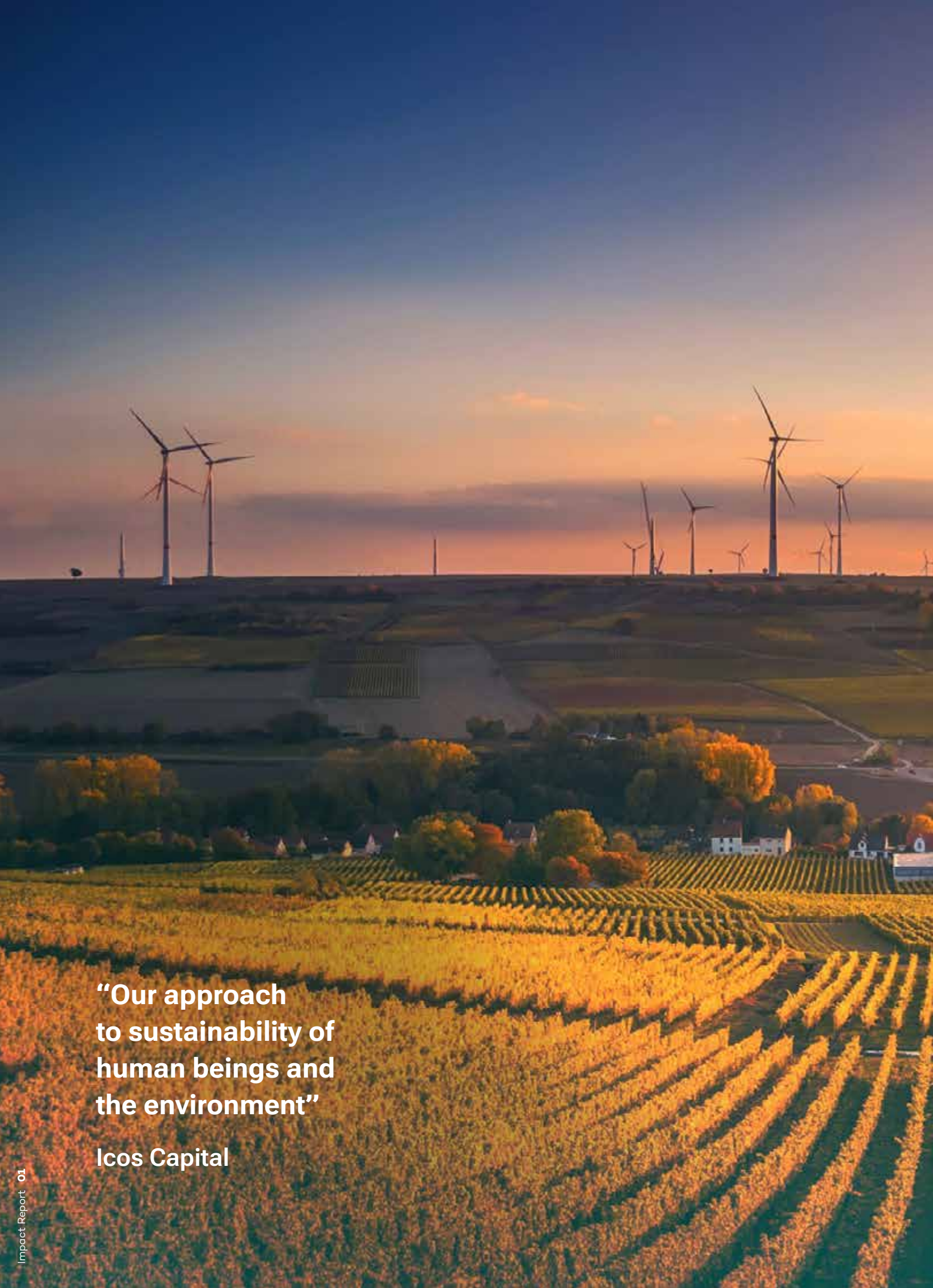
ICOS CAPITAL

IMPACT REPORT 2022



“Our approach to sustainability of human beings and the environment”

Icos Capital

CONTENT

A Note from Management

At Icos, we invest in next-level innovations to accelerate sustainability. Accelerating sustainability is about building successful technology innovations that bring positive change to the environment and human beings, reduce carbon intensity, improve bio diversity and increase circularity in concrete and substantial way.

Recent IPCC reports highlight even further that dramatic and immediate action is needed. Polluting processes and industries are being rethought but scale is needed to really move the needle. Large scale emissions impact has been a considerable focus for us, not only in 2022 but also as we lay the groundwork for our future focus. We believe that in scaling technology, ambitious growth should come with ambitious emissions avoidance and/or removal.

ICF III has also signed up to SFDR Article 8, thus becoming substantially focused on climate tech investments and adhering to requirements of EU backed Sustainability Finance Directive Regulations. As a firm committed to sustainability since 2006, we see SFDR is an important step in the right direction.

From a political and economic perspective, the year 2022 turned out to be the year when war returned to Europe, and inflation signalled the possible contraction of the global economy in years to come.

Since 2006, Icos is committed to sustainability of human beings & the environment by investing in game changing startups that can accelerate sustainability.

Thankfully, the global commitment to climate change has not diminished, with *$41 B invested in 2,023 deals in 2022, albeit it is lower than 2021, with $48 B in 2,043 deals. Another noticeable change is the closing down of the exit window, with 88 deals valued at $11 B (2022) versus 108 deals valued at $97 B (2021)*[1]. This change implies that the investment opportunity is more lucrative now than the exit opportunity in the venture capital market.
This situation also requires stricter financial management within portfolio companies as fund raising will be difficult and with fewer exit opportunities. It is time for Icos Capital to focus on maximization of value creation with limited means. One of the ways to realise success is through partnerships, collaboration with larger corporations with infrastructure and interest with innovative start-ups through the Icos collaborative platform.

The year 2022 also showed us how our partners and wider ecosystem are increasing focus on sustainable and circular solutions. It's a delight to share the same goals and together, share some of the financial, social and environmental successes, alongside future ambitions in the 2022 Impact Report. Our sustainability impact is outlined for all of our portfolio companies including ICF I and II seed funds. The methodologies shared here are our mutual best effort to understand CO2e impact of the portfolio companies. We invite your feedback to make these methodologies better. We look forward to our ongoing dialogue on sustainability and climate change further with this report.

Nityen Lal
Founder, Partner

Peter van Gelderen
Founder, Partner

[1] *footnote: Pitchbook.com*

SUSTAINABILITY REPORT APPROACH

How we define impact and sustainability

In 2022, Icos transitioned the growth fund, ICF III, into an SFDR Article 8 fund. To a large extent, the fund was already acting in accordance with Article 8, being a sustainably focused fund. However, Article 8 required further examination into clauses of "Do No Significant Harm" where follow-on impact is defined, measured and minimised.

In preparation for a new fund (ICF IV), we dived into our impact potential and settled on achieving an Article 9 fund for the next fund. This is the highest sustainability ranking and comes with more rigorous methodology and reporting requirements. We believe truly sustainable funds are achievable and this ambition is necessary on the path to Net Zero. Within this, the Icos focus remains largely on CO2e impact, either through emissions avoidance or removal, and circular solutions.

The ambitions for Icos are beyond methodology though, as we expanded our tangible CO2e targets. We assessed carbon reduction in the fund and examined projected CO2e potential at scale for €100 M revenue companies.

How we define impact and sustainability

The sustainability challenge is defined by Icos in many ways. We have held a strong focus on solutions that help transition to a low-carbon and circular economic models without losing sight on fund returns.

Considering these sustainability wins also benefit oceans, decarbonisation and low-carbon solutions are imperative, but they are also only one aspect of our larger societal challenges. Our analysis of impact includes two main parts. Firstly, we identify key impact areas for each portfolio companies. These are often sustainability metrics that are determinant on the companies success, while simultaneously addressing one or more of the EU SFDR Taxonomy objectives. Within these objectives, Icos has identified three areas of high interest: climate change mitigation, circular economy and biodiversity.

For example, tonnes carbon captured by a carbon technology company, has direct impact on revenue and growth. The second part of our analysis looks closer at the notion of "do no significant harm" or Principle Adverse Impact (PAI) and addresses adverse impact on a range of Environmental, Social and Governance targets including gender pay gaps, board composition, waste, water treatment and more.

Impact Area:

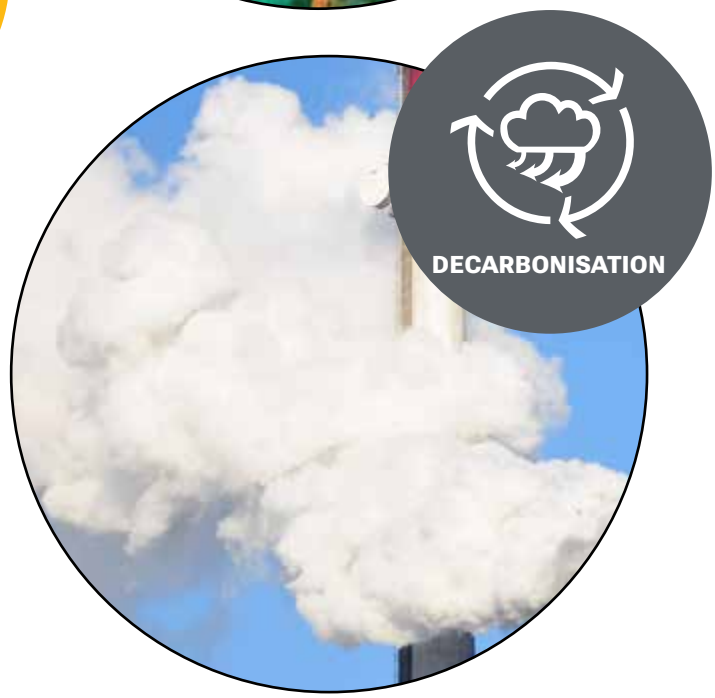
Climate Change

Circular Economy

Biodiversity

CLIMATE TECH AREAS

Climate tech includes many sectors but our focus is more specifically on 4 industry segments that are also responsible for 30% of global emissions



ALTERNATIVE PROTEINS
to replace animal & fish based proteins from land or ocean based plants, sidestreams

AG-BIOTECH
biofertilizers, bio-based fertilizers, pesticides based on land or ocean based plants, sidestreams

FOOD INGREDIENTS
sugar alternatives, fatty acids, colourants from land or ocean based plants, sidestreams

LIVESTOCK FARMING
Climate friendly land and ocean based plants, sidestreams as feed supplements

BIO-CHEMICALS
for fossil fuelreplacement based on land and ocean based plants, sidestreams

IMPROVED FUNCTIONALITY
of existing chemicals including (water) treatment solutions

CIRCULAR MATERIALS
including recycling of (micro) plastic, textile, batteries

INDUSTRY ENERGY SOLUTIONS
in batteries, carbon capture, recycling, mitigate ocean, water problems e.g; algae, micro plastics

INDUSTRY DIGITIZATION
Industry digitization for energy transition with IoT, satellites, precision agriculture & oceanography

BUSINESS INTELLIGENCE
On big data and AI to develop new solutions to mitigate climate change on land and oceans

VALUE CHAIN
transparency & optimization to reduce carbon footprint of scope 3 emissions in land and ocean environment

ADVANCED MANUFACTURING
Advanced production methods incl. 3D manufacturing, process solutions to reduce CO2, increase efficient in industry incl. marine

CARBON CAPTURE
from (direct) atmosphere, ([point) industry also to reduce ocean acidification

CARBON UTILIZATION
to bioplastic to avoid ocean pollution, biofuels for green shipping

CARBON SQUESTRATION
Improvement of carbon storage including carbon farming in land & ocean

CARBON IT
financial solutions, GHG emission monitoring of land & marine ecosystems

INNOVOPRO

NutriLeads
Ingredients for health

NAPIFERYN BIOTECH®

bioactor

FUL

NO Palm Ingredients

WHOLE FIBER

holiferm

PHOTANOL

NO Palm Ingredients

ReliaSol
The Art of Prediction

INVERT ROBOTICS

GAMAYA

squirro

PEF

RAINMAKER

GAMAYA

carbon clean

CarbonOrO

PHOTANOL

Deep Dive

FOOD SYSTEMS

Icos Target Areas:

Alternative proteins

Health-promoting food and food ingredients

Particular interest in:

Ingredients improving gut health

Ingredients improving immunity

Sugar alternatives

Fat alternatives

Ag Biotech

Precision agriculture

Global food systems contribute to roughly one quarter of all GHG emissions. Food systems are the sum of the actors and interactions along the value chain – from raw material and the production of crops, livestock, fish and other agricultural commodities to the transportation, processing, wholesaling, retailing, preparation and consumption of foods to disposal.

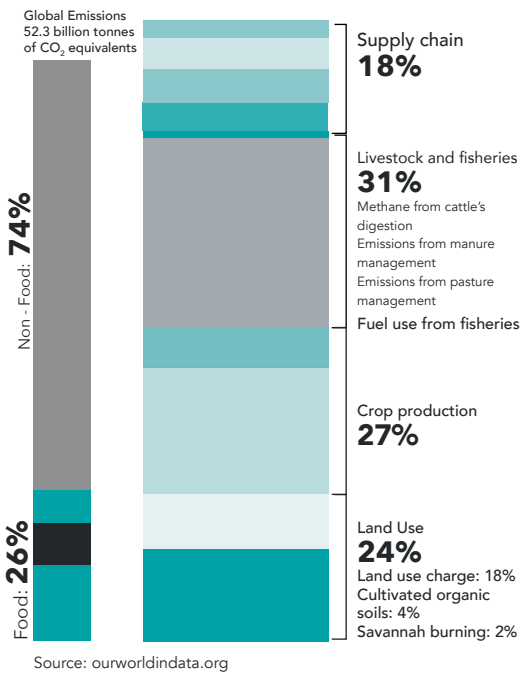
Sustainable food systems should be able to deliver affordable, nutritious, environmentally sustainable food. Currently, half of the world's habitable land (ice and desert-free) and 70% of global freshwater is used for agriculture*. This is even more difficult to comprehend when we consider that a doubling of food production may be needed by 2050 to cater for increased population and growing wealth.

Within food systems, innovations have significant potential to scale. We look forward to furthering the potential of technology within some high potential areas of food systems. Firstly alternative proteins where fermentation is of particular interest. Secondly health promoting food ingredients such sugar and fat alternatives and those that improve immunity and gut health.

Alongside that ag biotech including seed breeding and biofertilisers are of interest. We have a particular interest in soil monitoring, irrigation systems and ag-robotics.

Global Greenhouse

gas emissions from food production



Source: ourworldindata.org

Portfolio Companies active in Food Systems:

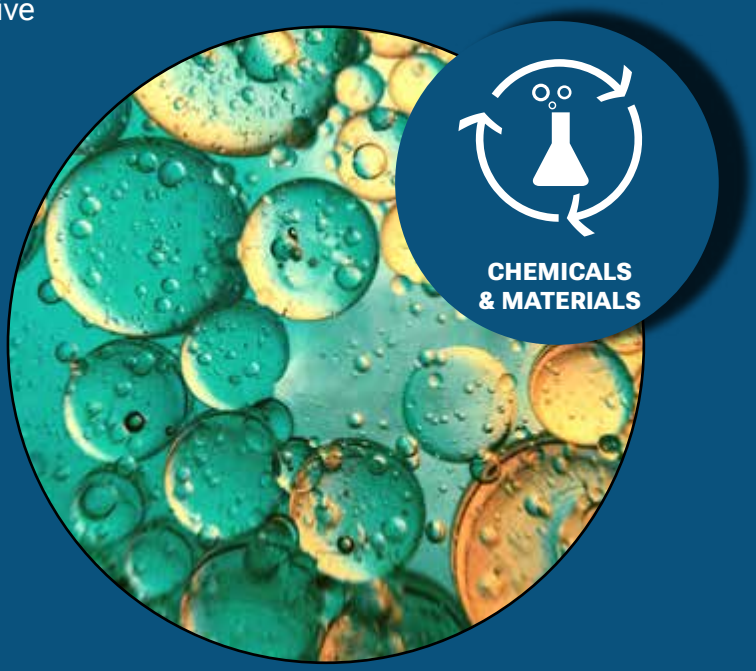
INNOVOPRO · NAPIFERYN BIOTECH® · NO Palm Ingredients · NutriLeads Ingredients for health · GAMAYA · WHOLE FIBER · FUL · bioactor

SDG: Sustainable Developmental Goals

Footnotes:

1 https://economictimes.indiatimes.com
2 https://architecture2030.org
3 https://ourworldindata.org
4 https://data.giss.nasa.gov/gistemp

Deep Dive



Icos Target Areas:

Bio-chemicals

Improved functionality

Circular materials

Industry energy solutions

The Chemical & materials industry uses 10% of global supply of fossil fuels. This industry being pressured by new regulations focused on safety, climate change and consumer interest to reinvent itself. Following market needs, significant investments are required for:
(i) the replacement of non-renewable and non-recyclable feedstock with biobased counterparts,
(ii) the shift towards sustainable energy resources for production needs,
(iii) the development of recycling technologies which allows for reducing the environmental footprint of goods produced.

Following the consumers' demand, the replacement of fossil based feedstock, for example in home and personal care products, with ingredients that come from sustainable resources such as biomass, became of high importance to FMCG producers.

Hence, the use of fossil resources, crude oil in particular, has been already reduced in some industries.

The Fund follows current trends across different segments of the Sustainable Chemical and & Material sector to reduce carbon footprint along the whole production value chain and the product life cycle.

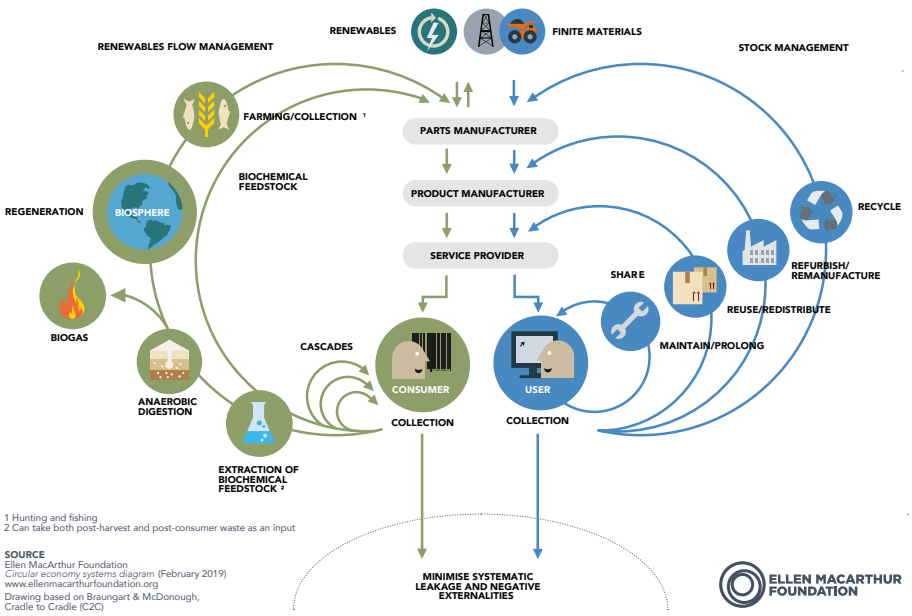
Portfolio Companies active in Chemicals & Materials:

holiferm

NO Palm Ingredients

PHOTANOL

SDG: Sustainable Developmental Goals



Footnotes:

1. 5 challenges to scaling the circular economy | Greenbiz
2. www.circular.academy
3. Plastic Waste: Environmental Effects of Plastic Pollution | Earth Eclipse

Deep Dive

Icos Target Areas:

Industry digitization

Business intelligence

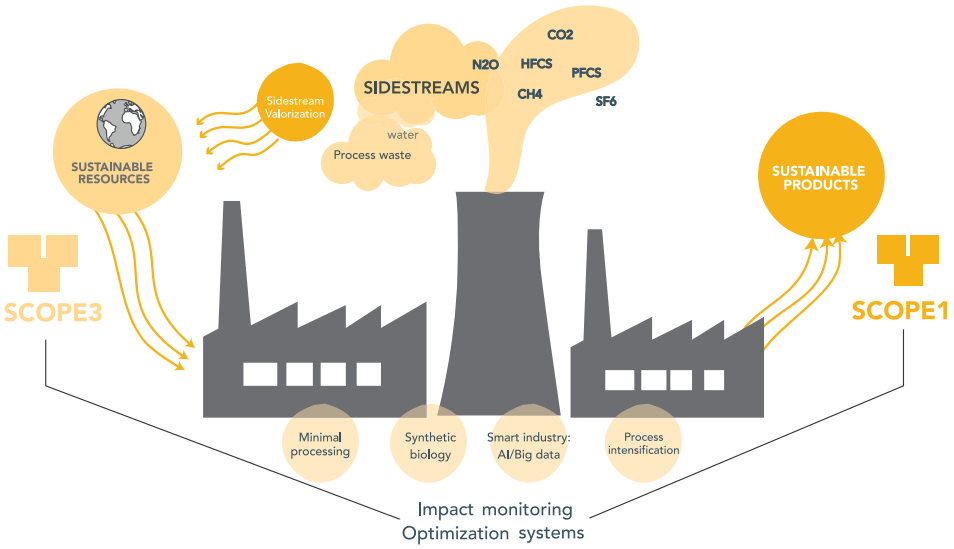
Value chain

Advanced manufacturing

Sustainable industry presents the ongoing revolution in manufacturing through increasing interconnectivity and smart automation.
Integration of new technologies such as the Internet of Things (IoT), cloud computing, analytics, Artificial Intelligence (AI), and machine learning, strongly revolutionize industrial production facilities and their operations.

Rapid changes are currently happening across the entire organization, including processes in product development, manufacturing, structuring,and service, containing internal operations from suppliers to customers, and key value chain partners.

These technologies can be used to:
(i) optimize industrial production processes,
including smart energy consumption,
(ii) minimalize waste production, and
(iii) conserve natural resources.



Portfolio Companies active in Sustainable Industry:

ReliaSol The Art of Prediction

GAMAYA

squirro

INVERT ROBOTICS

PEF

RAINMAKER

SDG: Sustainable Developmental Goals

Footnotes:
[1]Renewable chemicals building the biobased economy - Bio Based Press
[2] Digitalisation of industry | BusinessEurope

Deep Dive

DECARBONISATION

Icos Target Areas:

Carbon capture & sequestration

Carbon utilization

Carbon accounting

The extended carbon dioxide (CO_2) emissions from energy use in transportation, electricity and industry (73.2%) greatly contributes to global climate change [1]. The carbon-neutral strategy is then the first important step on the net-zero path, which aims to limit the rise in global temperatures below 1.5°C, by removing CO_2 from the atmosphere. Technological solutions in the current market are now able tackle this problem from different angles [2].

Carbon dioxide can be pulled out directly from the air (direct air capture) or production site (point-source capture) applying carbon capture technologies. Carbon capture might be followed by carbon utilization technologies, where CO_2 is used as a feedstock for building materials (e.g., concrete), chemicals (e.g., fuels, monomers), and proteins. Captured carbon dioxide can be permanently stored to contain carbon underground, through soil sequestration or ocean minerals following carbon sequestration solutions. At the same time, carbon management can be supported by carbon accounting technologies providing software solutions designed to streamline, digitize, and automate carbon accounting processes.

Following current trends in the decarbonisation sector, the ICF III fund targets solutions that allows unblocking implementation of above mentioned carbon technologies on the industrial scale. Implementation which might be blocked due to high investment, long time horizons, greater permanence risk, and complexity [3].

Portfolio Companies active in Decarbonization:

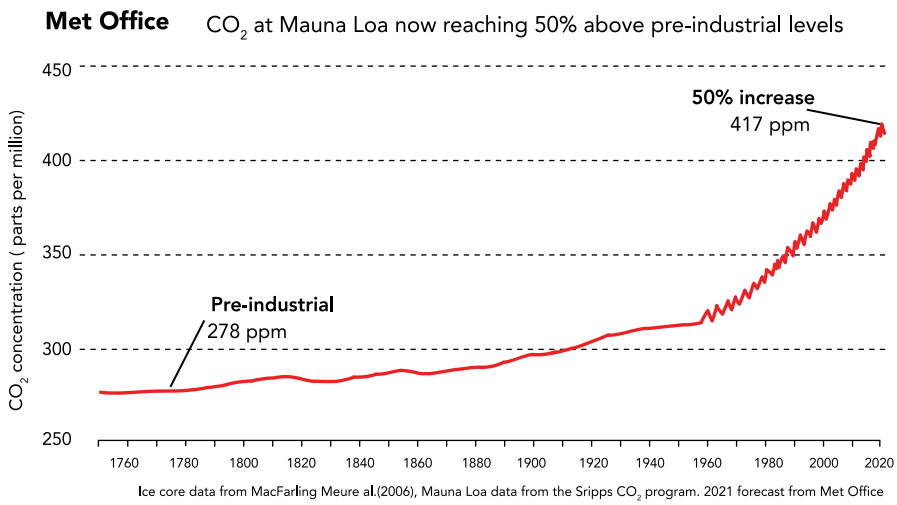
carbon clean

PHOTANOL

GAMAYA

CarbonOrO

SDG: Sustainable Developmental Goals



Footnotes:

1.Sector by sector: where do global greenhouse gas emissions come from? - Our World in Data

2. The Paris Agreement | UNFCCC

3.Net-zero carbon versus carbon neutral – what is your ambition? | ICF

ICF III IMPACT RECAP

DIVERSITY

36%
Average women in management teams

54%
Companies led by by women, minority

At Icos we believe that increasing diversity in business means more thoughtful solutions, higher productivity and a stronger change of success for scaling companies. That's something research has proven too. In a study by McKinsey, gender and ethnic diverse teams outperform teams with fewer women and ethnic-diversity by nearly 30%.

The challenges proposed to us as humanity at this time are not simple. We're looking at urgent, complex and multi-faceted problems that won't be solved with simple linear solutions by typical 'white male autocratic' leadership. What's required to overcome these challenges is out of the box thinking, by people and blended teams with experience and creativity beyond what the archetypical founder or leader possesses. That in practice means that Icos needs to be backing people from all genders, races, sexual orientations, abilities and backgrounds. In our current portfolio 42% of companies are led by minority origin founders and Icos team itself is composed of more than 50% women and minority including partners.

For our 2022 report, we looked at not only the usual ESG data required by reporting standards, but extended it even further to discover other areas where diversity should be considered. Instead of just looking at diversity amongst founders and their teams, we looked at their whole management team and their boards. We identified that within our founding teams, while having many great examples of women and people with a migrant background, the % of mixed gender and women led teams was less than that of male founded teams. We also saw that in board positions across our portfolio, that women were well outnumbered by men. For us, it's important to look at sustainability in a holistic perspective and to do that, diverse teams are key. We now have a better insight into which teams might be missing more unique perspectives and look forward to bringing these discussions into our portfolio.

We believe that diversity is a matter of mindset. Women account for only 13%, 10% and 6% of decision-makers in British, US and Dutch VC firms respectively. Icos Capital is one of the few European VC firms with diverse team and this has translated into active promotion of diversity in the team. Now, we're a team of 9 with 5 women. That's something that really has given us an incredible advantage in the venture capital impact space.

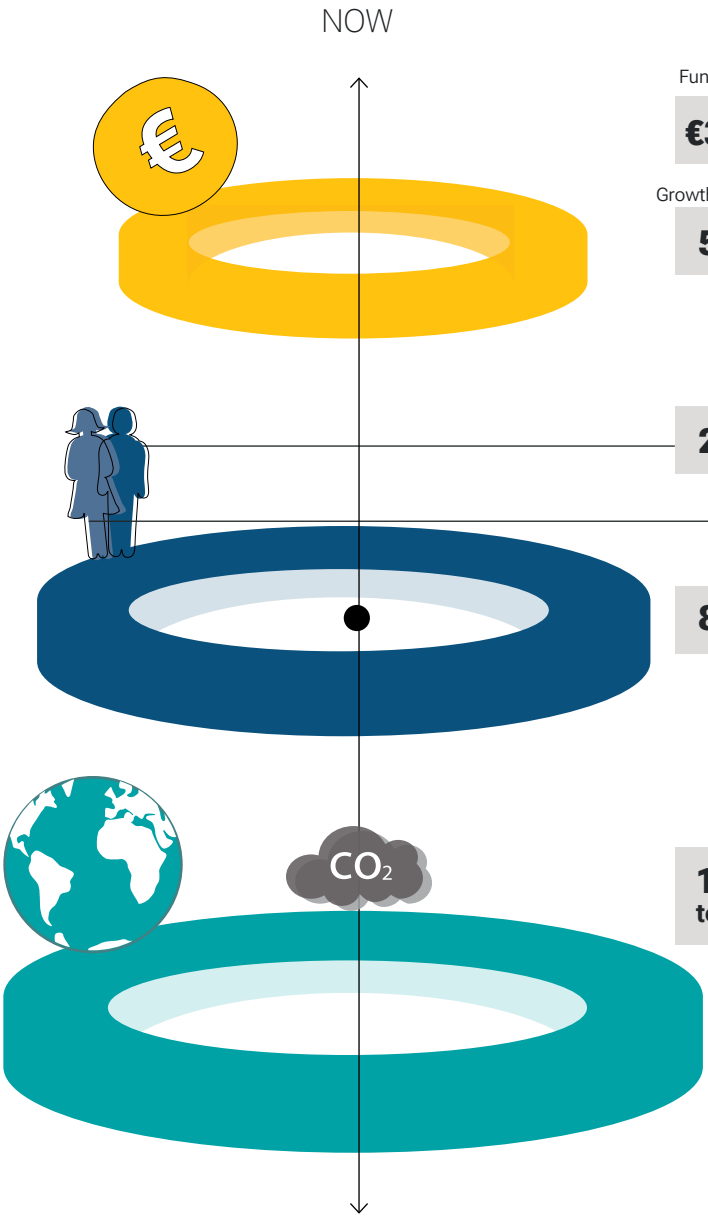
AUM: **approx. €72M**

Partners: **Nityen Lal, Peter Van Gelderen**

Dealflow: **2000 - 4000**

Portfolio managed: **18**

People. Planet. Profit



Profit

Total funds raised by the portfolio: **€315M (approx.)**

Growth stage portfolio (series B or sales €5M+): **50%**

Early stage portfolio: **15%**

Pre-A stage portfolio: **35%**

People

Number of opportunities created: **251**

Women in the startup teams:

87 out of 251 employees

(36% of the total headcount)

Planet

CO_2 impact: **1.71 M tonnes**

Companies utilizing sidestream as feedstock: **5**

Number of planetary boundaries addressed in portfolio: **7**

Number of SDGs addressed in portfolio: **10**

Holiferm produces biodegradable surfactants through fermentation.

Focus Area: Sustainable Chemicals, Circular Economy
Date invested: 2019
Country: United Kingdom

Holiferm, a spin-out from the University of Manchester, develops sustainable and environmentally friendly processes for producing biochemicals, thus eliminating the need for the use of harmful petrochemicals in manufacturing. Based in the North West, Holiferm has a research and development facility in Manchester and commercial plant in Liverpool. Holiferm currently supplies sophorolipids, through its patented fermentation with integrated gravity separation technology, and will introduce rhamnolipids and MELs to the market in 2024.

Impact at a glance

Climate Change

Circular Economy

Impact Area: Climate Change, Circular Economy

Holiferm is producing bio-based alternatives to petrochemical based chemicals. With fermentation technology, this enables two primary benefits. Firstly, a weighted average carbon intensity lower than that of petro alternatives and secondly, limiting the input of such chemicals and novel entities into the environment with a biodegradable product.

Unique Metrics

Kilo Tons of Holiferm biosurfactants capacity (per year)	**1100 tonnes**
Kilotons of sidestream products utilization capacity (per yer)	**1650 tonnes**

Carbon Intensity

Traditional Surfactant
2.5 tonne CO_2 per 1 tonne

Holiferm Biosurfactant
1 tonne CO_2 per 1 tonne

SDG

12: Holiferm is providing a fossil free alternative that is completely biodegradable.

14 & 15: Traditional surfactants can cause bio toxicity in oceans and land environments. With a biodegradable alternative, ocean and land ecosystems are better protected.

13: Holiferm aims to have a low carbon footprint and move towards net zero. The weighted carbon intensity of Holiferms biosurfactants is of key importance and ambitions are to improve even further.

ICF III Growth Investment

InnovoPro sparks a sustainable food revolution with cutting-edge chickpea protein.

Date invested: 2020
Focus Area: Alternative Proteins, Food Systems
Country: Isreal

InnovoPro is a rapidly growing FoodTech company that has developed a unique platform of chickpea protein ingredients for the global food and beverage industry. InnovoPro aims to revolutionise the way people eat across the globe by empowering customers to create delicious, healthy, clean label and sustainable products.

Impact at a glance

Climate
Change

Impact Area: Climate Change

Innovopro is producing alternative proteins with a weighted average carbon intensity lower than animal-based alternatives that it replaces such as meat and milk. In addition, Innovopro products use less land, less water and less harmful chemicals than meat-based alternatives.

Unique Metrics

	Since beginning
Metric tonnes of CP-Pro70 produced	**250 +**
Number of products on market containing CP-Pro70	**70 +**

Carbon Intensity

Example: Plant based milk with 5% CP-Pro compared to dairy milk (Zhao et al., 2018; "ourworldindata.org")

Animal Based
1.12-3.15 kg CO2 per kg

Innovopro
0.4-0.72 kg CO2 per kg

SDG

3: Innovopro products contain no additives or preservatives.

12: Producing a socially and environmentally conscious product.

13: Chickpeas require less land, water and have a lower CO_2 output that animal-based alternatives.

14: Plant based protein is used in fish replacement vegan meals

15: Chickpeas do not require nitrogen fertilizer, protecting the balance of local ecosystems.

NapiFeryn has developed a technology for extraction and isolation of rapeseed proteins.

Focus Area: Alternative Proteins, Food Systems
Date invested: December 2022
Country: Poland

NapiFeryn BioTech is a Polish innovator that developed and patented a unique technology for obtaining rapeseed protein from the side-streams of oil pressing. This is a unique innovation in that NapiFeryrn technology makes it possible to retrieve all protein contained in rapeseed.

Impact at a glance

This investment was made during the calendar year 2022. As such, the full impact methodology has not been included however the following metrics will be explored

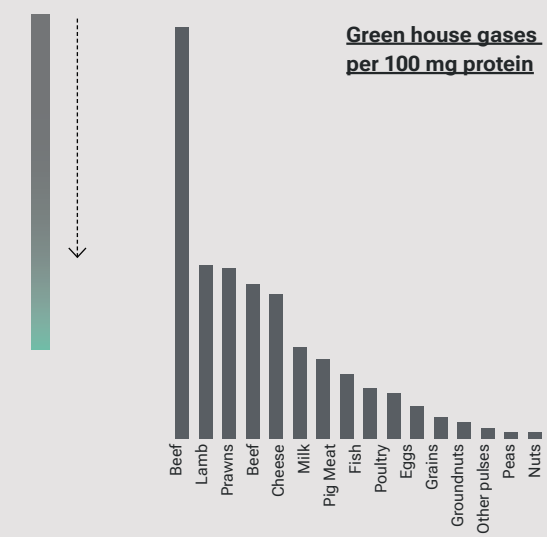
Impact Area: Climate Change, Circular Economy

Climate Change

Circular Economy

NapiFeryn is producing protein from a sidestream after rapeseed oil pressing. This will have a significantly lower impact than animal-based alternatives. By utilising a sidestream as an input for their products, the CO2 impact is further reduced and circular economy benefits are achieved.

Carbon Intensity



Sources: Our world in Data

SDG

3: NapiFeryn products contain no additives or preservatives.

12: Producing a circular and socially & environmentally conscious product.

13: Using a sidestream requires less land, water and have a lower CO_2 output than animal-based alternatives.

14: Plant based protein is used in fish replacement vegan meals

15: Protecting biodiversity, decreasing land use, chemical use and water use to protect life on land and below water.

ICF III Growth Investment

NutriLeads is strengthening human health through the power of plants.

Focus Area: Health-promoting ingredients, food systems
Date invested: 2019
Country: United Kingdom

NutriLeads is a Health Ingredients innovator, harnessing the health-giving power of natural plant compounds to help people strengthen their health through nutrition, addressing top consumer demands. We develop and commercialise natural ingredients with clinically proven health benefits, which we market in partnership with food, beverage, and food (or dietary) supplement companies, incorporating our ingredients into their products.

Impact at a glance

Circular Economy

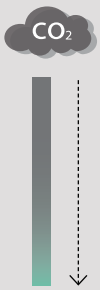
Impact Area: Circularity

NutriLeads produces products that support human health. By utilising the sidestream of carrot pomace, they also support circular economy principles.

Unique Metrics

Number of products on the market containing BeniCaros®	**2**
Percentage of raw materials as sidestream	**6%**

Carbon Intensity



0.4kg CO_2 is produced per 1 kg root vegetables (including carrot)
6% of side-stream utilization reduces emission
6% x 0.4kg x production capacity of NutriLeads

SDG

2: Nutrileads are producing products that support human health. They have been clinically proven to improve immune response.

12: Nutrileads is producing with responsible and sustainable practices and utilising a sidestream, carrot pomace.

ICF III Growth Investment

Gamaya specialises in climate smart solutions for Sugarcane farming.

Focus Area: Carbon capture, Decarbonization, Ag Tech, Food systems
Date invested: 2017
Country: Switzerland

Gamaya develops automated crop intelligence solutions that help sugarcane farmers to implement more sustainable practices and reduce carbon footprint from sugarcane farming. For value chain players Gamaya tools help to ensure sustainability of supply chain, automatically measure and report carbon footprint related to sugarcane farming as well as tool set to implement and deliver corporate decarbonizatoin targets.

Impact at a glance

Climate Change

Impact Area: Climate

Gamaya has all capabilities, data, and footprint to develop a solution to monitor regenerative practices (no-till, cover crops, crop rotation, etc.) on a large scale in Brazil for sugarcane and soybean crops as a starting point. Sugarcane given it`s ability for Carbon Sequestration could account for 25% of the market. The CO_2 captured by sugarcane is equal to 107 tons/ha/year, whereas up to 7 tons could be sequestered in the soil with regenerative practices application. Currently, Gamaya cover 17 mills as customers i.e., 1m ha (10% of the sugarcane market) that can be translate to 35% of voluntary carbon market credits.

Unique Metrics

Area under monitoring [ha]	**800,000**
Number of mills	**17**

Carbon Intensity

26M hectares of sugarcane farms have the capacity to sequester carbon up to 182 M tonnes of carbon (total potential). Gamaya is focused on Brazil initially where 10 m hectares and consequently 70 M tonnes of CO_2 sequestration can be potentially mobilized in by Gamaya

SDG

2: Gamaya improves the efficiency and sustainability of crop production, therefore contributing to increase in yield.

13: Gamaya develops its solution for the purpose of carbon accounting. This will allow farmers to better estimate how much CO2 their farms are absorbing and to which extent they contribute to mitigating climate changes.

ICF III Growth Investment

ReliaSol provides AI-based solutions for predictive and prescriptive maintenance.

Focus Area: Business intelligence, Sustainable industry
Date invested: 2019
Country: Poland

Industry is looking for new solutions to reduce its environmental impact. Predictive and prescriptive maintenance solutions help companies to take better care of their assets and extend their lifetime. It results in less frequent need for parts replacement and decreases waste coming from these activities. ReliaSol reduces failures by 80% and increases production profitability by 25%.

Impact at a glance

Climate Change

Impact Area: Climate

ReliaSol's technology is beneficial for a range of industries, including energy companies. For energy companies, installation downtime and recommissioning can cause excessive CO and CO_2 emissions. The ReliaSol predictive model allows for preventing installation downtime avoiding up to 69% of carbon dioxide emissions that are related to its recommissioning.

Unique Metrics

Amount of CO_2 avoided by emission of 1m3 of flue gases generated by an industrial facility	**0.14 tonne**
Amount of CO_2 reduction per one client facility	**35 - 500 tons**
The total amount of CO/CO_2 reduction per year (currently approx. 10 clients)	**3500-4000 tons**

Carbon Intensity

CO_2 impact estimated at 10,000 tons

SDG

9. Reliability Solutions uses already existing data for automated thus, fast, and low cost implementation of data-driven, extremely accurate analytical models dedicated for predictive maintenance of industrial machinery. Its clients benefit in the form of failures and downtime minimization and increased profits from production.

12. Reliabiity solutions helps its clients to use assets effectively and minimize the risk of making wrong maintenance decisions. They help to minimize the losses coming from interrupted production, costs of corrective repairs and downtime failures and penalties connected with them.

14. Use of predictive maintenance to reduce downtime and improve efficiency in marine, oil & gas equipment

squirro

“The Insight Engine applying AI-driven Cognitive Search to unstructured data for new opportunities, next-best-actions, & 360° client cockpits.”

Focus Area: Business intelligence, sustainable industry
Date invested: 2019
Country: Switzerland

Squirro is a leading provider of Augmented Intelligence solutions for search, analysis, and interpretation of unstructured information. Squirro is an ISO 27001 certified company. Thanks to its unique technology, marrying AI, Machine Learning, and Predictive Analytics, Squirro’s solutions deliver measurable results for its customers in the form of revenue and efficiency gains, reduced risks and cost, as well as faster time to market.

Impact at a glance

Climate Change

Circular Economy

Biodiversity

Impact Area: Climate, Biodiversity, Circularity

Squirro is a leading provider of Augmented Intelligence solutions for search, analysis, and interpretation of unstructured information. Squirro is an ISO 27001 certified company. Thanks to its unique technology, marrying AI, Machine Learning, and Predictive Analytics, Squirro’s solutions deliver measurable results for its customers in the form of revenue and efficiency gains, reduced risks and cost, as well as faster time to market.

Carbon Intensity

CO_2

The company is focused on achieving net zero emission by use of net zero data centers and other similar solutions. Their products can be used to improve insight in climate change problems and planning activities.

SDG

8. Squirro improves efficiency of workers, in many cases reducing employee overtime and stress connected with that.

9. Squirro technology increase usage of existing resources and organizational growth through smart use of big data

14. Use of technology in various marine and water infrastructure projects to improve planning

16. Squirro technology is used by national banks such as Bank of England and European Central Bank to increase risk management and prevent fraud.

ICF III Growth Investment

Providing safer industrial inspections to maximise asset integrity and make working conditions safer.

Focus Area: Advanced manufacturing, Sustainable industry
Date invested: 2019
Country: Ireland
Invert Robotics provides climbing robots to perform maintenance inspections of industrial equipment. The robots make inspection work faster, safer and more accurate than traditional inspection methods. Not only do Invert Robotics offer bespoke inspections, the robots are also available to lease or buy.

Impact at a glance

Climate Change

Circular Economy

Biodiversity

Impact Area: Worker safety, climate, water

Invert Robotics addresses the safety of workers by using robots to replace humans in industrial inspections. This removes the likelihood of dangerous scenarios that could result in injury. In addition, Inverst Robotics minimises the distance its inspectors need to travel from their offices to the client side, lowering Scope 3 emissions connected to travel.

Unique Metrics

2022

Inspections performed:	**300+**
Average travel distance per inspection:	**60 km**

Carbon Intensity

Carbon avoided: 3456 kg

footnote:
Calculated by 60km average distance travelled per inspection with 191g CO2 per km driven of 300 inspections.
https://ourworldindata.org/grapher/carbon-footprint-travel-mode

SDG

3: Good health and well-being. The company addresses the challenge of removing workers from unsafe working spaces.

8: Decent work and economic growth. Enabling safety in industrial inspections minimises risk of injury for workers.

12: less water use to flush equipment and less chemical usage to clean equipment

14: Use of invert robotics to improve uptime of marine and oil & gas equipment

Carbon Clean is a global leader in carbon capture solutions.

Date invested: 2019
Country: United Kingdom
Focus Area: Carbon capture, Decarbonization

Carbon Clean is a global leader in carbon capture solutions for hard-to-abate industries including cement, steel, refineries and energy from waste. The company's patented technology significantly reduces the costs of carbon capture when compared to conventional solutions. The company is an innovation leader in the CCUS market, with 81 active patent assets across 14 patent families covering 32 countries, and has developed a fully modular technology, CycloneCC, that is vital for scaling industrial carbon capture deployment to achieve global net zero targets.

Impact at a glance

Climate Change

Circular Economy

Biodiversity

Impact Area: Climate, Biodiversity, Circularity

CO_2 intensity in the atmosphere is higher than ever in human history and passed the threshold. With point-source carbon capture technology, Carbon Clean has a cost competitive solution to prevent CO_2 from being released into the atmosphere, supporting the net zero transition.

Unique Metrics

M tons of CO_2 capture	**1.7**
Number of carbon capture facilities	**49**

Carbon Intensity

1.7 M tonnes

SDG

12: Enabling net zero production in heavy industry

13: Carbon Cleans technology captures CO_2 at scale, minimizing the release GHGs in the atmosphere

NoPalm Ingredients is brewing sustainable palm alternatives from food waste.

Focus Area: Ingredients, Food Systems
Date invested: 2022
Country: The Netherlands

NoPalm Ingredients is a start-up brewing a better world by upcycling agri-food waste streams into versatile and affordable palm oil alternatives. NoPalm Ingredients developed an efficient fermentation platform that solves two challenges with one solution:
1. cutting down agri-food waste,
2. to produce sustainable, circular, and local alternatives to palm oil, reducing GHG emissions by 90% and land use by 99% compared to palm oil.

Impact at a glance

This company is still in R&D phase and as such, the data available is limited. The full methodology will be explored when the company starts commercial pilots.

Biodiversity

Climate Change

Circular Economy

Impact Area: Climate, Biodiversity, Circularity

NoPalm is a unique impact story in that it addresses problems across climate, biodiversity and circularity. NoPalm's local approach and sidestream utilisation cuts CO2 emissions compared to other plant oils and contributes to the circular economy. In addition, the avoided deforestation has considerable climate and biodiversity impact.

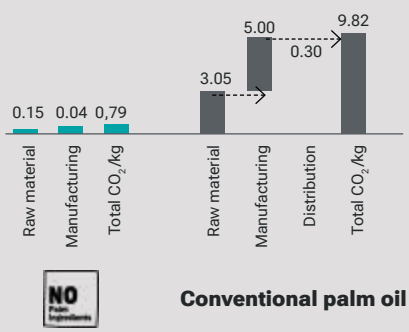
Unique Metrics

2027

Production plant capacity targeted by 2027	**70,000 tonnes**

Carbon Intensity

Emission of about 7.3 kg CO_2 equivalent per kg of palm oil.
NoPam production capacity: 70,000,000 x 7.3kg = 511,000,000 kg = 0.51MT of CO_2 savings



Conventional palm oil

SDG

12: NoPalm are ensuring sustainable production practices with negative impact on biodiversity, climate change and pollution significantly reduced.

13: Using a sidestream requires less land, water and have a lower CO2 output than palm oil.

14: Palm oil production traditionally causes major impact on water including scarcity and pollution of water

15: Traditional alternatives to palm oil and other ingredients require large deforestation to produce monoculture crops. NoPalm prevents further deforestation, protecting land, ecosystems and the biodiverse organisms within them.

Footnote:
NoPam production capacity: 70,000,000 x 7.3kg = 511,000,000 kg = 0.51MT of CO_2 savings

Sources:
Reducing food's environmental impacts through producers and consumers, Science, J. Poore and T. Nemecek*

ICF III Pre-A Investment

Carbon capture solutions for industrial flue gases.

Focus Area: Carbon capture, Decarbonization
Date invested: 2022
Country: The Netherlands
CarbonOrO delivers carbon capture solutions to industrial CO_2 emitters across industries including waste management, energy, oil & gas and the production of glass, chemicals, steel, cement and concrete. In these hard-to-abate sectors, capturing and storing (or using) CO_2 is indispensable to reduce emissions.

Impact at a glance

This investment was made during the calendar year 2022. However, the following metrics have been explored.

Climate Change

Impact Area: Climate

The bi-phasic amine technology of CarbonOrO is key to increasing the percentage of CO_2 capture in high and low temperatures. CarbonOrO captures CO_2 from flue gases, before it has the chance to enter and affect our atmosphere.

Unique Metrics (Demo)

Number of pilot projects	**4**
Carbon Dioxide Captured	**10 kton/yr** of CO_2 per working unit
Energy usage (Gjoule/ tonne of CO_2 captured) of amine technology	**1.4** (40% less than traditional amine based systems used for carbon capture)

Carbon Intensity

10ktons / year CO2 capture per unit

Plan to improved modular design and mimicking 1Mton/yr

40% less energy use in comparison to 1st generation amine-based carbon capture solutions

SDG

12: Enabling net zero production in heavy industry.

13: By capturing CO_2 at the source, limiting GHGs released in the atmosphere.

14: Usage of Carbonoro in marine industry

PEF uses pulsed electric field (PEF) processing as a new, energy efficient food pasteurisation method.

Date invested: 2022
Country: Netherlands
Focus Area: Advanced manufacturing, sustainable industry

Current pasteurisation techniques not only consume a lot of energy but affect important nutritional value during the processing. NanoPEF processing is an energy efficient alternative solution for preservation of liquid foods at lower temperatures compared to conventional pasteurisation without causing changes of taste, colour and nutrients.

Impact at a glance

Climate
Change

Impact Area: Climate Change

By using pulsed electric field technology instead of heat to pasteurise, PEF achieves energy savings and thus a lower footprint.

Unique Metrics

	2022
Energy saving of nanoPEF machine 10 000 l/h comparing to the conventional pasteurizer, kWh/year	**225,450**
Total energy saved by nanoPEF machines that were sold during the period 2023-2030, kWh/year	**7,439,850**
Weighted average carbon intensity per 10,000 l/h compared to pasteurisation by heat	

Carbon Intensity

10ktons / year CO2 capture per unit 1 kWh of electricity
When produced from a coal burning power plant, will generate 0.94kg of CO_2 emissions to the atmosphere according to CNCF

PEF CO_2 emission savings on 7,439,850 kWh x 0.94kg = 6,993,459 kg of CO_2 = 7kT of CO_2

Source: https://carbonpositiveaustralia.org.au/calculate/

SDG

12: Lowering energy consumption and contributing to net zero production in food and beverage industries.

13: Lowering the carbon footprint and avoiding CO_2e emissions.

ICF III Pre-A Investment

FUL offers a sustainable nutrition solution by converting CO_2 into functional nutrition from spirulina, a blue green algae.

Focus Area: Food Ingredients, Food systems
Date invested: 2022
Country: The Netherlands

Featured as a Fast Company "World Changing Idea", FUL is a food tech startup on a mission to scale future-proof nutrition through its microalgae-based F&B brand. FUL has launched a proprietary biorefining technology that recycles CO2 from carbon emissions to produce nutrients.

Impact at a glance

Impact Area: Climate, Circularity

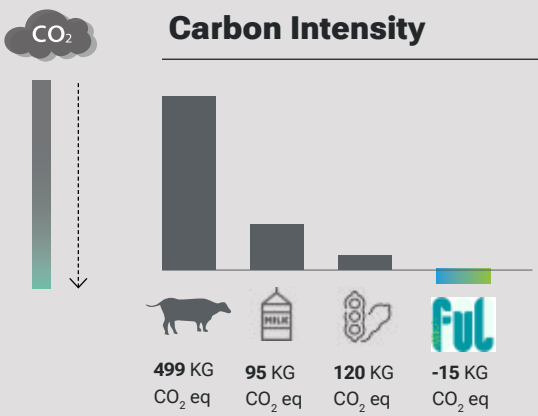
Climate Change

Circular Economy

FUL uses CO_2 as a feedstock for mico-algae production. Industry standard uses bicarbonate or sugars and can't achieve a negative CO_2 balance that FUL can. In addition, the biomass utilisation is more than double industry standard, reducing the quantity discarded. FUL products use less (negative) CO_2, less water, less land, no chemicals and no pesticides.

Unique Metrics	Value	Units	Explainantion
CO_2 feedstock from sidestream (used from beginning)	**3.00**	tonnes CO_2 eq	CO_2 from bioethanol production sidestream
Total CO_2 avoided (if they compare versus competing technology)	**5.81**	tonnes CO_2 eq	Comparing it with nutrients from other plant-based proteins (i.e. soy)
Net CO_2 equation for drink	**29.03**	tonnes CO_2 eq	(Total CO2 produced) - (CO_2 input) - (CO2 avoided)
Net CO_2 equation for ingredient	**-5.5**	tonnes CO_2 eq	(Total CO2 produced) - (CO_2 input) - (CO2 avoided)

Carbon Intensity



CO_2 emissions are our input. not output

SDG

3: Products contain antioxidants, vitamins and minerals such as vitamin C, calcium and iron. They also contain anti-inflammatory properties.
12: Producing a socially and environmentally conscious product that uses less land, raw materials, chemicals and water.
13: FUL produces products with (estimated, LCA in progress) lower carbon intensity compared to alternatives. Carbon balance is actually negative due to CO2 as a feedstock.
14&15: A range of benefits that avoid negative impact on land and under water including less land, no fertilisers and no pesticides.

ICF III Pre-A Investment

"Dried chicory root, naturally rich in prebiotic fiber, for a healthy gut flora."

Focus Area: Health-promoting ingredients, food systems
Date invested: 2020
Country: Netherlands

Whole Fiber contains no less than 85% prebiotic fiber, promoting the growth of good bacteria in the gut. Their product, produced from Dutch chicory root and minimally processed, has a positive effect on the gut microbiome, digestion and overall health.

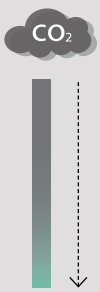
Impact at a glance

Climate
Change

Impact Area: Climate

WholeFiber is producing inulin fiber from chicory with minimal processing which reduces carbon footprint. The whole ingredient here is utilised, minimising potential waste.

Carbon Intensity



Initial estimates show a 30% lower carbon intensity than inulin technology

SDG

2: Prebiotic fiber is a key to a healthy gut microbiome which benefits general health and wellbeing.

12: Wholefiber is producing with responsible and sustainable practices by using the whole product and minimising waste.

Rainmaker is providing communities with fresh drinking water worldwide.

Focus Area: Advanced manufacturing, Sustainable Industry
Invested: 2007
Country: The Netherlands

Today, more than 800 million people live without access to a source of safe drinking water. As the world population continues to grow, millions more suffer from water scarcity. Rainmaker's mission is to produce safe drinking water in places where this is not available.

SDG

Photanol turns CO2 into renewable chemicals.

Focus Area: Carbon Capture, Decarbonisation
Invested: 2011
Country: United Kingdom

Petro-chemicals mean mining more fossil fuel, emitting more carbon. They're also resource, land and time thirsty - the kind of industry that has led to a planet out of balance. The Photanol solution helps reset that balance by optimizing the bacteria to absorb more CO2, adapting its metabolic pathways to produce a desired chemical.

SDG

BioActor has a mission to bring health food ingredients backed up by real science to consumers, help them perform better and improve their health and well-being.

Focus Area: Food Ingredients, Food Systems
Date invested: 2019
Country: The Netherlands
Date Divested: 2022

Founded in 2011, BioActor is an innovation leader in the development and commercialisation of clinically evaluated polyphenols extracted from edible plants and fruits and used by leading food supplement brands worldwide. Thanks to an in-house clinical research team with direct access to a state- of-the-art clinical research facility and a genuine passion for innovation, BioActor's health ingredients are all first-in-class, offering supplement brands the opportunity to develop unique solutions to consumers worldwide. BioActor currently exports to more than 20 countries worldwide, serving leading brands across the nutrition and supplement industries.

Solabia is already present in the nutrition segment through original ingredients recognized for their health benefits. This strategic investment will allow Solabia to benefit from a wider range of ingredients and from BioActor's expertise, strengthening its nutrition division positioning on this fast-growing market, as customers increasingly look for high quality active ingredients that combine naturality with proofs of efficacy.

Icos Capital led the initial series A investment in BioActor B.V. in 2011 and, together with co-investors Brightlands Venture Partners and Nedermaas Ventures (Liof), supported the company on its journey to create value by sourcing health food ingredient innovations from European R&D universities and technology institutes and systematically working on validation, sourcing, processing, scaling up production, marketing and sales of multiple health food ingredients. Today, BioActor has 8 products in the markets globally.

SDG

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Partner

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Operating Partner

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