

IMPACT VISION PAPER 2022

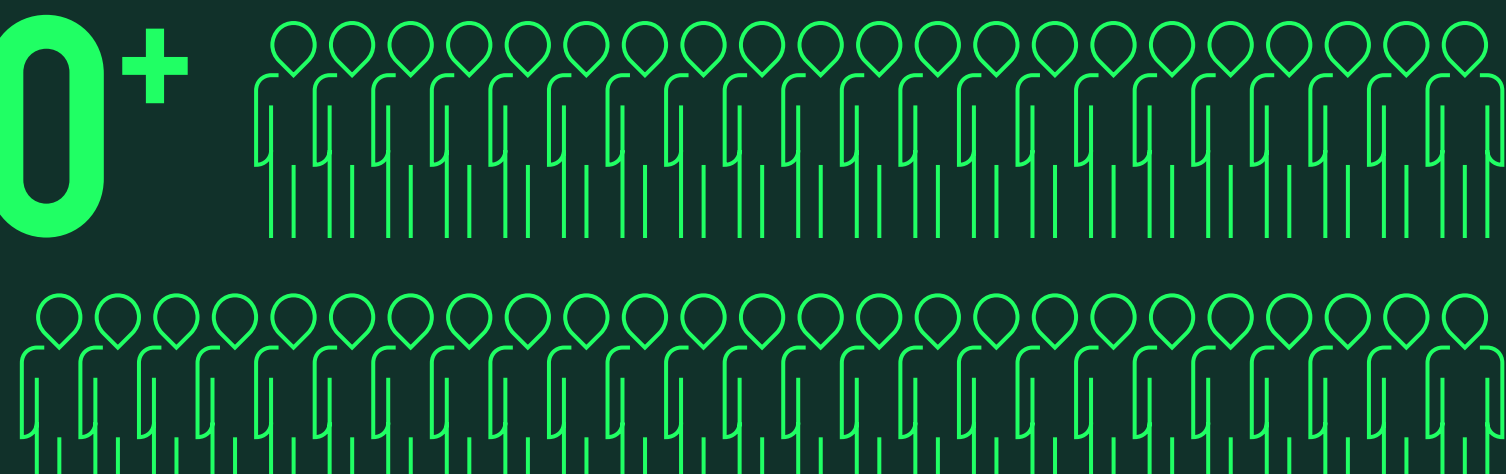
**Putting people
and planet first**



Visit our website at www.infarm.com
for the latest facts and figures

2013
INFARM
IS BORN

1,000+
INFARMERS



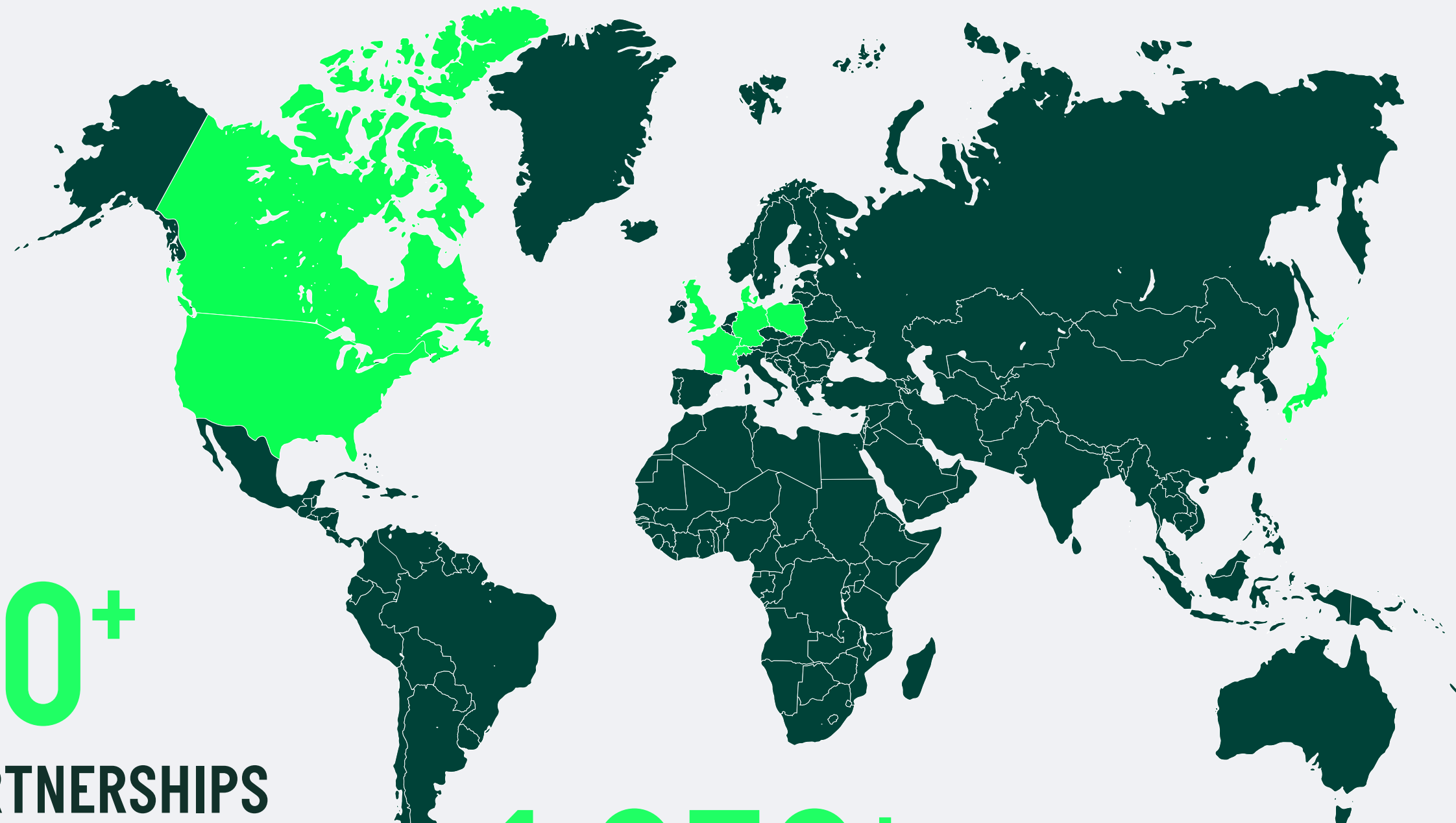
30+
PARTNERSHIPS
WITH THE WORLD'S
TOP RETAIL CHAINS

75+ DIFFERENT CROPS IN
PORTFOLIO

Including herbs, leafy greens, salads, microgreens and mushrooms. Soon to expand to dozens of new crops including strawberries, peppers, cherry tomatoes and peas.

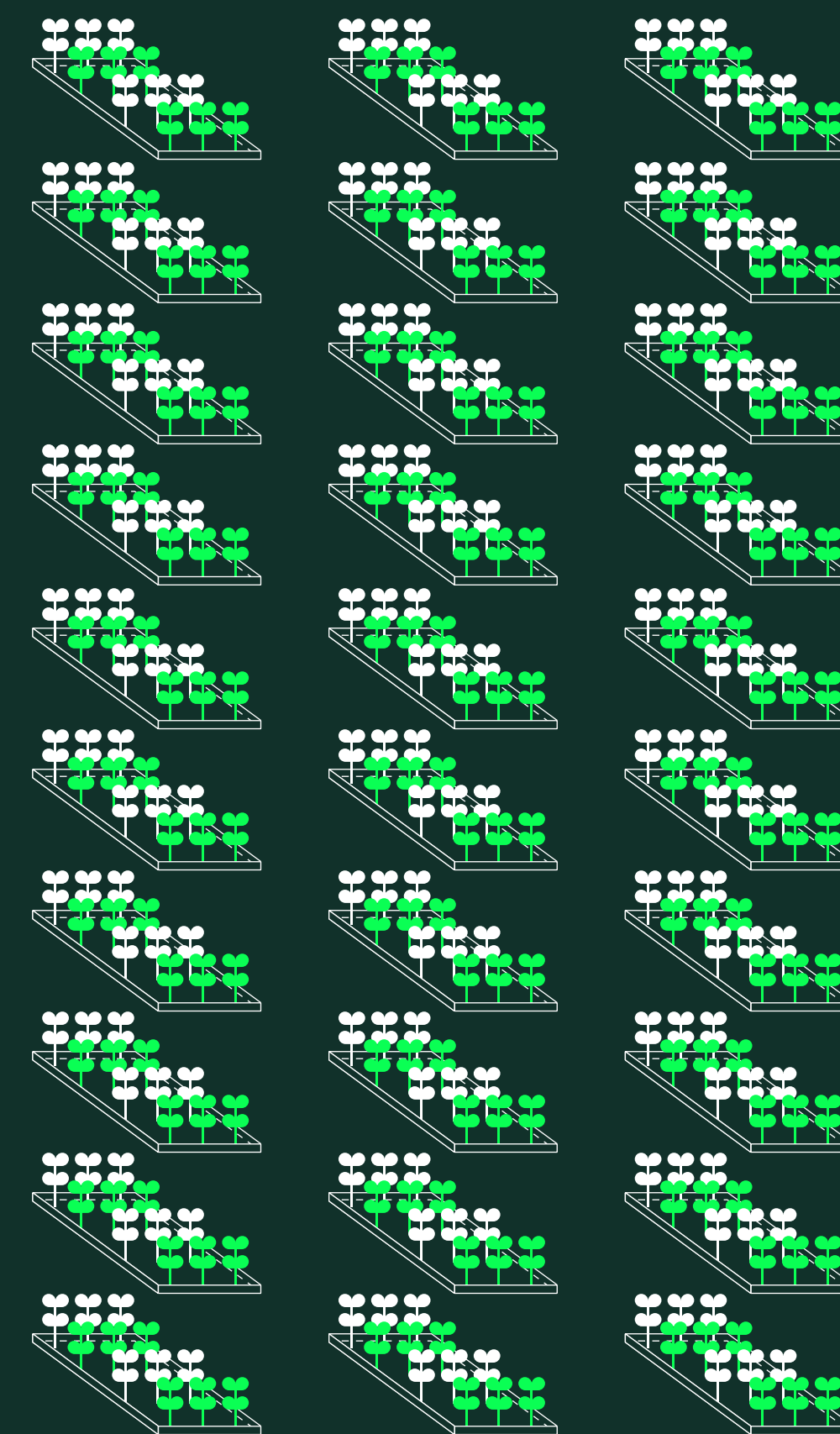


1,850+ **STORES WORLDWIDE OFFER**
INFARM'S FRESH PRODUCE



10+ **COUNTRIES OF OPERATION**
IN NORTH AMERICA, ASIA
AND EUROPE

20 countries of operation in North America,
Asia, Europe and Middle East by 2030



28,000,000+
PLANTS PLANTED TO DATE

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SOWING THE SEEDS FOR A BETTER FOOD SYSTEM

Innovators? Disruptors? Pioneers?

We are Infarmers: farmers who are doing things entirely differently. We are a purpose-born, tech-led urban farming company growing the first-ever global, cloud-connected vertical farming network. And we're doing it with the greatest respect for people and planet.

Our ambition is to improve access to premium-quality food produced in a sustainable, circular way. Everywhere.

TIME TO CHANGE COURSE

Humanity must produce more food in the next four decades than we have in the last 8,000 years¹. And we have now crossed several of Earth's planetary boundaries, which define the safe zone in which humanity can exist [read more on page 12].

Staying on the current trajectory by sticking to the existing ways in which food is produced, distributed and consumed would mean a catastrophic future. Only another great agricultural revolution can save us from the path of no return.





INFARMING

There is another way of efficiently producing food without the heavy social and environmental price tag.

At Infarm, we grow plants vertically, using 95% less land and 95% less water compared with conventional farming. We do so without chemical pesticides, avoiding damaging agricultural runoff. We produce locally, inside urban centres, as close as possible to the end consumer and hence our supply chain is significantly shorter.

Through the high-quality data harvested, analysed and interpreted by our cloud-connected farms, we continuously learn, improve and optimise our farms. That means better quality, tastier and more resource-efficient plants.

Essentially, we designed our company model to ensure that as we scale our farming operations and the variety of our crops, our positive impact on the planet will grow as well.

All of this ultimately translates into creating value for people. It means better access to fresh, nutritious and diverse food for the consumer. It means better-paid, higher-quality jobs for a new generation of farmers. It means promoting plant-based diets and enhancing a plant-based food narrative. It means reconnecting people to the origin of their food and building food security for the growing population. And it means a personalised food system that can give space to natural ecosystems to continue thriving while creating social value.

OUR VISION FOR IMPACT

This, our first Impact Vision Paper, will take you through our sustainability journey, which started when we founded the company in 2013. We'll shed light on the current food system's challenges [page 07] and describe how Infarm's farming model responds to these challenges [page 10]. You'll also learn about the areas where we want to go beyond our inherent strengths—improving, innovating and setting ambitious targets, from our Net Zero Carbon approach [page 28], to taking action in our Big Four focus areas [page 10].

We'll explain how crop science supports the resilience of our farming model [page 33], demonstrate the role of big data in optimising our operations, thereby making them more sustainable [page 38] and share our thinking on why partnerships are key in scaling our impact and feeding the world more sustainably [page 42].

We invite you to read it. Perhaps it might inspire you to join the new agricultural revolution and maybe even become an Infarmer yourself one day, joining us in our impact journey as we help create a new and sustainable food system.

WE ARE INFARM

Informed, intelligent, insightful farming.

Erez Galonska

Erez Galonska, Chief Executive Officer

Osnat Michaeli

Osnat Michaeli, Chief Brand Strategy Officer

Guy Galonska

Guy Galonska, Chief Technology Officer

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THE ROTTEN NATURE OF THE CURRENT FOOD SYSTEM

Resource depletion. Ecosystem loss. Climate breakdown.

The way we currently produce and transport our food is hurting Mother Nature. **FACT.** We've inherited a toxic legacy of inefficient, environmentally damaging and unsustainable food production. **FACT.** Never before have we faced such alarming levels of ecosystem collapse. **FACT.** Agriculture and food production are the primary drivers of biodiversity loss and degradation. **FACT.** The data couldn't be clearer:

Greenhouse gas emissions.
Creating a bad atmosphere.

28%

28% of global greenhouse gas (GHG) emissions are caused by the food industry, largely due to land clearance for agricultural use². The long journeys that food often travels from farm to fork—sometimes several thousand kilometres—also cause additional transport-related emissions.

Land. No more room to grow.

50%

50% of the world's habitable land has already been converted to agricultural use³. But a growing population means we'll need even more land on which to grow food. The result? Increased deforestation, plus land and soil degradation—all of which comes at a substantial cost to the environment⁴.

Water. Wasting way too much.

70%

70% of global freshwater withdrawals are made for agricultural use⁵. Meanwhile, 3.2 billion people—40% of the world's population—live in agricultural areas with high to very high water shortages or scarcity⁶. It's an ironic, yet devastating, reality.



Fertiliser and pesticide use. Turning water toxic.

78%

78% of global ocean and freshwater pollution is caused by agricultural products such as fertilisers, biocides, herbicides and antibiotics⁷. Such substances adversely affect aquatic ecosystems, for example through causing toxic algal blooms.

Biodiversity. Negatively impacting nature.

86%

86% of the 28,000 species at threat of extinction have agriculture listed as a potentially contributing factor [IUCN Red List]⁸.

The consequences of biodiversity loss are huge: from increasing the negative impacts of resource depletion and climate change, to the estimated annual cost of 235–577 billion USD of losing pollinating insects⁹.

Lengthy and vulnerable food supply chains.

Taking unnecessary risks.

21%

21%. That's the amount by which human-induced climate change has reduced agricultural productivity since the 1960s¹⁰. And for every additional degree Celsius of global warming, yield losses of rice, maize and wheat are estimated to grow by 10–25%¹¹. Whilst climate change causes longer term shocks, unnecessarily lengthy supply chains are also vulnerable to short-term shocks from political, public health and other crises.



NOW IS THE TIME TO CHANGE COURSE

The data we have outlined here speaks for itself—and it's not good news. If we fail to transform our food systems, we don't stand a chance of addressing climate change, water stress, pollution, habitat decline or harm to livelihoods.

Is there another way to produce and distribute food without the heavy social and environmental price tag? We think so—and the answer lies at the heart of our impact vision. Read on to find out how we intend to change the system.

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THE ROOTS AND SHOOTS OF OUR SUSTAINABILITY MODEL

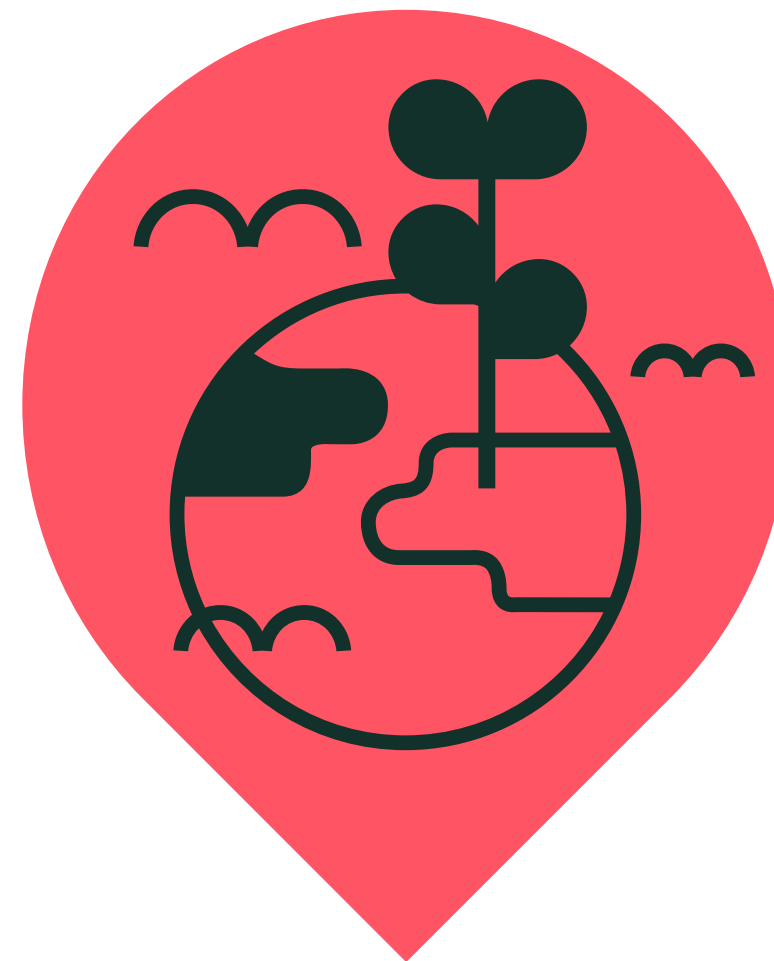
Respecting people and planet

Infarm's Big Four

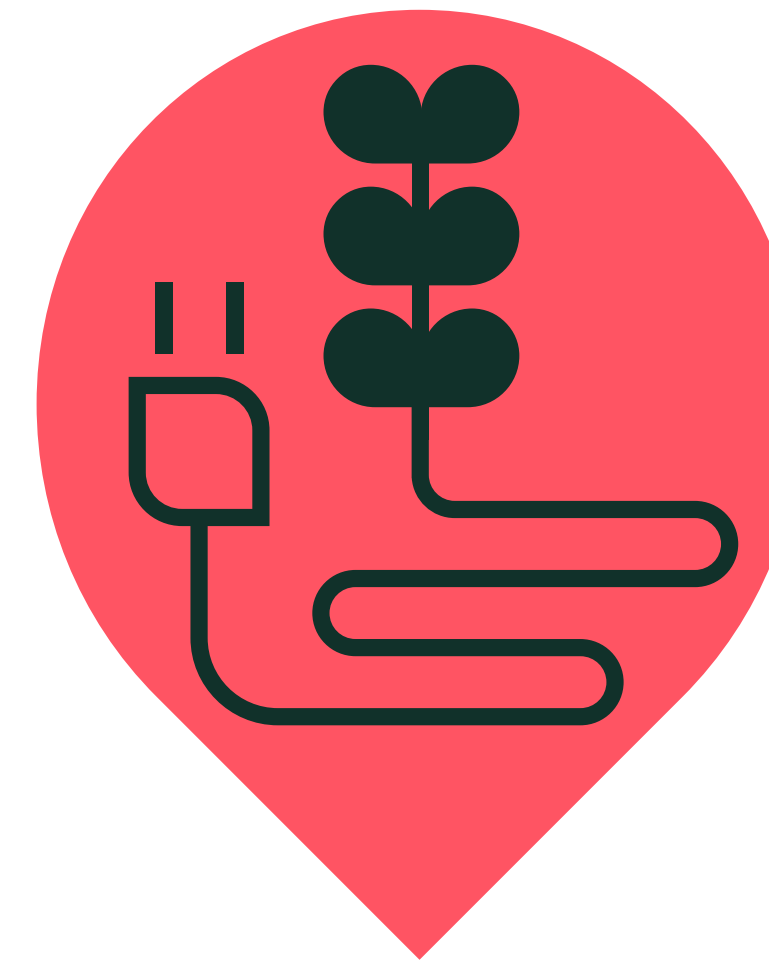
To have the greatest effect on people and planet, we focus on four areas of impact—Infarm's Big Four. They, in turn, shape how we improve, innovate and fulfil our ambitions and purpose. They are:



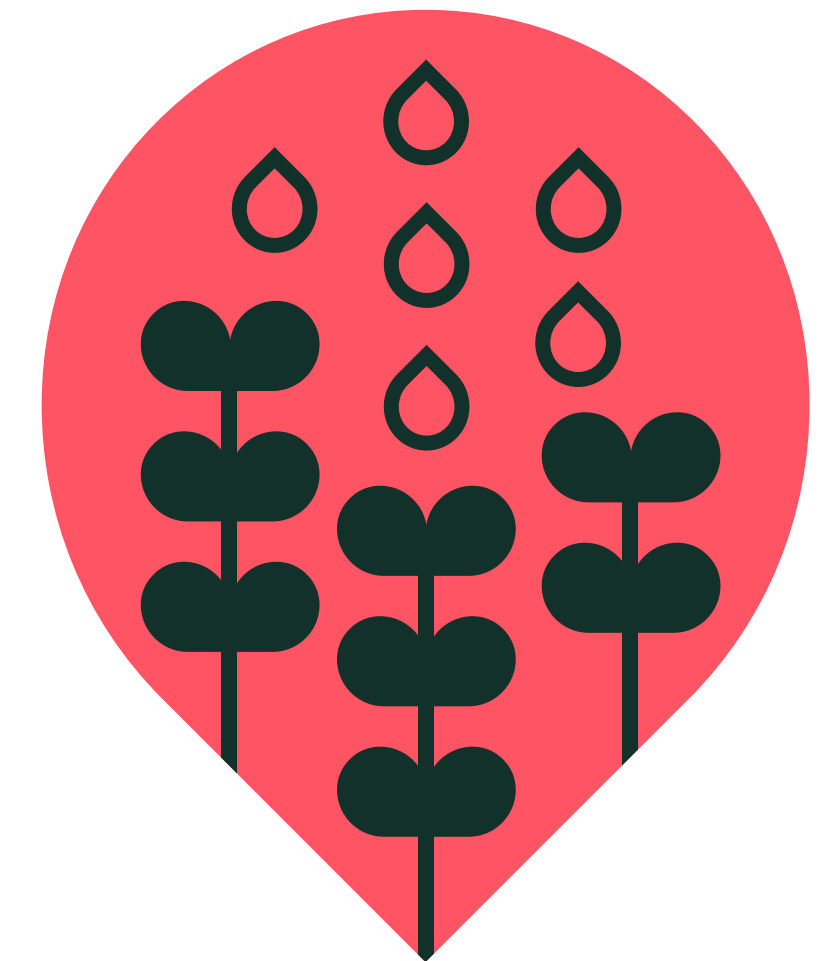
1. LOCAL PRODUCTION
AND URBAN FARMING



2. LAND USE AND BIODIVERSITY



3. CARBON AND ENERGY

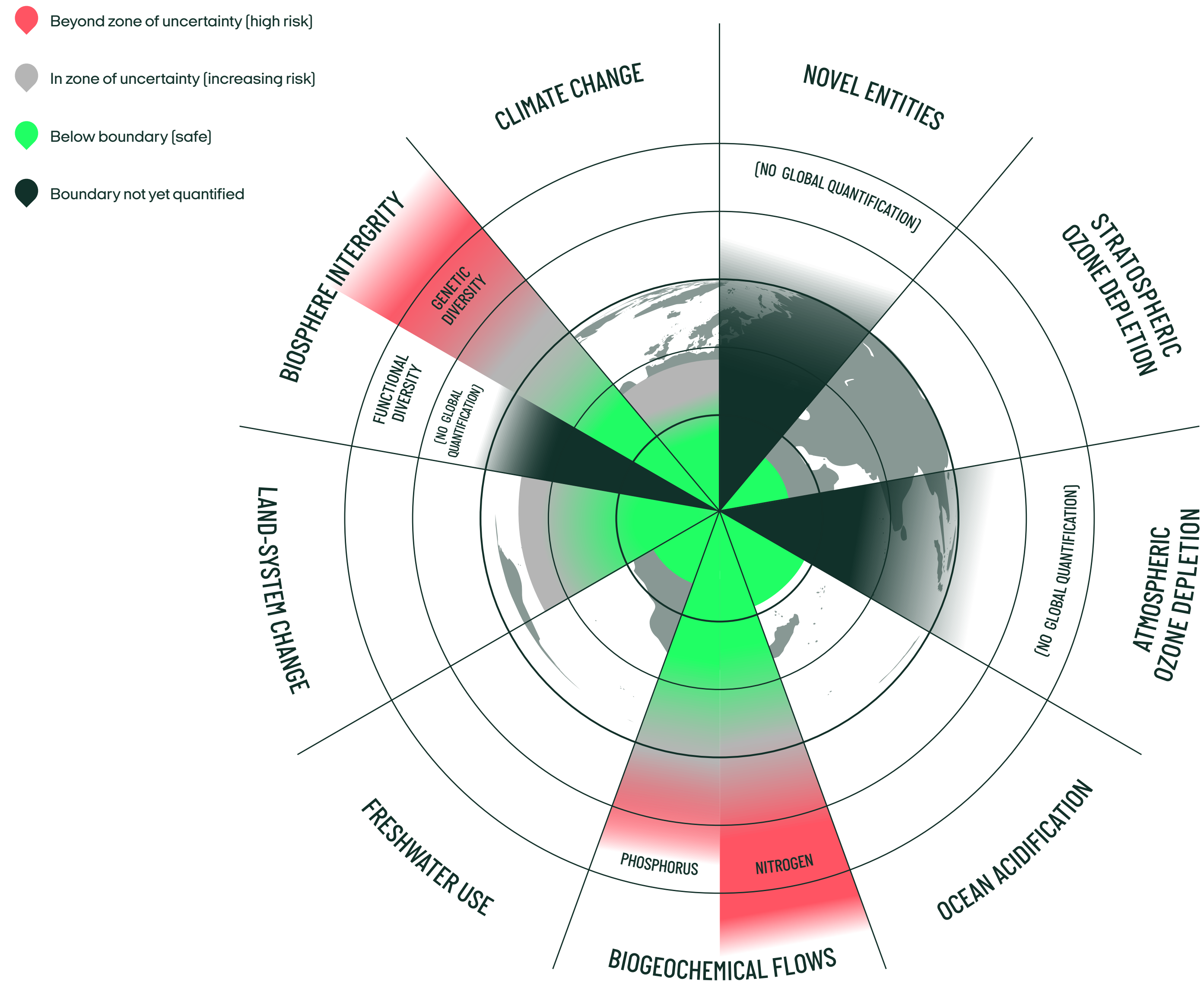


4. WATER

The Big Four were born out of two critical pieces of work: the Planetary Boundaries and our own Materiality Matrix.

Pushing the boundaries

The Planetary Boundaries concept [introduced in 2009 by the [Stockholm Resilience Centre](#)] identifies nine planetary boundaries, which threaten humanity's future, if breached. These boundaries define a 'safe operating space for humanity' and relate to: climate change, biodiversity loss, ocean acidification, ozone depletion, atmospheric aerosol pollution, freshwater use, biogeochemical flows of nitrogen and phosphorus, land-system change and release of novel chemicals.



THE BAD NEWS. SPEED IS OF THE ESSENCE.

At least four of the nine boundaries [climate change, biodiversity, land-system change and nitrogen and phosphorus imbalance] have already been breached. There are several underlying causes, but our food system is a major contributor [see page 07]. And yet, we

will need to produce more food in the next four decades than humanity has produced in the last 8,000 years. Unless we reinvent our food system, we won't be able to make it back to the safe operating zone within our planetary boundaries.

THE GOOD NEWS. FOOD SYSTEM TRANSFORMATION IS WITHIN REACH.

Once transformed, our food systems will be able to sustainably feed the global population whilst simultaneously improving health and food security. All against a backdrop of ongoing climate change. As a society, we have similarly come together once before, when the world's nations addressed the urgent issue of ozone layer depletion in 1987. We stepped back from the brink and now the ozone hole could be completely healed by 2050.

Meetings at global level are creating vital targets and agreements whilst fostering collaboration. The UN Food System Summit in 2021, for example, galvanised broad support and commitment to collaborate on food systems and the climate agenda. The COP15 [Conference of the Parties] summit in 2022 on the Post-2020 Biodiversity

Framework is set to introduce more ambitious and wide-reaching targets on protecting ecosystems and species.

Meanwhile, COP27, also in 2022, will continue to address climate change globally, including a focus on our food systems as a key contributor. Business models like Infarm's that are producing food in innovative ways and significantly reducing the heavy environmental and social costs, are growing and scaling fast.

By partnering together to transform food production across the entire value chain and through behavioural change, we can prevail [read more on page 43 on how we are partnering for change at scale].

“At Lightrock, we back innovative businesses like Infarm that are using technology to reconfigure legacy industries. We believe that a focus on sustainability—such as decarbonising supply chains and increasing food security in Infarm’s case—is not only important for our collective future, but is also critical for any company wanting to create long-term commercial value.”

Pål Erik Sjøtil, CEO & Global Managing Partner, Lightrock

Mapping materiality

Following the global goals

The second major input from which we derived the Big Four areas of impact is our Materiality Matrix. It identifies what's important to Infarm, mapped against what's important to our various stakeholders.

A foundational exercise completed in 2021, the process identified and prioritised the most important issues that shape our sustainability thinking. Many of our stakeholders—from Infarmers to customers, investors and partners—provided input into the process.

Among others, we learned that climate change, local food and product quality are really important to all Infarm stakeholders, internal and external. We also learned about the importance of biodiversity, food waste and packaging to some stakeholders.

Thinking in planetary terms and defining our impacts and stakeholder needs give us a clear blueprint for our impact strategy. They also help us understand how we are contributing to the global big picture, as defined by the UN

Sustainable Development Goals (SDGs) to 2030. In this paper, we have shown the SDGs that have the strongest links to our business within each of our Big Four areas and which benefit the most from our model.

These are SDGs 6 *Clean water and sanitation*, 9 *Industry, innovation and infrastructure*, 11 *Sustainable cities and communities*, 12 *Responsible consumption and production*, 13 *Climate action*, 14 *Life below water*, 15 *Life on land* and 17 *Partnerships for the goals*.

6 CLEAN WATER AND SANITATION



9 INDUSTRY, INNOVATION AND INFRASTRUCTURE



11 SUSTAINABLE CITIES AND COMMUNITIES



12 RESPONSIBLE CONSUMPTION AND PRODUCTION



13 CLIMATE ACTION



14 LIFE BELOW WATER



15 LIFE ON LAND



17 PARTNERSHIPS FOR THE GOALS





Towards a fully circular, sustainable farming system

The answers to many of the environmental challenges of our current food system lie in purpose-led business models such as Infarm's. It already offers resilience and demonstrates social and environmental value. But we're also targeting fully circular (for example closed-loop water systems) and sustainable production, and innovating across our value chain and Big Four areas of focus.

1. Local production and urban farming



Global food production is currently intertwined with other systems which are erratic, unstable and inconsistent. For example, climate or public health crises like pandemics. The Infarm model decouples food production from these external forces, by localising production and controlling the growing environment.

This means not only is the food supply chain significantly shortened [we estimate 95% fewer food miles on average, compared with conventional agricultural models], it's also a lot less likely to be adversely affected by global shocks and wider systemic challenges.

Infarm's model of farming also means that food is produced close to where it is mostly consumed: in the urban markets. This enables access to nutritious and fresh food for the increasing population of urban dwellers, which is due to reach six billion by 2040¹². The result is to offer greater resilience from most shocks, and support food self-sufficiency in cities.

Our goals:

By 2030, we intend to have Growing Centres in 20 countries worldwide and grow the full range of crops that constitutes the human diet. We will expand globally, but stay local.

No matter how our technology will evolve, our high-quality and nutritious crops will always be freshly produced and inside the urban centres. We will simply grow them more efficiently and sustainably, in greater varieties and at a larger scale. Upstream and downstream in our supply chain, we are working on

optimising our logistics and shipping activities to minimise our transport-related emissions.

We will set and communicate specific targets to support these goals in 2023.

Related SDG:



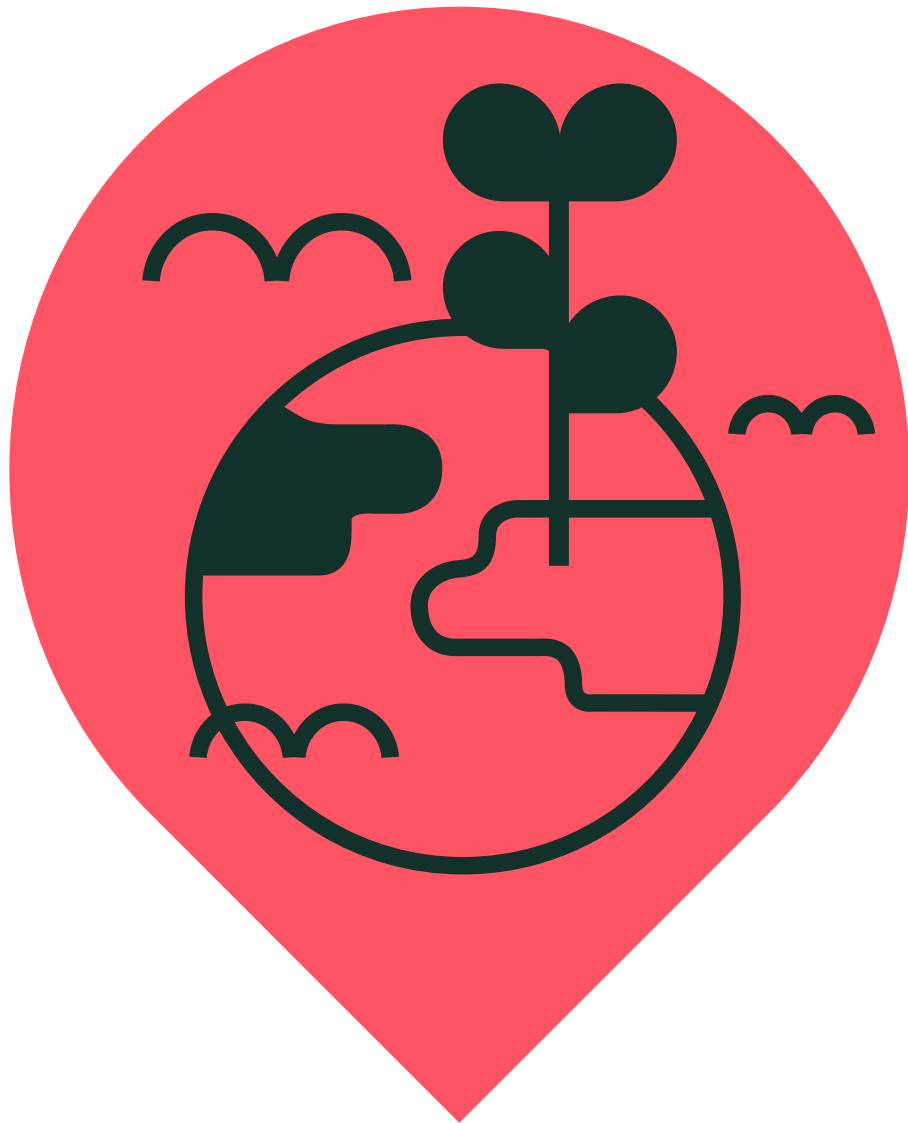
LOOKING AHEAD

As we grow and expand, our technology also evolves to make our production more efficient, scalable and sustainable. We continue to operate In-store farms—farming units placed directly inside supermarkets and other retail and public spaces—but most of our production is shifting to our large Growing Centres. These are warehouse-style urban spaces which can accommodate a large number of cloud-connected farming units, each occupying 25–40 square metres of growing space and at least 10 metres in height. We ship our produce from these Growing Centres to retail points, involving transport distances averaging 250 kilometres¹³.

"At Coop, we recognise the pressures of the lengthy and vulnerable food supply chains on our suppliers, customers and communities. We play our part by making sure consumers have access to healthy, sustainable options. Working with suppliers like Infarm helps us demonstrate what sustainable food could look like for the urban consumer, and to reconnect them to the origin of their food."

Thomas Roland, Head of CSR, Coop Danmark

2. Land use and biodiversity



We grow plants hydroponically in vertically-stacked layers without the use of soil. Our yield per square metre of land is much higher than conventional agriculture due to our optimal use of space and resources, enabling us to use 95% less land than conventional agriculture to produce the same crops.

Our analysis shows that our farming model is up to 100 x more efficient than conventional farming. This has allowed us, within Infarm's young lifespan, to save 188,000 square metres of land to date. And what little land we do use, does not require the conversion of habitats such as wetlands or forests. Neither does it involve the degradation of land or soil—it is within urban environments and utilises existing infrastructure.

Our closed farming system prevents contamination from most pathogens. Our strict control of environmental variables further reduces fungal and bacterial growth. To control any remaining pests in our growing units, we rely on a combination of biological microorganisms and UV light, making all our produce chemical pesticide-free.

In addition, as we use a near-circular irrigation system to get nutrients to our plants, we don't create farming runoff, which means we don't pollute water courses with agricultural substances.

Even more importantly, the land that we avoid using may be potentially left undisturbed, set aside for conservation, rewilded, or restored—maintaining its ecosystem services.

LOOKING AHEAD

Thanks to our efficiency and avoidance of water runoff, our impact on land and biodiversity is inherently positive. But we recognise that we need to work on reducing our emissions in other areas which can adversely impact land and biodiversity. Some of these aspects are core to our operations—such as eliminating organic waste in production—while others are related to our upstream and downstream supply chain. Examples include our use of substrates, retail- and consumer-related food waste and use of packaging materials. We are setting targets to address these across the business and in collaboration with customers, suppliers, research partners and other stakeholders.

USE OF SUBSTRATES

Our research and development efforts have been geared to minimising and ultimately eliminating our use of peat as one of the substrates for our rooted herbs and salads. Peat bogs are effective carbon sinks and mining them unlocks stored carbon into the atmosphere. They also host unique biodiversity, which is lost when they are mined and hard to restore.

Our goals:

Our Crop Science and R&D teams are trialling alternative substrates such as coir [coconut husk fibre] and recycled fabric fibre.

By the end of 2023 we will stop using peat. And by the end of 2025 we will exclusively use renewable, recyclable and environmentally preferable substrates.

Related SDG:



“The role of urban areas in conserving natural resources and securing food supply will become increasingly important in the future. Some of the solutions are being worked on right here in Berlin, with new technologies developed by the diverse talent that comes together in our city of innovation from all over the world.”

Stephan Schwarz, Senator for Economics of the City of Berlin

2. Land use and biodiversity (continued)

WASTE

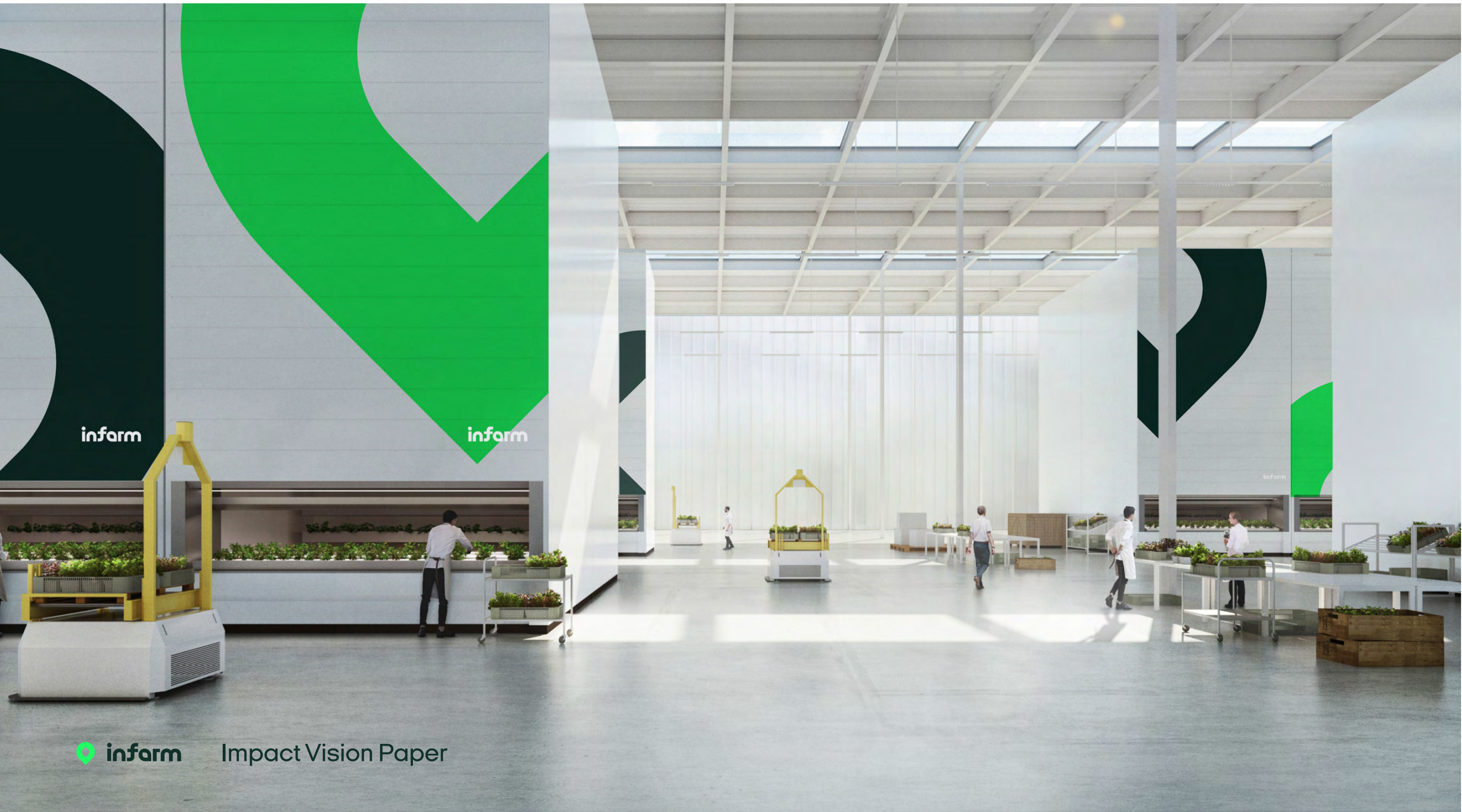
We take a comprehensive view of waste generated in our operations. This includes both organic and non-organic waste. Our data systems are set up to measure organic waste caused by factors such as weight or quality issues and overproduction as well as retail-level waste.

We are introducing company-wide monitoring of non-organic waste categories, which include consumables such as solvents and Personal Protective Equipment; supplies and equipment like trays, containers and capsules; packaging material; hardware waste and other sources. This will all help us establish the drivers of organic and non-organic waste and determine the most effective ways to minimise and treat each waste stream.

We are implementing a zero food waste operational culture and developing a company-wide waste hierarchy to ensure organic waste is:

- **Avoided where possible (for example through minimising weight or quality issues in production and improving production planning).**
- **Valued if not avoided (for example through transforming and repurposing waste as secondary products or donating to food charities).**
- **Treated to keep out of landfills (for example through composting).**

For non-organic waste, we are establishing consistent company-wide categories and reduction targets, and will communicate these in 2023.



Our goals:

By 2025, we aim to reach zero organic waste and zero waste to landfill.

Related SDG:

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



2. Land use and biodiversity (continued)

PACKAGING

As a business that produces and distributes fresh food, packaging has a critical function for us: it protects the food from contamination, keeps it fresh for the consumer and prevents it from being lost or wasted. It also communicates key information about the product to the consumer.

We use different types of packaging for different products and farms. Our packaging currently comprises plastic-based solutions [such as poly-propylene flow packs used for herbs with roots], paper cones [used in our In-store farms for lettuce, herbs and leafy greens in roots], and hybrid solutions [such as plastic- and paper-based tray seal packaging for herbs].

While the production, sourcing and use of packaging also contributes to our indirect emissions in the supply chain, this is not the most material environmental issue in packaging, particularly in plastic packaging.

Studies have shown¹⁴ that plastic packaging tends to have a net positive impact when it comes to environmental impacts such as greenhouse gas emissions, energy, water and resource use, given that the impact of plastic production and handling is lower than the impacts which would result from food waste without packaging.

One of the critical environmental issues involved in packaging, particularly plastic-based packaging, is its potential to become a source of waste. Plastic pollution is a key environmental concern—particularly in terms of impacts to ocean health and wildlife; and packaging is the dominant use of primary plastics, with 42 % of all plastics globally being produced for packaging purposes¹⁵.

Therefore, our efforts are focused on:

- **Optimal choice of packaging material that balances shelf-life and food safety with minimising environmental impact (from sourcing and production right through its entire lifecycle).**
- **Ensuring that packaging is compostable or recyclable in all the markets where we sell our products.**



Our goals:

We want all our packaging to be smart, circular and fit for purpose.

are fit for purpose in ensuring food safety and prolonging shelf life.

Related SDGs:

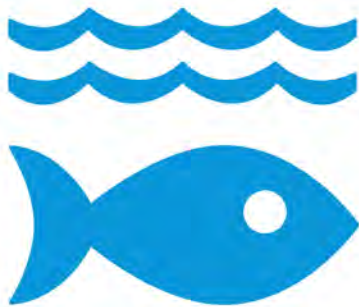
By 2025, we will:

- Source paper-based packaging solutions that are from certified or recycled sources.
- Source, design and use plastic-based packaging solutions that are 100% recycle-ready across all our markets.
- Utilise our labelling and artwork to communicate the correct disposal of packaging to our consumers.
- Partner with suppliers and research partners on designing packaging solutions that are fully circular, minimise environmental impact across the value chain, and

12 RESPONSIBLE CONSUMPTION AND PRODUCTION



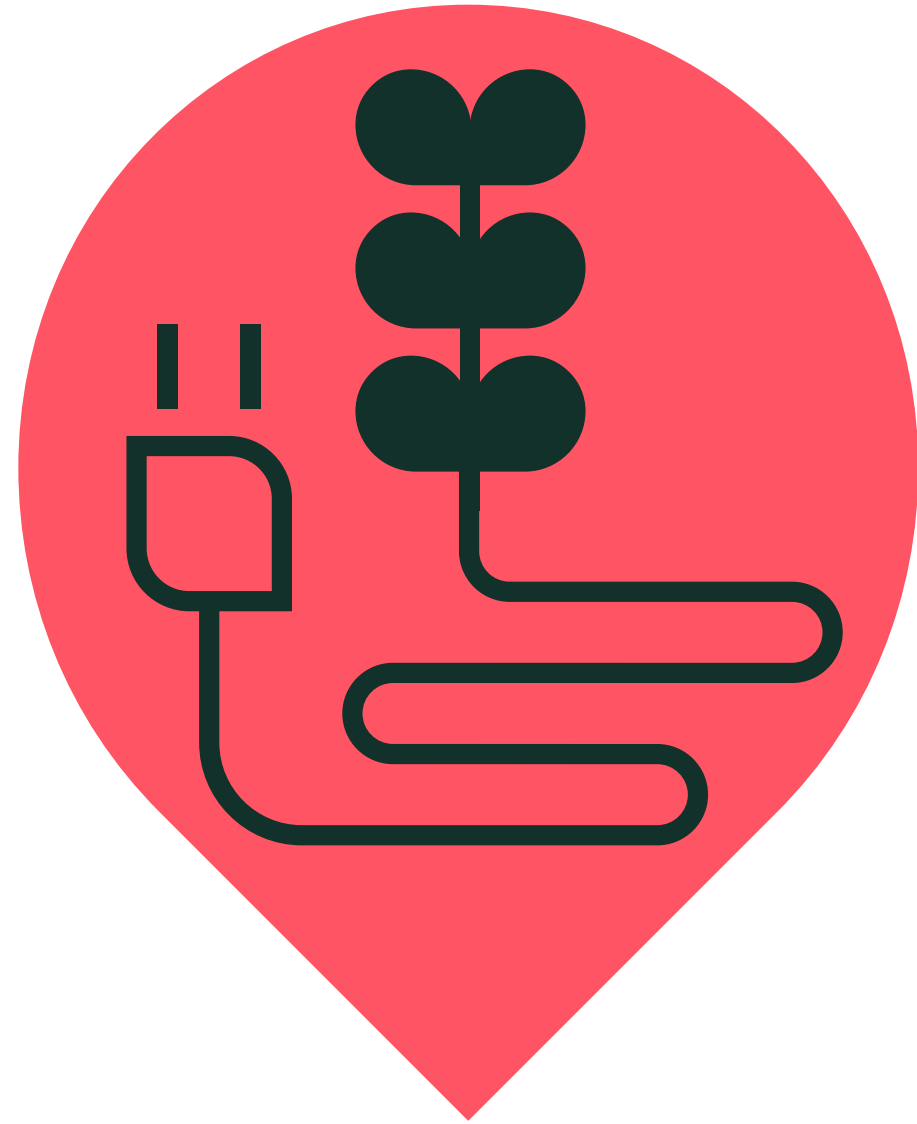
14 LIFE BELOW WATER



“At Weber, we are playing our part in the transition towards the circular economy, by supporting our customers in their sustainability efforts. Infarm has set ambitious targets on packaging, and Weber is contributing to these by supplying Infarm with 100% recycled packaging paper, produced with energy-efficient technology, and printed with 100% water-based inks.”

Klaus Jahn, General Manager, Weber Verpackungen

3. Carbon and energy



We rely on energy to power our farms and grow our plants, with approximately 42% of our total carbon emissions being caused by our electricity consumption. Almost half of our emissions occur in the supply chain—both upstream and downstream.

As a purpose-born business, decarbonising our business and supply chain is critically important to us. Therefore, we have committed to setting a Net Zero Science-Based Target by the end of 2022. Please read the next chapter on page 28 for more details on our approach, ambition and action on climate change.

Our goals:

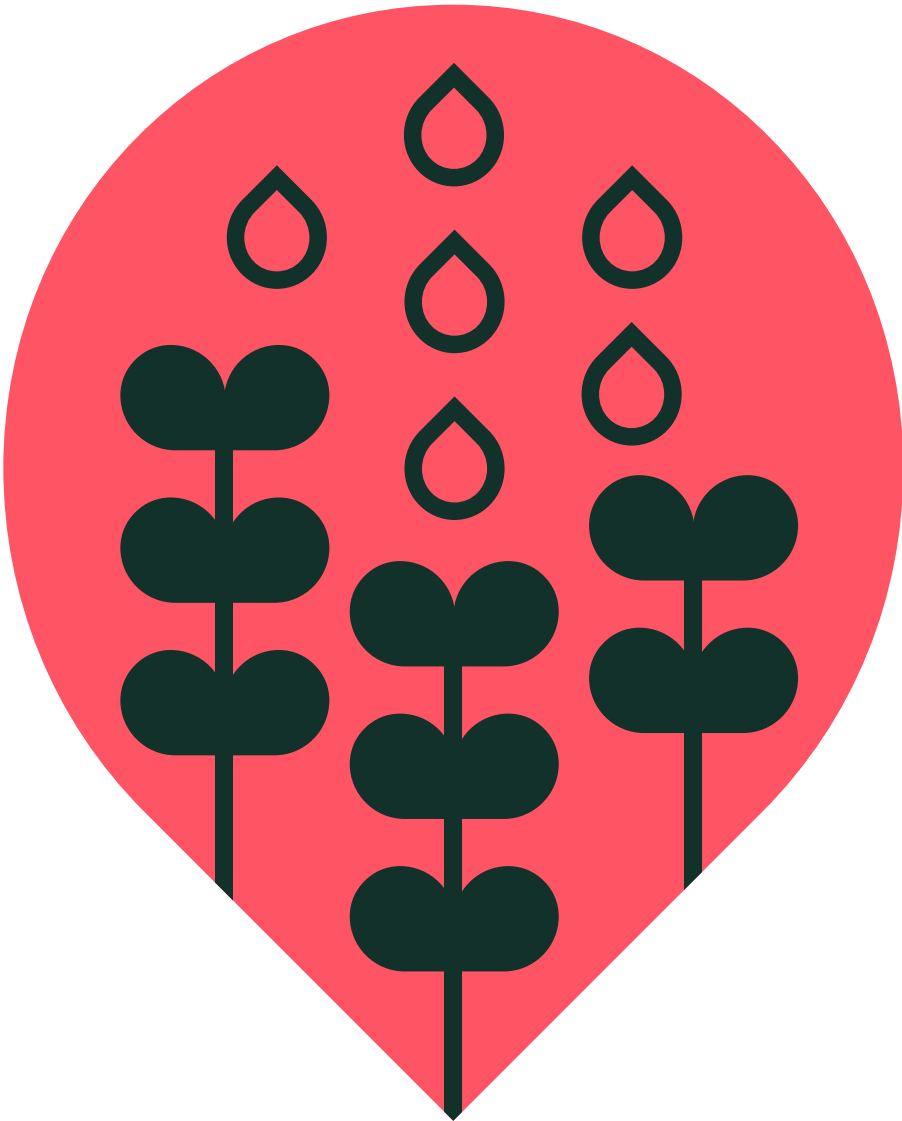
We are building a Net Zero farming network. By the end of 2022, we will set and communicate our Net Zero Science-Based Targets.

Related SDG:

13 CLIMATE ACTION



4. Water



Our farms use 95% less water than traditional agriculture due to our closed, near-total circular system, which regularly recycles water and recaptures the water evaporated from the plants back into the system. This means it takes only about 400 millilitres of water to irrigate and nourish a kilogramme of our herbs in a growing centre over its growth cycle.

To date, we have saved more than 130 million litres of water as a result of producing crops hydroponically and vertically. The majority of our water use goes towards providing our plants with the water and nutrients they need to grow. We source the water mostly from municipal sources, given our presence in urban environments.

Our goals:

By 2023, we will map our water use against local water risk maps in collaboration with external partners and experts, to understand and respond to short- and long-term risk to local watersheds.

By 2030, we want to have 100% circular water systems across our operations.

Related SDGs:



LOOKING AHEAD

Our water processes are circular to a large extent and our farming method uses a small fraction compared to conventional farming. However, we recognise the importance of using water wisely and responsibly, given the water scarcity challenges facing some of the markets we operate in and the increasing risk to water resources in a world under climate change. Through our R&D efforts, our growing recipes are being continually optimised to ensure they are water-efficient while producing the same nutritional value in our crops [read more on page 35].



Verifying our approach

B Corp certification

Our intent and business model implies that we are driving positive change for people and planet. In order to ensure that Infarm is indeed a force for good and that we are taking a holistic view of sustainability across environmental, social and governance aspects, we have initiated the process for B Corp certification.

B Corp certification is awarded to companies, which meet high standards of social and environmental performance, public transparency and legal accountability to balance profit and purpose. Our objective is to be certified by 2023. The recommendations emerging from the B Corp certification process continue to move Infarm towards the next level in sustainability and impact.

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PLANTING THE SEEDS FOR A NET ZERO FARMING NETWORK

Carbon is a big deal.

It's perhaps the understatement of the Anthropocene. But sometimes it helps to just say things out loud, as it focuses the mind. Carbon is a big deal to the world at large. To the wider food industry. To the resource-intensive farming industry. To the vertical farming industry. And of course, to us at Infarm.

It's no wonder that carbon is embedded in our company-wide key objective of building a net zero farming network. As a future-oriented business that's here to help transform the food system, our solution needs to address climate impact.

We have committed to setting a Net Zero Science-Based Target¹⁶—the first vertical farming company to do so¹⁷.

We don't have all the answers yet, but we know where we are headed and we have a clear roadmap of how we'll get there.

By setting ambitious, science-driven climate targets and partnering with customers, suppliers and partners up and down the supply chain, we can lead the way in decarbonising the entire value chain.

"I am encouraged by the commitment and collaborative energy that Infarm's strategic suppliers are showing in helping to decarbonise the supply chain. It's only by innovating and working together, at speed and at scale, that we can hope to make a Net Zero future a reality."

Alexandra Morton, Global Executive Vice President of Supply Chain, Infarm



Scientific. Rigorous. Transparent.

These three words define our approach to measuring, mitigating and offsetting our carbon footprint. To meet our goals, we recognise the need for collecting high-quality data, applying robust standards, deriving meaningful insights and actioning findings on the ground.

Measure. Getting the facts together.

We believe that an impactful and effective climate response starts with robust measurement and collection of data. Data creates information and delivers clarity, which generates insights, which can inform decisions, ultimately creating positive change. Without robust data, we would be operating blindly—without a blueprint.

We have used the Greenhouse Gas Protocol and the guidance provided by the Science-Based Targets Initiative (SBTi) for our measurement, monitoring and reporting efforts. But we started it all with a pilot life-cycle analysis (LCA) in 2021.

Our LCA pilot was conducted in our Pfungstadt Growing Centre (Germany) as a model for all future hubs, to pinpoint our production-related carbon hotspots across the supply chain and map out everything we need to measure going forward. **We found that around half [47%] of our total carbon emissions across Scope 1, 2 and 3 categories¹⁸ occur in the supply chain and two fifths [42%] are generated by our electricity consumption.**

Within our supply chain emissions that make up 47% of our total, we learned that sourcing our solvents, plastics and other raw materials accounts for roughly a third [31%] of emissions. Our farms and their equipment make

up approximately an eighth [12%]. It means we now have greater clarity on the areas we need to target and how we can drive reductions across the supply chain.

Using the insights from the LCA, we're undertaking a baselining exercise to determine our total carbon footprint across Infarm by the end of 2022. This will provide us with a detailed and accurate data baseline, against which we can set future Net Zero targets and track our future progress annually.

Commit and mitigate. Following the science.

In our ambition for Net Zero, in measuring and reporting on our data and in designing our mitigation pathway, we are guided by the SBTi, as it promotes best practice in the industry in line with climate science and in line with the Paris Climate Agreement.

Our mitigation activities will be broad and touch on many different aspects of the business. We will utilise efficiency gains from modern LED technology and ongoing R&D. By the end of 2022 we aim to procure close to 100% green-certified, renewable and low-carbon sources of electricity across our network. Through our Crop Science work, we will continuously improve our plant recipes to make our produce more energy-, carbon-, water- and space-efficient and utilise artificial intelligence to regularly optimise our

LED lighting parameters [see also page 35]. Minimising waste across our processes and increasing the circularity of our operations is a critical objective and will contribute to our emission reduction efforts. We will report on our baseline, target and progress in our sustainability report next year.

Our goals:

We are building a Net Zero farming network. By the end of 2022, we will set and communicate our Net Zero Science-Based Targets.

Related SDG:

13 CLIMATE
ACTION





Offset and remove. Recognising its value and limitations.

We believe offsetting and carbon removal shouldn't be the default solution in dealing with carbon footprint—and they shouldn't be the only solution. Our priority is to reduce and mitigate our carbon wherever we can across the supply chain. However, offsetting has an important role to play in our Net Zero pathway.

Ultimately, not all sources of carbon emissions can be mitigated, reduced, avoided or transformed by Infarm. And ultimately, the carbon emissions already in the atmosphere would not be 'undone' unless we remove them. So it's important that we identify and invest in credible and impactful carbon removal solutions that are aligned with Net Zero principles, and will help the industry to achieve

decarbonisation faster. We have partnered with [Supercritical](#), and invested in a nature-based carbon removal solution for our 2021 estimated production-focused emissions of 3,000 tonnes. The carbon removal project involves tree planting with a guaranteed permanence of 60 years—longer than most other nature-based offsets.

This reflects our commitment of investing one cent per plant for carbon removal and offset solutions. We will continue to invest in carbon removal technology so we can scale our removal of carbon faster.

“The vertical farming industry has a tremendous opportunity to transform the food system and decarbonise its supply chain. The strategic collaboration between Infarm and SSI Schäfer is actively targeting that transformation through the next generation of scalable, automated vertical farms, which produce the equivalent of more than an acre of farmland on only a 25 square metre footprint. This is a crucial efficiency boost needed to feed the growing population sustainably, while significantly reducing transport emissions.”

Martijn Magendans, Vice President Market Sector Agri-Tech, SSI Schäfer

“For many industries, Scope 3 emissions account for the lion’s share of companies’ carbon footprints. It is increasingly important that companies have visibility of upstream and downstream sources of emissions, so they can make impactful reductions across their value chains. Carbmee is supporting Infarm to develop a supplier emissions database that can identify where to take action effectively and collaboratively.”

Robin Spickers, Co-Founder and Managing Director, carbmee

NURTURING SUPER CROPS

Growing every crop to be a super food.

Crop Science is the beating heart of Infarm. With our business model deeply rooted in technology and science, it is crucial that we stay on top of our game, integrating fundamental research in plant biology with cutting-edge technology.

This is important not just to our bottom line, but to our vision as a company that wants to help transform the food system.

Our Crop Science team of circa 50 people continually strive to optimise plant quality, yield, flavour, sustainability and nutritional profile. They play a critical role in driving our business and our impact vision forward.

“Our main focus is on selecting the right varieties and identifying their optimum growing conditions. In practice, that means seeking out the best quality, fastest-growing plants that require the least amount of nutrients, CO₂, light, water and energy. Sustainability is ingrained into our process and our findings feed directly into Infarm’s Big Four impact areas.”

Pavlos Kalaitzoglou, Vice President of Science, Infarm

SUPER IN TERMS OF RESOURCE USE

Investing in innovation is a win-win solution for us: when we optimise resource usage we not only improve our environmental footprint but we help our bottom line too. Our growing system uses a fraction of the land, water and fertiliser when compared to conventional agriculture. But because we know it can be even better, we're constantly reviewing, challenging, and improving our methods.

SUPER IN TERMS OF NUTRIENT DENSITY

In setting up Infarm, our founders wanted to create access to healthier, more diverse food, to bring more nutrients to people's plates. We started with herbs, before moving into leafy greens and mushrooms. This year our main focus will be on tomatoes and strawberries and next year we hope to begin producing peas and a range of root vegetables. We aim to grow the entire fruit and vegetable basket by 2030 and beyond that, produce staple crops such as wheat or rice. Through calorie-dense staple crops, we will be able to significantly scale the positive impact of Infarm's model of farming.



SUPER IN TERMS OF SHELF LIFE

Growing great food is only part of the picture. When we send it out into the world, it needs to reach the end consumer in the same condition as when it left our growing units. That's why we have a dedicated workstream researching the best post-harvest storage, packaging and modified atmosphere composition for our produce. This actually has two benefits: it reduces food waste and improves consumer experience. We are focusing on sustainably sourced and environmentally friendly packaging materials to help us get there [see page 23].

SUPER IN TERMS OF CONSUMER APPEAL

Localised food production is central to our philosophy: by locating farms within or close to urban centres, food doesn't have to travel so far to the end consumer. That frees us from selecting varieties simply because they can withstand long distance supply chains. Instead, we can focus more on factors like flavour and visual appeal. Our production system is in favour of flavour!

SUPER IN TERMS OF QUALITY

Ensuring that our products are of the highest quality and safety standards is clearly a business prerogative. But it's even more important than that. By working on making our produce not just as good, but better than conventionally-farmed produce, we are demonstrating 'proof of concept' of vertical farming as a novel method of food production. That will further build trust in the industry, making it easier for us to scale our positive impact.

SUPER IN TERMS OF RESILIENCE

The future of our global food production has never faced such challenges and uncertainty. On the one hand, our growing global population and improving standard of living mean we will need to produce more food than ever in the coming decades. On the other hand, our environment is on the brink of collapse, yet we are utterly dependent on it for our food supply. Our farms can produce top quality food regardless of prevailing climate conditions.

As the climate emergency accelerates, the resilience of food production in the face of an unpredictable climate is one way in which we can ensure global food supply in the years to come. Our vertical farms don't only provide greater resilience for our food supply, but will aid in restoring planetary resilience, freeing up land for nature where ecosystems and biodiversity can be restored. That will put us on track to becoming a truly sustainable civilisation, living in harmony with nature and Mother Earth.

SUPER IN TERMS OF SCIENTIFIC RIGOUR

Maintaining strong links with academia is important to us. It provides us with early access to new ideas and innovations. It gives us a direct line of communication to younger audiences to explain the benefits of vertical farming as a career and the impact it can have on the world. And of course, it helps us to find the Infarmers of tomorrow.

This year, we forged a four-year partnership with Wageningen University & Research (WUR), the globally leading organisation on innovation in horticultural research. The collaboration will focus on maximising flavour, nutrition and yield of vertically farmed tomatoes whilst conserving resources. It will feed into our ongoing sustainability work around the Big Four [read more on page 11]. We are committed to sharing our findings in peer-reviewed journals, including through open-access platforms.



“In close collaboration with WUR, Infarm will identify ways to reduce overall costs while improving the quality of tomato harvests in Infarm’s Growing Centres. The goal is to offer consumers premium quality tomatoes with better taste, more diversity and higher nutritional value at an affordable price, grown locally, year-round.”

Guy Galonska, CTO, Infarm

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2. BROKEN FOOD SYSTEM

3. INFARM'S BIG FOUR

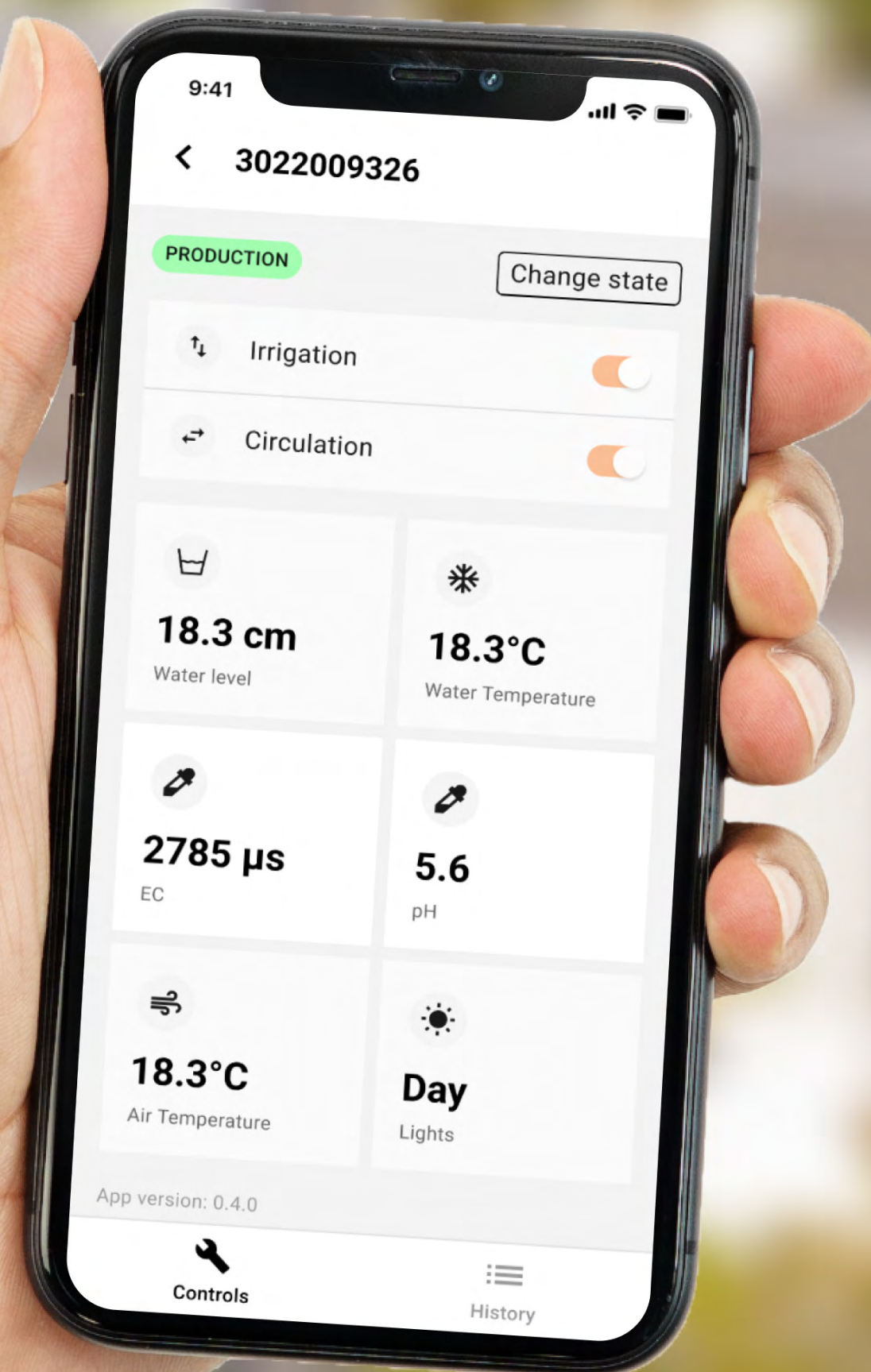
4. NET ZERO NETWORK

5. SUPER CROPS

6. INTELLIGENT FARMING

7. STRATEGIC PARTNERSHIPS

CULTIVATING THE VERY BEST TECHNOLOGY



Data is our life blood.
It flows through every part of Infarm.
It fuels our software platform.
It informs crop performance decisions.
It influences our business strategy.
It enhances our partnerships.
It quantifies our impact.

100,000,000,000

Yes, 100 billion. That's the number of data points we've collected so far. But where's it all from?

We may harvest individual crops every few weeks but we harvest sensor data from each plant several times every minute. We do this with the help of our modular software platform, which monitors, controls and operates our cloud-connected farming network. It allows us to record temperature, humidity, CO₂ and pH data. Then there's the planting and harvesting scheduling, inventory and revenue data.

Why are we collecting it?

Put simply, it helps us to grow better. With the constant data flow, the more we grow, the better we grow. With improved outcomes, we can use resources such as space, water, fertiliser, CO₂ and energy more efficiently. And that means...a better deal for people and planet.

Our team of data scientists, analysts and engineers, ensures our data is the best quality it can be. They interpret it, enrich it and visualise it so we can grow better, produce better yields and positively impact the planet.

"What sets us apart is the knowledge we've acquired managing such a large-scale network over the years, but also the data that we've been able to collect. We've invested in that since day one where data was key to our strategy."

Pedro Silva, Director of Software and IoT, Infarm

Leveraging data and scaling impact

Leveraging data for sustainability insights

The data that we collect constantly from our farms also feeds into our sustainability visualisation tool, the 'Global Environmental Impact Dashboard'.

The Dashboard provides real-time information on crop production data, land and water savings, waste and other key metrics from every single farm across our global operations.

Visible to all Infarmers in our network, the Dashboard offers an always-accessible and live visual tool for monitoring our performance and deriving sustainability insights. In the future, it will also host and track our long-term goals on carbon, waste, fertilisers, substrates, packaging, and others [see page 18 onward for more detail on the goals].

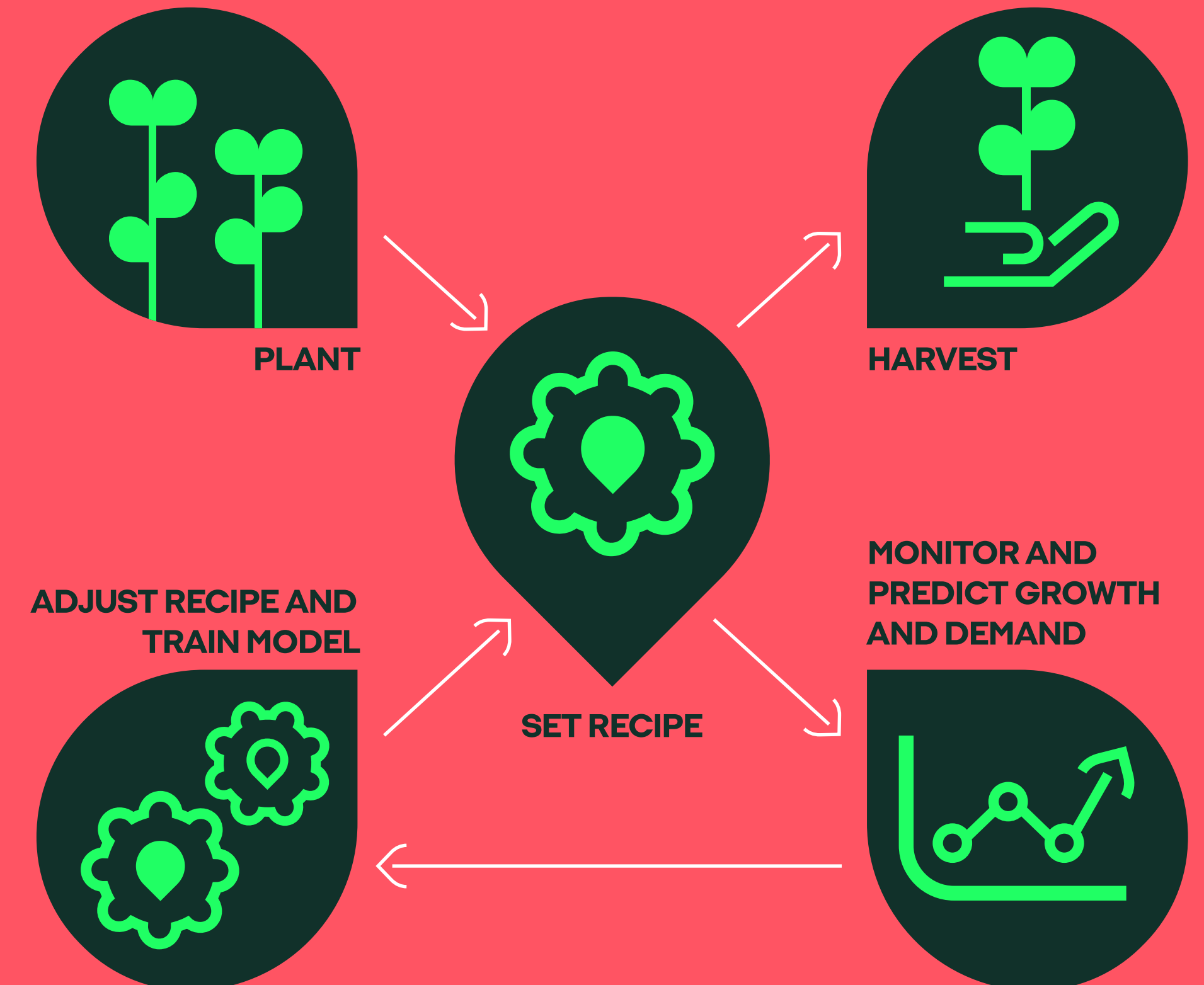
Scaling impact and reducing resources

Our developers and designers are continually working on improving and future-proofing our technology, to make it as accessible as possible for our staff and customers.

For example, we're enabling our platform to be plugged into third party systems. And we're working towards a more sophisticated demand forecasting and predictive modelling system. This will help us to improve our resource use and reduce waste in the supply chain.



Artificially intelligent farming



Our goal is to expand our current use of Artificial Intelligence [AI] to respond to the specific real-time needs of our plants, completely automating the crop growing conditions. Or in other words, self-optimisation.

By giving the plants only what they need to maximise their yield, we can minimise the resources used. Working collaboratively with Crop Science, our Data team is currently using state of the art 3D vision and multispectral imaging technology to build our AI capability and test the concept. Early trials using our virtual plant AI models indicate savings of 12% in light consumption and 40% in irrigation. That's more energy and water savings than we already have. And we're only getting started.

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GROWING OUR ECOSYSTEM THROUGH STRATEGIC PARTNERSHIPS

Connect. Collaborate. Co-create.



WE CANNOT FIX THE BROKEN FOOD SYSTEM ALONE

At Infarm, we know that we can't transform food systems on our own. To scale our impact, halt nature loss and address climate change, while providing affordable and nutritious food, we have to work with others.

We know that no single solution can solve the climate, nature and food crisis. But we do believe that vertical farming and the potential to grow more climate-resilient food with far less environmental impact, will play an important role. That's as part of a collective movement focused on transforming the agricultural industry and food sectors.

We want to elevate the voice and visibility of 'agritech' and demonstrate new solutions to help it scale. We need to align, measure and adopt common standards to address climate change and biodiversity loss.

Because it's only through a collective effort that we can amplify the positive environmental impact of these new technologies that are urgently required to transform our broken food system. Promoting solutions for climate-resilient, sustainable food systems is at the heart of our collaboration and partnership efforts. Together, we want to show how a new approach can provide a profitable and sustainable future for the new agritech food industry.

LEADING THE CHANGE

Working with others is not only the right thing to do, it also gives us a competitive advantage. It allows us to champion the good that our technology, science, business and the agritech sector can bring, thereby positioning Infarm and our sector as a trailblazer, showcasing food systems of the future.

INFARM ACTIVISM—SUPPORTING GRASSROOTS MOVEMENT

At Infarm, we are raising our voice and supporting movements most important to our business and our communities. Not only does Infarm need to deliver on its sustainability promises, it needs to add its support to others at the forefront of the fight for the planet. In the past year, we've supported COP26, Veganuary¹⁹, Fridays for Future and Earth Day. We've signed the Plant Based Treaty and we're promoting the move to plant-based diets.

MADE WITH INFARM



To scale our positive impact and empower others to use our technology for more sustainable food production, we are launching 'Made With Infarm'. Through this programme, we are offering a new business model based on collaboration, to create a favourable ecosystem within the vertical farming sphere.

Supporting our vision to enable third parties to farm everywhere, Made With Infarm provides farming technology and recipes to other operators that benefit from Infarm's cloud-based learning and resource optimisation.

We believe that access to sustainable fresh produce at an affordable price is not a privilege but a fundamental human right. We are actively looking for long-term investors, entrepreneurs, food producers, and distributors to join us in building the first global farming network operating hyper-locally.

Partnerships for the goals

At Infarm, our impact strategy focuses on eight of the 17 UN Sustainable Development Goals [SDGs 6, 9, 11, 12, 13, 14, 15 & 17]. Importantly, SDG 17, *Partnerships for the goals* recognises that collaboration across sectors, companies, countries and organisations is essential, and without it, none of the other SDGs can be achieved.



"Partner or perish. Efforts to quickly implement and scale the game-changing solutions needed to transform food systems will be crucial to turn the tide on climate change. At the core of delivering successful outcomes are strong partnerships with purpose."

Dhanush Dinesh, Founder, Clim-Eat

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Infarm
Infarmers

Friends of Infarm

Working closely with our business partners
(for example suppliers, customers, investors, etc.)

Vertical farming industry

Building strong relationships within the VF industry for greater
impact (for example VF CEO Policy Forum)

Controlled Environment Agriculture

Controlled Environment Agriculture collaborating with the wider industry through
associations (for example FarmTech Society)

Agritech

Promoting agritech and food innovation for good (for example Global Agrifood Tech Alliance)

Food systems, climate, biodiversity

Together addressing global issues through coalitions and with NGOs, multilateral
organisations, etc. (for example Science Based Targets Network, The Plant Based Treaty)

Our partner network

From sharing knowhow to shaping policy and supporting global initiatives, our partnerships span a multitude of different areas across our business.

Key collaboration platforms

Global Agrifood Tech Alliance Shaping the future of food



Jointly with our partners, we've established the Global Agrifood Tech Alliance of purpose-driven organisations working in the agri-food sector. From insect-based feed to plant-based dairy alternatives and lab-grown meat, our areas of interest

are broad. But we share a common goal in raising the challenges and issues plaguing the environmentally harmful food system as a collective of organisations using innovation and technology to transform the same system.

COP27 food systems pavilion Taking our seat at the table

Together with diverse stakeholders, we want to put food at the centre of the table at the upcoming COP27 UN climate negotiations in Egypt. To do this, we'll be co-hosting a Food Systems Pavilion featuring activities and communications co-created with a multi stakeholder group including non-governmental organisations, business

and government. We'll showcase solutions and demonstrate action, putting Infarm at the centre of positive change and food systems transformation.

Join us on the journey.
7–18 November 2022

Vertical farming industry collaboration Amplifying our collective voice

Together with other organisations in the fast-moving space of vertical farming, we're building a collective identity for the industry. In doing so, we hope to position the vertical farming industry as a major player at the intersection of horticulture, data science, engineering and sustainability. Our shared

identity allows us to speak with one voice on the issues affecting us all. As we grow, this will prove hugely valuable in promoting the vertical farming sector whilst helping us tackle the challenges we face together.



Endnotes

1 Ernst van den Ende, Director of Plant Sciences, Wageningen University and Research

2 IPCC; Special Report on Climate Change and Land, [accessed April 2022], 2019

3 Our World in Data; Breakdown of global land use today [accessed April 2022], 2019

4 Planetary Health, Protecting Nature to Protect Ourselves, 2020. p. 94–7

5 United Nations; Summary Progress Update 2021: SDG 6—water and sanitation for all [accessed April 2021], 2021

6 FAO; The state of food and agriculture 2020 [accessed 25.04.2022], 2020

7 Science; Reducing food’s environmental impacts through producers and consumers; 360[6392], 987–992, 2021

8 Our World in Data; Breakdown of global land use today [accessed April 2022], 2019

9 IPBES; Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services. Population and Development Review, 2019

10 Nature; Anthropogenic climate change has slowed global agricultural productivity growth, [accessed April 2022], 2021

11 Science; Increase in crop losses to insect pests in a warming climate, [accessed April 2022] 2018

12 IIED; Urbanising World [accessed April 2022], 2020

13 This figure was derived from our limited 2021 LCA exercise for our Pfungstadt Growing Centre, and is subject to update once our company-wide baselining exercise is completed [read more on page 30]

14 Our World in Data; Are plastic alternatives better for the environment [accessed April 2022], 2018

15 Our World in Data; Plastic pollution impacts on wildlife [accessed April 2022], 2018

16 A GHG emission target is defined as ‘science-based’ if it is in line with the scale of reductions required to keep global temperature increase below 2°C compared to pre-industrial levels. The Science-Based Targets initiative [SBTi] is a collaboration between CDP, the United Nations Global Compact [UNGC], World Resources Institute [WRI] and the Worldwide

Fund for Nature [WWF]. It champions Science-Based Target Setting as a powerful way of boosting companies’ competitive advantage in the transition to the low-carbon economy

17 Science Based Targets initiative; Companies Taking Action [accessed April 2022], 2022

18 Scope 1 reflects emissions from activities owned or controlled by the organisation that release emissions straight into the atmosphere. Scope 2 reflects emissions released into the atmosphere associated with the consumption of purchased energy. Scope 3 reflects emissions that are a consequence of the company’s activities in upstream and down stream supply chain / from sources not controlled by the company

19 Vegan January. Veganuary is an annual challenge run by a UK non profit organisation that promotes and educates about veganism by encouraging people to follow a vegan lifestyle for the month of January

THANK YOU

Infarm

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