector in reducing near-term UK aviation emissions. This project is expected to commence at Port Talbot in South Wales. The proposed facility would use LanzaTech's process technology to convert various waste sources into waste-based low-carbon ethanol. This ethanol would then be converted to SAF and diesel fuel using LanzaJet's ATJ technology.

<sup>5</sup>Source: World Economic Forum





Per Year

**100M** Liters

The goal for a fully operational waste-to-SAF facility in Port Talbot, South Wales, United Kingdom, as part of Project DRAGON.

**€20M**

Grant funding from the EU's Horizon 2020 program for the FLITE consortium led by SkyNRG. FLITE will convert waste-based ethanol to SAF at a scale of over 30,000 tons/year.

## Other Projects Ongoing in 2022

**Project FLITE** (Fuel via Low Carbon Integrated Technology from Ethanol) received grant funding from the **EU Horizon 2020** program.<sup>6</sup> Project development has been initiated and LanzaTech is responsible for plant design, construction, and operations using LanzaJet's ATJ technology.

With cleantech company **Carbon Engineering**, we have undertaken **Project AtmosFUEL**, expected to create SAF out of atmospheric CO<sub>2</sub> in the UK. In 2022, we completed a feasibility study (funded under the UK Department for Transport's Green Fuels Green Skies program).

In the United States, we are working with **SkyNRG** in a cooperative agreement with the **U.S. Department of Energy** on **Project LOTUS<sup>6</sup>** (Landfill Off-gas To Ultra-low carbon intensity SAF) to design, build, operate, and maintain a production facility that will convert renewable natural gas into SAF, using a project partner's partial oxidation technology, LanzaTech's gas fermentation technology, and **LanzaJet ATJ** technology.

In addition, with partial financial support from the **U.S. Department of Energy**, we are building and operating a pre-pilot facility to produce SAF made from biogenic waste CO<sub>2</sub> and renewable hydrogen at our Freedom Pines facility in Georgia.<sup>6</sup> **Argonne National Laboratory** (ANL) is providing third party analysis of the greenhouse gas savings.

<sup>6</sup> LanzaTech gratefully acknowledges U.K. Department of Transport, EU Horizon 2020, and the U.S. Department of Energy for their financial support in these respective projects.

# Sustainability Certification

## The Roundtable on Sustainable Biomaterials



**The Roundtable for Sustainable Biomaterials (RSB)** is a global membership organization accelerating the sustainable transition to a bio-based and circular economy through certification, sustainability solutions, innovation, and partnerships. LanzaTech has been an RSB stakeholder community member for many years. RSB's mission aligns with every aspect of LanzaTech's core values to advance the circular bioeconomy while protecting the environment and those most vulnerable.

### To validate our sustainability:

- In 2016, LanzaTech helped our Shougang LanzaTech (SGLT) joint venture partner gain RSB certification for the demonstration facility producing ethanol from industrial emissions at the Shougang steel mill in Caofeidian, China.
- In 2020, LanzaTech supported RSB Certification of the fully commercial ethanol production facility operated by the SGLT joint venture at the same site.
- In 2021, LanzaTech supported RSB Certification of the Nippon Refine ethanol purification facility at Anapachi, Gifu, Japan.
- LanzaTech began the trader Certification process and was audited in October 2022 without any non-compliant items identified.

Image Credit: Allen Ding, Senior Global Services Engineer



# Clean Air, Decent Work, and Justice for All

LanzaTech is creating just climate solutions by recycling carbon from point source pollution emitters and transforming it into the building blocks needed to equitably advance society to ensure healthy communities, healthy societies, and a healthy planet. Distributed, domestic biomanufacturing provides environmental and social equity by improving air quality in historically disadvantaged communities near industrial plants, providing jobs and economic stimulus to rural, lower socioeconomic populations, and reducing our reliance on the extraction and refining of virgin fossil fuels.

By capturing and transforming carbon before it is combusted, our process has the potential to reduce human health inequalities by reducing criteria pollutants from point sourced waste emissions, including sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>), and particulate matter that are byproducts of fossil fuel combustion.

Distributed manufacturing with gas fermentation has the potential to provide employment opportunities in urban and rural areas using feedstocks from agricultural and forestry residues to municipal solid waste, industrial emissions, and CO<sub>2</sub> or waste streams from rural corn ethanol facilities.

Plants in Operation  
as of 2022 Year End

CO<sub>2</sub> abated<sup>7</sup>

>240,000<sup>Tonnes</sup>

Sustainable ethanol  
produced<sup>7</sup>

>45M<sup>Gallons</sup>

Equivalent amount  
of oil in the ground  
from mitigated CO<sub>2</sub><sup>7</sup>

>20M<sup>Gallons</sup>

Jobs created  
from new plants<sup>7</sup>

>300

<sup>7</sup> Source: LanzaTech Management,  
Numbers as of 12/31/2022

# Supporting the United Nations Sustainable Development Goals

We are committed to supporting the United Nations Sustainable Development Goals (SDGs) and understand their importance in creating the framework for sustainable and equitable business practices.



Image credit: Ellie Wood, Chief of Staff

## United National SDGs

## LanzaTech Activities



Achieve gender equality and empower all women and girls

Diversity, equity, and inclusion (DEI) is one of our core values. We have promoted this value by introducing new diverse hiring practices to broaden our applicant pool across all positions. We have 32% women in leadership, 50% on the Executive Team, and 43% of our Board are women.



Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Safety is our top priority. We are committed to fostering a safe, inclusive, and decent workplace for our employees to reach their full potential. Employee well-being is paramount, which is reflected through our safety program, benefits package, and community outreach efforts.



Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Through growth in our synthetic biology platform and capabilities, we are improving the performance of our ethanol producing biocatalyst and developing 2<sup>nd</sup> generation products to further reduce the world's carbon footprint and our technologies' overall operating costs. We are continuously improving our systems and processes and in the past year, have developed new ways to valorize previously inaccessible feedstocks.

## United National SDGs

## LanzaTech Activities



Ensure sustainable consumption and production pattern

The core of our business is enabling the circular carbon economy. Through our process, we can recycle and valorize carbon-rich/hard-to-abate emissions and waste into sustainably produced fuels and chemicals — the building blocks of CarbonSmart™ products, which will provide consumers with sustainable products with a lower carbon footprint.



Take urgent action to combat climate change and its impacts

The purpose of LanzaTech's business is combatting climate change.

Our sustainably-produced fuels and chemicals offer overall carbon savings compared to fossil-derived products. Besides greenhouse gas emissions, our technology avoids challenges associated with waste management, land use change, biodiversity impact and fertilizer/runoff.



Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

We are committed to protecting and promoting sustainable land use by detaching our products from feedstocks that require arable land to grow. We work with agricultural waste streams to find alternative solutions to combustion, avoiding pollutant and particulate emissions.

From a life cycle assessment perspective, our technology produces products that have a competitive sustainability profile regarding land use, terrestrial toxicity and eutrophication, as well as overall biodiversity loss.



Strengthen the means of implementation and revitalize the Global Partnerships for Sustainable Development

Partnerships are critical to technology development and deployment. Our partners range from financial institutions to technology leaders, consumer brands, NGOs, and government entities, all of whom share our core values and help to bring our products to market.

## LanzaTech Affiliations

At LanzaTech, we have long recognized the power and impact of working with others. As we have grown, we have developed close working ties and partnerships with organizations, consortia, advocacy, and advisory groups worldwide. Our international team actively engages with these groups across multiple sectors and initiatives - from synthetic biology, to supporting policy frameworks, to leveraging our expertise to help new organizations entering the sector.

### We are pleased to be affiliated with the following:

- Advanced Biofuels Canada (ABFC)
- American Chambers of Commerce in India (AMCHAM India)
- ARC Center of Excellence in Synthetic Biology
- Association of Biotechnology Led Enterprises (ABLE)
- BioMADE
- Biotechnology Innovation Organization (BIO)
- Biofuture Campaign, within global Clean Energy Ministerial
- Carbon Capture Coalition
- The Carbon Recycling Network
- Center for Advanced Bioenergy & Bioproducts Innovation (CABBI)
- Clean Hydrogen Future Coalition (CHFC)
- The Confederation of Biomass Energy in India (CBEII)
- Confederation of Indian Industry (CII)
- Engineering Biology Research Consortium (EBRC)
- Indian Chemical Council (ICC)
- Industrial Innovation Initiative (I3)
- Renewable Carbon Initiative
- The Roundtable on Sustainable Biomaterials (RSB)
- The SAF Consortium New Zealand
- Sustainable Aviation Fuel Blender's Tax Credit Coalition (SAF BTC Coalition, US-based)
- Sustainable Markets Initiative (SMI)
- UK Jet Zero Council (JZC)
- US-India Strategic Partnership Forum (USISPF)
- World Economic Forum Clean Skies for Tomorrow Coalition

Image Credit: Ellie Wood, Chief of Staff

# Our Global Team

By the end of 2022, we saw LanzaTech's global team grow to 367 employees spread across nine countries, with over 40% of this growth occurring outside of our U.S. offices. This growth supported our business – from new commercial plant start-ups to project development, grant funding and expansion of our platform capabilities.

In 2022, we continued our efforts to ensure that all employees felt valued, respected, and a part of our global LanzaTech team.





# Diversity, Equity & Inclusion

## Recruitment Practices

Our recruitment practices focus on growing the diversity of well-qualified applicants by actively conducting outreach to organizations, learning institutions, and associations that promote and advance qualified women, people of color, and other diverse groups. We have seen a positive impact, with increased gender diversity across our global and U.S. offices and racial and generational diversity in our U.S. offices. Adherence to these values and ideals makes us a better, more robust, more innovative company that reflects our global identity and gives us an edge.

## Women at Work

Commitment to DEI starts at the top, where women comprise **32%** of our entire leadership team, **60%** of our technical leadership team, **50%** of our executive leadership, and **43%** of our board of directors. Due to success in diverse recruiting practices, we now have over **33%** female employees in our global workforce.

## Initiatives and Outreach

2022 was a year of giving back. With Blend organizing and leading numerous events and fundraisers throughout the year, including for Black History Month (BHM), Pride Month, Ukraine Crisis Relief, and supporting efforts to promote Synthetic Biology in Uganda.

LanzaTech is committed to fostering a diverse, equitable, and inclusive workplace where people of all cultures and backgrounds can succeed. Our ideals are deeply rooted in diversity, equity, and inclusion (DEI) and resonate throughout our company and our work. We aim to empower individuals from all groups and identities to become engaged in projects and succeed through initiatives and outreach, policies, training, and recruitment practices. **Blend**, our DEI employee resource group, builds upon these ideals and works to bring awareness to and educate the broader team on these issues.

In addition to focusing internally, LanzaTech makes DEI plans with actionable, Specific, Measurable, Achievable, Relevant, and Time-Bound (SMART) milestones and tasks focused on advancing DEI initiatives relevant to each specific government-funded project. Example plans include quantifying the impact of reduced criteria pollutants in neighborhoods, developing outreach programs for schools, and incorporating DEI metrics into development plans to ensure future site locations are where they could do the best for overlooked communities.



Image Credit: Stephen Chong, Patent Attorney



# Board of Directors

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## Barbara Moakler Byrne

### Independent Director

Barbara is an experienced Independent Board Director, corporate advisor and senior executive with a career in finance spanning over 35 years. An early leader in social-impact investing, she pioneered several initiatives that paired clients with NGOs and governments to promote sustainable development and shared growth. A member of the World Economic Forum's Gender Parity Task Force, she worked constantly to advance next generation women leaders, especially in the finance sector. During her investment banking career, where she was the first woman named Vice Chairman of Lehman Brothers and Barclays, she appeared consistently on lists of the top women on Wall Street. She was top five of American Banker's "25 Most Powerful Women in Finance" for eight consecutive years through 2017. She received American Banker's Lifetime Achievement Award in Finance in 2018.

- 👤 Member of the Audit Committee
  - 👤 Member of the Compensation Committee
- 



## Nigel Gormly

### Director, Waihou Capital

Nigel Gormly brings a wealth of investment experience focused on climate solutions and large-scale growth companies, including from the New Zealand Super Fund where he previously led the International Direct Investment team. He has broad governance experience across a range of sectors and stages of development and currently serves as a director for View, Inc. and CTF Pledge Pioneers. Nigel has served as a Director for LanzaTech since 2014 and has chaired the Audit Committee since 2015.

- 👤 Member of the Audit Committee
  - 👤 Member of the Nominating and Corporate Governance Committee
- 



## Dr. Jennifer Holmgren

### CEO & Chairperson, LanzaTech

Dr. Jennifer Holmgren is CEO of LanzaTech and also a Director and the Chair of the LanzaJet Board of Directors. Prior to LanzaTech, Jennifer was VP and General Manager of the Renewable Energy and Chemicals business unit at UOP LLC, a Honeywell Company. Jennifer currently sits on numerous boards and councils, providing strategic guidance on energy, the environment, and cutting-edge technology development and deployment.

# Board of Directors

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## Dorri McWhorter

**President and CEO of the YMCA of Metropolitan Chicago**

Dorri McWhorter is the President and CEO of the YMCA of Metropolitan Chicago. Prior to this, she served as CEO of the YWCA Metropolitan Chicago, where she embarked on a journey to transform the 140-year-old social service agency to a 21st century social enterprise. Dorri has extensive auditing and consulting experience, including as a former Partner of Crowe LLP, and she served on the American Institute of Certified Public Accountants' Board of Directors from 2013-2016. An anchor in Chicago's business, philanthropic and civic communities, she was a 2019 inductee into the Chicago Innovation Hall of Fame.

- 👤 Chair of the Audit Committee
  - 👤 Member of the Nominating and Corporate Governance Committee
- 



## Jim Messina

**CEO, The Messina Group**

Jim Messina is the CEO of the Messina Group, which provides strategic consulting to political campaigns, advocacy organizations, and businesses around the world. Jim has led his team in advising over thirteen Presidents and Prime Ministers on five continents. Previously, Jim served as Campaign Manager of President Barack Obama's successful 2012 re-election campaign. Following this, he served as President Obama's Deputy Chief of Staff, where he played an integral role in a number of landmark policies that have had significant and lasting impact.

- 👤 Member of the Compensation Committee
  - 👤 Chair of the Nominating and Corporate Governance Committee
- 



## Nimesh Patel

**Managing Director, The AMCI Group**

Nimesh Patel is a Managing Director for the AMCI Group. Nimesh has served as a key member of AMCI's senior management team since January 2008 and has helped lead the investment business for AMCI. Since Nimesh joined AMCI, AMCI has invested nearly \$2 billion across 20 privately negotiated transactions in the global industrial, transportation and natural resources sectors. Furthermore, Nimesh has led the completion of multiple joint ventures with major global industrial corporations. Prior to joining AMCI, Nimesh was with Great Hill Partners where he focused on private equity investments in technology-enabled services companies.



## Gary Rieschel

**Founder and Managing Partner, Qiming Venture Partners**

Gary Rieschel is the Founding Managing Partner of Qiming Venture Partners, a firm with \$9.4 billion in capital raised, and primarily focused on Technology and Consumer (T&C) and Healthcare related companies across China. He has over 35 years of operating and investing experience in the information technology and cleantech industries. Gary has been widely recognized as a leading venture capitalist in both the U.S. and China through sponsoring and founding several of China's early VC firms including Softbank China Ventures, SAIF Partners, Ceyuan Ventures, and Qiming Venture Partners.

- 👤 Chair of the Compensation Committee

# Scientific Advisory Board



## Prof. Dr. Michael Jewett

Dr. Jewett is a Professor of Bioengineering at Stanford University. His lab focuses on advancing synthetic biology research to support planet and societal health, with applications in medicine, manufacturing, sustainability, and education. He has received numerous honors, including the NIH Pathway to Independence Award, David and Lucile Packard Fellowship in Science and Engineering, and Finalist for the Blavatnik National Awards for Young Scientists, and several teaching awards. Jewett is an elected member of the American Association for the Advancement of Science, the American Institute for Medical & Biological Engineering, and the National Academy of Inventors. He co-founded SwiftScale Biologics (acquired by National Resilience Inc.), Stemloop, Pearl Bio, Design Pharmaceuticals, and Gauntlet Bio.



## Prof. Dr. Ramon Gonzalez

Dr. Gonzalez is a Professor and Florida World Class Scholar in the Department of Chemical, Biological and Materials Engineering at the University of South Florida (USF) where he leads the laboratory for Metabolic Engineering and Biomanufacturing. He is also the Editor-in-Chief of the Journal of Industrial Microbiology and Biotechnology (JIMB). Before joining USF, Dr. Gonzalez was a Professor in the Departments of Chemical & Biomolecular Engineering and Bioengineering at Rice University and the Founding Director of Rice's Advanced Biomanufacturing Initiative, and from 2012 to 2015 served as Program Director with the Advanced Research Projects Agency-Energy (ARPA-E) of the U.S. Department of Energy.



## Prof. Dr. Huimin Zhao

Dr. Zhao is the Steven L. Miller Chair Professor of chemical and biomolecular engineering, and professor of chemistry, biochemistry, biophysics, and bioengineering at the University of Illinois at Urbana-Champaign (UIUC). He received his B.S. degree in Biology from the University of Science and Technology of China in 1992 and his Ph.D. degree in Chemistry from the California Institute of Technology in 1998 under the guidance of Nobel Laureate Dr. Frances Arnold. Prior to joining UIUC in 2000, he was a project leader at the Industrial Biotechnology Laboratory of the Dow Chemical Company. He was promoted to full professor in 2008. Dr. Zhao has authored and co-authored over 340 research articles and over 30 issued and pending patent applications with several being licensed by industry.



## Prof. Dr. Rolf Thauer

Dr. Thauer is the Emeritus group leader at the Max Planck Institute for Terrestrial Microbiology for which he was one of the founding directors in 1991. Author of over 400 publications and the recipient of numerous awards, including the Gottfried Wilhelm Leibniz Prize by the Deutsche Forschungsgemeinschaft in 1987. He holds a Ph.D. degree in biochemistry from the University of Freiburg, Germany. He has more than 50 years of research experience in biochemistry, physiology and ecology of anaerobic bacteria and archaea with a focus on the enzymes and coenzymes involved in the energy metabolism of Clostridia.



## Prof. Dr.-Ing. Ralf Takors

Dr. Takors is heading the Institute of Biochemical Engineering (IBVT) at the University of Stuttgart. Main research interests are systems metabolic engineering, synthetic biology and biochemical engineering to develop novel bioprocesses from lab to production scale. Wet-lab activities are supported by intensive modelling activities comprising genome scale stoichiometric modelling, metabolic flux analysis, gene regulatory networks, and bioreactor modelling using compartmented approaches and computational fluid dynamics.

# LanzaTech Management Team

## Executive Leadership



**Dr. Jennifer Holmgren**

Chief Executive Officer



**Joe Blasko**

General Counsel and  
Corporate Secretary



**Freya Burton**

Chief Sustainability Officer



**Dr. Robert Conrado**

VP Engineering Design and  
Development



**Dr. Johanna Haggstrom**

VP Technology &  
Manufacturing



**Dr. Steven Stanley**

Chief Commercial Officer



**Dr. Zara Summers**

VP Science



**Geoff Trukenbrod**

Chief Financial Officer



**Carl Wolf**

Chief Operating Officer



**Julie Zarraga**

EVP Engineering

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## Business Development

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**Steve  
Arakawa**

VP Strategy, Commercial



**Sangeet  
Jain**

Director and Country  
Head, India



**Li  
Xu**

Managing Director,  
Asia Pacific



**Babette  
Pettersen**

VP Europe



**Srinivasa  
Varadarajan**

VP Business Development



**Jim  
Woodger**

Managing Director, UK

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## Finance

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**George  
Dimitrov**

VP Finance



**Hoyt  
Hudson**

VP Strategic Initiatives



**Omar  
El-Sharkawy**

VP Corporate Development

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## Government Relations

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**Tom  
Dower**

VP Public Policy



**Dr. Laurel  
Harmon**

VP Government  
Relations



**Dr. John  
Holladay**

VP Government  
Programs

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## People & Infrastructure

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**Nilesh  
Kumar**

Chief Information  
Security Officer



**Chad  
Thompson**

Head of People



**Ellie  
Wood**

Chief of Staff to the CEO

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## Science

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**Dr. Michael  
Koepke**

VP Synthetic Biology



**Maryann  
Maas**

VP Global Intellectual  
Property



**Dr. Sean  
Simpson**

Co-founder and Strategic  
Advisor



# LanzaTech

[LanzaTech.com](https://www.LanzaTech.com)