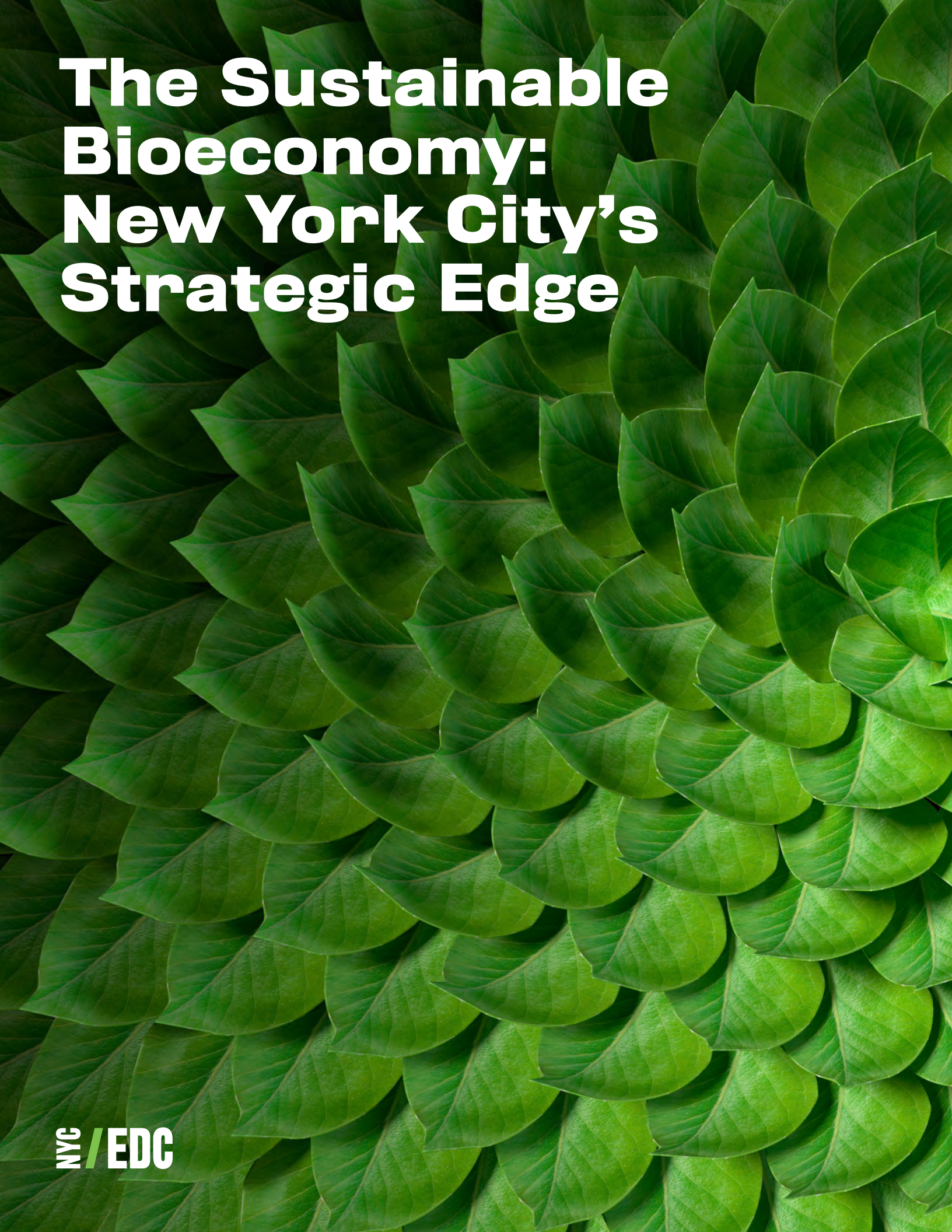
The Sustainable Bioeconomy: New York City's Strategic Edge



NYC/EDC

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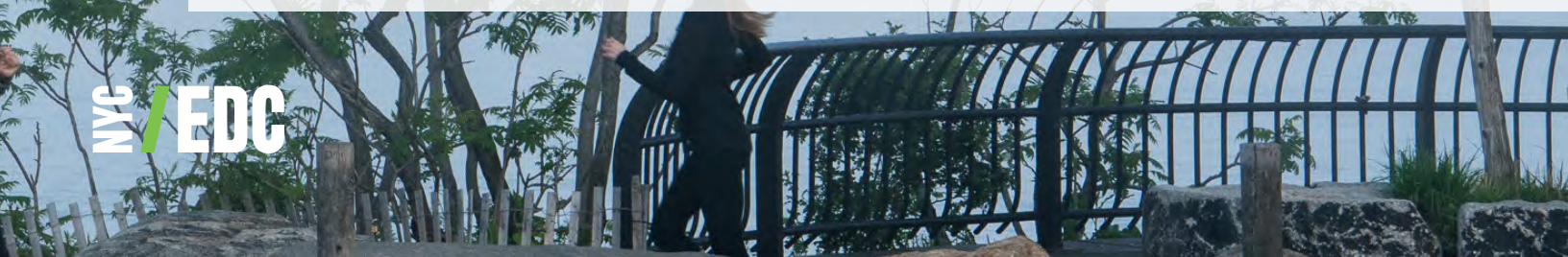


NYC EDC

Executive Summary

Unprecedented challenges require unprecedented solutions. New York City has emerged as a global leader in the fight against climate change, and as the world seeks new solutions, the City is committed to supporting the next frontier of innovation. The sustainable bioeconomy, an emerging deep-tech sector, is one example of the City's leadership in this space. This cutting-edge industry leverages 21st-century innovations in biology, engineering, chemistry, and artificial intelligence (AI) to create novel climate and sustainability solutions across six innovation verticals: materials, food, agriculture, home, medical and personal care, energy, and the environment. As a leader in innovative industries, such as technology, the green economy, and life sciences, New York City is well-positioned to become the global capital of the sustainable bioeconomy.

"Thanks to its diversity of ideas—and its grit and ingenuity to actualize them—New York City will continue to be a global center of innovation for generations to come. The sustainable bioeconomy represents a new frontier for deep-tech that builds on NYCEDC's LifeSci NYC initiative and advances the City's 2024 Green Economy Action Plan. It will unlock a new era of climate tools and technologies to make our economy, our city, and our world more sustainable."

Andrew Kimball,
President and CEO, NYCEDC

New York City Economic Development Corporation (NYCEDC) focuses on strengthening confidence in New York City as the place to do business; growing innovative sectors with a focus on equity; building neighborhoods as places to live, learn, work, and play; and delivering sustainable infrastructure for communities and the city's future economy. With decades of experience in growing future-focused innovation sectors, NYCEDC identified the sustainable bioeconomy as a high-impact industry that leverages the strengths of New York City.

The sustainable bioeconomy is a new deep-tech sector that applies a green lens to biotechnology to bring biobased and bioinspired innovations to legacy industries like fashion, construction, food, and healthcare. The convergence of these innovation and legacy industries creates a unique opportunity for New York City to offer first-of-its-kind support for the creation, scale, and adoption of new solutions while expanding economic opportunity for New Yorkers.

The power of biology as a tool for innovation is being explored across industries outside of the life sciences, and the impact of this biotechnological advancement will be immense. The World Economic Forum estimates that the global bioeconomy is worth $4T in 2025 and the McKinsey Global Institute states that, "60 percent of the physical inputs to the global economy could, in principle, be produced biologically." From vegan leather to alternative proteins to mass timber in construction, biotechnology is unlocking our ability to make sustainable products we can see, touch, and taste in new ways.

NYC's workforce is primed to support the sustainable bioeconomy

1.05M
Life sciences, healthcare and public health

425K
Food and food service

140K
Construction

110K
Fashion

35K
Beauty and personal care

$2.3T: Gross metropolitan product (GMP) of the NYC metro area

The six innovation verticals were identified based on their ability to leverage the existing strengths of NYC's innovation industries as well as their potential impact on legacy industries. The New York City metro area is home to a high concentration of potential users for sustainable bioeconomy products. The region is the largest economic engine in the nation with a GMP of $2.3T. The five boroughs are home to a large concentration of industries employing workers across life sciences, healthcare, and public health (1.05M), food and food services (425,000), construction (140,000), fashion (110,000), and beauty and personal care (35,000) all primed to benefit from the sustainable bioeconomy. The co-location of innovators in the sustainable bioeconomy and the end users for those solutions make New York City the ideal location to not only create the solutions of the future, but to implement them through-out the supply chain.

Within New York City, six innovation verticals are poised for transformation by, and form the core of, the sustainable bioeconomy:

1. **Materials**
2. **Food**
3. **Agriculture**
4. **Energy**
5. **Home, Medical, & Personal Care**
6. **Environment**

1. Materials

The development of new, non-petroleum-based advanced and sustainable materials that support a range of uses across industries, like fashion and construction

TômTex, Brooklyn

TômTex is an award-winning material science company creating innovative, eco-friendly textiles from natural biopolymers, not fossil fuels. The cutting-edge platform challenges traditional oil-based methods, ushering in a new era of sustainable, green chemistry for the material industry.

2. Food

The use of biobased alternatives to traditional food manufacturing processes, such as alternative proteins, and reuse of food waste to build new recycled products

Helaina, Manhattan

helaina

Helaina believes the next evolution of nutrition must be better for both people and the planet, unlocking biology to move beyond agricultural compromises. Helaina uses precision fermentation to create bio-identical proteins—a 100-percent animal-free foundation that delivers both superior human performance and a truly sustainable future for food.

3. Agriculture

The application of biobased solutions to improve agricultural supply chain production, safety, and resilience

Aanika Biosciences, Manhattan

AANIKA

Aanika Biosciences creates custom microbial BioTags which can help track, trace, and authenticate products throughout the supply chain, helping reduce the potential for widespread food recall and contamination. These BioTags are edible, invisible, and tasteless and securely attach to plant materials, ensuring reliability throughout the supply chain.

4. Energy

Biobased forms of energy that utilize natural processes to power our world

CarbonBridge, Manhattan

CarbonBridge develops advanced bioreactors that convert waste gases into fuels and intermediate chemicals at costs that compete with fossil-derived sources, without the need for subsidies or carbon credits. The reactor unlocks the true capability of the microbes, delivering over 400 percent higher conversion rates and shrinking the size of associated equipment.

5. Home, Medical, & Personal Care

New inputs for medical disposables, beauty, cleaning, and other personal products that replace ingredients with more sustainable bio-alternatives

C16 Biosciences, Manhattan

C16 BIO

C16 Biosciences has built a proprietary biomanufacturing platform to produce sustainable fats and oils. In 2023, C16 introduced its first ingredient, Palmless™ Torula Oil—a powerful biodesigned emollient now featured in skincare and personal care products for its rich antioxidants, luxurious texture, and proven skin health benefits.

6. Environment

Biobased solutions to help heal and protect the natural world in New York City and beyond

Quorum Earth, Manhattan

Quorum Earth is a new biotech startup that is using fungi to address current global challenges. Quorum Earth's first product is a safe fungal-based biopesticide which can be used to control parasitic mites that kill honey bees.

The City has invested nearly $70M in the sustainable bioeconomy, resulting in approximately $6B in economic output and 1,000 high-quality direct jobs over the next 30 years.

NYCEDC is charged with building the economy of the future and spurring the growth of the most promising innovation industries. Having identified the sustainable bioeconomy as a high-impact sector, NYCEDC engaged with over 50 stakeholders, including academic research institutions, the startup community, venture capitalists, nonprofits, and industry to understand what is needed to make New York City the premier global destination for the sustainable bioeconomy. This report will outline the foundational investments that New York City is making to grow the industry and showcase the ecosystem, one of the first of its kind globally.

Recognizing the impact of this industry, NYCEDC committed to "catalyze sustainability-focused biotechnology and materials innovation," in the *Green Economy Action Plan (GEAP)*. Companies working in the sustainable bioeconomy require unique facilities, equipment, talent, and support, and NYCEDC is laying the foundation for this industry's success through multiple public-private partnerships and investments. This report will outline the catalytic investments that the City has made in support of the sustainable bioeconomy, totaling nearly $70M in public investment, $6B in economic output, and 1,000 high-quality direct jobs.

A New Generation of Materials for NYC Legacy Industries

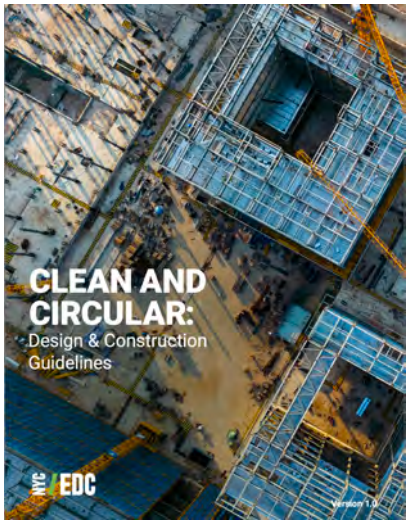
In 2025, the global market for sustainable materials is valued at $358B and is expected to grow to $800B by 2032. As industries like fashion, construction, design, and healthcare seek new solutions to meet their sustainability goals, the sustainable bioeconomy offers unique opportunities to utilize biobased and bioinspired materials. These materials will use existing inputs, often found in the waste stream, to make novel materials resulting in a more sustainable and circular economy.

Capitalizing on the world-class research across the city, the more than 10,000 students who graduate with a degree related to materials science annually from NYC institutions, and the density of end users, NYCEDC is making the city the epicenter of material innovation. Through novel public-private partnerships, NYCEDC ensuring that innovators have the tools needed to develop biobased solutions and that industries that form the cornerstone of New York City's economy can use these products to grow their businesses.

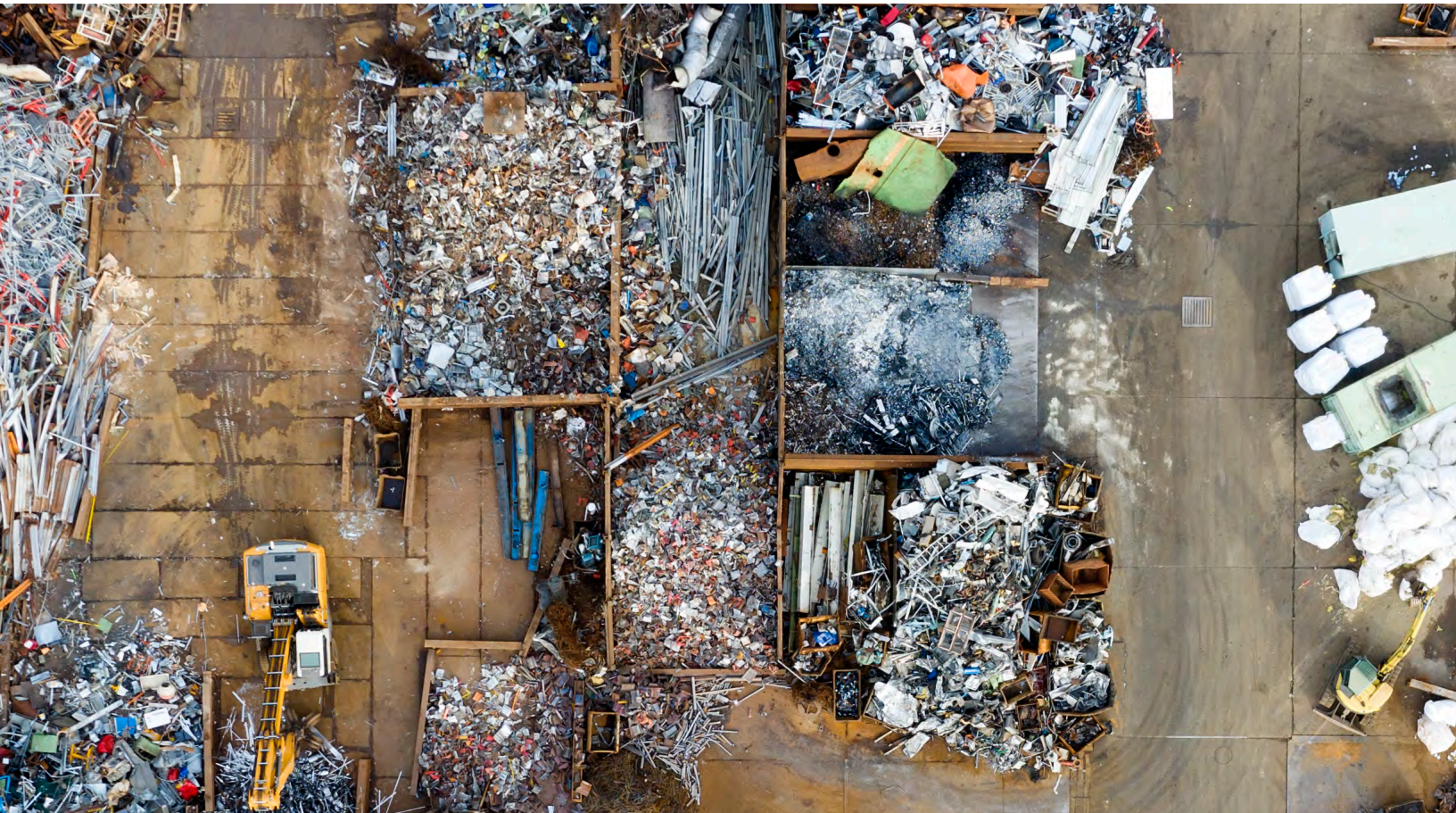
Clean and Circular: Design and Construction Guidelines

The built environment presents the biggest opportunity to integrate emerging biobased solutions while maximizing use of the existing building stock to help New York City achieve its decarbonization goals. Currently, materials, including their extraction, transport, and manufacturing, represent ~70 percent of all embodied carbon emissions in the built environment and construction and demolition (C&D) waste accounts for more than 60 percent of New York City's solid waste stream. In a linear economy, materials are extracted, made into products, and ultimately disposed of as waste. A circular economy shifts from this "take-make-waste" system and supports a more sustainable future in which materials are kept at their highest and best use through reuse, recycling, and planning for longevity. This approach maximizes the economic value of decisions made in design and construction while improving sustainability outcomes.

Biobased materials can play a part in this effort by providing renewable, biodegradable material inputs into circular supply chains. Entrepreneurs in the sustainable bioeconomy are creating new innovations that can contribute to New York City's circular economy, which in turn will ensure that biobased materials are used efficiently and their waste minimized. Embracing circular practices and a local interconnected circular material network will create jobs, diversify supply chains, and conserve natural resources.



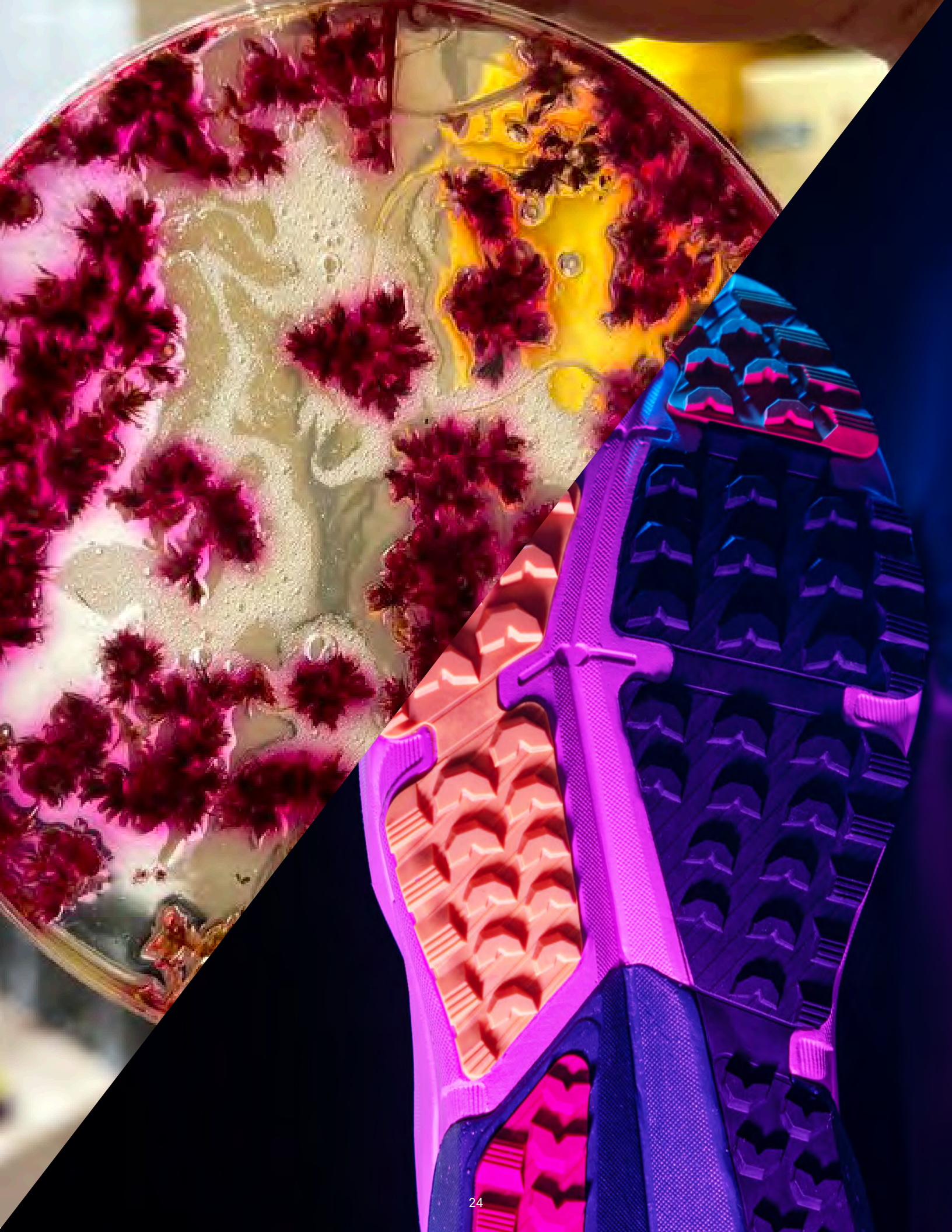
Clean and Circular: Design and Construction Guidelines, an operational guide to reduce waste and embodied carbon in New York City's built environment.



The Battery Coastal Resilience Project, a coastal protection initiative to reduce flood risk.

NYCEDC is leading by example with the launch the *Clean and Circular: Design and Construction Guidelines*, an operational guide integrated to all projects across the $9B capital portfolio. This commitment to scale circular practices builds on precedent projects such as the Battery Coastal Resilience Project, a coastal protection initiative to reduce flood risk as part of the Lower Manhattan Coastal Resiliency (LMCR), where NYCEDC has developed a robust material-management strategy to inform material selection and maximize on-site reuse. The Battery was awarded Envision Platinum, achieving the highest embodied carbon reduction recognized by the Institute for Sustainable Infrastructure (ISI) for generating a 54 percent reduction in embodied carbon from the baseline.

Moving forward, the Guidelines outline a hierarchy of circularity principles that will be evaluated for each project, including building only what is necessary, with the right materials, efficiently and for long-term value. In addition to maximizing materials reuse, the Guidelines aim for 25 percent of new materials procured on projects to be low-carbon alternatives, such as mass timber and other biobased solutions. Once implemented at scale across NYCEDC projects, the Guidelines will set a new standard for material procurement in New York City.



Rendering of Gotham Foundry, a new sustainable materials innovation hub operated by a consortium including Columbia University, Advanced Science Research Center at the City University of New York, Fashion Institute of Technology, and Genspace.

Gotham Foundry

In response to the growing cadre of materials innovators across legacy industries and NYC's innovation economy, NYCEDC has partnered with leading institutions to create a novel public-private partnership to build a first-of-its-kind hub for materials innovation. This hub will support the next frontier of sustainable materials–such as new bioplastics, textiles made from food products, and other materials that will reduce industrial waste and pollution–and is expected to generate $5.12B in economic output over the next three decades and create more than 650 high-quality jobs.

In 2023, NYCEDC released the Materials Innovation Hub RFEI to build and operate a center for materials innovation. Gotham Foundry, a novel consortium between Columbia University, the City University in New York's Advanced Science Research Center (CUNY ASRC), the State University of New York's Fashion Institute of Technology (FIT), and Genspace, a community biolab based in Sunset Park, has been conditionally awarded $45M to build an interconnected ecosystem of materials innovation.

Gotham Foundry has been conditionally awarded $45M to build an interconnected ecosystem of materials innovation.

Gotham Foundry By the Numbers:

$5.12B
Economic output

650
Jobs

$45M
City investment

Anchored by an approximately 25,000-square-foot hub on Columbia University's Manhattanville campus in West Harlem, Gotham Foundry will support the commercialization of the next generation of sustainable materials. Ranging from clothes to construction materials, Gotham Foundry is designed to bring new innovations to fashion, construction, healthcare, and other industries. Gotham Foundry will build on the existing partnerships between local communities and the four institutions leveraging the unique capabilities of the partners to support translational R&D, workforce development, and company formation while making New York City the epicentre of materials innovation.

Gotham Foundry will open in 2030 in West Harlem and support additional commercialization activities at CUNY ASRC and FIT. Prior to the hub opening, Gotham Foundry began programming and operations at Harlem Biospace in July 2025 with a specific focus on workforce development and skills training for students, and business and technical support for entrepreneurs working in fashion and construction. This interconnected ecosystem will allow companies to take a material from a Petri dish to the runway, a construction site, or a hospital by providing scientists and entrepreneurs with specialized equipment, connections to industry, and commercialization support.

Romare Antrobus, PhD: Developing Sustainable Biomaterials

Romare Antrobus, PhD, is a materials expert specializing in the development of sustainable, bioinspired materials for textile and tissue engineering applications. Growing up, Romare was disturbed by the sight of textile and plastic marine debris washing up on the beaches where he swam. He realized that our current “take-make-waste” linear economy posed serious threats to climate stability, biodiversity, and human health, with effects disproportionately impacting socially disadvantaged communities. But it also fueled Romare’s passion to find sustainable solutions through material science and environmental stewardship.

In 2023, he completed his doctorate in biomedical engineering at Columbia University. Romare’s research focuses on developing an alternative way to manufacture textiles that uses bacteria to make a biobased material called nanocellulose, pictured above. Currently a post-doctoral research scientist at the Fashion Institute of Technology, Romare is also the Founder & CEO of AceTech, a New York-based biotech startup leveraging the power of microbes to engineer safe, and more sustainable home compostable packaging.

Rendering of Walter Gladwin Recreation Center by Marvel

Building to Net Zero with Mass Timber

Once manufactured, mass timber products are 50 percent carbon by dry weight and can effectively store carbon long term.

Expanding the use of mass timber, wood products engineered to form structural building components, is critical to achieving New York City's carbon reduction targets, including reducing embodied carbon emissions for new buildings, infrastructure, and major retrofits by 50 percent. Mass timber products offer a path to sequester and store carbon in buildings by leveraging the carbon cycle of forests. The carbon dioxide absorbed by trees from the atmosphere is converted into carbon-based compounds which make up the wood fiber in tree structure. Once manufactured into mass timber, these products are 50 percent carbon by dry weight and can effectively store carbon long term.

As a structural alternative to high-polluting building materials, mass timber presents added benefits of prefabrication, faster onsite assembly, and potential for disassembly and reuse. However, mass timber is a relatively new structural system to New York City, and the knowledge gaps faced by industry stakeholders and regulators present challenges to scaling the innovative adoption of mass timber practices. The New York City Mass Timber Studio aims to build capacity across the industry, unlock the potential economic and environmental impacts, and inform regulatory processes to ensure safe and efficient construction of mass timber projects across building typologies. The Studio is operated by NYCEDC, in partnership with the NYC Department of Buildings (NYC DOB), Fire Department of New York (FDNY), WoodWorks, and Mayor's Office of Climate and Environmental Justice (MOCEJ), with funding support from the US Forest Service and the Softwood Lumber Board.

The New York City Mass Timber Studio aims to accelerate and derisk the adoption of biobased and prefabricated mass timber projects through regulatory wayfinding and technical assistance. Launched in 2023, the Studio has had two cohorts consisting of fourteen projects, several of which are located in environmental justice communities, spanning all five boroughs with diverse building typologies and scales–from community centers to multi-family residential and adaptive reuse developments.

Project teams advanced technical, logistical, and regulatory questions through monthly meetings with WoodWorks and NYCDOB to successfully set up their projects for permitting. Building on the learnings and impact of the initial cohort, NYCEDC is activating two vacant land parcels within the New Stapleton Waterfront on the North Shore of Staten Island with a redevelopment project that will create over 500 new mixed-income housing units. The Stapleton development will be the largest mass timber residential project in New York City history.

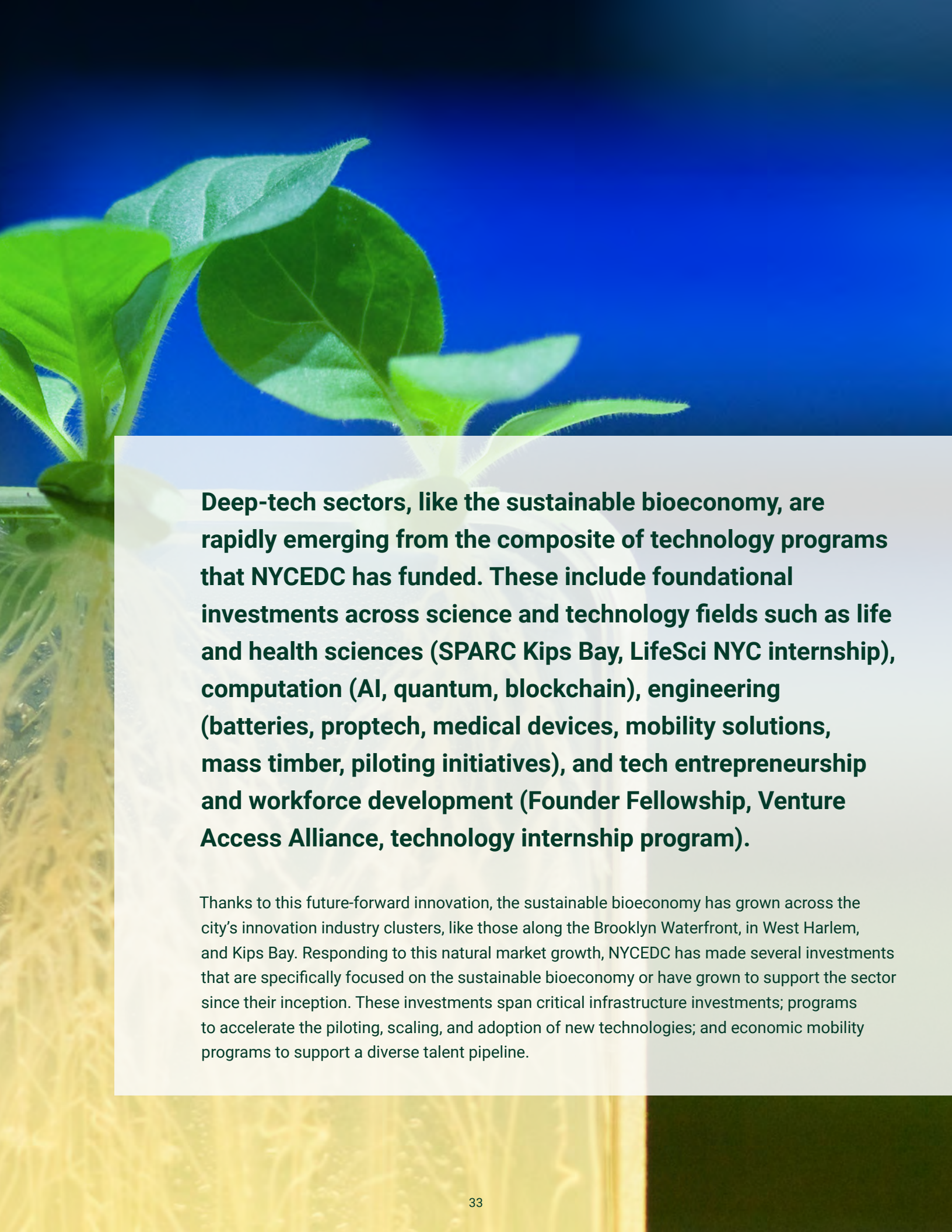
The NYC Mass Timber Studio will offer regulatory and technical assistance to the selected project team as part of the Studio's second cohort to ensure that the project is successfully delivered at scale. As building innovation advances, biobased technologies like mass timber offer a nimbler and more integrated way to construct today's buildings and deconstruct them in the future, with potential to sequester carbon and turn our cities into carbon sinks. Through climate innovation programs such as the NYC Mass Timber Studio, NYCEDC is catalyzing the local mass timber ecosystem to ensure this future vision is achieved.

The Stapleton Waterfront site, a planned NYCEDC procurement, will bring a large-scale mass timber development to the North Shore of Staten Island.

Rendering: GF55 Architects

Rendering: GF55 Architects

An Ecosystem With Roots



Deep-tech sectors, like the sustainable bioeconomy, are rapidly emerging from the composite of technology programs that NYCEDC has funded. These include foundational investments across science and technology fields such as life and health sciences (SPARC Kips Bay, LifeSci NYC internship), computation (AI, quantum, blockchain), engineering (batteries, proptech, medical devices, mobility solutions, mass timber, piloting initiatives), and tech entrepreneurship and workforce development (Founder Fellowship, Venture Access Alliance, technology internship program).

Thanks to this future-forward innovation, the sustainable bioeconomy has grown across the city's innovation industry clusters, like those along the Brooklyn Waterfront, in West Harlem, and Kips Bay. Responding to this natural market growth, NYCEDC has made several investments that are specifically focused on the sustainable bioeconomy or have grown to support the sector since their inception. These investments span critical infrastructure investments; programs to accelerate the piloting, scaling, and adoption of new technologies; and economic mobility programs to support a diverse talent pipeline.

Brooklyn Navy Yard By the Numbers:

$941M
Economic output

218
Jobs

$12.8M
NYCEDC investment

The Brooklyn Navy Yard

In 2023, the City announced an investment in a sustainable bioeconomy hub at the Brooklyn Navy Yard as part of Mayor Adams's State of the City address. This hub is designed to support companies across the six verticals of the sustainable bioeconomy, and the innovation industries at large, on their path to scale. Having naturally emerged as a deep- and climate-tech ecosystem, the hub will feature multiple sites to ensure companies have opportunities to scale technologies for adoption.

Companies seeking to bring big ideas to market will need space to grow. With a rich history of supporting innovation and advanced manufacturing as well as a burgeoning deep-tech ecosystem, the Brooklyn Navy Yard Development Corporation (BNYDC) and NYCEDC have partnered to create 50,000 square feet of graduation space limited to companies from across the innovation industries and the sustainable bioeconomy. The ninth floor of Building 303 on the western edge of the Navy Yard will house up to 10 companies when at maximum capacity further cementing the sustainable bioeconomy ecosystem at the Brooklyn Navy Yard.

Rendering of the New York Climate Exchange, a new anchor research and educational campus opening in 2029. Rendering courtesy the New York Climate Exchange and Skidmore, Owings & Merrill.

5,000
Permanent jobs

2,100
Students trained

$55B
Economic impact

Harbor Climate Collaborative

BNYDC, NYCEDC, and the Trust for Governors Island (TGI) are collectively investing $725M across the new Harbor Climate Collaborative, a joint effort to build a climate innovation ecosystem in the New York Harbor connected by NYC Ferry. With six million square feet of space for climate research, innovation, and training, the Harbor Climate Collaborative is coordinating piloting and tenanting opportunities to best serve businesses and entrepreneurs, support the creation of 5,000 permanent jobs, educate and train 2,100 students, and generate $55B of economic impact.

Newlab

In 2016, Newlab opened in the Brooklyn Navy Yard and offers 84,000 square feet of workspace, piloting opportunities, and mentorship that supports entrepreneurs working across the deep-tech ecosystem in advanced technology, including robotics, AI, urban agriculture, last-mile mobility, and more. Newlab provides infrastructure, commercialization projects, and capital to a community of more than 800+ companies. To date, Newlab has partnered with over 50 industry and government leaders and has supported its 400+ member companies in raising over $5.8B from venture capital firms, with over $2.3B of successful exits and a collective valuation of over $20B.

Since its inception, Newlab has supported several companies working in the sustainable bioeconomy and serves as a beacon for deep-tech innovation within the sustainable bioeconomy. Mothership Materials, a 2024 Newlab Founder Fellow, is solving the bioeconomy's most critical bottleneck—access to carbon-negative, non-food competitive, affordable feedstocks. Using their patented TRACE™ platform, the company transforms everything from NYC's industrial food waste to harbor seaweed into the high-value sugars, cellulose, and molecules that can power precision fermentation, bioplastics, textiles, the built environment and more. This solar-powered technology operates directly at waste sources, positioning Mothership Materials to unlock commercial-scale biomanufacturing right from NYC.

Founders Jo Marini and Dr. Agnes Ostafin strategically chose NYC as their global headquarters because while other cities make promises, NYC takes action. “World-class research institutions and government-backed innovation hubs like Newlab provide exactly what the bioeconomy needs: real resources, real partnerships, and clear pathways to scale,” said co-founder Jo Marini. “By fostering companies like Mothership Materials, NYC is positioning itself as the global leader in sustainable biotech innovation—demonstrating how cities can differentiate their economies by turning climate challenges into commercial opportunities.”

“The city’s unmatched energy, community support,and funded government initiatives create an ecosystem where breakthrough biotech companies can thrive at unprecedented speed.”

Jo Marini
Co-founder, Mothership Materials

Deputy Mayor Adolfo Carrión, Jr. joined NYCEDC President & CEO Andrew Kimball in May 2025 to announce BATWorks.

BATWorks

To catalyze innovation in climate technologies, as outlined in the *Green Economy Action Plan*, NYCEDC is leading the effort to develop BATWorks, a cutting-edge climate innovation hub located at the Brooklyn Army Terminal (BAT) in Sunset Park. BATWorks will anchor a growing ecosystem along New York Harbor for new climate technologists, entrepreneurs, and talent working to develop, pilot, and deploy new solutions to combat the effects of climate change. Led by the Los Angeles Cleantech Incubator (LACI) and Cambridge Innovation Center (CIC), and with The City University of New York (CUNY) and New York University (NYU), the hub will provide programming and specialized facilities to enable emerging market innovators, small- and medium-sized companies, and growth- and commercialization-stage companies to build and rapidly prototype products, provide business support using the fit-for-purpose space, and carry out product research and development. In addition to specialized lab facilities, it will also offer work and convening spaces. BATWorks will also provide workforce training for green economy jobs to New Yorkers, through the Sunset Park Economic Mobility Network, led by Southwest Brooklyn Industrial Development Corporation (SBIDC) and with community partners including Brooklyn Workforce Innovations (BWI), Opportunities for a Better tomorrow (OBT), Solar One, Chinese American Planning Council (CPC), and Center for Family Life (CFL).

BATWorks will be nearly 200,000 square feet within BAT's existing campus, with $100M in investment. It is projected to have $2.6B in economic impact, serve 150 startups over 10 years, and create 600 jobs.

BATWorks By the Numbers:

$2.6B
Economic impact

150
Startups served

600
Jobs

Conceptual Renderings of BATWorks by Perkins&Will

Cornell Tech's campus on New York City's Roosevelt Island.

Cornell Tech

As the winner of the City's Applied Science RFP, Cornell Tech has emerged as a transformative force in New York City's tech ecosystem since its founding in 2012. By bringing together experts in engineering, computer science, design, business, and law, an interconnected model that the sustainable bioeconomy has learned from, Cornell Tech is building the foundations for groundbreaking digital technologies, with a particular emphasis on AI. Through interdisciplinary collaboration and strategic partnerships with leaders in both the private and public sectors, Cornell Tech is advancing practical technology solutions to address real-world challenges. The institution has significantly boosted the local economy, with an estimated annual economic impact of $768M, projected to rise to $1.5B by 2030.

Cornell Tech has been instrumental in developing New York City's tech talent, fostering entrepreneurship, and creating jobs. The institution has launched over 110 startups, 94 percent of which are based in New York City, collectively raising nearly $378M in venture capital and employing over 700 people. The campus has also attracted world-class faculty and increased its student body, having graduated approximately 1,900 students as of 2023, with 1,000 of them currently living and working in New York City. Impressively, 86 percent of Cornell Tech graduates have secured full-time jobs in the tech industry. Additionally, Cornell Tech plays a pivotal role in developing leaders and technologists for the AI era through its foundational and applied research, graduate education, and new ventures.

Aanika Biosciences

Aanika Biosciences creates custom microbial barcodes that can help track, trace, and authenticate products throughout the supply chain. Founded by Vishaal Bhuyan and Ellen Jorgensen, a co-founder of Genspace, Aanika Biosciences has reimagined commercializing biotechnology innovation. The company has leveraged its proprietary and regulatory-approved tagging technology to underwrite insurance coverages in the food and agriculture sector and is conducting major pilots with agricultural companies across the world. Aanika Biosciences is headquartered in Manhattan, with manufacturing conducted outside of the five boroughs, highlighting the potential for New York City to be the epicentre of innovation within the sustainable bioeconomy as solutions are scaled across the globe. NYCEDC supported Aanika Biosciences with an $800,000 investment from the LifeSci NYC Expansion Fund, which provides capital to early-stage innovative life and health sciences companies looking to expand operations within the five boroughs. The LifeSci Expansion Fund is a program of LifeSci NYC, a robust initiative to support all aspects of the life and health sciences ecosystem in New York City.

A trainee in Cohort 3 of Break into Biotech executes a molecular cloning experiment.

Genspace

As with all innovation industries, talent remains the key driver of economic opportunity for New Yorkers. The sustainable bioeconomy, uniquely, spans multiple legacy industries calling for talent from health and life sciences, the green economy, and the creative economy. This represents a unique opportunity to provide high-quality jobs to New Yorkers with non-advanced STEM degrees. To help New Yorkers enter the sustainable bioeconomy, NYCEDC and Genspace partnered to launch the Break into Biotech program in 2024, which is projected to serve 60 people by the end of 2025.

This specialized program is designed to equip adult learners with minimal to no experience in health and life sciences with the necessary skills to work in a laboratory setting. The program has experienced widespread success with participants reporting a 50 percent increase in employment in a role related to the career goal and a reduction of unemployment from 25 to zero percent after participating in the program. As part of this program, participants work on an independent research project related to therapeutics or biomaterials. To date, participants have researched sustainable dyes, nanotechnology for textiles, and mycelium biobased fabrics. As a core partner of Gotham Foundry, Genspace will expand this program to West Harlem and continue to bring opportunities to participants.

Members of Genspace's Biomaterials Studio work on a large-scale mycelium installation for a public art exhibition.

BioBus

In 2023, NYCEDC announced a new partnership with BioBus to expand its proven hands-on education and training into additional underrepresented communities throughout the Bronx. BioBus, a nonprofit organization known for its two state-of-the-art Mobile Labs, provides students of all ages with free educational programming and training to prepare for careers in science, technology, engineering, and mathematics (STEM). Through a $700,000 NYCEDC investment, BioBus will bring STEM education and training to over 12,700 students in the Bronx through 2026.

As part of this expansion, BioBus launched Biodesign Explore, a ten-week bilingual after-school program for 20 middle school and high school students. In 2024, students worked in teams to create original projects at the intersection of design and biology and participated in biomaterials investigations testing different formulations to create a stronger bioplastic. Challenged to consider the impact of plastic in their communities, students shared the importance of fishing and recognized the ecological harms of leftover fishing lines. In response, students designed ECOLinea, a bioplastic fishing line that reduces harm to wildlife.

Students using professional grade microscopes on the BioBus.

"My time at Quorum Earth has been nothing short of inspiring! I am beyond thrilled to be working behind the scenes on the important work of creating solutions to help preserve our environment. This kind of work is critical for humanity to be able to continue living on this planet."

Aisha Ahmad

LifeSci NYC Internship

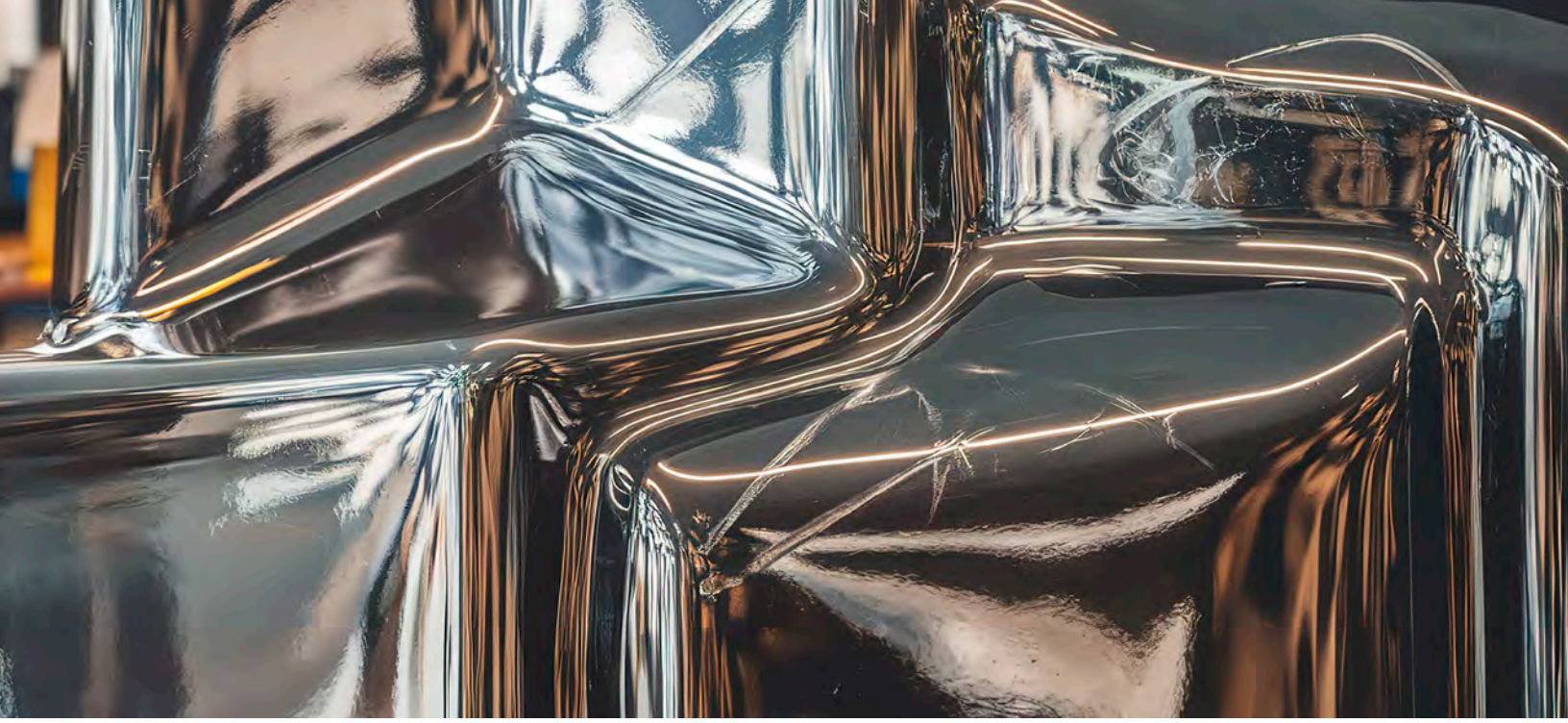
The LifeSci NYC Internship Program was launched in 2017 and helps build an equitable talent pipeline for a rapidly growing life sciences industry. To date, it has placed over 1,000 students at over 220 partner companies and nearly 45 percent of the internships have been extended or expanded into offers of employment for college or graduate students. The program provides quality internships for New York City undergraduate and graduate students, while also pairing host companies, several of which are within a sustainable bioeconomy innovation vertical, with diverse talent and support across scientific and business functions.

Sustainability Startups in New York City

A signature program of NYCEDC's Venture Access NYC initiative, the Founder Fellowship is designed to improve access to capital and networks for underrepresented founders across all tech-enabled sectors. Each year, the Founder Fellowship supports a diverse community of New York City tech startup founder teams with much-needed access to resources and networks to help them grow their companies. Though the industry is nascent, New York City has emerged as a leader across the sustainable bioeconomy with founders who reflect the diversity of the City. The following Founder Fellows are but a few examples of the local innovations that have the potential for global impact.

"Tomorrow's materials are as much about cutting-edge research as who gets a seat at the bench."

Casey Lardner, PhD
Executive Director of Genspace



ChemFinity Technologies, Brooklyn

Separating the world from waste, one mineral at a time

ChemFinity Technologies, founded by Dr. Adam Uliana (CEO) and Dr. Ever Velasquez (CTO), is developing the next generation of mining: mining metals from waste. ChemFinity is building new metal recovery systems that deliver the cost and performance needed to recycle materials that are typically landfilled. Critical metals such as platinum-group metals, rare earth elements, and base metals like copper are essential components for nearly all clean energy technologies. Yet these metals are currently sourced using expensive, pollution-heavy mining methods, contributing up to seven percent of global GHG emissions and 44 percent of US toxic chemical pollution. ChemFinity's systems project up to 3x lower costs and 99 percent reductions in energy demand, greenhouse gas emissions, and water consumption compared to mining.

"Choosing where to start ChemFinity was one of our earliest big decisions when spinning out from Berkeley. We needed a location where we could grow and be supported as an early-stage startup, so we conducted a comprehensive search across the country, exploring leading tech hubs like the Bay Area, Boston, Seattle, Austin, and New York City. NYC was chosen for out its unique combination of strengths—including specialized chemical lab infrastructure, a strong talent pipeline from top-tier universities and the chemical industry, access to a highly skilled and diverse workforce, a dense concentration of investors, an active deep-tech ecosystem, and a range of funding opportunities."

—Ever Velasquez, Co-founder and CTO, ChemFinity Technologies

Afterlife Ag, Brooklyn

Don’t let waste go to waste

Currently 95 percent of organic waste goes into landfills, however, Afterlife Ag, a circular farming startup, is upcycling food waste that would otherwise go into landfills to grow over 10 different species of mushrooms. Afterlife Ag grows one pound of mushrooms with every one pound of food waste upcycled, making it a highly biologically efficient process that helps restaurants and other produce and food providers comply with waste regulations and delivers fresh, local, and sustainable produce in just four to six weeks.

“NYC is the leader for the circular economy in the USA. The City has clear goals to reduce organic waste from going into landfills and are always willing to support innovative startups. For our business, we wanted to work with chefs and folks who care about organic waste. They’re leaders in fighting against the food waste problem, and NYC has some of the best chefs in the world to partner with and show what’s possible together.”

—Winson Wong, Co-founder and CTO, Afterlife Ag

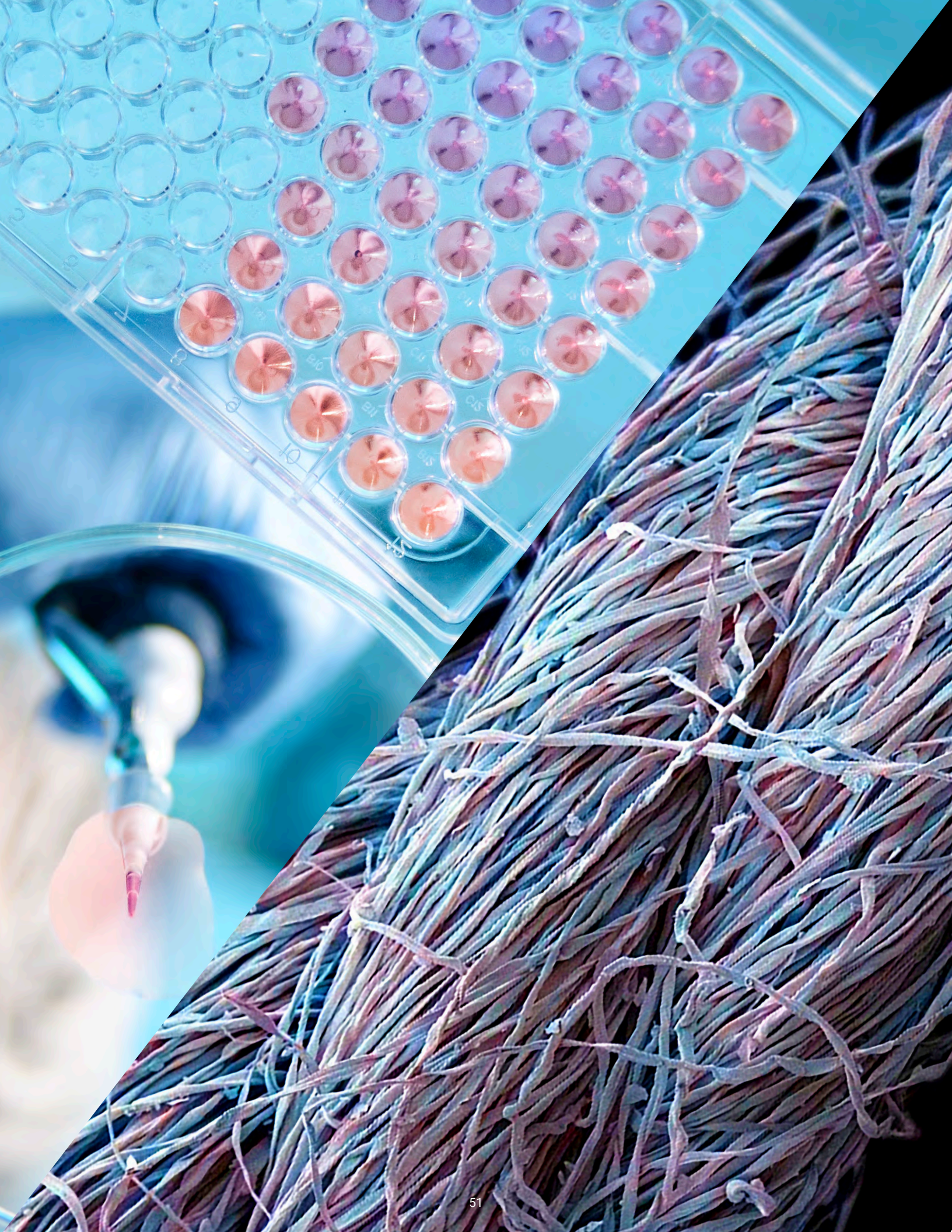
Gel Matter, Brooklyn

Biomimetic, sustainable gels for better products and a greener future

Gel Matter is an early-stage B2B materials science startup designing high-performance, sustainable gels to offer cruelty-free, scalable alternatives to animal-derived materials. The versatile platform combines biomimicry and green chemistry to create synthetic, biodegradable gels with multifunctional capabilities—hydration, lubrication, protection, and adhesion—serving industries such as personal and medical care, adhesives and coatings, and climate tech.

"New York City is vibrant and ambitious, with an innate drive to lead, to push boundaries, and to shape the future of innovation. We chose NYC because of its unique position at the intersection of biotech, materials science, and consumer markets, along with its strong infrastructure for early-stage companies—including lab space, City and State grant support, and access to industry partners."

—Ilse Nava-Medina, PhD, Founder, Gel Matter



Looking Forward

New York City has been on the forefront of innovation and culture for centuries and continues to be today. From SPARC Kips Bay to the Climate Innovation Hub at the Brooklyn Army Terminal, New York City is committed to building a stronger and more resilient economy that is more socially and environmentally aware. The sustainable bioeconomy represents not just a vision for the future, but a tangible reality unfolding before us that New York City is poised to lead. The collective actions outlined in the report demonstrate New York City's commitment to the sustainable bioeconomy and represent the first unified vision of this growing deep-tech sector. Unprecedented challenges require unprecedented solutions and, through these investments, NYCEDC is empowering a new generation of scientists and entrepreneurs to make what was once considered science fiction a reality.

To learn more, please visit edc.nyc/sustainablebio or email sustainablebio@edc.nyc.