



Impact report 2019

**NEW
BALANCE
IMPACT
INVESTORS**

2019 at a glance

Solid growth in impact: 2019 vs 2018

-  **CO₂** ▲ CO₂ reduction increased by over 60%¹
-  ▲ Energy savings increased by almost 30%
-  ▲ Reduction in pesticide/chemicals use increased by over 40%²
-  ▲ Water saved increased by almost 800%, largely driven by TRW investment
-  ▲ Waste reduction increased by over 550%²

4 new investments: 3 in 2019, 1 in 2020



Smart platform for indoor farming, saving water and CO₂



Fully bio-degradable technical foam for the horticulture sector



A second life for unsold or returned stocks in the fashion industry



Vegan alternative for egg-whites in the meat substitutes market

1. Includes CO₂ compensation by Vandebroon related to gas usage of customers; 2. Partly driven by 2019 investment in TRW; General: reported impact is based on the input from the companies, which is reviewed but not audited

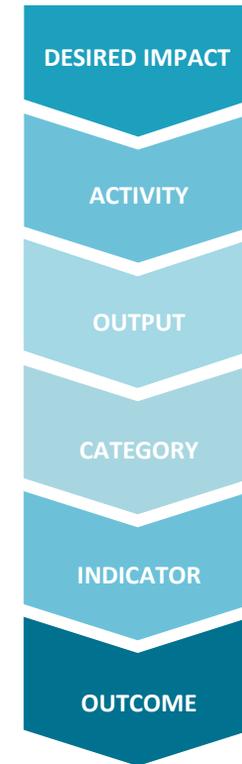
Our impact approach

► Sustainability as a fundamental goal

The fundamental objective of SHIFT I, II and III is to contribute to sustainable value chains and wellbeing while realising a financial return for its investors in specific sectors. These include the agriculture, food & health, and green & circular tech sectors. For defining and monitoring the sustainability benefits or impact on environment or health, we looked at several possibilities. It proved to be a great challenge to find a model that was broad enough to encompass the wide range of companies in our portfolio, and specific enough to successfully assess the impact of the individual portfolio companies. Additionally, the model should fit the early phase of our companies and define both current or relative benefits as well as the potential benefits, as most of the companies we invest in have only just entered the market. In order to meet all the requirements above, we developed our own approach based on different frameworks, mainly being the Theory of Change and the indicators defined by the Global Reporting Initiative and IRIS. Note that each portfolio company also contributes to at least one and often multiple of the UN SDGs.

Our sustainability framework starts with the desired impact the company addresses after which the activities and the output of the company that contribute to the desired impact are described. The outcome of the company's activities is the multiplication of the output times the effect per output unit of measurement defined by the category & KPI.

► Sustainability framework



What environmental or health issue does the company want to address with its activities

What are the activities of the company that can contribute to realizing the desired impact

Which output of the company in terms of products or services contributes to realizing the desired impact

To which category or categories can the desired impact of the company be assigned

What impact indicators are used to assess the impact of the company per output unit of measurements

The sustainability benefits the company is realizing to address the problem by multiplying effect per unit of measurement with the total output of the company

We turned investments into impact



The size of the SDGs indicates the amount of portfolio companies that address the respective goal



Reduction of CO₂

Pesticide reduction, material recycling, and increased milk production

Increase of arable land and biodiversity

Water savings

Energy efficiency increase and usage reduction

Reduction of infections & medicine



SHIFT /

formerly known as



**DUTCH
GREENTECH
FUND**

IMPACT PER PORTFOLIO COMPANY



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VANDEBRON HAS BEEN ABLE TO LINK THE LARGE DEMAND FOR GREEN ENERGY TO THE SUPPLY VIA AN ONLINE RENEWABLE ENERGY MARKETPLACE

IN 2019, VANDEBRON WAS ACQUIRED BY ESSENT IN ORDER TO TAKE THE TOTAL IMPACT TO THE NEXT LEVEL FROM 2020 ONWARDS



82% 

On average, 82% of Vandebtron's customers' energy was previously supplied by fossil generators

63% ^{CO₂} 

Vandebtron has been able to increase its total CO₂ reductions by 63% in 2019 vs. 2018, saving an additional hundreds of ktonnes



MEATLESS DEVELOPS A FIBRE TO REPLACE ANIMAL MEAT IN MEAT PRODUCTS, THEREBY REDUCING EMISSIONS FROM MEAT PRODUCTION

IN 2019, MEATLESS ANNOUNCED A MAJOR INVESTMENT PROGRAMME IN ORDER TO TRIPLE PRODUCTION CAPACITY IN 2020

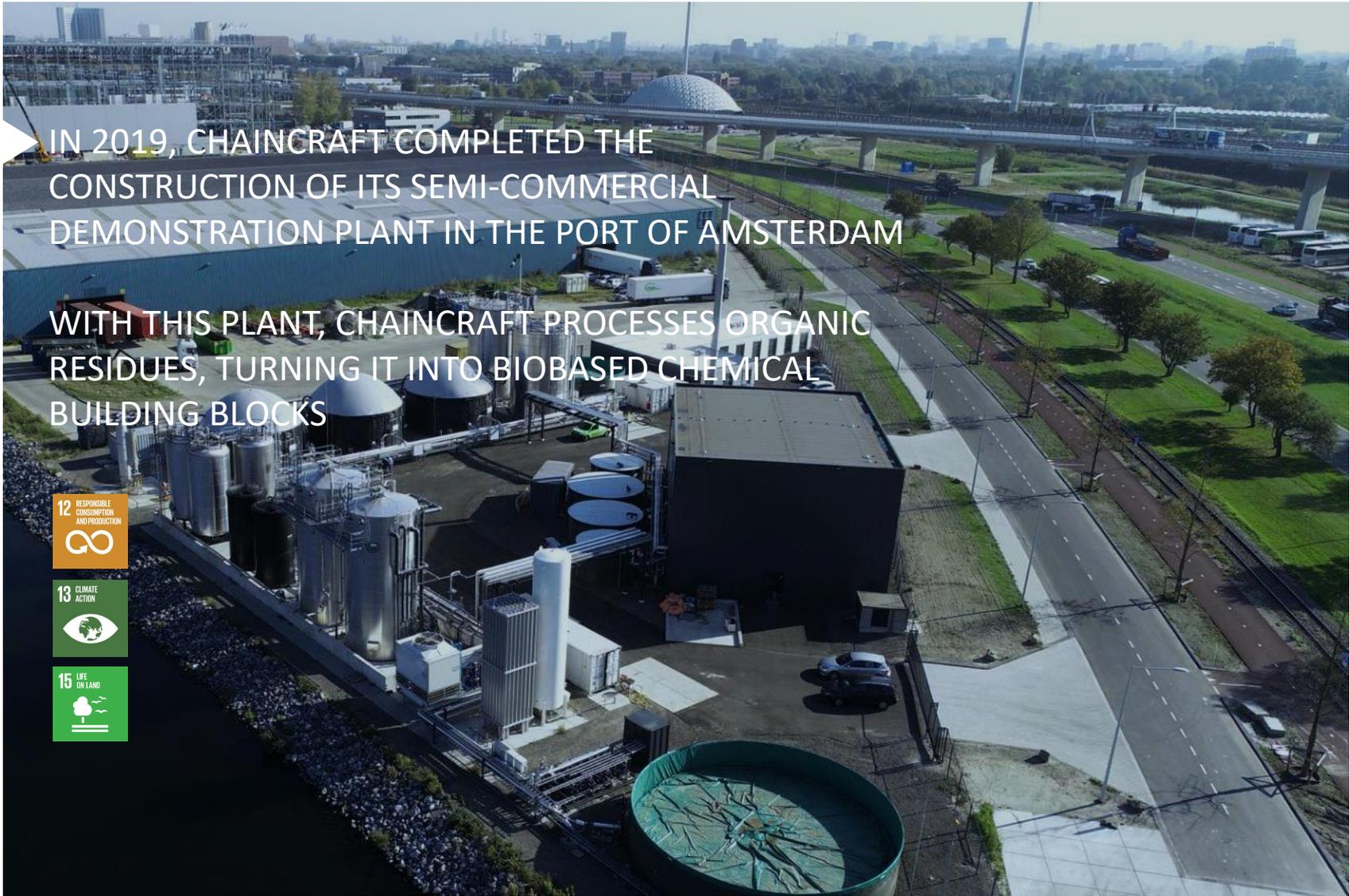


10% ^{CO₂} ▼

For 1 tonne of hybrid chicken products (i.e. 20% Meatless fiber, 80% chicken), the CO₂ equivalent is -10% compared to pure chicken

18% ^{CO₂} ▼

For 1 tonne of hybrid beef products (i.e. 20% Meatless fiber, 80% beef), the CO₂ equivalent is -18% compared to pure beef



IN 2019, CHAINCRAFT COMPLETED THE CONSTRUCTION OF ITS SEMI-COMMERCIAL DEMONSTRATION PLANT IN THE PORT OF AMSTERDAM

WITH THIS PLANT, CHAINCRAFT PROCESSES ORGANIC RESIDUES, TURNING IT INTO BIOBASED CHEMICAL BUILDING BLOCKS

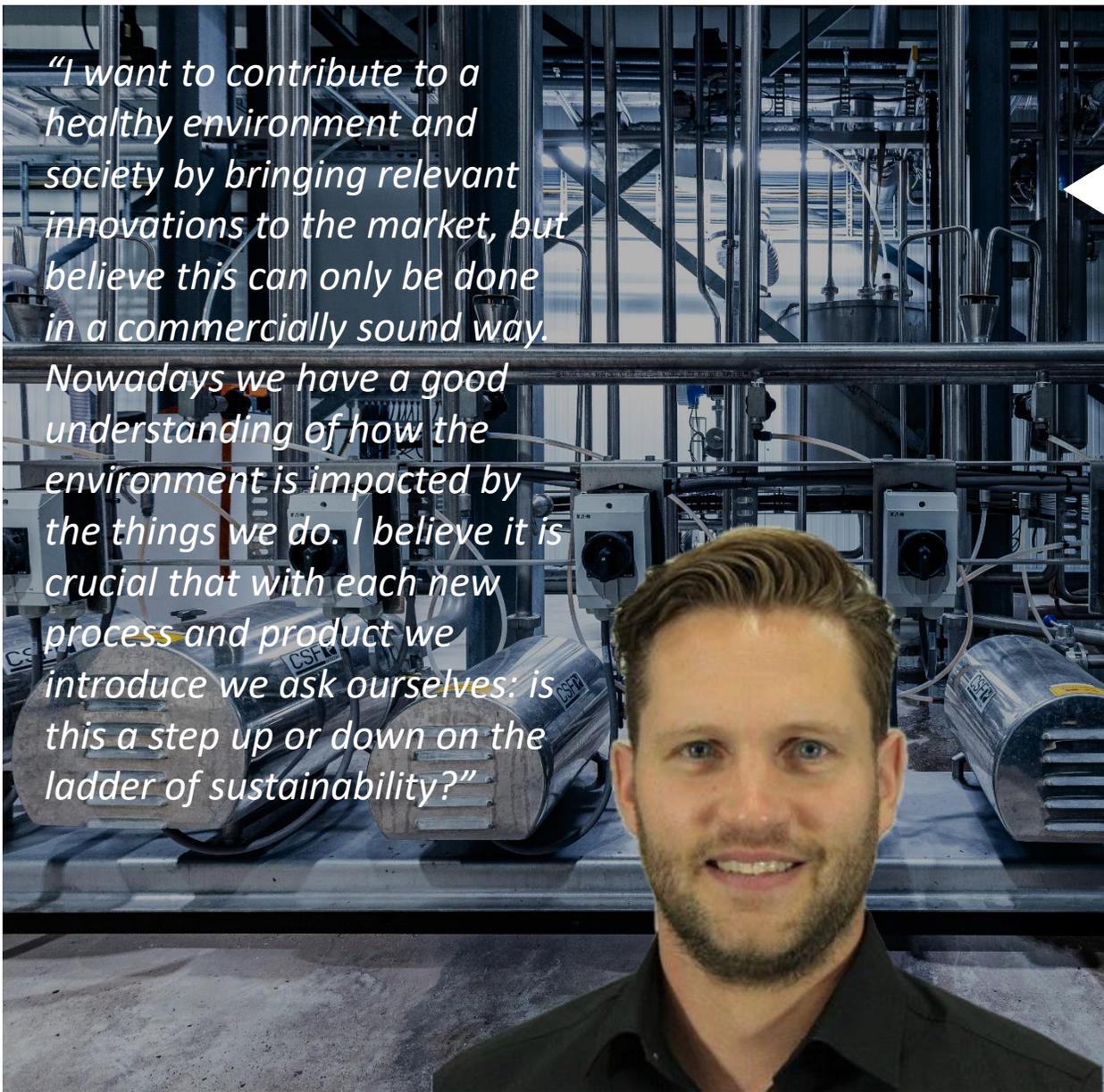


100% 

ChainCraft's production of 1 tonne MCFA replaces 1 tonne of conventional palm oil derived MCFA while also reducing food waste

70% 

Chaincraft's production process realises 70% less CO₂ emissions than production of MCFA via oil or palm oil.



“I want to contribute to a healthy environment and society by bringing relevant innovations to the market, but believe this can only be done in a commercially sound way. Nowadays we have a good understanding of how the environment is impacted by the things we do. I believe it is crucial that with each new process and product we introduce we ask ourselves: is this a step up or down on the ladder of sustainability?”

Niels van Stralen

Director & Co-founder ChainCraft



I started ChainCraft after graduating on its technology at Wageningen University & Research. My co-founder Kirsten Steinbusch and I established the company and started fund raising for upscaling of the technology. At ChainCraft we produce Medium Chain Fatty Acids (MCFA's) from organic residues, replacing oil and palm oil based production methods, reducing the footprint of this category of products significantly. MCFA's are used in several applications, e.g. in the chemical industry, the animal feed industry, in consumers products like cosmetics and even in flavours and fragrances.

After years of development we realized the completion of our semi-commercial plant in the Port of Amsterdam in 2019. It was a great moment when the first big bag filled with product came out of the plant. We are now gradually ramping up the production to the plant's full capacity.

Our dream goal is to replace the currently used chemical building blocks like MCFA in large quantities, so that we decrease the negative footprint these products have at scale. We strive to build several commercial plants where we produce these products from organic waste and residues. This way we maximize our impact and make our contribution to a healthy and sustainable environment.



SHIFT //



IMPACT PER PORTFOLIO COMPANY

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IN 2019 HEATMATRIX INSTALLED HEAT EXCHANGERS WITH SEVERAL NEW CUSTOMERS, WHICH ALLOWED THEM TO RECOVER SUBSTANTIAL AMOUNTS OF ENERGY FROM THEIR FLUE AND EXHAUST GAS

THROUGH THE HEAT EXCHANGERS, CUSTOMERS ARE ABLE TO REDUCE ENERGY CONSUMPTION AND THUS REDUCE CO₂ EMISSIONS



3-20% 

Through the heat exchangers, customers increase their energy efficiency by at least 3% and up to 20%

45% ^{CO₂} 

Through new installations, HeatMatrix has increased its total CO₂ reductions by 45% in 2019, saving many ktonnes of CO₂ emissions

GREENA DEVELOPS AND MARKETS SQUALL, AN ADDITIVE FOR PESTICIDE MIXES THAT DECREASES SPRAY DRIFT AND IMPROVES RAIN FASTNESS, RESULTING IN LESS WATER AND PESTICIDES USED

IN 2019, SQUALL WAS ABLE TO INCREASE ITS OVERALL IMPACT BY 31% VS. 2018



20% 

GreenA is able to save 20% of water per 1 liter of Squall when spraying crops¹ – in the future this percentage may rise to 25%

20% 

20% less watering volume directly correlates to a 20% reduction in the volume of pesticides used in the watering mix²

1: Adding 1L of Squall to 200L of water replaces 250L of water that would otherwise be needed;

2: Similarly, the 5kg of pesticides that would be needed is replaced by 4kg



MASTITIS IS THE MOST COMMON DISEASE FOR DAIRY CATTLE WORLDWIDE – MASTILINE HAS SUCCESSFULLY DEVELOPED AN IN-LINE PRE-CLINICAL MASTITIS MONITORING DEVICE

IN 2019, MASTILINE WAS ACQUIRED BY LUMINULTRA WHICH WILL FURTHER DEVELOP THE IMPACT CASE IN THE YEARS TO COME



50%  

When using the mastitis sensor, farmers will be able to decrease the average prevalence of high Mastitis cell counts by 50%



NUTRILEADS DEVELOPS DIETARY SUPPLEMENTS SUCH AS XTRAMUNE™ THROUGH WHICH IT SUPPORTS INDIVIDUALS' IMMUNE SYSTEMS

IN 2019, NUTRILEADS MADE GOOD PROGRESS WITH THEIR CLINICAL PROGRAMS. IT COMPLETED ITS TOXICITY WORK AND INITIATED PROCEDURES TO ACCESS THE MARKET



10% 

Currently, it is hypothesised that 1 dose/day for 4 weeks will result in a 10% reduction in:

- Incidence of respiratory tract infections (RTI)
- Number of days with (infectious) disease
- Severity of symptoms of (common) infections

CEVAP TECHNOLOGY DEVELOPS THERMAL SEPARATION TECHNOLOGY USED FOR WASTEWATER TREATMENT WITH A FIRST INSTALLATION IN 2020

THROUGH DISTILLATION, CEVAP INSTALLATIONS ARE ABLE TO TRANSFORM WASTEWATER INTO CLEAN WATER AND USEFUL CONCENTRATES



100% 

In its application to brine in the cheese industry, the CEVAP system is able to recover 100% of the waste stream to be used anew

80% 

In its application to black liquor in the paper industry, the CEVAP system is able to recover 80% of the waste stream to be used anew

KRIYA MATERIALS DEVELOPS TRANSPARENT COATINGS WHICH ENHANCE SURFACE PERFORMANCE

DURING 2019, KRIYA HAS EXPANDED ITS OVERALL IMPACT THROUGH A VARIETY OF NEW PROJECTS SAVING KTONNES OF CO₂ EMISSIONS



25% ⚡

Through its novel solar glass coating, Kriya anticipates to improve the efficiency of solar panels by up to 25% when installed outside

35% ⚡

When applied in building glazing, the masterbatches for PVB and glass coatings can significantly reduce the electricity used for air conditioning, by up to 35%

GREEN BASILISK DEVELOPS SELF-HEALING AGENT FOR CONCRETE STRUCTURES, DECREASING OVERALL MAINTENANCE AND REPAIR EFFORTS AND ALLOWING EFFICIENT USE OF RESOURCES

IN 2019, BASILISK WAS THE WINNER OF BIO-BASED PRODUCT OF THE YEAR AS WELL AS THE BAUMA INNOVATION AWARD, AMONGST OTHERS

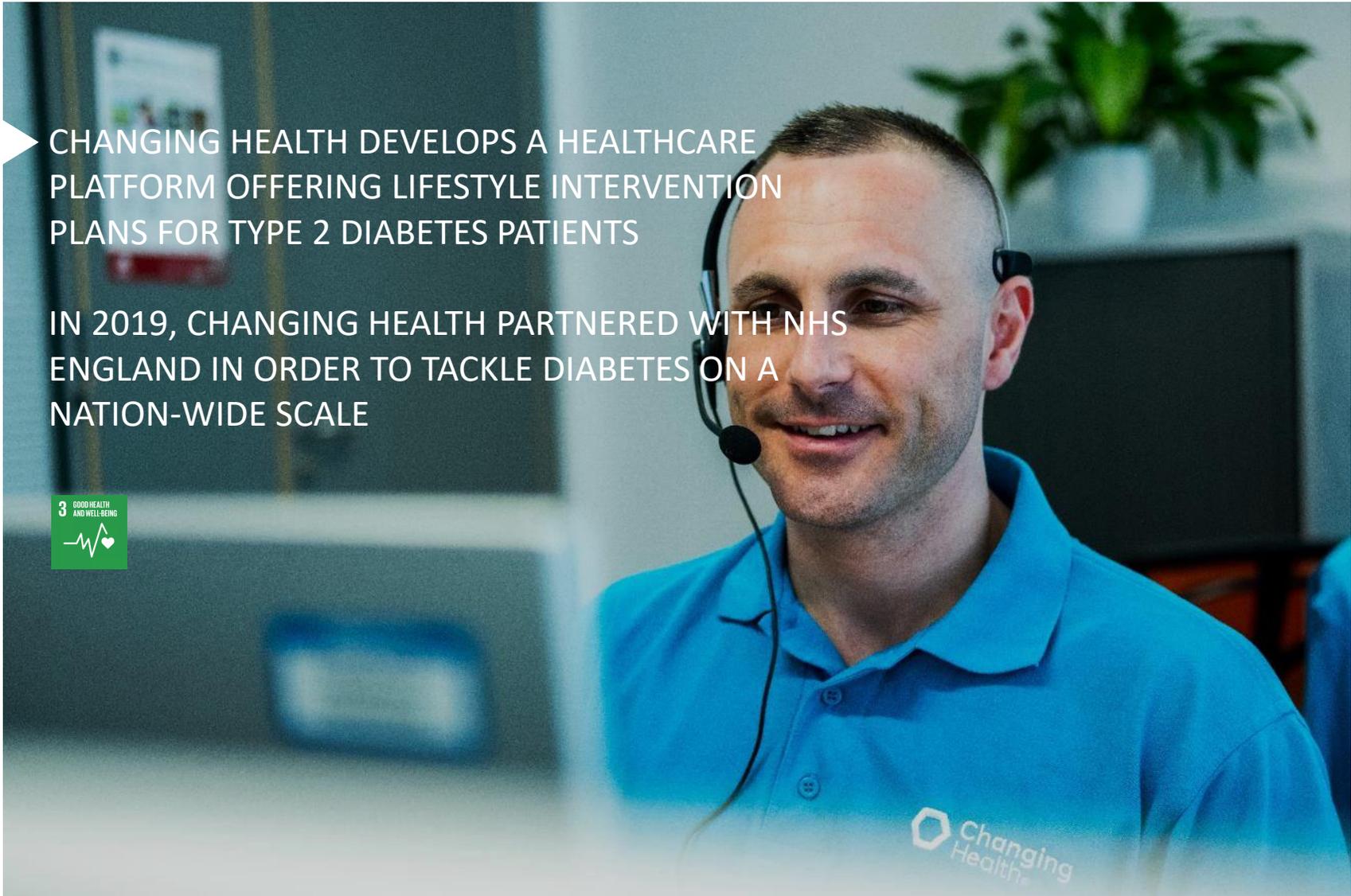


30%  

Premixing self-healing agent in concrete extends the lifetime of concrete structures by approximately 30%

19%  

Green Basilisk has increased its total impact on CO₂ reductions by 19% in 2019, saving an additional hundreds of tonnes of CO₂ emissions



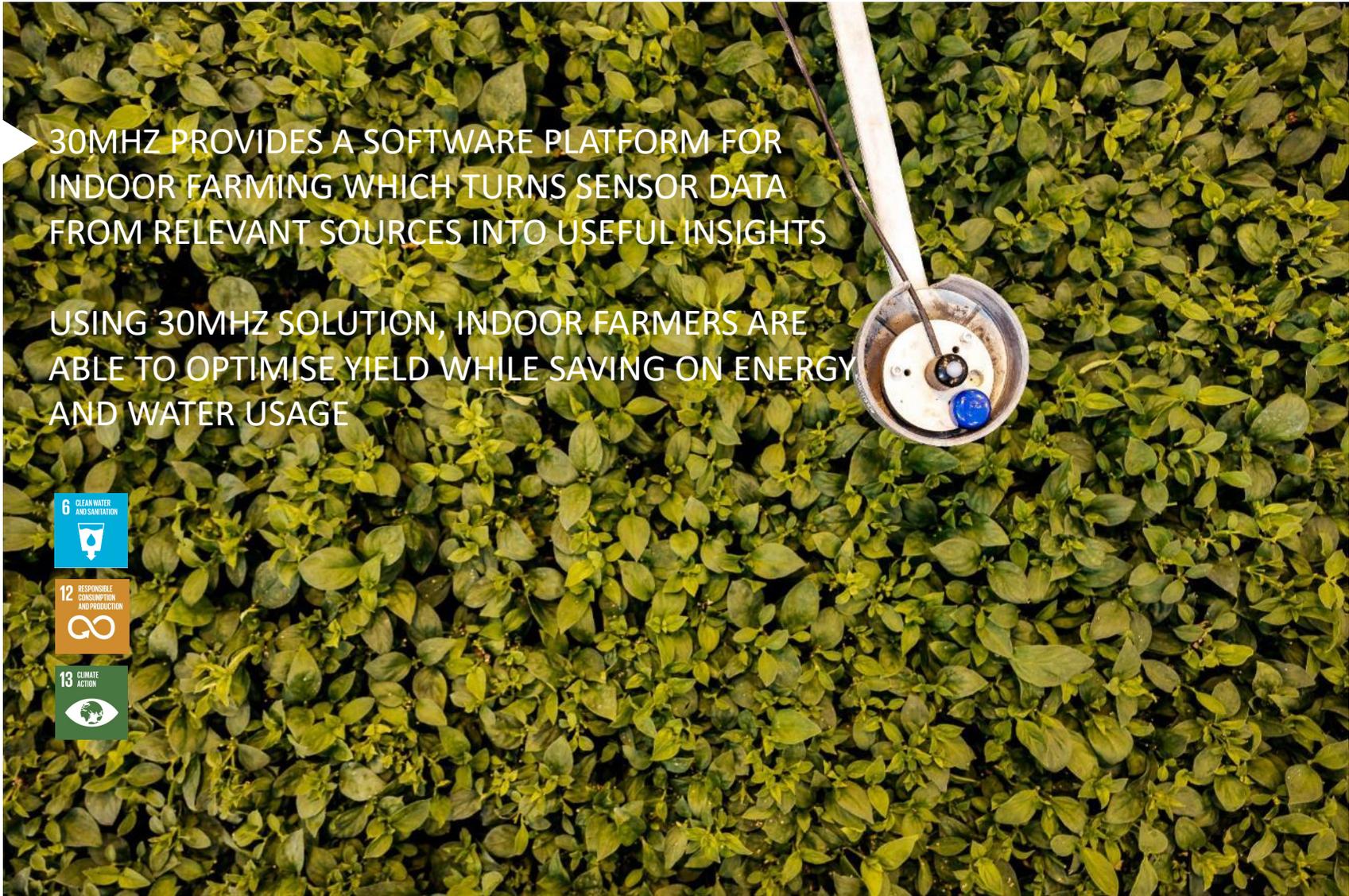
▶ CHANGING HEALTH DEVELOPS A HEALTHCARE PLATFORM OFFERING LIFESTYLE INTERVENTION PLANS FOR TYPE 2 DIABETES PATIENTS

IN 2019, CHANGING HEALTH PARTNERED WITH NHS ENGLAND IN ORDER TO TACKLE DIABETES ON A NATION-WIDE SCALE



5%

Of all participants using the platform, 30% is expected to realise a weight loss of >5%, resulting in partial remission of diabetes and improved overall quality of life



30MHZ PROVIDES A SOFTWARE PLATFORM FOR INDOOR FARMING WHICH TURNS SENSOR DATA FROM RELEVANT SOURCES INTO USEFUL INSIGHTS

USING 30MHZ SOLUTION, INDOOR FARMERS ARE ABLE TO OPTIMISE YIELD WHILE SAVING ON ENERGY AND WATER USAGE



5% ⚡

Clients reported a 5% energy saving per ha when using 30MHz's monitoring solution

3% 💧

It is expected that per client, a reduction in water usage of 3% per ha will be realised



“My ultimate goal is that we can reach farmers across the globe not only with our technology but with knowledge. We can make their lives easier, enable more local production and production in places where it was not possible. This way we give farmers in developing countries and their communities an opportunity to build a better life”



Flavia Paganelli

CTO 30MHz

Originally, we used to be a sensor company offering wireless sensors for all kinds of applications. As we experienced most traction in horticulture we decided to focus. Now we offer a software platform combined with wireless sensors that enables indoor farmers to save energy and water while optimizing crop yield.

We are in an interesting phase where we go from “we let you visualize your data” to “we let you learn from your data”. We have already reached all early innovators that can benefit from simply visualizing their data as they know what to look for, but now we are moving to solutions that can help the masses. In our applications, we are capturing the extensive knowledge that exists within companies like Delphy and make it available for growers worldwide to help them be efficient and sustainable.

I am proud when I hear quotes from customers saying: “thanks to this product I can make things faster, optimized, easier”. In the end it is about producing food and we all will benefit.

FOAMPLANT DEVELOPS BIODEGRADABLE, TECHNICAL FOAMS FOR ANY APPLICATION OF WHICH HORTICULTURE IS THE FIRST, CONTRIBUTING SIGNIFICANTLY TO SUSTAINABILITY IN THIS SECTOR

IN 2019, FOAMPLANT RAISED €2M FROM SHIFT INVEST AND FUTURE FOOD FUND TO ACCELERATE GROWTH AND PRODUCT DEVELOPMENT



70% 

In horticulture, each kg of Growfoam replaces 0.7 kg of non-recyclable substrate, resulting in a 70% reduction in materials waste¹

75% 

Use of Growfoam results in a 75-90% reduction in CO₂ footprint compared to black peat

1: Substrate materials used in horticulture often result in residual waste where Growfoam is fully compostable – as such, each kg of growfoam plugs results in 0.7 kg of waste reduction.



THE RENEWAL WORKSHOP RENEWS GARMENTS THAT WOULD OTHERWISE BE PROCESSED AS WASTE BY THE FASHION INDUSTRY. THESE ITEMS ARE PUT UP FOR SALE BY BRANDS, REPLACING OTHERWISE NEWLY PRODUCED PIECES.

IN 2019, SHIFT BACKED TRW TO FUEL ITS GROWTH



Thousands of kg 


Thousands of kilograms of renewed apparel were sold in 2019, decreasing large amounts of CO₂ emissions, water and toxics usage by the fashion industry

94% 


In 2019, TRW enabled global fashion brands to reduce tens of tonnes of CO₂ emissions, an increase of 94% compared to 2018

NEW

FUMI INGREDIENTS IS DEVELOPING AN ALTERNATIVE TO EGG WHITE. THEIR PRODUCTION PROCESS IS BASED ON VALUABLE FOOD SIDE STREAMS AND NATURAL MICRO-ORGANISMS.

IN 2020, FUMI RECEIVED AN INVESTMENT OF €0.5M FROM SHIFT INVEST AND INNOVATION INDUSTRIES IN ORDER TO ACCELERATE THEIR MARKET ENTRY



97% ^{CO₂} ▼

It is estimated that 1kg of FUMI's products require 97% less CO₂ emissions compared to traditional egg whites from chicken

“Both Edgar and I are die-hard engineers. We don’t like inefficient processes and growing chicken to make them lay eggs from which you extract the egg white which you then turn into powder is an inefficient process. Producing one kg of egg white this way costs approximately 40kg CO₂ equivalent emissions. Our yeast-based process makes the same amount with 90% less emissions, a great step in efficiency, which makes us engineers’ happy people.”



Corjan van den Berg

Co-founder FUMI

After an academic career in Biotechnology at WUR and a PhD in Process Technology at TU Delft, as well as a business career (Corbion and TNO), I went back to WUR to continue research on developing food products (proteins) from microalgae. Here I met co-founder Edgar Suarez Garcia. Together we determined that algae are too expensive, and that yeasts are a good alternative for producing functional proteins with a very low carbon footprint This is when we decided to start FUMI.

We are now working on the first samples to send to potential customers for testing. We already passed the first test. I made pancakes for my girlfriend using our egg white product without she knowing.

If the tests are successful, we will build our first large scale production plant. Our dream goal is that beer breweries in the near future not only produce beer but use the used yeast to produce functional proteins; thereby upcycling waste into a low carbon alternative for animal proteins.

**THANK YOU
FOR READING**



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