



Aleph[®]
Farms[™]

Impact Report 2022

Our Sustainability Journey



About This Report

This is Aleph Farms' first impact report since our company's journey began in 2017. In it, we aim to set out our vision for more resilient food systems and our progress in turning that vision into reality. Following this report, we will continue to publicly document our progress on impact on a biennial basis.

Transparency is paramount. Throughout our pre-commercial stage as a company, we have prioritized building social, environmental, economic, and nutritional sustainability into our product strategy, business model, partnerships, and operations. Sustainability is a continuous journey, one that involves constant monitoring of and vigilance towards our impact as we grow and scale our commercial footprint. We recognize that we don't have all the answers yet but are working to continuously improve. This report is an opportunity for us to share details of our journey so far – from the establishment of our company through 2022, including challenges, commitments, and updates on our progress.

We believe in the importance of transparent, comparable communication of ESG-related data. In accordance with this belief, we have aimed to align this report to the international best practice framework established by the Global Reporting Initiative (GRI). We have noted our initial alignment with specific sections of the GRI standard throughout this report and are working towards full alignment in reference to GRI for future reporting.

At Aleph Farms, we strive to be open and collaborative. Our door is always open, and we welcome feedback regarding this report. To share your thoughts, please email our Sustainability Team at sustainability@aleph-farms.com



CEO Introduction GRI 2-22

Welcome to Aleph Farms’ very first impact report.

Aleph Farms was born out of a desire to tackle two of the most serious issues facing the world today – food security and nature conservation. These two issues are intrinsically linked to humanity’s food systems, and animal agriculture in particular. Amidst rising global demand for protein, there is a pressing need for efficient and scalable solutions that can guarantee unconditional access to safe and quality animal-based nutrition. We set out to create such a solution and provide such access for anyone, anytime, anywhere.

Our aim became to achieve nature-inspired design. We understood that if we could grow animal cells and produce cultivated meat in a closed system, with substantially fewer resources and in a controlled way, we would have the potential to be part of the solution.

From the outset, sustainability has been core to our raison d’être.

Meat and milk have helped shape our history, and we understand and value the nutritional, cultural, and economic importance of conventional animal agriculture. The challenge is that the current animal agricultural sector has passed its maximum scale in terms of environmental impact, public health, and animal welfare. We aspire not to replace conventional animal products from raising whole animals, but rather, to complement sustainable livestock agriculture with a new category of animal products, with the intent of diversifying and decentralizing sources of animal proteins and fats. This is central to our purpose. With the appropriate policies in place, it is possible to drive a just and inclusive transition within the agri-food sector, one that optimizes food systems for all stakeholders, including and especially livestock farmers, and also gets humanity living within **planetary boundaries**.

We are cognizant of the fact that in order to preserve natural resources for future generations and to contribute to both the mitigation of and adaptation to climate change, we must ensure that our business itself does not exacerbate negative impacts on the climate. I am proud to say that we at Aleph Farms are committed to and are executing our roadmap to achieving **net zero carbon emissions by 2025 for our operations and by 2030 for our wider value chain**.

We are proud to have been recognized for our efforts and leadership in this , winning the **Sustainability Leadership Award** as an organization in the Business Intelligence Group 2022 Sustainability Awards.

As a pre-commercial company, our thought leadership, engagement with policy-makers and industry collaboration are necessary to make an impact in terms of protecting the climate and strengthening food security. The partnerships we have developed with international bodies, national governments, regulatory agencies, food incumbents, and others are vital to our success to date, as well as our future growth. Building an **ecosystem** to support cellular agriculture is critical to enable strong scale-up for this new way of supplying animal products. In addition, our product strategy – focused on high-impact and high value products, such as cattle-based products – is instrumental in fulfilling the environmental promise of cellular agriculture and also in reaching mid-term price parity and more widespread acceptance of cellular agricultural products.

We are confident that by communicating key elements of our journey, we can continue to inspire and expand our ecosystem and to turn the future that we envision into a reality.



Didier Toubia,
Co-Founder & CEO



About Us



About Us GRI 2-1, 2-3, 2-7

Aleph Farms Ltd. is a cellular agriculture company, headquartered and with operations in Rehovot, Israel and with additional offices in the United States and Europe. We diversify the supply and decentralize the production of quality animal proteins and fats as a complement to sustainable animal agriculture.

Humans have practiced animal agriculture for millennia, observing and replicating natural cycles (animal growth and reproduction) under controlled conditions in the pasture. Today, animal agriculture provides sustenance for billions of people. However, global population growth and conventional agricultural practices have had negative environmental and public health impacts, including on the resilience of food systems. With humanity currently using 1.8 planets' worth of resources each year¹, coupled with a rapidly changing climate and significant biodiversity loss, there is a clear need for change. Cellular agriculture is the newest chapter of animal agriculture's story. With rising demand for animal proteins, domesticating animal cells as complementary animal products reduces pressure on livestock farming and can help solve the inherent conflict between scale and sustainability in our food systems.

At Aleph Farms, we put people and humanity at the center of everything we do. We innovate because we care about our future and are dedicated to ensuring food accessibility through our quality animal products, which can meet the needs of today and provide the chance for a better tomorrow. By delivering an exceptional, delectable product, we aim to create a positive impact on people's lives and contribute to resilient food systems that benefits people and the planet.

¹ <https://www.theworldcounts.com/challenges/planet-earth/state-of-the-planet/overuse-of-resources-on-earth>

Our Vision

Secure access to high-quality animal products for anyone, anytime, anywhere, in service of people, the planet and animals.

Our Mission

To support a just and inclusive transition to sustainable and secure food systems, which we achieve by diversifying the supply and decentralizing the production of quality animal proteins and fats as a complement to sustainable animal agriculture.

Our Values

The code by which Aleph Farms and the people who represent it live. What we celebrate and promote:



Creativity

Innovation; openness to change; thinking outside the box



Courage

Daring to be pioneers and leaders



Collaboration

Inclusiveness; succeeding through teamwork



Care

For our product quality and safety; for humans, animals, and the planet



Curiosity

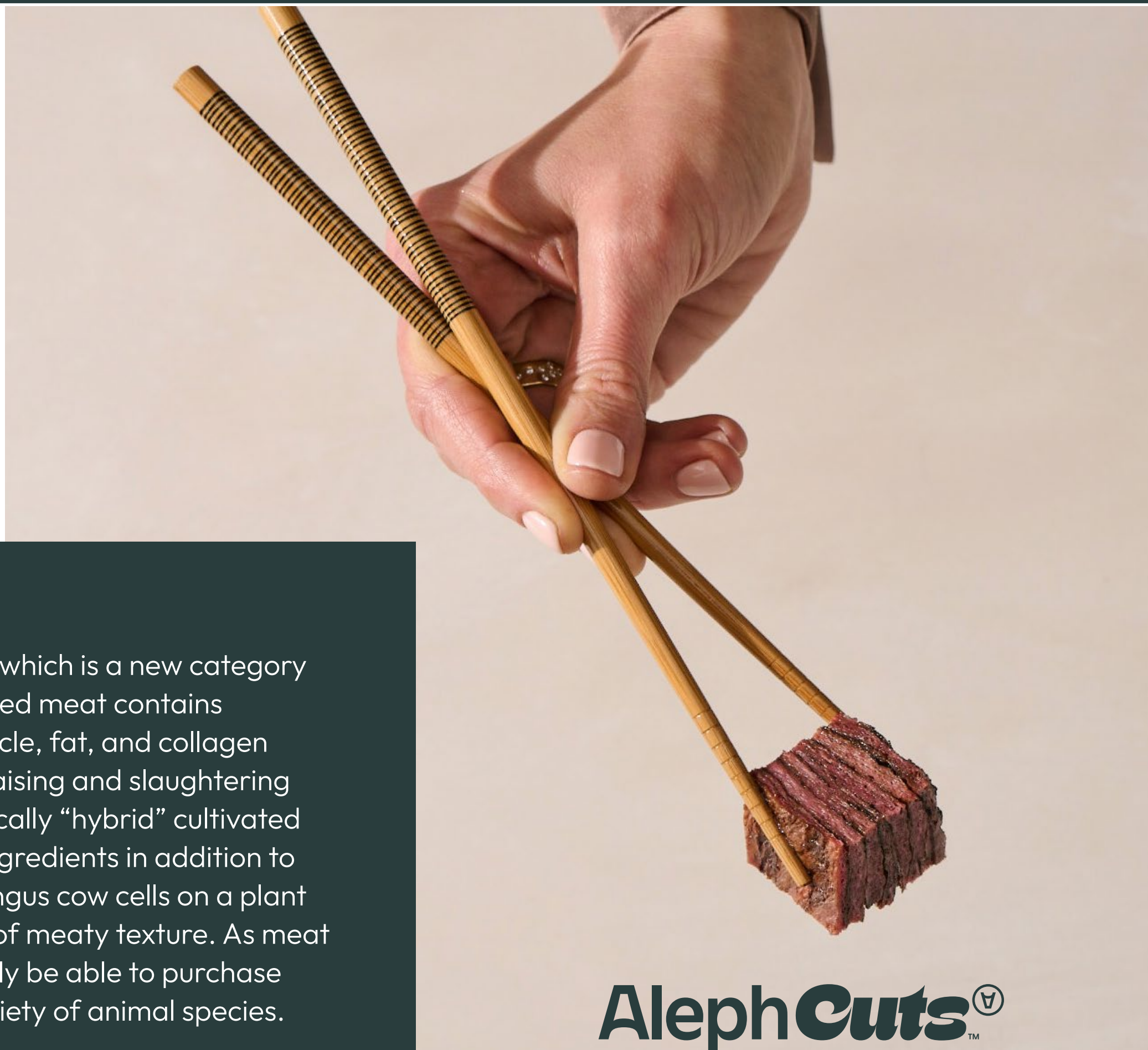
Constantly learning and pushing boundaries; evolving, both as individuals and as a company





Our First Cut

Aleph Cuts is the first product brand launched by Aleph Farms and will be used to market the world's first cultivated beef steaks. Our first Cut is the cultivated Petit Steak, grown from non-genetically modified cells of a premium Black Angus cow named Lucy. We chose to focus on steak for our first product not only to achieve price parity more quickly, but also due to the environmental and social impacts associated with conventional beef agriculture – impacts that pertain to land use and deforestation, biodiversity loss, greenhouse emissions, and precious resources like water. Across all conventional animal agriculture, cattle have the highest environmental footprint.



What is Cultivated Meat?

Cultivated meat is an application of the animal cell, which is a new category of animal products. Like conventional meat, cultivated meat contains animal muscle, fat, and collagen. However, this muscle, fat, and collagen is grown directly from animal cells, rather than by raising and slaughtering an animal. Most of today's cultivated meat is technically “hybrid” cultivated meat, meaning the products contain plant-based ingredients in addition to the animal cells. We make Aleph Cuts by growing Angus cow cells on a plant protein matrix, which optimizes our steaks in terms of meaty texture. As meat cultivation technology advances, consumers will likely be able to purchase both hybrid and fully cultivated products from a variety of animal species.

AlephCuts®
TM



A New Category in Food

Just as meat-eating has shaped our evolution as a species and milk influenced our progress as a civilization, we believe that at scale, a ***new category of food products from cattle – the cow cell itself*** – stands to have a monumental impact on how humanity responds to its current and future challenges. As a cellular agriculture company, we are committed to advancing the applications of the animal cell – specifically developing new animal products that consist of protein and fat. Through our own flagship product brand, Aleph Cuts, we aim to bring to market our first application of cellular agriculture – the world’s first cultivated beef steaks.

By enabling better-managed animals and necessitating fewer of them, cultivated meat can help alleviate some of the pressures faced by food producers, livestock farmers and society more broadly. We want to increase responsible consumption and access to animal products while helping humanity live within planetary boundaries, solving the conflict between scale and sustainability that is associated with sole reliance on conventional animal agriculture.

We believe that we can advance resilience into food systems. Because cultivated meat is made in closed systems, production can be decentralized and take place geographically close to consumption, including places where raising animals is not feasible. By diversifying food supply with a short and predictable value chain, cellular agriculture can significantly reduce susceptibility to shocks. As a result, cultivated meat can offer a more stable supply of protein to diners, even amidst fluctuating markets and rising demand. It spurs economic growth and empowers communities, countries, and regions to access adequate, locally produced nutrition.





Our Technology

Growing Aleph Cuts via cellular agriculture takes approximately four weeks. The cells for our first Cut, a cultivated Petit Steak, come from Lucy, a premium Black Angus cow who lives on a breeding farm in California.

Ranchers around the world purchase Lucy’s fertilized eggs and use them to improve the quality of their livestock. We needed a source of premium cow cells and needed to look no further than Lucy.

We have no plans to raise cows because all we need is a one-time collection of Lucy’s fertilized eggs. From there, we can grow high-quality, tasty, and nutritious Aleph Cuts.

When at scale, we expect to grow thousands of tons of steak from this single collection.



This is a picture of Lucy

1. Source

We source a fertilized egg from Lucy, allow it to develop for a short period of time, and then derive cells from it. These cells have the potential to mature into the different types of cells that make up meat, like muscle and collagen-producing cells. The cells are preserved at sub-zero temperatures in our cell bank and can be used to cultivate Aleph Cuts.

2. Grow

Next, we move a small number of starter cells into a growth tank called a cultivator. Our cultivators provide a temperature-controlled, clean, and closed environment where cells can thrive. The cell feed contains everything the cells need to live and grow, including water, oxygen, nutrients, and growth factors. In this environment, our starter cells quickly produce many duplicates.

3. Mature & Structure

We transfer the young cells into separate cultivators to mature into different cell types for muscle and collagen. Inside a cow, a network of proteins and other molecules would surround, support, and give structure to these cells. At Aleph Farms, we model this process with a plant protein matrix made of soy and wheat, which enables the cells to form the shape and texture of an Aleph Cut.

4. Harvest & Culinary Innovation

In just about four weeks our Cuts are ready for harvesting and packaging. They are stored and ready for distribution to our chef partners. Whether served as a whole cut, sliced, or shredded, chefs can create traditional or new innovative dishes with Aleph Cuts.



Supporting our Mission

By supporting diversification of protein supply, our production model also supports stability of that very supply.

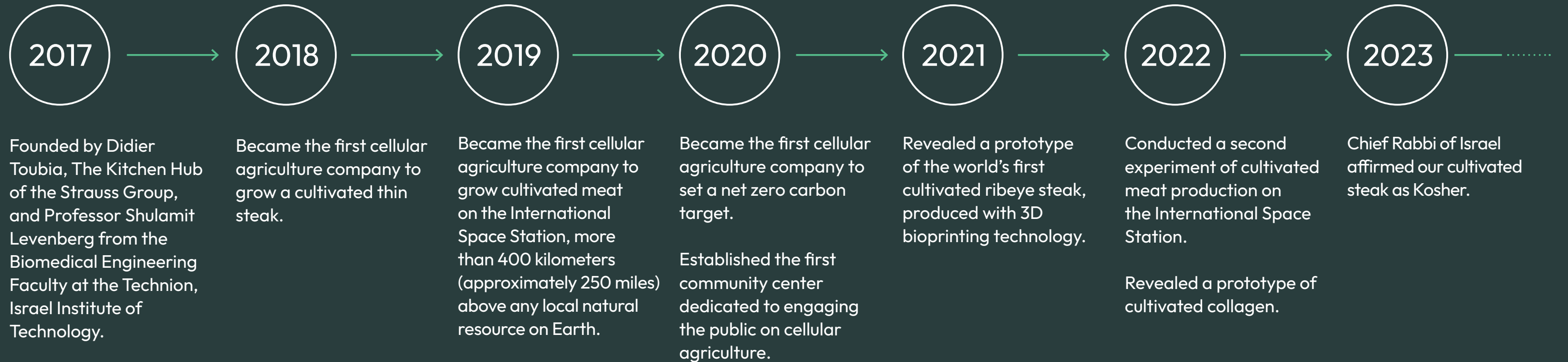
Currently, a lack of diversity in protein production methods is hurting producers' ability to keep prices stable. In the face of sudden shocks to supply chains, existing production systems are incapable of adjusting to meet demand for conventional animal products, causing prices to increase and consumers to panic.

Cultivated meat's short, predictable, and resilient value chain significantly reduces susceptibility to shocks. As a result, it can serve as an anchor for prices, enabling a more stable supply of protein to consumers, even amidst fluctuating markets and rising demand.

The presence of cultivated meat alongside sustainable animal agriculture in food systems helps producers by increasing resilience and flexibility in times of high uncertainty, including in the aftermath of external shocks like extreme weather events, global conflicts, or the onset of global health crises.

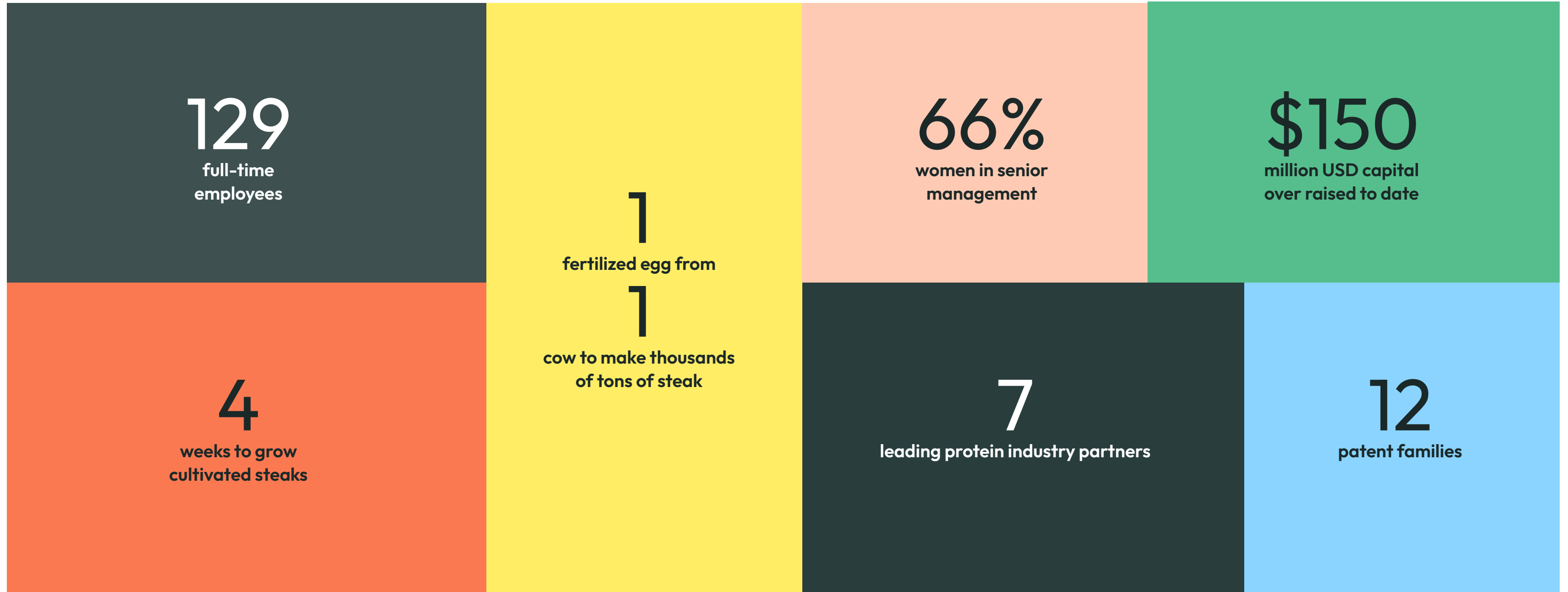
Aleph Farms is working with an array of partners to develop innovative business models that create synergies between cultivated meat and conventional livestock systems. By doing everything to safeguard workers' livelihoods and create new opportunities, we are proactively allocating our efforts towards enabling current food producers to take active roles in the transformation of food systems.

Aleph Farms' Timeline





Aleph Farms in Numbers





The Aleph Farms Approach to Sustainability



Sustainability Governance GRI 2-13

Sustainability is woven into Aleph Farms' very mission and purpose, so naturally, sustainability is overseen at the highest level of our company and is incorporated inherently across all business functions. Our Vice President of Sustainability, reporting to the CEO, maintains overall leadership of our sustainability goals at Aleph Farms and is responsible for the establishment and implementation of our strategy.

Our VP Sustainability is supported by our Sustainability Advisory Board, which is comprised of experts in the fields of food systems, agriculture, and climate change. The board has supported us on a number of strategic ESG initiatives, including our net zero carbon and Just Transition strategies. It has also supported us in promoting policy and in expanding our network at events and gatherings devoted to global food systems and climate action, such as the United Nations Conference of Parties (COP), United Nations Food Systems Summits (UNFSS) and the Agriculture Innovation Mission for Climate (AIM4C).





Our Leadership



Didier Toubia
Co-Founder & CEO



Prof. Shulamit Levenberg
Co-Founder and Chief Scientific Advisor



Kevin Benmoussa
EVP & CFO



Dr. Lee Recht
VP Sustainability



Aurelia Greystoke
Chief of Staff



Yifat Snider
VP People



Dr. Neta Lavon
CTO



Yifat Gavriel
Chief of RA, QA & Product Safety



Eyal Rivlin
VP Production & Operations



Nicky Quinn
VP Marketing



Dr. Tami Dvash
VP R&D Meat Products



Our Sustainability Advisory Board



Danielle Nierenberg

World-renowned Researcher, Speaker, and Advocate on all issues relating to our Food System and Agriculture. The President of Food Tank, an expert on sustainable agriculture and food issues and recipient of the Sixth Annual Julia Child Award.

Aimée Christensen

Founder & Chief Executive Officer, Christensen Global and Founder & Curator, Sun Valley Forum. Climate and Sustainability Adviser and Speaker. Hillary Institute Laureate, Aspen Institute Fellow.

Marc Buckley

Founder ALOHAS Regenerative Foundation, Ecological Economist, Global Food Systems Reformist, Regenerative Futurist for UNFCCC Resilience Frontiers, UN Advisor & Advocate, EU Taxonomy PSF commission, WEF Expert Member Network & Impact Circle AI.

Leonardo DiCaprio

Academy Award winning actor, co-founder of Re:wild and Earth Alliance, UN Messenger of Peace with special focus on climate change, Board Member of several environmental protection organizations including the WWF and the Natural Resources Defense Council, Winner of the Clinton Global Citizen Award.

Sustainability Policies and Practices GRI 2-23

While we are still at an early stage, we aim to implement a comprehensive approach to ESG management in our business to provide a strong foundation from the start. We are building our policy suite to ensure that our entire business is grounded in the same purpose and ethics. We maintain strong principles, processes, and policies in areas of Anti-Bribery & Anti-Corruption, Anti (Sexual) Harassment and General Safety, Corporate Information Technology Strategy & Management, and Information Security Procedures. In addition, and central to our sustainability work, are the following:

Sustainability Policy

Our Sustainability Policy outlines the principles that underpin our operations, including embedding sustainability in all business decisions, encouraging our value chain partners to adopt sustainable practices, monitoring and managing our impacts, and ensuring that all Aleph Farms employees are committed to the implementation and improvement of our policy and strategy.

Supplier ESG Code of Conduct

Ensuring the integration of sustainable development principles and goals throughout our supply is a priority for us. Our Supplier Code of Conduct spells out our own commitment to doing business not only legally, but also ethically and with integrity, and is based on the ten principles of the United Nations Global Compact initiative, the United Nations Guiding Principles on Business and Human Rights, the International Labor Organization, Declaration on Fundamental Principles and Rights at Work.



Engaging our People & Communities GRI 2-29

Our partnerships and engagement with key stakeholders are vital to our growth. Central to our mission is supporting a just and inclusive transition towards sustainable and secure food systems, for which meaningful stakeholder engagement is crucial (see page X – Just Transition.) We also engaged a range of internal and external stakeholders in our first materiality assessment (see page 21 – Materiality Assessment) in 2022 and continue to collaborate with industry-leading organizations and consultancies to ensure that we make informed decisions (see page 33 – Partnerships) that account for the perspectives of those who are impacted by our business.



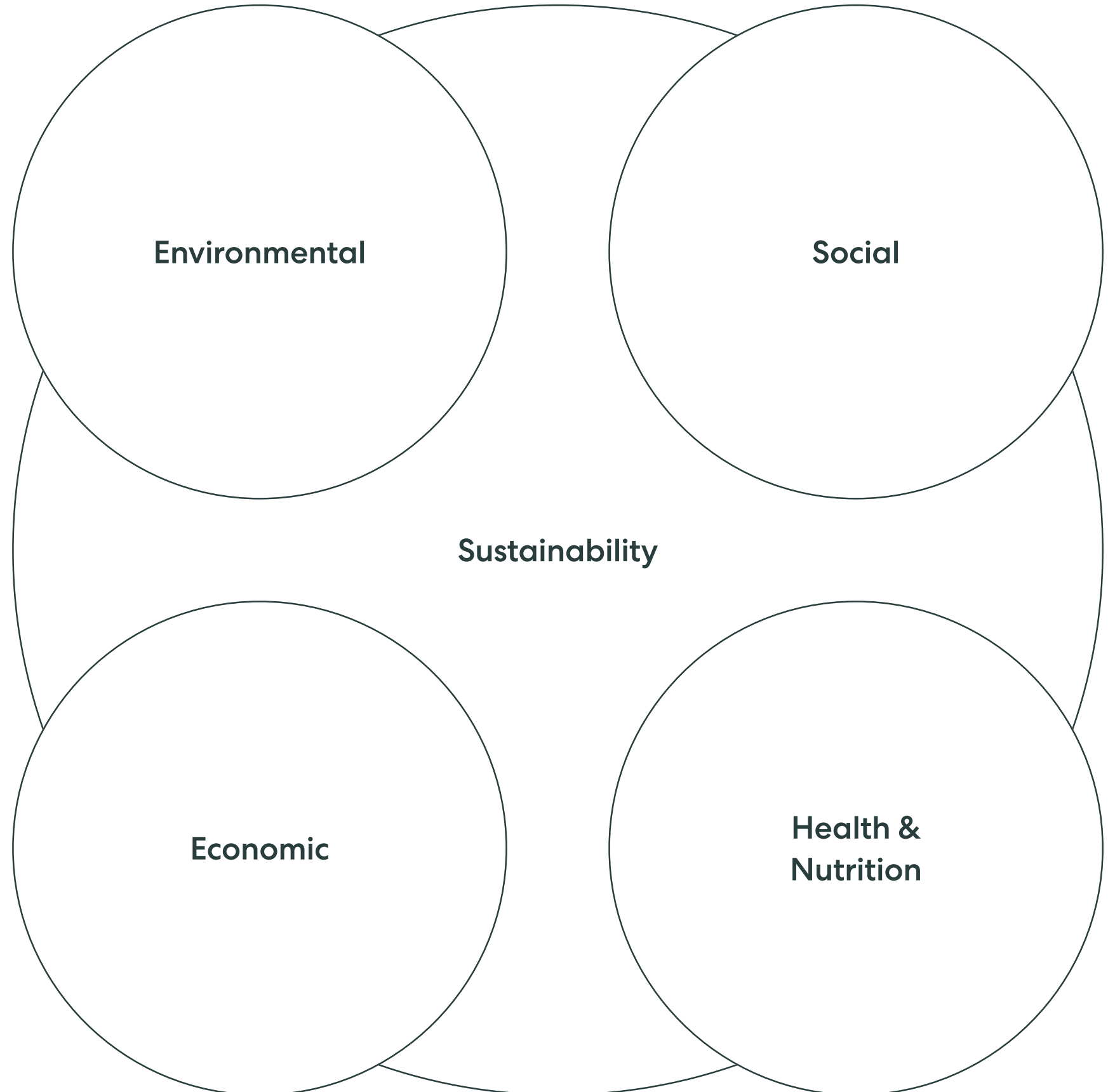
Sustainability – A Holistic Approach

We believe that to build more sustainable and resilient food systems and enable greater food security, we need to uphold four pillars of sustainability impact: Environmental, Social, Economic and Health & Nutrition.



"How food systems use finite resources has major implications on climate action, food security, economic prosperity, and social well-being. Aleph Farms' holistic approach to sustainability allows us, as a growing company, to frame our responsibility towards the planet and humanity."

– Dr. Lee Recht, VP Sustainability





Environmental

Environmental sustainability for us means managing and minimizing our use of resources while tackling global issues, such as climate change, water scarcity and biodiversity loss. This includes designing our processes and production lines with sustainability and resource efficiency in mind and making sure to measure all our inputs and outputs. As we scale, it is vital for us to strive for continuous improvements and efficiencies to reduce our environmental footprint across sourcing ingredients, waste, energy use, energy sources, water use and greenhouse gas emissions. Our work in this pillar aims to both reduce and regenerate, providing solutions for sustainable food systems.

Social

Social sustainability to us means ensuring that we are part of an equitable and just transition to more sustainable economies, and specifically more resilient food systems. We proactively engage our stakeholders and promote fair labor practices as we build our supply chain. Through our work and engagement in international forums, we hope to create government frameworks to encourage and incentivize meaningful discussions between cellular agriculture and livestock farmers. This discourse can catalyze collaboration and establish innovative business models that protect communities from potential impacts resulting from climate action, such as loss of livelihood.

Economic

Economic sustainability for Aleph Farms means forming a viable economic future for our products, while ensuring that they are globally accessible and affordable. Our partnerships are vital to achieving this. Collaboration can drive economies of scale and help achieve price parity with the conventional meat market. Beyond building financial models to ensure that our sustainability practices help drive our company's growth, we also advocate to policymakers on the need to re-evaluate the true cost of food and incorporate externalities such as environmental impact and public health. Moreover, as we establish our global footprint, we put emphasis on empowering local communities and contributing to decentralizing the protein and fat sector for long-term and decent economic growth.

Health & Nutrition

As a company that is active in food technology, the quality, safety, and nutritional value of our products is of fundamental importance. As we scale, we prioritize ensuring that our products are globally accepted and trusted based on the highest standards for food safety. We recognize that by prioritizing the quality and taste of our food products, we contribute significantly to the development of more resilient and healthier food systems, while also strengthening national, regional, and global food security.






Sustainable Development Goal (SDG) Alignment

Our approach to sustainability is bolstered by our alignment to the Sustainable Development Goals (SDGs). We believe the power of collective action to drives much needed focus and globalized action in the face of today’s common societal challenges. For this reason, we appreciate the ambitions of the goals, targets, and indicators set by the SDGs, while also acknowledging that there is still much work to be done to achieve these ambitions by 2030. Together with SDG

Israel, we chose to align our business to 8 SDGs (detailed below). We strive to support meaningful progress towards these goals, while also ensuring we can credibly measure our impact against them year-on-year. To that end, we recently adapted the selected SDGs’ global indicators to fit our capabilities as a growth company, acknowledging the journey that our business is on – both internally and globally. For instance, certain targets, such as the material footprint

of our products and our carbon emissions, have been part of our business’ more immediate priorities. As we launch and expand our products globally, we will be able to drastically grow our contribution to resilient food production systems, supporting our ultimate mission of global food security. We are committed to tracking our progress against these indicators as part of our sustainability strategy, which we will report on in the coming years.

SDG	Target	SDG Indicator	Aleph Farms' Indicator
 <p>2 ZERO HUNGER</p>	2.4: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters and that progressively improve land and soil quality	2.4.1 Proportion of agricultural area under productive and sustainable agriculture	Development of food production processes that support maintenance of ecosystems, strengthen capacity for adaptation to climate change, extreme weather, drought, flooding, and other disasters, and that progressively reduce land and soil stress. (supporting 2.4.1)
 <p>5 GENDER EQUALITY</p>	5.5: Ensure women’s full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic, and public life	5.5.2: Proportion of women in managerial positions	Proportion of women in managerial positions at Aleph Farms. (supporting 5.5.2) <i>(Aligned – Diversity and Equal Opportunity 405-1)</i>
 <p>7 AFFORDABLE AND CLEAN ENERGY</p>	7.2: By 2030, increase substantially the share of renewable energy in the global energy mix	7.2.1: Renewable energy share in the total final energy consumption	Renewable energy share in the total final energy consumption by our company, measured annually. (supporting 7.2.1) <i>(Aligned – Energy 302-1b)</i> <i>“Total fuel consumption within the organization from renewable sources, in joules or multiples, and including fuel types used.”</i>



SDG	Target	SDG Indicator	Aleph Farms' Indicator
 <p>8 DECENT WORK AND ECONOMIC GROWTH</p>	<p>8.3: Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity, and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</p> <p>8.5: By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value</p>	<p>8.3.1: Proportion of informal employment in total employment, by sector and sex</p> <p>8.5.1: Average hourly earnings of female and male employees, by occupation, age, and persons with disabilities</p>	<p>Public promotion of policy that supports growth companies to have access to international frameworks. (supporting 8.3)</p> <p>Number of employees (male/female) engaged in full-time formal, productive work in conditions of freedom, equity, security, and human dignity at Aleph Farms (decent work, as defined by the International Labor Organization). (supporting 8.5)</p>
 <p>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</p>	<p>9.4: By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities</p>	<p>9.4.1: CO2 emission per unit of value added</p>	<p>Carbon emissions per unit produced (Co2e). (supporting 9.4.1)</p>
 <p>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</p>	<p>12.2: By 2030, achieve the sustainable management and efficient use of natural resources</p>	<p>12.2.1: Material footprint, material footprint per capita, and material footprint per GDP</p>	<p>Material footprint calculated as tonnage of biological material, water use and packaging in production. (supporting 12.2.1)</p>
 <p>13 CLIMATE ACTION</p>	<p>13.2: Integrate climate change measures into national policies, strategies, and planning</p>	<p>13.2.2: Total greenhouse gas emissions per year</p>	<p>Total greenhouse gas emissions per year (scope 1,2,3). (supporting 13.2.2)</p>
 <p>17 PARTNERSHIPS FOR THE GOALS</p>	<p>17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnership</p> <p>17.16: Enhance the Global Partnership for Sustainable Development, complemented by multi-stakeholder partnerships that mobilize and share knowledge, expertise, technology, and financial resources, to support the achievement of the Sustainable Development Goals in all countries, in particular developing countries</p>	<p>17.7.1: Amount in United States dollars committed to public-private partnerships for infrastructure</p>	<p>Advocacy for public-private and civil society partnerships; partnership for emerging technologies to support the Sustainable Development Goals. (supporting 17.7.1)</p>



Materiality Assessment and Matrix – Identifying What Matters Most GRI 3-1, 3-2, 3-3

In 2022, in collaboration with our stakeholders, advisors and external consulting partner, **Anthesis Group**, we conducted a materiality assessment. The aim of the assessment was to identify and assess the actual and potential impacts, both positive and negative, that our business activities and operations have on people, the environment, and the economy. After close inspection of the industry landscape as well as international frameworks, we identified 20 material ESG topics to test with our stakeholders.

We engaged a range of key internal and external stakeholders and experts, including our sustainability advisory board, investors, suppliers, and academic partners to test and understand these material topics from the Aleph Farms perspective. Consequently, we identified 6 topics for priority focus in the short term as we prepare our product for launch: **Climate & Carbon, Just Transition, Food Security, Partnerships, Food Safety & Product Quality, and Category Definition and Responsible Marketing.**

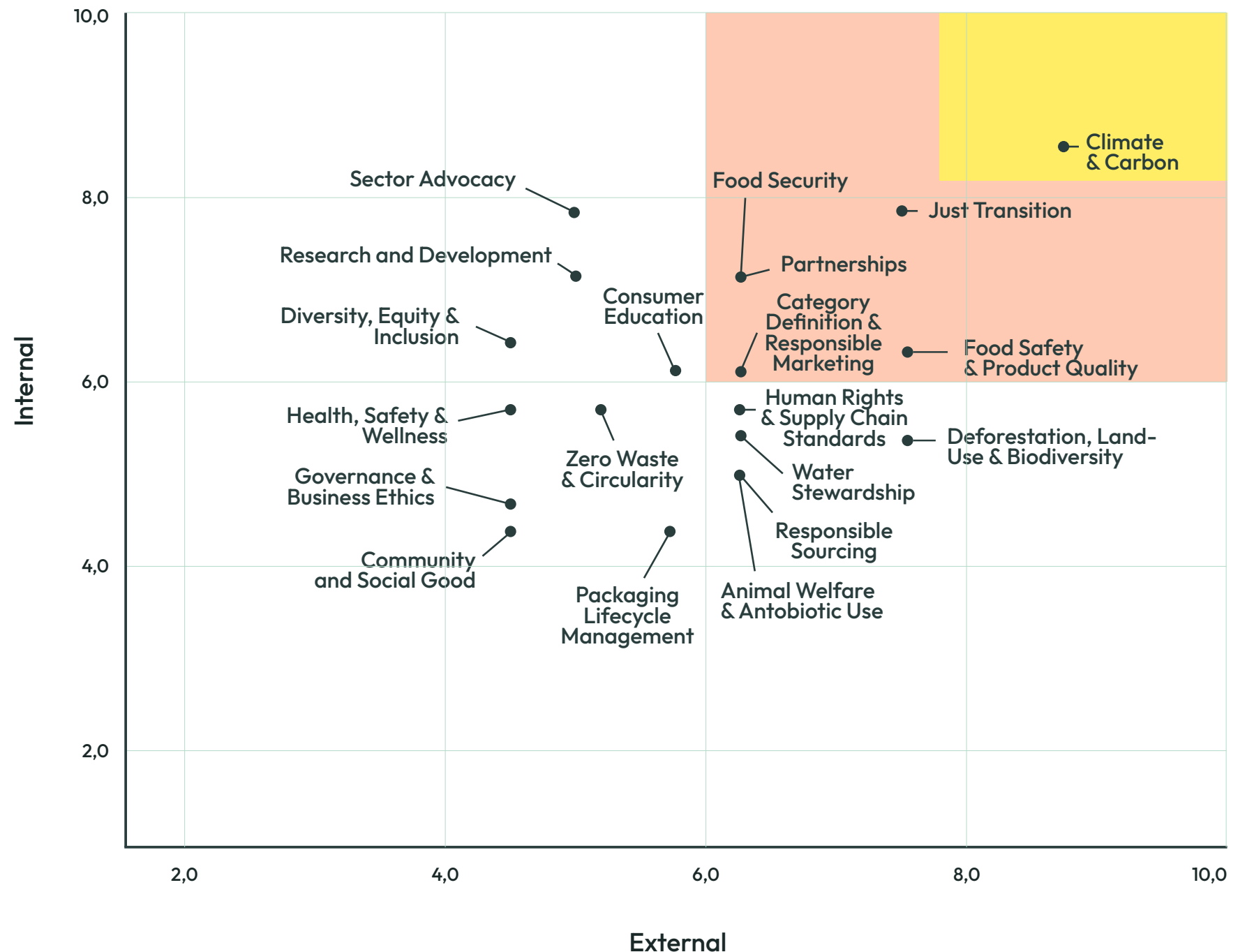
While we have flagged ‘Category Definition & Responsible Marketing’ as

being high priority, we have made the decision not to cover this topic in this 2022 report. This is due to the inherently external nature of the topic, meaning that we want to take a cautious and measured approach that will consider the ripple effect that any statements we make may have on the wider cultivated meat sector and the perception of it. With this in mind, we aim to solidify our approach to this in the coming year and publish our progress in our next report. We have decided to instead dedicate a part of this report to ‘Consumer Education,’ an important topic in its own right that will eventually feed into our position on ‘Category Definition & Responsible Marketing.’

While we will develop and build our approach to all topics, this prioritization allows us to focus certain efforts and resources on the immediate future and gives us a blueprint for our strategy. As we scale and commercialize our operations, we understand that our priorities and focus areas will shift as well.

We will share our ambitions and our approach to each of these topics within this report.

Priority ESG Topics





Environmental



As we scale and on an ongoing basis, we carefully manage our environmental footprint. This includes conducting a Life Cycle Assessment (LCA) on our cultivated meat products, alongside measuring our corporate ecological footprint (greenhouse gases, electricity, water, and waste).

In addition, we have launched programs for energy and resource efficiency, our transition to renewable energies and waste management that help us meet our environmental goals.



66%

reduction in water use



94%

reduction in pollution



92%

reduction in greenhouse gas emissions



98%

reduction in soil acidification



90%

reduction in land use



5.5x

more efficient Feed conversion ratio (FCR) (excl. Grass-fed)

Climate & Carbon

Climate Change – Our Mission and Purpose

Responding to the climate crisis was and always will be a core driver in Aleph Farms’ creation and continued existence.

Meat consumption will not and should not disappear. The cultural, nutritional, and social significance of conventionally grown meat is not something we want to lose. That being said, food systems are in crisis, and intensive agriculture has led to biodiversity loss, deforestation, water shortages and overuse of antibiotics. Perhaps most critically, **30% of worldwide GHG emissions²** are associated with the global food system. It is estimated that **57% of these emissions** are linked to the production of animal-based food.

Cultivated meat is important in two very different ways: First, to mitigate further damage to the climate, it provides high-quality protein with reduced emissions. Second, to adapt to the effects of climate change that has already taken place, its production is both less reliant on specific climate conditions and more resistant to extreme climate events.

Aleph Farms strives to be part of the solution by advancing cellular agriculture and furthering resilient and climate-friendly cultivation of animal products.

We contributed our data and insights, together with 18 other companies in the cellular agriculture value chain, to an industry-level research study by **CE Delft**, modeling the life cycle analysis of cultivated meat at scale. The research³ shows that when cultivated beef is scaled with renewable energy, there is a **66% reduction in water use, 92% reduction in greenhouse gas emissions, 94% reduction in pollution and 90% reduction in land use** as compared to conventional beef production.

We continue to work closely with CE Delft establishing our own LCA and, even though we are not yet commercial and still do not have real-time data, our LCA functions as a tool for decision making. It helps us to understand the major hotspots within our operations and supply chain, and, through scenario analysis, what solutions will create the biggest ecological impact.

²“Science for Environment Policy”: European Commission DG Environment News Alert Service, edited by the Science Communication Unit, The University of the West of England, Bristol.

³<https://link.springer.com/article/10.1007/s11367-022-02128-8>



Our Commitment - Net Zero Carbon

From early on, we have sought to build our company with a net zero carbon mindset. Since 2022, we have been measuring our corporate GHG emissions (scopes 1, 2 and 3), to understand the baseline for our operations and our wider supply chain. In 2020, we became the first cellular agriculture company in the world to announce a net zero carbon goal. Our goal is to **reach net zero carbon within our operations by 2025 (scopes 1 & 2) and throughout our supply chain by 2030 (scopes 1, 2 & 3).**

Our target of reaching net zero carbon by 2025 in our operations is ambitious but attainable. We are realistic and expect multiple challenges along the way, but with a robust roadmap to guide us and several key partnerships to help us navigate, we are determined to succeed.

Our Route to Net Zero Carbon

Our initial roadmap to net zero carbon in 2021 was created in partnership with **Christensen Global Strategies**, a world-renowned consultancy in climate change and sustainability strategies.

“By building a company with a net zero mindset from nearly day one, Aleph Farms is pioneering the smart clean growth that all companies must take” – Aimée Christensen, CEO, Christensen Global Strategies

We are taking the following steps:

1

Energy Efficiency and Electrification:

Designing efficient and circular practices throughout all operations (scopes 1 and 2) and supply chain (scope 3). We will continuously invest in the decarbonization of our production lines and work with suppliers to strengthen their sustainable practices while decarbonizing our value chain. Electrification of selected practices to reduce emissions linked to scope 1.

2

Renewable Energy:

Generating and/or sourcing renewable energies to eliminate emissions linked to electricity (scope 2).

3

Offsetting and Insetting:

We will offset our remaining carbon footprint through local projects with a longer-term view to finance climate protection projects in our value chain (insetting).

Since then, we have created an ecosystem of partnerships to support our journey to net zero carbon. In 2021, we signed a Memorandum of Understanding with **Engie Impact**, the sustainability consulting arm of world leading energy provider, Engie. This partnership enables us to integrate energy efficiency and energy circularity into our operations, and strategically source our electricity from renewable sources. In tandem, our partnership with **CE Delft** - to analyze the life cycle impacts of production and supply chain - is allowing us to optimize our products' overall ecological footprint. Finally, our partnership with **Persefoni** allows us to measure our greenhouse gas emissions at a corporate level, breaking down our carbon footprint to different scopes, sites, and operations, all according to the **GHG protocol**.



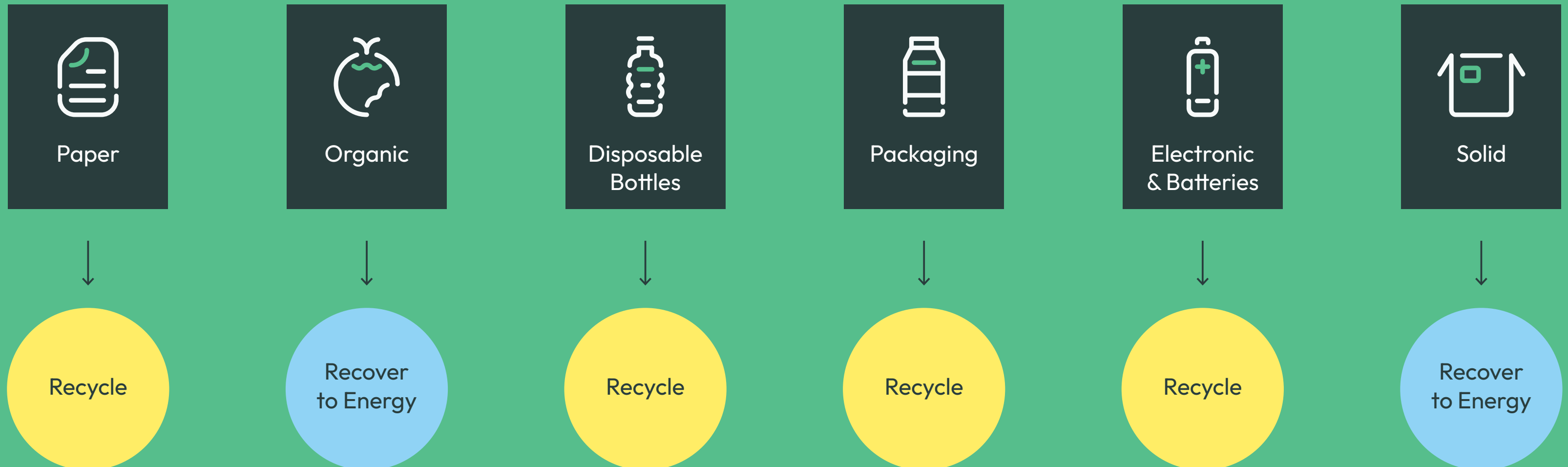


A Social Path to Zero Landfill

In 2022, we launched our Waste Management Program to promote action to reduce, reuse and recycle waste in our operations. Through auditing our waste reduction process and measuring its results, we eliminated much of the waste and material that would otherwise head to landfill and release methane, a greenhouse gas, into the atmosphere. Today, we have seven streams of waste that get either recycled or recovered into energy. To make this process even more

impactful, we wanted it to be inclusive and aligned with our social values. To achieve this, we partnered with **Yarok Hevrat** (“Social Green”), a social organization that employs people with disabilities to provide recycling and waste collection services, further intertwining social betterment with ecological preservation.

Aleph Farms’ Waste Mgmt. Framework - A Path to Zero Landfill



The Challenges for Low Carbon Start-Ups

As a company at the forefront of innovation and technology in the food sector, we are accustomed to paving new, uncharted paths in many aspects of building our business – from constructing our supply chain ecosystem to developing the right testing procedures and protocols. Our ambition to achieve net zero carbon emissions from inception is another path we have had to trailblaze. As we are starting with a low carbon approach, we do not have an emissions baseline from which we can substantially reduce our emissions. We can never claim, for instance, that “Aleph Farms has achieved X% emissions reductions.” We fully support leading frameworks for calculating, reporting, and acting on climate change, such as the Science Based Targets initiative, the Race to Zero, and others, but somewhat paradoxically, without a baseline from which to reduce, we and other **growth-stage companies** committed to preventing emissions from inception are excluded from current frameworks.

We have also seen an opportunity for carbon markets to become more inclusive and help support the growth of companies that are low carbon from inception. Under current approaches to carbon credit issuance, companies can earn credits through the implementation of technological and operational changes that avoid, reduce, or remove GHG emissions. While this approach may work well for industry incumbents, it being the sole means of generating carbon credits prohibits companies that are low carbon from inception from gaining credits. With coming guidelines to enhance transparency and rigor in the carbon marketplace, we are also keen to see provisions for better inclusivity of low carbon early-stage companies. One such provision would be the **implementation of sector baselines** for carbon emissions. This would allow low carbon start-ups to gain credits by virtue of operating below a defined sector baseline, thereby rightly rewarding them for creating new and sustainable products and services.

We believe in the importance and impact made by these frameworks and are advocating for greater inclusion, so that companies like ours are incentivized to take action right from the beginning.





Current Offsetting Projects

While we strive to significantly reduce the amount of greenhouse gases we emit, the reality is that we will not be able to completely remove all emissions from within our operations and supply chain. We therefore utilize credible carbon offsetting projects to combat these remaining emissions and we have implemented some projects of our own.

In 2021, we committed to annually offset the carbon footprint associated with our company’s air-miles from business travel. That year, we engaged with local organization **Good Energy Initiative** to plant 41 trees in low socio-economic cities in Israel – one for each employee we had at the time. We chose to support this project specifically to support our local community in Israel, as well as its close ties to three of our four sustainability pillars: Environment, Social and Economic.

For our 2022 airmiles, we invested in a carbon offsetting project managed by Shachar Group, an Israeli company which specializes in the treatment and recycling of industrial food waste. This project focused on turning unconsumed excess milk into animal feed and allowed us to offset 271 tons of CO₂eq. The project was certified by **Oporto Carbon** in accordance with standard ISO 14064-3, assured by BDO in accordance with ISAE3410, and further verified by Herzog Fox Neeman.





Social



What is Just Transition?

Just Transition is a concept designed to ensure that the substantial benefits of the green economy transition are equally distributed, while also supporting those who could otherwise stand to lose economically, including countries, regions, industries, communities, workers, and consumers.

Key goals of a Just Transition should include decent jobs, social protection, and social inclusion, while addressing the climate crisis.

People are central to all that we do. Given the potential scale of cellular agriculture, we know that engaging stakeholders with our vision, mission and approach is vital for our success and is perhaps most important for a just and equitable transition across animal agriculture. As such, we work in partnership with different stakeholders across our value chains and are actively exploring future partnerships that can bring value to livestock farmers and other stakeholders in animal agriculture. We are also collaborating with partners in different markets to champion local food cultures and strengthen local communities.

A Just Transition

Collaboration Is Complex but Can Be World Changing

At Aleph Farms, we see promoting and achieving a Just Transition as central to all that we do.

Global food systems need to change in a manner that is inclusive. To this end, we believe in advocating responsible protein consumption and advancing sustainable practices in animal agriculture, complemented by innovative technologies such as cellular agriculture that help provide high-quality nutrition for all.

To achieve this, we need to address the complexity of relationships between different activities and stakeholders. Creating a fairer world through an equitable transition will only be possible through collaboration and engaging stakeholders at all levels.

For example, the transition to more resilient food systems must include collaborations and partnerships with farmers to promote their prosperity and introduce new economic opportunities. Supporting and investing in local production, empowering communities, and giving control back to farmers is a critical part of the overall social and systemic change required of the agricultural and food sectors.



The Just Transition in Action

Aleph Farms is not here to vilify conventional meat. Rather, we believe in relieving pressure on conventional food production by complementing it. We do this with the animal cell – the newest category of animal products, and its applications, including cultivated meat.

We also want our actions to be grounded in clear research and understanding. To this end, and in partnership with Prof. Harpinder Sandhu from [Federation University Australia](#), we began a socio-economic study in 2021 that is examining the role of cultivated meat in a Just Transition of livestock farming. The study compares three regions: the United States, Europe, and the Global South, each of which represents a different way of cattle farming. The study’s aim is to develop innovative and tailored business models that include synergies between cultivated meat and traditional livestock farming systems in respective regions.



Consumer Education and Our Human-Centered Approach

Forging a Just Transition means accounting for the impact that food system transformation will have on people. All of us eat, so all of us are consumers, and ultimately, what we choose to have for dinner has a significant impact on food systems. In order to drive positive change, we need consumers to be on board and help us drive the change through what they demand. This is why we are focused on:



When it comes to collaboration and stakeholder engagement, the consumer must be part of the dialogue.

Listening to Our Consumers

Building trust with consumers is paramount and central to our mission. To bring our products to market and achieve scalable impact on food systems, we must continue to work hard to ensure that our messaging is simple and transparent.

Since our inception, we have conducted extensive quantitative and qualitative consumer research, and the results have been informative and encouraging. From market research to engagement via our Community Center (which includes a visitor center), dialogue with consumers is a top priority. Overall, our research suggests that while cultivated meat is still an unfamiliar food choice, it is likely to be widely accepted by the public, especially by younger people.

Ultimately, trust is something that must be constantly earned and never presumed. As our CEO, Didier Toubia, shares, *“Social proof is important to [our future customers] ... They want to be assured that a product is delicious, safe, functional, and beneficial before they incorporate it into their diets. This is why transparency and trust are cornerstones of our company.”*



Economic



From Start-up to Scale-up: Ensuring Sustainability is Baked into Business Growth

To drive sustainable growth for our business, we collaborate with partners both in our upstream and downstream supply chains, which helps us reduce costs, drive economies of scale and achieve price parity with the conventional beef market. We also promote policies designed to account for the true cost of protein. These include policies that aim to highlight climate and public health-related externalities associated with food production and redirect subsidies to climate-friendly incentives and practices.

We take a pragmatic, long-term approach to financing sustainability in our business. It's a balancing act of course, ensuring we can grow aggressively without compromising our values or contradicting our purpose. However, with our net zero carbon commitment as our top priority, we always consider how this target could be impacted or supported through business decisions, financial and otherwise.

We actively collaborate in the global protein market to support and grow our capacity, our reach, and, in turn, our impact. In January 2021, we signed a Memorandum of Understanding with [Mitsubishi Corporation's Food Industry Group](#) to bring cultivated meat to the Japanese table, combining the use of our scalable manufacturing platform for producing cultivated steaks with Mitsubishi Corporation's expertise in biotechnology processes, branded food manufacturing, and local distribution channels in Japan. Later that same year, we signed a Memorandum of Understanding with one of Asia's largest food companies – [Thai Union](#) – to help us accelerate our scale-up and go-to-market activities and also elevate distribution of cultivated meat in existing marketing channels across the APAC region.

Innovation is our backbone. We are proud to be part of the [World Economic Forum's Global Innovators Community](#), giving us a platform to engage with public- and private-sector leaders and to contribute new solutions to overcome existing crises and build future resilience. We have also been officially recognized by the [Agriculture Innovation Mission for Climate](#) (AIM for Climate) as an Innovation Sprint Partner. As part of this innovation sprint, \$40 million is being invested in cellular agriculture R&D between 2021-2025 through Aleph Farms in partnership with L Catterton, Strauss Group, VisVires New Protein, CPT Capital, Synthesis Capital, Food Tank and Christensen Global. These partnerships support us in introducing our products to global markets as soon as regulatory processes conclude and approvals are finalized.



Partnerships – Building the Ecosystem for a Fairer Food Sector

We are building an ecosystem for cellular agriculture. When we started our journey in 2017, the blueprint for a supply chain like ours did not exist. We needed to identify the right partnerships to continue our growth and build a resilient value chain that could support our mission. From the careful selection of our suppliers and our technical and academic partnerships to our manufacturing partners who are helping us expand our production capacity, we always endeavor to work collaboratively to achieve our long-term goals.

The inherently complex nature of seeking meaningful transformation of the food systems means that we need to focus on action, propelled through partnerships. In November 2022, Aleph Farms, as part of a coalition of leading food organizations, hosted the first ever Food Systems Pavilion at COP27 in Egypt alongside a diverse set of stakeholders.

In addition to producers like farmers and ranchers, there were participants from public, private, and not-for-profit sectors, including policymakers, scientists, Indigenous Peoples, NGOs and IGOs, and youth representatives. This diverse coalition includes segments of the population whose voices have historically been underrepresented or non-existent in such forums, but whose voices are crucial in developing the discussions.

We seek to create partnerships that are mutually beneficial from financial, environmental, and social perspectives. Our partners cover the span of the value and supply chain. Some of these companies offer capabilities in biotechnology and food processing; others in go-to-market, distribution, and sales. They include industry leaders such as Micarna, Cargill, BRF, Thai Union and Mitsubishi Corp Food Industry Group. We aim to both learn from and inspire our partners.

Our Partners

World Class Investors



NGOs and International Organizations



Industry Leading Partners



Environmental & Social Impact Partnerships



Research and Academic Partnerships





Health & Nutrition



At Aleph Farms, we believe that cultivating nutritious products facilitates a just and inclusive transition to sustainable and secure food systems.

Global Food Security – and the Dangers of Putting All of Our Eggs in One Basket

We need to relieve pressure on global food systems. Unforeseen events with reverberations around the world such as the Covid-19 pandemic and Russia’s invasion of Ukraine have disrupted global trade and food production. Supply chains have been stretched and fractured, food prices have inflated, and lack of access to high-quality nutrition has worsened. Meanwhile, a changing climate has continued (at an increasing pace) to destabilize agricultural productivity.

Without drastic changes to the way we produce and consume food, food systems will remain vulnerable to sudden shocks. Today, humanity relies on a shockingly narrow range of plant⁴ and animal species to feed itself. While a limited set of food crops can be efficient in terms of pure output and number of calories, it has serious deficiencies in terms of impact on biodiversity loss, local resources, agricultural resilience, and gaps in nutrition.

⁴ In 2020, sugarcane, maize, wheat, and rice made up around 50% of global crop production. These species provide 50 percent of the plant-based calories we eat and occupy 40 percent of the world’s arable land.

Diversifying Our Diets for Healthier People on a Healthier Planet

Food systems affect everyone, and it will take all of us to make positive change happen, each playing their own role in an inclusive transition to a more sustainable, equitable and secure world. Fortunately, leaders around the world are embracing the fact that food can and should be produced without the heavy social and environmental price tags to which we have become accustomed. Incorporating the animal cell and its applications into global food systems can relieve pressure on conventional food production and play a key role in diversifying our diets.

Our Global Health Crisis

While people may be getting sufficient calories, these narrow diets don’t provide enough vitamins and minerals and about 3.1 billion people worldwide were unable to afford a healthy diet in 2020⁵. Currently, about 1.5 billion people in the world are affected by one or more forms of micronutrient deficiency. Deficiencies in iron, zinc, iodine, vitamins A, B12 and D impact many people globally, especially women and children and those in lower income communities.

⁵ FAO, IFAD, UNICEF, WFP and WHO. 2022. The State of Food Security and Nutrition in the World 2022. Repurposing food and agricultural policies to make healthy diets more affordable. Rome, FAO.



Growing Our Products in Space – Aleph Zero

Aleph Zero is Aleph Farms' space program. Beyond letting us explore the frontiers of closed-loop, circular and near-zero resources production of cultivated meat, our space program better enables us to apply new technologies to our sustainability practices on Earth.

Through the findings of Aleph Zero's missions, which began in 2019, we will better understand the effects of microgravity on proliferation and differentiation of cells, which may help enable deep space exploration by disconnecting food production from planet Earth.





Food Safety & Product Quality GRI 416-1

The safety, quality and nutritional value of our products is integral to our food security vision. As we approach market entry, we want to assure regulatory agencies around the world that we meet strict food safety standards in our production process and that our final products are safe to eat. We implement rigorous protocols to ensure the safety of our products.

Our Stance on FBS & Antibiotic Use

From the start we decided that we would develop our products without the use of FBS (fetal bovine serum)⁶. This decision was challenging from a technical point of view but was nonetheless rewarding and was driven by our desires to support healthy food systems, to uphold the highest possible standards of animal welfare, and to grow products that reflect natural processes as much as possible. We partnered with **WACKER** to co-develop streamlined production processes for essential growth medium proteins that serve as replacements for those proteins found in FBS. Growth medium proteins are essential components naturally found in animals and represent one of the most prohibitive expenses in scaling cellular agriculture. These proteins help cells grow and mature into muscle, fat and collagen-producing cells and are imperative for supporting cellular activity. This partnership and others like it help us achieve a significant reduction in the cost of these proteins by matching the standard of quality and scale to the food industry. This means all that we need from a cow is a fertilized egg.

Aside from starter cells that come from this fertilized egg, there are no animal-derived components in the cultivation process and the final product. There are no antibiotics used in our production process, nor are any present in the final product. This reduces risks of antibiotic resistance, foodborne illnesses, and zoonotic diseases.



⁶Fetal bovine serum (FBS) is the liquid fraction remaining after the blood drawn from bovine foetus coagulates. Through centrifugation, cells, coagulation fibrinogens, and proteins are removed to produce serum.

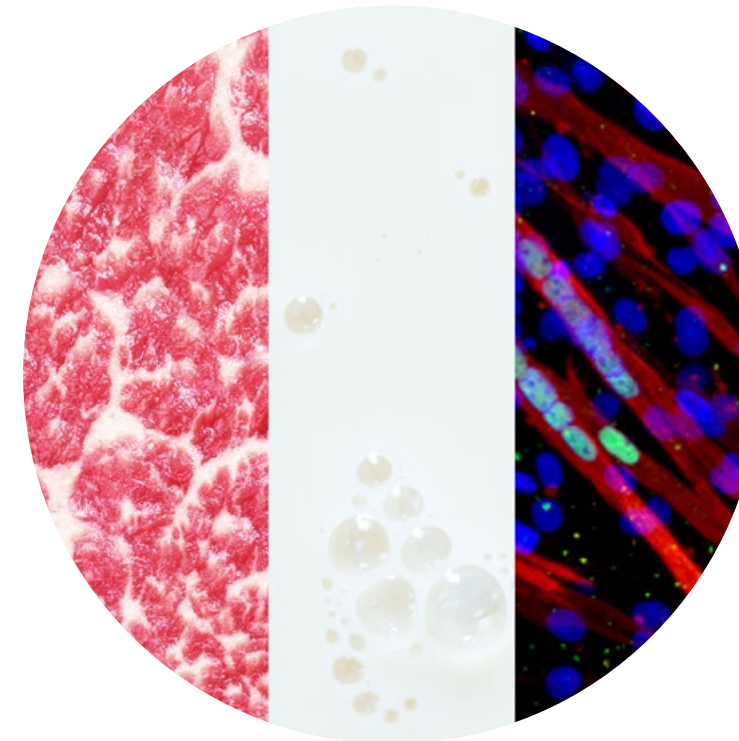
Specializing in Assurance and Safety

Public acceptance of food products relies on those products having been demonstrated to be safe for consumption. This is why we have been diligent in providing regulators with data on safety. We have also worked closely with safety-focused partners, such as the United Nations' Food and Agriculture Organization (FAO), which **visited our facility** in September 2022 in coordination with Israel's Ministry of Health, and subsequently **published a report** on food safety aspects of cellular agriculture.

Transparency helps regulators – our valued partners – in protecting consumers, workers, and the environment, and also helps consumers themselves understand that cultivated meat is a safe source of high-quality protein.

At Aleph Farms, we have a strong, dedicated team of in-house experts leading our work in food safety, quality, and regulatory compliance.

Our team developed a set of testing standards to demonstrate the safety and quality of products, with a two-step approach:



1 We customized risk assessments and implemented risk mitigation routes for all aspects of production, including ingredients, helping us demonstrate that our food product is completely safe for consumption.

2 We maintain an aseptic production environment that adheres to regulations concerning “cleanrooms,” which are classified by the numbers and size of contaminants permitted per air volume. Since there is no slaughter involved in our production process, the risk of contamination is significantly reduced.

Our approach to safety often goes beyond what is required of us by global regulatory bodies for food safety, who are indispensable partners in building trust with consumers.



Looking Forward



This impact report captures highlights of our progress up until 31st December 2022, but we have so much more in the pipeline. In 2023, we announced new and exciting partnerships to support our scale-up, and initiatives to promote sustainability in our operations. Here are some examples of the work we have been accomplishing so far in 2023:

We have established a long-term partnership with [Thermo Fisher Scientific](#) to produce some of our formulations of growth media and acquired a manufacturing facility in Modi'in, Israel and certain related assets from biotechnology company [VBL Therapeutics](#) (Nasdaq: VBLT) to increase local output. We also signed a Memorandum of Understanding with [ESCO Aster](#), a vertically integrated contract manufacturing organization, to produce cultivated meat in Singapore. ESCO Aster is the world's first and only company with full regulatory approval from a government authority (Singapore Food Agency), and with ISO 22000 and FSSC 22000 certifications, to produce cultivated meat for commercial sales and consumption at the highest safety standards.

Earlier this year, the [Yesodot Institute](#) published a policy paper that it had initiated previously in collaboration with Aleph Farms. The policy paper introduced the concept of a Just Transition in the agri-food sector to the Israeli government and conveyed the importance of implementing such a transition. Over a dozen partners took part in this initiative, including farmers and industry associations, private companies and firms, and four government ministries.

We recently announced that [Chef Marcus Samuelsson](#) is joining Aleph Farms as an investor, culinary advisor, and launch partner. Through much of his rise to fame as the celebrity chef behind 13 restaurants around the world, a *New York Times* best-selling author and a TV personality, Samuelsson has been using his unique background to elevate diversity in the culinary world.

We will continue meaningful engagement with our stakeholders to build out our ESG policy suite. We will be launching our **Diversity & Inclusion Policy and Deforestation/Conversion Free Soy Sourcing Policy**, for soy used in our plant protein matrix. While we currently do not use any soy associated with deforestation or conversion, this policy will formalize our stance and will be rolled out to our supply chain in 2023.

We have also established our Environmental, Health and Safety (EHS) Department, which ensures that we are in full compliance with all EHS related matters and also supports our sustainability efforts throughout the company.

We are excited to be scaling up our **community engagement initiatives** in Rehovot, Israel, where we are headquartered, from paid volunteering days for our teams to local transport initiatives that promote more sustainable travel options for Aleph Farms commuters and our neighbors.

We continue to advocate for the future of our sector, and we are looking forward to promoting regional Middle East food security and climate action ahead on the world stage at COP28.

Follow along on our journey here
<https://aleph-farms.com/media/>

Thank You®



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