

# Impact

creation report  
2020-2021



**ASTANOR**

Where tech meets nature



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# Preface

We started Astanor four years ago with the vision that the giant agrifood industry needed a radical shift towards sustainability. Four years later, reality has surpassed our vision. The world has woken up to the pressing need to move to a new agrifood system, a shift that can only be started by entrepreneurs free from the inertia that slows down large incumbents. Thanks to these disruptors, agrifood can be transformed from one of the leading causes of social and environmental harm into the greatest regenerative solution.

This revolution will not happen overnight. It has taken decades to shape our food system into the one it is today: it over produces calories and under delivers nutrients, it perpetuates global health crises and accelerates global warming, it destroys ecosystems and harms our oceans. No single policy or strategy can address all the interconnected problems within today's food system.

As an early-stage impact investor in the agrifood sector, we are facing multiple challenges: investing in technology driven solutions that can scale rapidly to respond to today's urgent climate and social crisis, supporting our companies over the long-term to scale their positive impact with growth and quantifying our contribution to global goals in a transparent and honest way.

Until a new accounting system that factors in environmental and social costs is adopted worldwide, measuring the true bottom line of companies will require investors to engage deeply with their investee companies to evaluate these externalities. This level of engagement is more suited to venture capital than it is for firms investing in large, publicly traded companies, thus positioning early-stage venture investors as the natural leaders in the fundamental shift towards this much needed disruption.

We are pleased to share with you this first edition of our Impact Creation Report in the hope that we will grow together as an industry and collectively advance in the journey toward a more positive future of food. Beyond the numbers, beyond sustainability and beyond impact, food must become again delicious. And to measure that, tasting food and enjoying it will continue to be needed outside of reading reports. Enjoy!

*The Astanor Team*





# Introduction



For the past 70 years, the agrifood industry has invested in quantity over quality, resulting in a **food system that is outstripping the planet's resources and perpetuating global health crises**. As an impact investor, we embrace our role to help re-invent this **broken food system**. We believe in the future of an agrifood system that provides affordable nutrients for 10 billion people, preserves and regenerates natural resources, actively contributes to decarbonization and protects land and ocean biodiversity.

At Astanor, we are driven by a pressing urgency to **combat climate change, biodiversity loss and improve the health of humanity and the planet**. We work with scientists, policy makers, activists and tech entrepreneurs to catalyze a fundamental shift in the way we grow, harvest, transform, make, distribute, consume, waste and eat food. **Systemic disruption is needed** to reach the ambitious targets set forth by the Paris Agreement, the UN SDGs and the European Commission's Farm to Fork strategy.

*Our mission as impact investors is to find, support and scale the most disruptive, impactful solutions to accelerate progress towards global sustainability targets.*

In 2020, the world population spent an estimated \$8 trillion on food, a cost which includes producing, processing and distributing the food we buy and eat. However, this cost does not include the externalities of the agrifood system such as greenhouse gas (GHG) emissions, water use, land degradation, diet-related diseases or poor work conditions – a burden disproportionately borne by historically marginalized and underserved communities. **The environmental, health and social impacts of the agrifood value chain are simply not factored in today.**

To support the long-term development of a sustainable agrifood industry, there is a growing need for a global, unified accounting framework that integrates the “true cost” of our food system. True Cost Accounting (TCA) in the agrifood industry is emerging to address this challenge.<sup>1</sup> Although there is a long road ahead to reach full TCA, our approach is built within this mindset. Science-based assessments of the positive impacts and negative externalities of our portfolio companies' solutions are required to ensure we support and scale solutions that will bring the agrifood system back into planetary and social boundaries.<sup>2</sup>



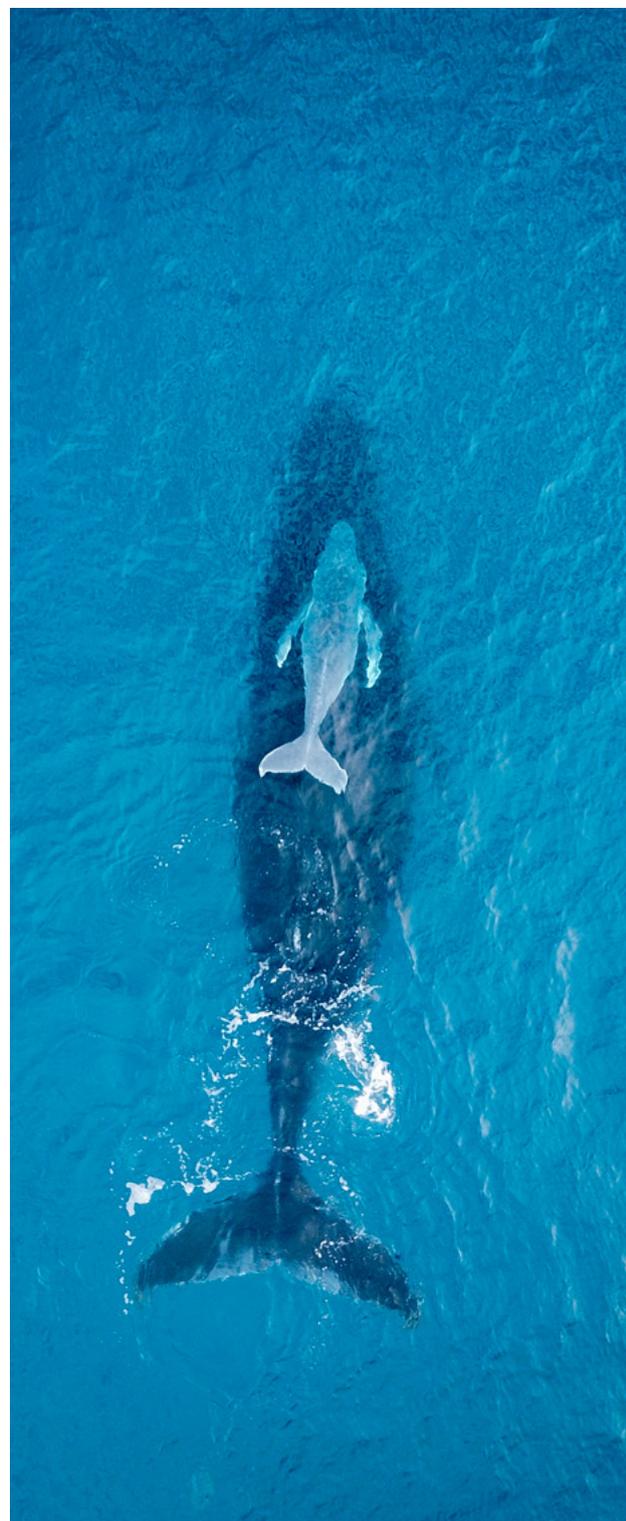
# Astanor's Commitment

Consumers, and a variety of players along the agrifood value chain, are increasingly choosing to support businesses that contribute to a fairer system and one that is sustainable in the long term. The market is looking for sustainable solutions and **the businesses that embrace ESG and impact are being rewarded for it**. This has led to the exponential growth of Environmental, Social & Governance (ESG) and impact-based investment strategies.

However, ESG and impact investing have come under strict scrutiny for over-promising and under-delivering and for failing to put in place the proper incentives to align fund managers with their mission. To ensure complete alignment between our mission and our operations, Astanor's long-term incentive program is dependent upon the impact performance of our Fund. If we fail to deliver on our impact creation mission, **up to 30% of the team's carried interest compensation will be distributed to NGOs and charities selected by Astanor**, a process overseen by the Fund's Advisory Committee.

Transparency and integrity are key to the success of this endeavor, and we aim to share our learnings with the impact investing community to help other funds follow suit. We are continuously learning and refining our impact measurement process to ensure that, by the end of the life of our first fund, we will have all the necessary data and advanced methodologies to demonstrate our impact creation and participation in meeting the **Sustainable Development Goals (SDGs)** and **EU Farm to Fork targets** in 2030 as well as the 2050 **net zero target**.

*Astanor follows a fully transparent approach to impact creation with science-based data at the root of our methodology. We are leading the way forward and strive to inspire agrifood entrepreneurs and investors.*



# Astanor's Approach

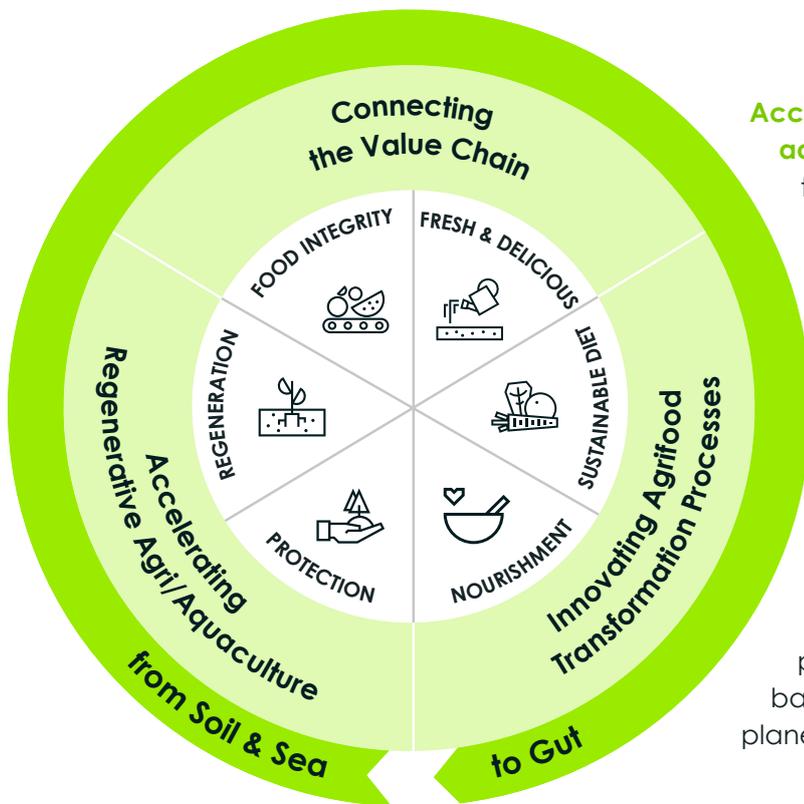


# From Soil/Sea to Gut

*Revolutionizing the agrifood system across the entire value chain*

## What do we do?

Astanor invests across the agrifood value chain: from the regeneration and efficient use of the primary resources in our seas and soils → across sustainable and circular methods of production and distribution, → while compensating fairly the workers along the supply chain, → in order to provide nourishing, healthy and sustainable products for the final consumer and the human gut.



**Accelerating regenerative agriculture and aquaculture** by finding innovative solutions that enable the global regenerative use of resources, soil & ocean stewardship and scalable agroecology.

**Connecting the value chain** through the implementation of sustainable, shorter supply chains with fair remuneration to the farmers while increasing traceability & transparency, encouraging circularity and eliminating waste.

**Innovating agrifood transformation processes** to facilitate the sustainable production of food, textiles & agriculture-based materials and restore human and planet health.

In the first step of Astanor's investment process, companies are assessed according to our **guiding principles**. Continuous consideration of our principles allows us to make the right investments and to keep impact at the center of the investment process from day one.

### Protection

#### Waste not, want not

Greater care and efficient use of natural capital, alongside new methods to repurpose waste, are needed to repair the planet.

### Regeneration

#### Healthy soils & oceans

Health for people and the planet starts and is sustained by fertile soil and healthy oceans.

### Food Integrity

#### Insight breeds intelligence

Traceability, transparency, fair labor and supply chain practices will restore trust, decrease risk and strengthen communities.

### Sustainable Diet

#### Resilience rooted in diversity

New sources of food are required to end overreliance on a few species, monoculture systems and climate-destructive diets.

### Fresh & Delicious

#### Quality-led innovation

New ways to distribute and package to preserve without polluting and enhancing deliciousness and nutrition.

### Nourishment

#### Food as medicine

Sustainably grown and minimally processed foods protect and promote health.

*Committed to scaling impact  
and return in equal measure*

# Sustainable Investing

*Combining ESG and impact for scalable sustainability*

Environmental, social, and governance investing evaluates a company's operations based on three pillars. A solid ESG strategy is key to supporting the internal health of a company, promoting good management practices and minimizing any potential harm caused the company's operations.

Impact investing is focused on the external influence a company has on society and the environment via its products and services. Impact investing supports mission-driven companies that have identified a problem and found a solution to solve it.

In order to achieve lasting long-term impact, ESG is a requisite. A company with a highly impactful product or service will not achieve its mission if it lacks a solid ESG framework of strong values, policies and processes. Both ESG and impact are needed to achieve the ambitious global targets for sustainable development

ESG Investing



Impact Investing

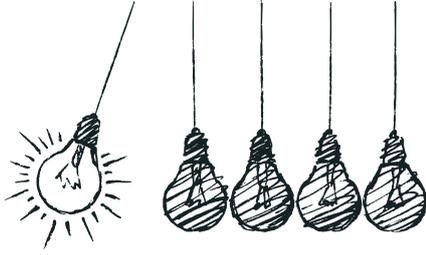
Advancing sustainability with systemic vision

*We believe there is no trade-off between return and impact.*

## Our ESG approach

Astanor evaluates the potential ESG risks & opportunities of companies pre-investment to assess the internal health of the business and help them build the fundamental drivers of their success. As a venture capital firm, Astanor invests in early stage, developing companies. Therefore, it is relatively common for potential investee companies to lack ESG framework in at time of investment. To address this, we have built a **comprehensive process** to assess the company's ESG baseline at the time of investment and define a **constructive ESG roadmap** to build their internal health while the business scales.





Holistic science-based approach to impact

# Measuring Impact

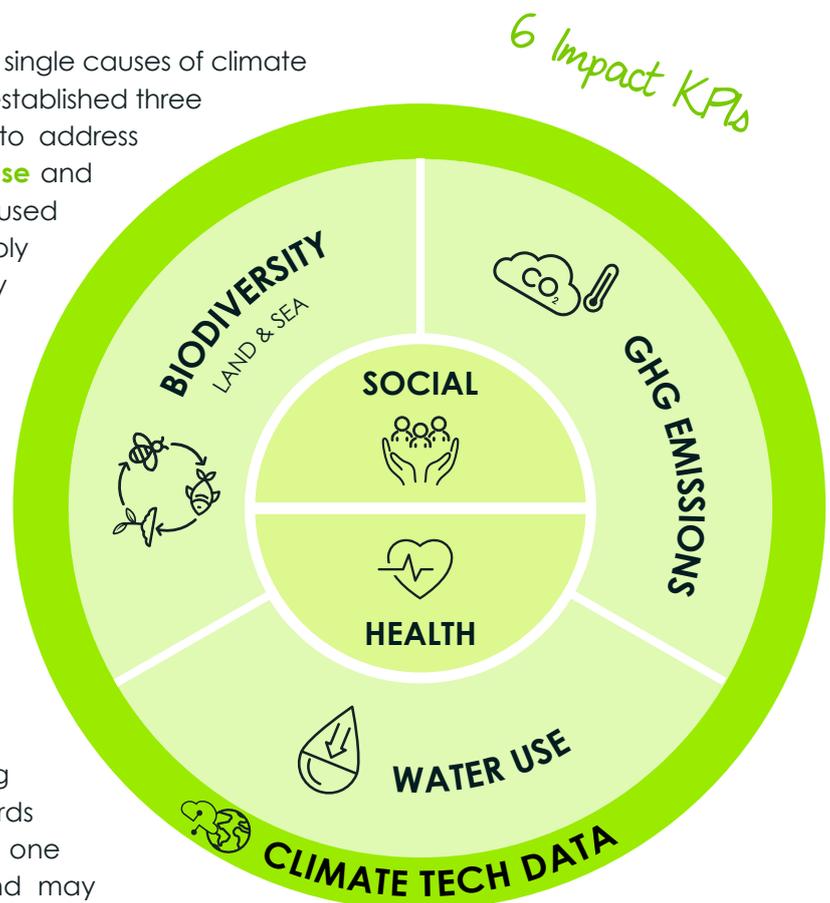
Defining the right metrics is an essential first step to measure impact. As our investment universe includes a wide range of companies from the entire agrifood value chain (including contributors and enablers), we defined **impact KPIs that capture a holistic image of Astanor's positive impacts on people and the planet.**

## Impact KPIs

The agrifood industry is one of the largest single causes of climate change and biodiversity loss.<sup>3</sup> We have established three "planet" KPIs to efficiently assess how to address this challenge - **GHG Emissions, Water Use** and **Biodiversity**. While the market is often focused on carbon, these three factors are deeply interconnected and instrumental to fully assess our environmental impact and tackle climate change at the root.

By focusing on quantity of cheap calories over quality products, the agrifood sector has perpetuated social inequalities and long-term health issues. To measure our positive impact in addressing these key issues, we developed two "people" KPIs - **Social** and **Health**.

Our third category of KPIs addresses the enablers that are necessary to ensuring our collective advancement towards global climate goals. Today, we have one "enabler" KPI, Climate Tech Data, and may add more as our methodology evolves. **Climate Tech Data** enables the achievement of impact at scale by providing the tools to assess the baseline, make informed decisions and quantify the benefits of impact investments.



Each of these **6 impact KPIs** is an essential pillar in the foundation of a sustainable food system. As we are early in this journey, it is possible that these KPIs could evolve to include new methodological and data developments. We are actively involved in the impact investing ecosystem and will continue to participate in global initiatives to further refine our approach.

Full alignment in our impact-driven mission

# Scaling Impact

Astanor's investment process has been designed to provide an in-depth understanding of the sustainability and impact of each company at the time of investment. It builds the foundation for an individualized engagement roadmap, enabling us to increase a company's ESG profile and scale up its impact over the course of the investment and achieve its full impact potential.

## A Trusted, Sustainable Advisor

We maintain a very close relationship with our investees and act as a sustainable advisor: challenging, advising and supporting them through their sustainability and impact journey. Our tools and metrics help track improvements and our partnerships with a diverse range of experts allow us to connect companies with targeted support where and when they need it.

## Life Cycle Assessment

The majority of our investees require a comprehensive environmental Life Cycle Assessment (LCA) in order to understand the company's contribution to our impact KPIs. Over the past two years, we have been co-developing our LCA process alongside investees to ensure we meet the specific needs and development level of each investee. We have built a network and partnerships to support companies through this journey by either hiring external experts or recruiting in-house talent which is then followed by an external certification.

These LCAs provide high-quality data that serves to structure our impact measurement process and provide valuable insights for investees. The data supports them in remaining agile, understanding the full impact of their operations, designing their products in a sustainable way (eco-design), identifying key sustainable outcomes and communicating on their positive impacts and negative externalities.

## Company Impact Reports

In the final stage of the investment onboarding process, we build a detailed Impact Assessment Report for each new investee. This report is reviewed with the portfolio companies to establish the definitive impact KPIs, their weighting and their targets. It then serves as a basis for the continuous impact collaboration throughout the company's time in our portfolio.



# Governance & Values

## Pillars to achieve impact

### Astanor's values

Our values and principles, which define who we are and how we go about our investments, act as three pillars that guide us as a firm and as people.

#### *Integrity*

- Trust built upon clarity, reliability, honesty and a high standard of both personal and professional behavior
- Competitive advantage and commercial success derived through the application of superior individual and collective skill

#### *Diversity & Equality*

- Always make decisions based solely on merit and business needs
- Committed to providing a work environment free of direct or indirect discrimination of any kind
- Aim to achieve diversity and inclusion and, most importantly, foster a sense of belonging

#### *Sustainability*

- Environmental and social issues are at the core of Astanor's mission, embedded in our investments' DNA and reflected within our daily operations
- Encourage sustainable use of resources and responsible consumption for staff and companies
- Community engagement

*Our values allow us to attract diverse mission-driven entrepreneurs who will themselves build long-lasting businesses which foster diversity, equity and inclusivity.*

## Governance

Astanor's first fund, Good Harvest Ventures I, is a signatory of the Principles for Responsible Investment (PRI) and a signatory to the Operating Principles for Impact Management.

To support investors in making investment choices in line with their sustainability goals, the EU Sustainable Finance Disclosure Regulation (SFDR) came into effect in March 2021. Under the new European regulation, Good Harvest Ventures I, is a "dark green" Article 9.2 fund, i.e. a fund which has sustainable investment as its objective. Astanor is also a member of Invest Europe and sits at its Responsible Investment Roundtable.

The SFDR's disclosures and the PRI annual reporting which now includes a Taskforce for Climate related Disclosure's dimension (TCFD) as well as the 9 Impact Principles provide a solid framework for impact funds.

Linking our carried interest compensation to the positive impact generation of our companies is an essential element of our commitment to impact. To ensure transparency and accountability, the selection of impact KPIs, as well as targets and weightings, are discussed and validated with the Fund's Advisory Committee.

Signatory to:



Operating Principles for  
Impact Management

Signatory of:



Principles for  
Responsible  
Investment

INVEST  
EUROPE

# Long-Term Vision

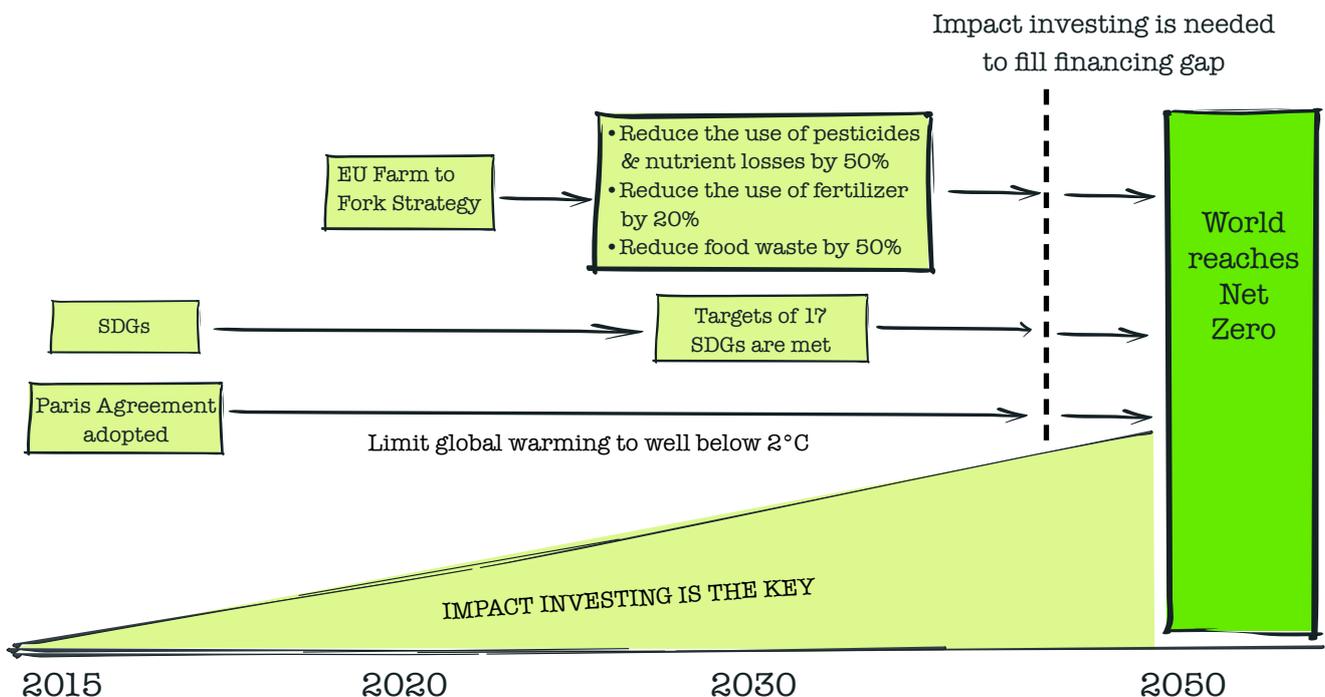
## Next steps

Although our average holding period is expected to be between 5 and 10 years, our vision is much more long-term. Due to the early nature of our investments, there is a high probability that we will invest in a few companies that will have very limited impact before we exit and that, for many of them, the full scaling of impact will actually occur post exit. We want to go a step further and measure our additionality post exit. While there are limitations to modelling, we believe we can find a **prudent and truthful methodology to measure our long-term impacts** on the people & the planet allowing us to materially assess our contribution to international goals on 2030 and 2050 timelines.

**True Cost Accounting** has the potential to truly explain the devastating costs of our current food system while also advancing the disruptive solutions that can positively transform the agrifood system.<sup>4</sup> The approach we have developed allows us to methodically assess the positive impact and potential negative externalities of our companies. By leveraging the science-based data we have gathered on our investee companies, we aim to go a step further by actively participating in the upcoming sustainable accounting revolution. This will lead to a more informed and transparent agrifood model which will bring back the agrifood system into planetary and social boundaries.

## Filling the funding gap to meet global targets

There has been a spectacular growth in impact investments with the market reaching roughly \$715 billion in assets under management in 2020, according to the Global Impact Investing Network.<sup>5</sup> However there is still a €470 billion annual gap in the funds needed to reach the European Green Deal targets<sup>6</sup>, a \$6.9 trillion annual gap to implement the Paris Agreement<sup>7</sup> and a \$2.5 trillion gap to meet the SDGs.<sup>8</sup> All targets are set for 2030.



*Our contribution to SDGs through our impact driven companies and ESG practices.*



# Impact KPIs



# Deep Dive

The following section is a deep dive into our six impact KPIs: **GHG emissions, Water Use, Biodiversity, Social, Health** and **Climate Tech Data**. Each deep dive includes a description of our methodology and focus, as well as case studies from a selection of Astanor's portfolio companies. Although each case study is focused on one specific KPI, most of our companies address more than one impact KPI.

	GHG Emissions	Water Use	Biodiversity	Social	Health	Climate Tech Data
Apeel	✓		✓			
Apheo.Bio			✓			
Cervest						✓
Demi				✓		
garten	✓				✓	
Hyris					✓	
Infarm	✓	✓	✓			
Kuleana			✓			
La Ruche Qui Dit Oui	✓			✓	✓	
MagGrow	✓	✓	✓			
MiiMOSA			✓	✓		
Modern Meadow	✓	✓	✓			✓
Notpla	✓		✓			
ProducePay				✓		
Stockeld Dreamery	✓					
The Gut Stuff				✓	✓	
Vivent	✓					✓
Ynsect	✓	✓	✓			

Astanor's portfolio as of end of June 2021

✓ KPIs are included in Deep Dives



1/3 of GHG emissions come from the agrifood sector

# GHG Emissions

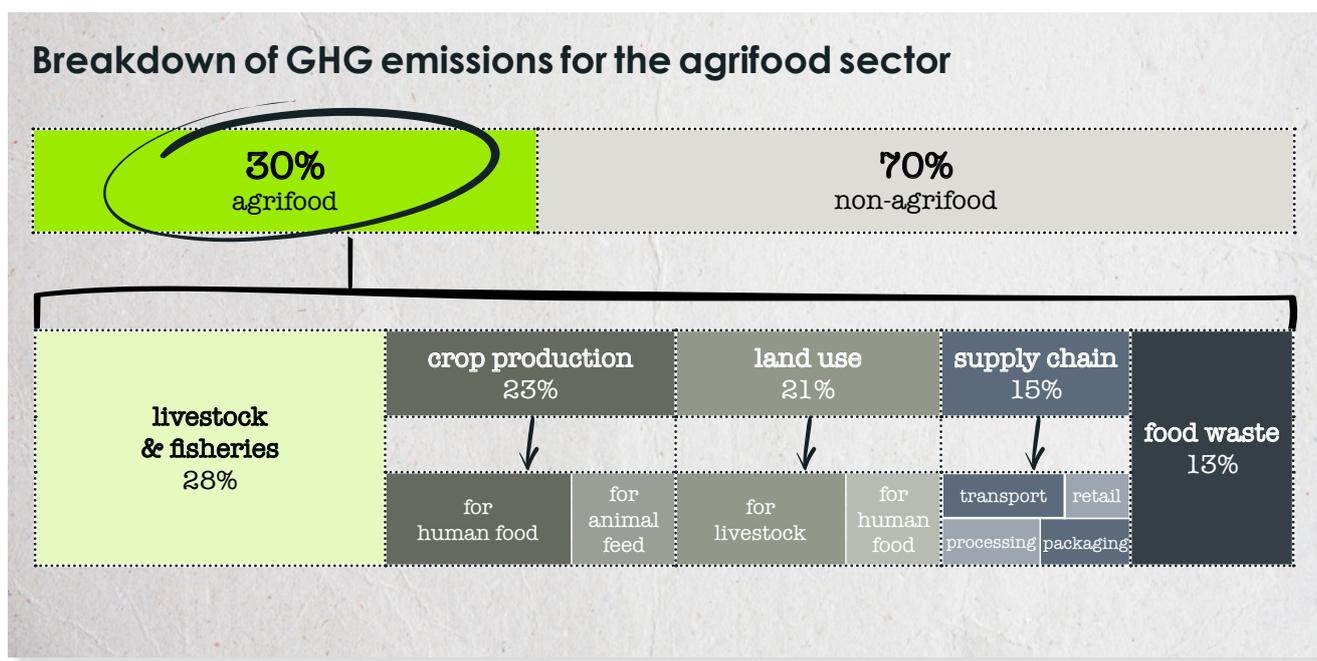
The agrifood industry is responsible for one third of global anthropogenic greenhouse gas emissions.<sup>9</sup> Emissions occur at each step of the value chain: food needs to be farmed, harvested or caught, transported, processed, packaged, distributed and finally cooked, with food waste each step of the way.

There is indisputable evidence that anthropogenic GHG emissions are driving extreme changes in our earth's climate. Six years ago, the Paris Agreement put this fact squarely in the public eye and united hundreds of countries across the globe to take urgent action. Agriculture is a key piece of the puzzle to achieve net-zero global emissions by 2050.

Under the right conditions, agriculture can provide a multitude of environmental services that can help mitigate against and reverse the effects of climate change. Innovations in agriculture boost ecosystem services that reduce GHG emissions and draw carbon back into the soil - a necessary part of the plan to get to net-zero.

There is an urgent need for an agrifood system that actively contributes to decarbonization.

51 bn tons of GHG emitted per year globally



Source : Crippa et al. (2021)



Seeding an agrifood tech revolution to tackle climate change at the root.

## Our Focus

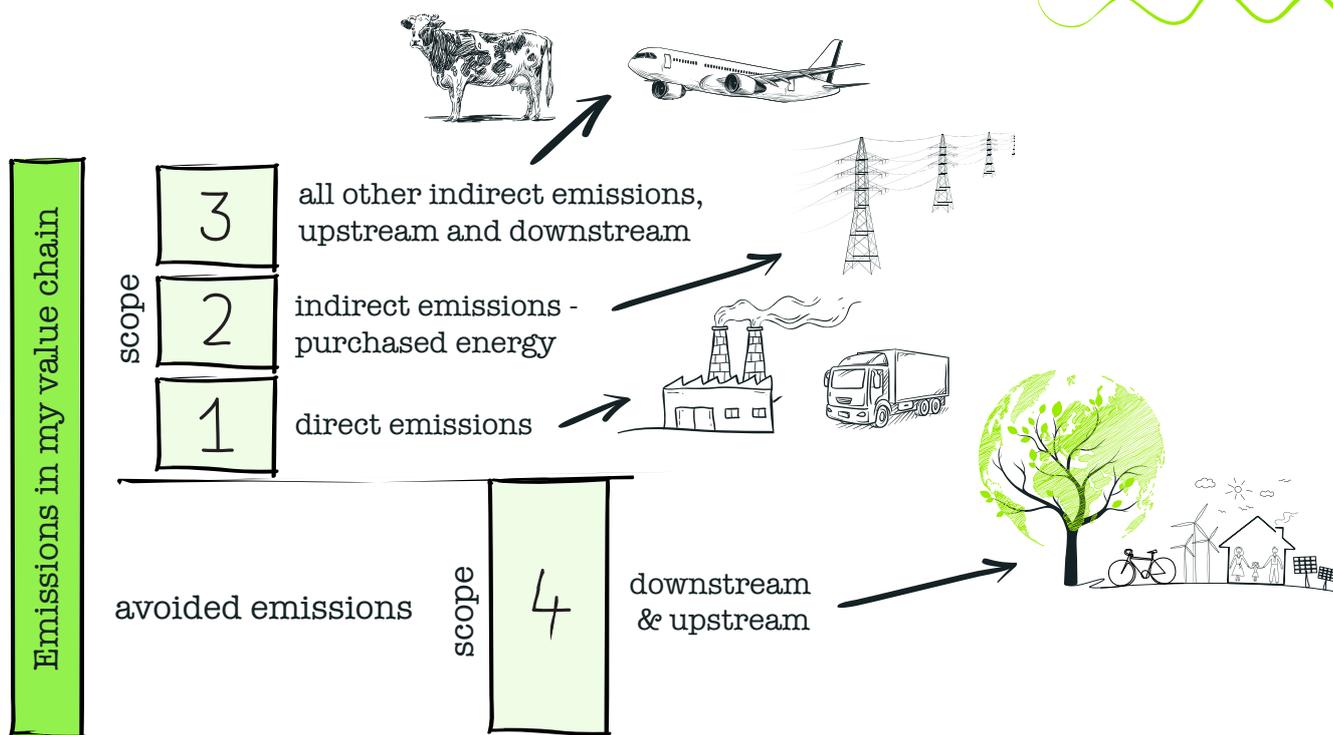
Astanor backs disruptive solutions that actively contribute to net zero. To quantify this impact, we define our carbon impact KPI by **tons of CO<sub>2</sub> emissions avoided** (scope 4 emissions - see chart below). We invest in mission-driven companies that place tackling climate change at the core of their own existence.

Although emissions avoided are our focus, we do support our investees in measuring and reducing their company carbon footprint - the scope 1, 2 and 3 emissions. The carbon footprint of our investees tends to be small but will grow with the expansion of the business (more employees, larger offices, increased production...). Mindful of this, we work hand-in-hand with investees to maintain GHG emissions to the lowest level and increase efficiency across their value chain.

Across Astanor's impact categories, we focus on the positive impact of each company's products and services and so measure **emissions avoided by the products or services of our investees over time**. Product lifecycle analysis assesses carbon emissions of the sectorial baseline scenario and compare it to the emissions of the innovative product or process of our investees.

**Through investing in solutions that actively reduce the carbon intensity of the agrifood system, Astanor aims to transform the sector from being one of the largest causes of climate change to one of the greatest remediations.**

## Understanding carbon footprint





# Case study

## mission

Apeel is on a mission to make sustainable, high-quality and longer-lasting produce a reality, reducing waste throughout the supply chain, and creating a more abundant future for us all.

## solution

Apeel protects produce with a sustainable, plant-based coating, slowing the rate of water and oxidation and helping fruits and vegetables last two times longer. Apeel product is completely safe to eat and tasteless.

## impact

Food waste epitomizes the paradoxes of our global food system. An estimated 40% of the food grown globally is never consumed, due to supply chain inefficiencies and consumer waste, while nearly 30% of the world's population remains malnourished and food-insecure (FAO).<sup>10</sup>

Apeel's solution reduces food waste, plastic packaging and emissions at each step of the produce value chain, from distribution to retail to the end consumer. As the company extends its global reach, its positive impact scales, increasing **carbon emissions avoided** while also reducing water use and biodiversity impacts.

*Since 2019, Apeel has prevented 42 million pieces of fruit from going to waste at retail, which has helped avoid 10,000 metric tons carbon dioxide equivalent of greenhouse gas emissions and conserve nearly 4.7 billion liters of water.*



### Additional Impact KPIs:



By limiting food waste, Apeel's solution also leads to significant reduction of water use and has a positive impact on biodiversity with reduction in freshwater acidification and eutrophication.





# Case study



## mission

Catalyze the shift away from animal and petroleum-based production processes by providing high-performance, novel materials with a positive environmental impact.



## solution

Modern Meadow develops bio-based, animal-free, novel materials with enhanced performance and sustainability profiles that can be applied across multiple industries such as textiles and beauty.



## impact

Within the agrifood sector, the livestock industry is especially damaging for the environment, contributing 18% of global GHG emissions each year.

The Sustainable Apparel Coalition's Higg Materials Sustainability Index – which measures impact of materials up to the point of fabrication – gives most leathers an impact of 159 (compared with 44 for polyester and 98 for cotton), due to its high contribution to global warming, water use and pollution.<sup>11</sup>

Modern Meadow's flagship product, a bio-based leather replacement called Zoa, is made from sustainably sourced soy and emits 80% less GHG emissions across its life cycle compared to traditional leather.



# 80%

## fewer GHG emissions

*Modern Meadow on track to avoid 5,000 tons carbon emissions in the next three years.*

Additional Impact KPIs:



Modern Meadow's bio-based materials lead to positive impact on water use and biodiversity, through a reduction in land use and eutrophication.





By 2025,  
2/3 of the world's population  
will be at high risk of water  
shortages

# Water Use

Today, **70% percent of the world's accessible freshwater is consumed by agriculture.**<sup>12</sup>

Predicted growth in population and income, and the resulting increased demand for agrifood products, are expected to further increase pressure on our water resources. While the urgency of climate change necessitates that carbon be the focal point of current environmental action, the rate of disappearing water resources poses a pressing threat to the future of our food system.

It is estimated that two-thirds of the world population could be living in water-stressed

countries by 2025 if current consumption patterns continue.<sup>13</sup>

As a major consumer and polluter of water resources, agriculture has a central role to play in addressing water challenges. **Around 60% of water used in the agrifood value chain is wasted** due to leaky irrigation systems, inefficient application methods and the production of water-thirsty crops in dry environments.<sup>14</sup> Agrifood is also one of the main drivers of freshwater pollution due to runoff of fertilizers and pesticides.

## Global Annual Freshwater Consumption



## Our Focus

Increasing the efficiency of water use in the agrifood sector, especially in water stressed areas, is a key step in ensuring the sustainability of global water resources. How do we get from 60% waste to (near) zero? By investing in solutions that will prevent water waste across the entire agrifood value chain.

Innovation in more efficient ways to grow, raise, produce and consume is essential to ensure long-term water security across the planet. Astanor seeks out solutions that will maximize reductions in water use throughout the agrifood value chain.

Understanding and measuring the water use of the agrifood sector is fundamental to developing a more resilient global industry. This includes both direct and indirect water use of a process or product, including water consumption and pollution throughout the full production cycle. Astanor calculates the absolute reduction of water use due to the solutions in which we invest either through increasing the efficiency of conventional practices or by creating entirely new, highly sustainable methods of production.





# Case study



## mission

Laying the foundation for a sustainable urban food system, saving thousands of food miles, preserving water and natural resources while providing tastier and more nutritious food for everyone.



## solution

Infarm is a vertical-farming services company that develops modular farming tech, integrated throughout cities in local distribution centers and grocery stores. Each farm connects to the cloud through a central farming brain that monitors and optimizes growth performance.



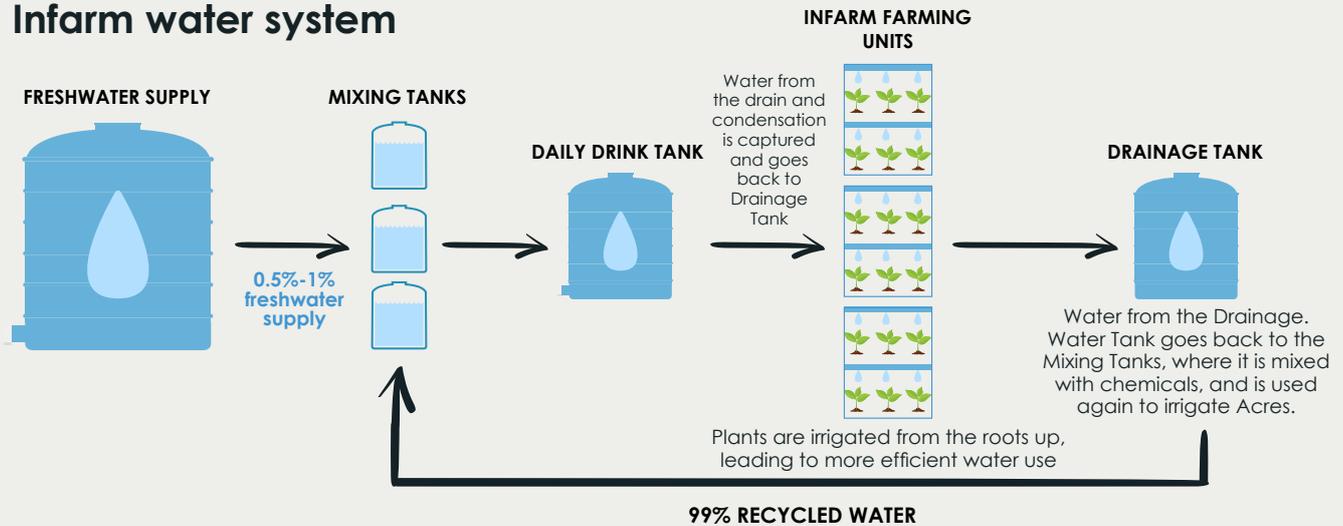
## impact

In parallel to solutions that drive higher water efficiency within conventional farming, there are also other innovative solutions that are leading to entirely new ways to grow food in order to reduce water use and other traditional agriculture inefficiencies.

Infarm uses 95% less water than conventional farming. Their science-led approach combines hydroponics, a highly water-efficient and soil-less growth technology, with years of experience and research to regulate water usage and recycle water without any loss due to evaporation.

*Target 1 billion liters of water saved in 2022-2023*

## Infarm water system



Additional Impact KPIs:



Infarm's vertical farms also have a positive impact on biodiversity through the reduction of land use and GHG emissions avoided.





# Case study



## mission

Providing the best technology to growers to help them grow crops sustainably and tackle the planet's pressing food and water challenges.



## solution

MagGrow spraying technology uses magnetic inserts to create finer droplets of pesticides. MagGrow's patented, proprietary technology dramatically increases coverage capabilities whilst reducing drift and reducing waste associated with conventional pesticide spray applications.



## impact

With conventional spraying technology, 70% of pesticides do not reach their intended target. This leads to runoff, with pesticides ending up in neighboring crops, fields and waterways. Farmers had to choose between reasonable drift control and inadequate coverage or inadequate drift control and reasonable coverage.

With this sustainable technology, MagGrow is addressing this challenge while reducing pesticide use by 50% and tackling both water use and water pollution's challenges.

- **Reduces water usage by 25 to 50%.**
- Reduces chemical pollution in freshwater systems, nearly **40% better crop coverage** and up to **70% drift reduction.**

MagGrow's scalable, patented and technology-ready solution, which can be retrofitted on any new or existing engine, meets the goals of the EU Farm to Fork strategy of reducing pesticide use by 50%. One solution that could help accelerate reaching the 2030 goal by 2025.



### Additional Impact KPIs:



By reducing the use of inputs and reducing the drift and runoff, MagGrow's solutions also has positive impacts on biodiversity and GHG emissions avoided.



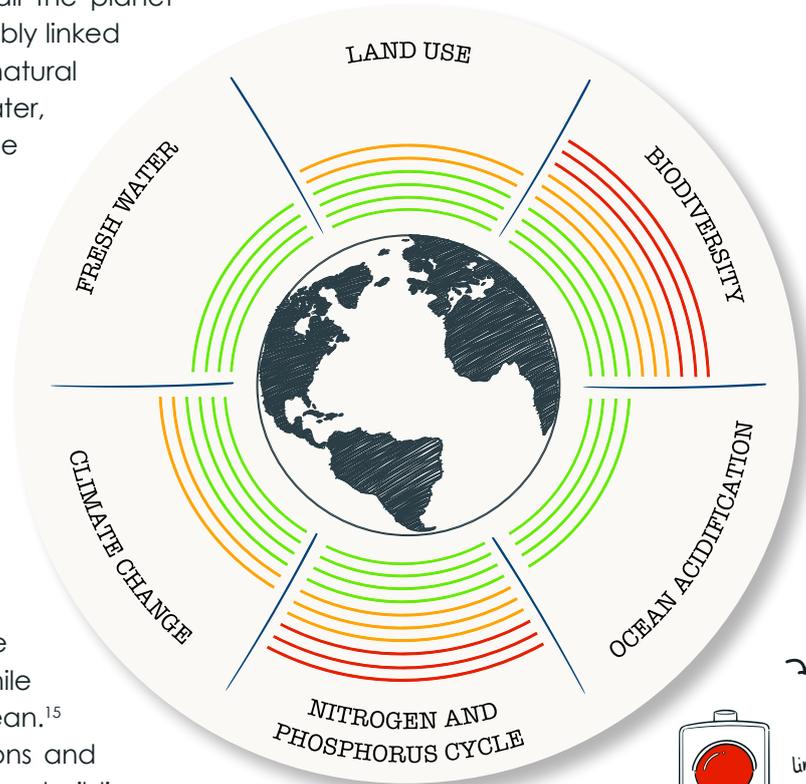


# Biodiversity

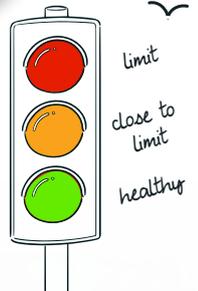
70% of oxygen in the atmosphere comes from marine plants!

Biodiversity is a fundamental pillar of a healthy agrifood system. The health of our planet, and all the planet systems on which we depend, is inextricably linked to the balance of biodiversity in the natural world. Healthy ecosystems clean our water, purify our air, maintain our soil, regulate the climate, recycle nutrients and provide us with food. Biodiversity is indispensable to food security and makes production systems and livelihoods more resilient to shocks and stresses.

The strength of our agrifood system is dependent on the diversity of ecosystems on land, in the soil and in the deepest reaches of the ocean. While trees are well known as the "lungs of the earth", they contribute only 30% of the oxygen in Earth's atmosphere. Microscopic marine plants produce the remaining 70% of the planet's oxygen while also regulating the acidity of the ocean.<sup>15</sup> Plastic pollution, greenhouse gas emissions and nutrient runoff are threatening these tiny building blocks of the ocean food chain, endangering a delicate cycle on which all life on earth depends.<sup>16</sup>



Planetary boundaries, Stockholm Resilience Centre



## Our Focus

Supporting companies that have **a positive impact on our soils and oceans is a core element of Astanor's mission.** Unlike water and carbon, biodiversity cannot be measured by one single metric. Rather, ecosystem health can be measured through a range of KPIs which, together, can be used to quantify the positive impact of a business on biodiversity. We

choose biodiversity metrics for our companies based on the specific ecosystem services their business protects. We measure impacts with metrics such as land use reduction, tons of wild species spared, reduced use of pesticides and fertilizers, quantity of plastics avoided and reduced eutrophication.





# Case study

## mission

Placing insect-derived protein at the heart of the agrifood system to sustainably address the global growing demand for premium proteins required for human and animal nutrition.

## solution

Ynsect farms insects to make high-quality and sustainable food for aquaculture, pet nutrition and, human nutrition. Their state-of-the-art facilities are attuned to natural ecosystems and powered by artificial intelligence to help meet global demand for premium proteins.

## impact

Nearly 90% of the world's marine fish stocks are now fully exploited, overexploited or depleted.<sup>17</sup> While aquaculture (which represents half of global fish production) does reduce some demand on wild-caught fish, it still depends heavily on ocean populations of small fish to produce fishmeal, the main diet for farmed fish across the world. This further contributes to the cycle of overfishing and bycatch ("accidental" catch that is unused or unmanaged). Insects make up a large portion of the diet of wild fish. By developing a solution to sustainably feed farmed fish at scale, Ynsect's solution is much healthier for farmed fish and is expected to spare more than 65,500 tons of small fishes over the next 3 years.



Health benefits for pets and farmed fish



Spare more than 65,000 tons of small fishes over the next 3 years



Human food, EU approved in 2021

Additional Impact KPIs:



By replacing traditional proteins by insects, Ynsect's solution also leads to significant reduction of water use and GHG emissions avoided.





# Case study

## mission

Replacing short shelf single-use plastic packaging by a sustainable alternative in order to reduce waste, protect marine ecosystems, protect human health and reduce the use of non-renewable resources.

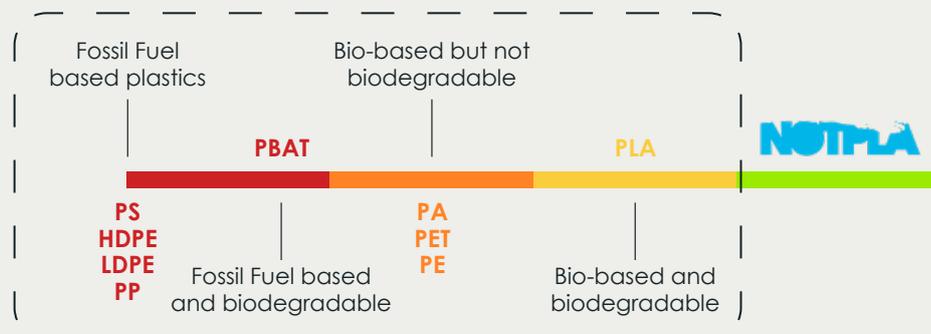
## solution

Notpla has created a seaweed-based packaging material that is sustainable, microplastic-free, biodegradable, renewable, non-contaminant, vegan and safe for consumption.

## impact

Researchers estimate that more than 8.3 billion tons of plastic have been produced since the early 1950s and the industry continues to produce about 300 million tons of plastic each year, nearly equivalent to the weight of the entire human population.<sup>18</sup> While plastics can take from 20 – 500 years to break down, half of the plastic produced annually is destined for single use items. Food products that will be consumed within hours or go bad within weeks are packaged in plastics that will outlive their contents by decades or centuries.<sup>19</sup>

Rivers carry plastic waste from deep inland to the sea. Five to 13 million tons of plastic flow into the ocean each year, leading to entanglement, ingestion and starvation of marine life. Notpla's seaweed-based packaging solutions seek to replace these millions of tons of plastic with highly functional solutions that biodegrade rapidly in nature.



All chemically modified under new directive and therefore PLASTIC!<sup>20</sup>



Single serve plastic sachets  
100% compostable.



Water-soluble film breaks down  
without releasing microplastics  
into waterways.



Seaweed-lined take-out boxes  
targets waste from food delivery.

Additional Impact KPIs:



Notpla's solution to replace plastic is also significantly increases GHG emissions avoided.





*Disruption needed to restore a fairer system for the farmers*

# Social

## Farmers

While the agrifood sector is essential to our health and survival, those who sustain the system are notoriously poorly compensated for their labor. The sector is often defined by **low incomes, low pensions, difficulties to access financing and seasonal work which leads to a high risk of poverty and social exclusion.** In 2018, the majority of farmers in the US had barely positive income with a yearly median farm income for US farm households of \$296.<sup>21</sup> This dire situation is reflected in economies across the globe. Low incomes, increasing debt and decreasing quality of life have contributed to a spike in suicide among farmers, with one suicide every two days in France alone.<sup>22</sup>

Although policies worldwide aim to support the agrifood sector, they often fail to serve those already disadvantaged by the system. While small-scale farmers produce over 30% of food globally (and up to 80% in parts of Africa and Asia), they have faced significant financial and social challenges due to the globalization of the agrifood industry.<sup>23</sup> These farmers, who work on farms smaller than two hectares, struggle to compete with large-scale farmers and are forced by the market to accept prices well

below the fair value of their goods. Programs that seek to rectify this often fail to meet their intended target. For example, 80% of EU agriculture funds reach only the top 20% of farmers.<sup>24</sup> There is an **urgent need to reshape our global food production system to build a fair and inclusive supply chain for all the actors.**

## Consumers

In recent years, we have witnessed a growing necessity and interest from consumers and citizens to reconnect to nature, to get access to local, fresh and seasonal products and **to participate in a transition towards a more sustainable agrifood sector.** This trend is led by higher income and socially aware consumers.

When thinking about consumers, the social and health impact KPIs are actually closely interlinked with poverty and lack of education being two of the root causes of malnutrition.<sup>25</sup> There is a need to further **build a more sustainable and healthier eating mindset**, to spread it across all social classes as well as to make it accessible to everyone.





## Our Focus

We are looking for innovative solutions that will empower farmers to increase their profitability and, in turn, their income. This will provide farmers the means and stability to allow them to lead the transition towards a regenerative agrifood system. **Increased income for farmers enables them to provide the upfront investment needed to develop sustainable agricultural practices.** This investment is quickly profitable, as chemical-free, sustainable approaches to agriculture result 3 to 6 times greater profits for farmers.<sup>26</sup>

**Giving access to better dietary education is an important first step to address the challenge of feeding the people better and more sustainably.** We support solutions that empower consumers to make more informed choices and improve access to fresh, healthy and sustainable food.

Impact creation is measured using a range of metrics from increased remuneration and number of jobs created for the farmers to number of individuals reached or increased awareness among citizens for the consumers.





# Case study

## mission

Connect farmers and consumers with easy-to-use tools that enable citizens to produce, distribute and consume food in a fairer and more sustainable way.

## solution

An e-commerce platform and in-person stores that connect producers and end-consumers. Members order products on the website, producers harvest based on demand and deliver to an assembly "Ruche."

## impact

The current industrial food system is largely dominated by intermediaries, often undervaluing producers' work. **With more than 1,500 Ruches and 10,000 producers, la Ruche is offering a sustainable, scalable alternative to a conventional model.** Their model provides a stark contrast to large grocery outlets, which are based on price pressure on producers, long-distance sourcing, warehousing logistics and provide little traceability of products. La Ruche's business model ensures fair remuneration for small-scale food producers, with farmers experiencing an increase in their margin of 40 to 50% by selling directly to consumers.

La Ruche is also instrumental in reconnecting farmers and consumers. Consumers are reconnecting with the roots of the agrifood system, learning about seasonal produce and sustainable practices and gaining full transparency on the produce they consume.



**LA RUCHE  
QUI DIT OUI!**

*40-50%  
increased remuneration  
for farmers*

Certified



Corporation



Additional Impact KPIs:



By harvesting only what has been pre-ordered by customers, La Ruche's solution reduces food waste and contributes to GHG emissions avoided. Their solution also has a positive impact on human health by providing consumers with fresher produce.





# Case study

## mission

MiiMOSA's ambition is to enable everyone - farmers, citizens and corporations - to participate in a sustainable agricultural, energy and food transition, which respects the environment while being economically viable.

## solution

MiiMOSA is an impact funding marketplace, focused on financing the transition towards a sustainable agrifood sector. The platform strengthens the social fabric of rural communities while providing easy access to credit for an often-forgotten population.

## impact

Due to an increasingly restrictive regulatory environment, banks no longer meet the needs of agrifood financing, the demand for which has more than doubled over the past ten years. This financing gap is crucial for current farmers and a barrier to entry for future farmers. The French company addresses a pressing issue in its home country, as the French farming system is about to experience its biggest inter-generational transition in 100 years, with half of farmers expected to retire in the next 10 years.

By connecting donors and lenders with farmers in search of financing, MiiMOSA helps promote a nourishing food system which cherishes nature, promotes fair value chains and strengthens communities. Project bearers and donors are fully aligned with MiiMOSA sustainable values.

- 95% of agricultural project bearers having an agro-ecological approach,
- 93% of contributors feel they are participating in solving major challenges of the 21st century and
- Foster gender diversity with 49% of the project bearers being women while nationally only 30% of farmers are women.

Additional Impact KPIs:



With its focus on agro-ecology, MiiMOSA's platform has a positive impact on biodiversity. We are still in the process to measure how this impact can be scientifically measured.



Target more than 3,700 farming projects in the next 3 years

Certified



Corporation

FAITES  
DU BIEN À  
VOTRE ÉPARGNE  
METTEZ-LA  
AU VERT





# Health

Three billion people – almost half of all humanity – cannot afford a healthy diet<sup>26</sup>

The food system faces a **double burden of malnutrition**. In 2019, 26% of the global population experienced hunger or did not have regular access to nutritious and sufficient food, while 23% was overweight or obese. The volume of food produced globally is sufficient to feed everyone on the planet, but nutrition and distribution challenges continuously exacerbate global health crises.<sup>28</sup>

Addressing the food challenge is not only about providing universal access to food but also about ensuring that the right food is available at affordable prices globally. Healthy food must become more available and more affordable. A study estimated that around 35 million years of life were lost in 2019 due to metabolic risks, largely due to a combination

of eating too much, eating the wrong food and not exercising enough.<sup>29</sup> There is mounting scientific evidence that a healthy diet has a positive effect on mental and physical health. This, in turn, is leading consumers to search for a diet that will actively nourish their microbiome.

In areas where access to food is not the most pressing issue, there are rising concerns about the health impacts of food choices. Consumers' trust in food production has been undermined by food-borne pathogens, questions about the health of pesticides and widespread apprehension about genetically modified food. This has led to a strong demand for full supply chain transparency and traceability to increase food safety and quality.

## Our Focus

Health improvement is a difficult KPI to measure. Surveys are often used to assess the impact of a product or treatment on consumers, however, surveys that cover the innovative solutions in our scope of investment rarely reach the critical mass required for accurate data collection.

We assess the impact creation based on the direct impact of the products in which we invest: **number of healthy products being sold, number of consumers benefiting from a healthier diet. This allows us to quantify the positive impact by measuring the volume of people reached by a solution.**





# Case study



## mission

What we put into our body directly impacts our health and productivity, but it can be very challenging during the workday to make the right food choice. Garten's mission is to provide access to healthy food while also building good habits employees can take home from work.

## solution

Garten is redefining the enterprise food services sector by bringing wellness to the workplace and educating the workforce to move away from the current mass consumption, quantity-over-quality offer into a next-generation individualized offer.

## impact

Inadequate consumption of nutritious food during the workday has been tied to difficulty concentrating and making decisions, fatigue, sickness, low morale and greater risk of workplace accidents. Employers need to provide easy access to nutritious and healthy food both at the office and at home.

Garten brings high-quality food and a holistic approach to overall wellbeing with its nutritious snacks and meals (that reach employees in-office and at home), personalized food choices and wellbeing in-office and virtual events. Garten's disruptive offer is precisely attuned to customers' demands. Their solution provides full transparency on data (e.g. exact consumption of products per working area as well as per employees for some companies), giving companies the possibility to link food, diet and health at the workplace, an increasingly important topic for HR managers and CEOs alike.

### Additional Impact KPIs:



Garten's sustainable and short supply chain leads to GHG emissions avoided.





# Case study

## mission

Hyris's mission is to create a worldwide lab in everyone's hand. The company's primary focus was fast-track, off-site testing for food adulteration & pathogens, but now offers a versatile tech-platform for wide range of testing including Covid-19.

## solution

Hyris has developed an integrated platform for DNA testing. Its portable proprietary technology can perform PCR (Polymerase Chain Reaction) tests in any setting, at any time, with real time access to results and full control over the process.

## impact

Although food transparency and traceability remain core to Hyris's business model, the market environment led the team to focus on a more pressing issue in 2020. As RT-PCR testing became widely recognized by the World Health Organization and other public health institutions as the most accurate test to diagnose COVID-19, Hyris pivoted their business model to bring their fast-track tests to everyone including isolated populations across the world. Since January 2021, Hyris has run more than 130,000 COVID-19 tests on humans.

Access to accurate testing has been a key indicator of vulnerability to COVID-19 outbreaks, and Hyris's unique, mobile PCR testing system enabled unserved, remote communities to gain access to testing. The Hyris system was used in remote Canadian mining sites to screen workers and prevent outbreaks of COVID-19. The Hyris system also reduces the environmental impact of testing as it reduces carbon emissions produced in transferring and transporting samples to central laboratories. While these social and environmental impacts of the Hyris are known, they are not tracked as an impact KPI due to a lack of access to accurate data collection methods.

130,000 covid tests in 5 months

Democratizing and easing the access to DNA diagnostics



Enablers play a critical role in strengthening climate resilience

# Climate Tech Data

Data collection enables the achievement of impact at scale by providing the tools to assess a baseline, make better-informed decisions and quantify the benefits of impact investments. As illustrated through the first five impact KPIs, high quality data collection is critical to accurate impact measurement.

International institutions have set ambitious global targets for 2030 and 2050. Accurate, user-friendly data is required to establish a baseline, determine the efficacy of proposed solutions and track progress on a global scale. Without timely, quality, open and disaggregated data

we cannot effectively build the right solutions or understand achievement of these goals.

It is estimated that climate change could lead to an 18% reduction in global GDP by 2050 if global temperatures rise by 3.2°C. If the Paris Agreement targets are met, this estimate is reduced to only 4%.<sup>30</sup> While the first five impact KPIs aim to tackle climate change, the sixth impact KPI enables us to adapt to and mitigate the consequences of climate change. High quality climate tech data is needed to make climate intelligent decisions and limit the economic losses caused by natural disasters.

## Our Focus

Astanor backs innovative solutions that collect, analyze and share data to support a more sustainable and resilient food system. These enablers facilitate the climate resilience of every actor in the agrifood system, from farmers

to policy makers to mission-driven agrifood tech companies and beyond. By investing in these solutions, we are moving the system from climate tech data to climate intelligence.





# Case study



## mission

Planning for climate security has been nebulous and inexact while traditional forecasting has been unstandardized and expensive, so no one has a clear picture of the climate risks and opportunities their organization faces. Cervest aims to empower everyone to adapt with climate change and build a resilient future for our planet.



## solution

Cervest offers cloud-based climate intelligence to empower enterprises, governments, and financial services companies to manage and adapt to climate risk at an asset-level. By creating a unified picture of the challenges we face and the actions we can take, organizations can make climate intelligent decisions that help them manage risks and embrace opportunities.



## impact

Cervest's Earth Science AI(TM) creates a unified picture that helps organizations adapt. To build a resilient future for our planet, Cervest opens that picture up so we can all see our shared interests. Their technology fuses machine learning, cutting edge statistical and physical science with scalable computation to generate automated asset-level climate intelligence in their first product offering - EarthScan. Based on 130 years of data, 50 years historically and 80 years into the future, it provides the means for organizations to quantify the impacts of climate change and physical risks, such as floods and droughts. This builds a network of change to move towards a climate intelligent world.

*Cervest integrates more than 100 climate, scientific, satellite and biophysical datasets with proprietary client databases and reached 500m of physical assets queryable on Earthscan.*



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