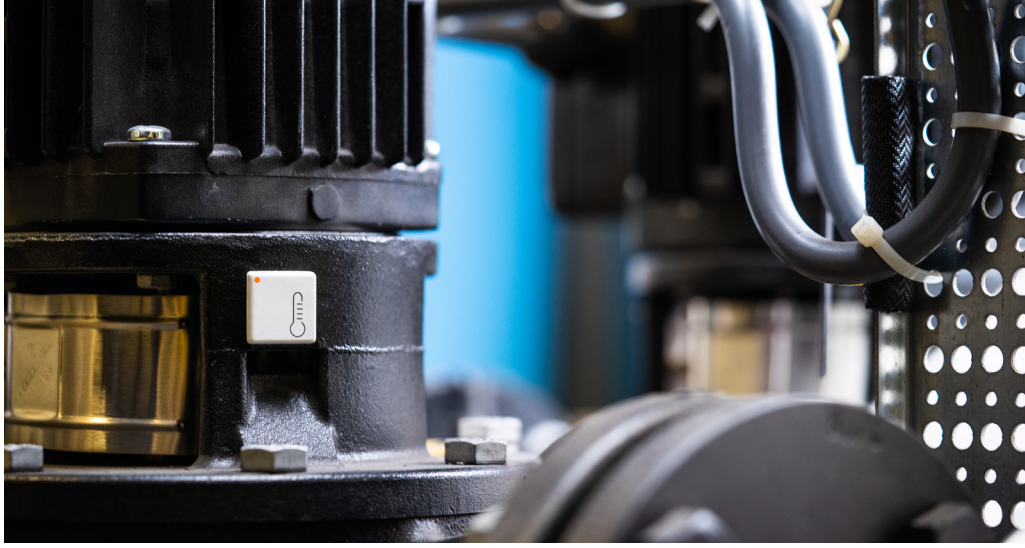
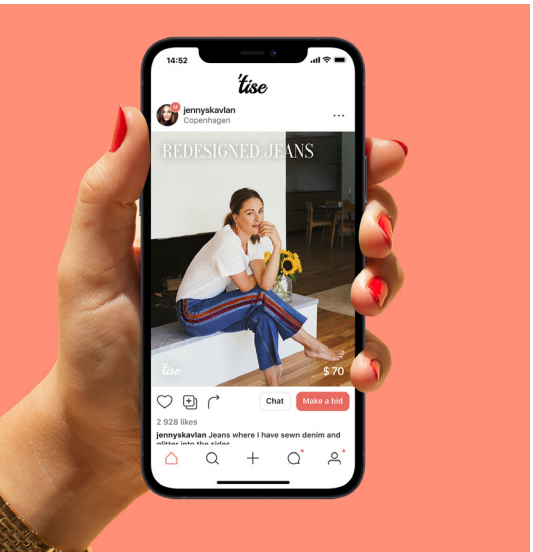
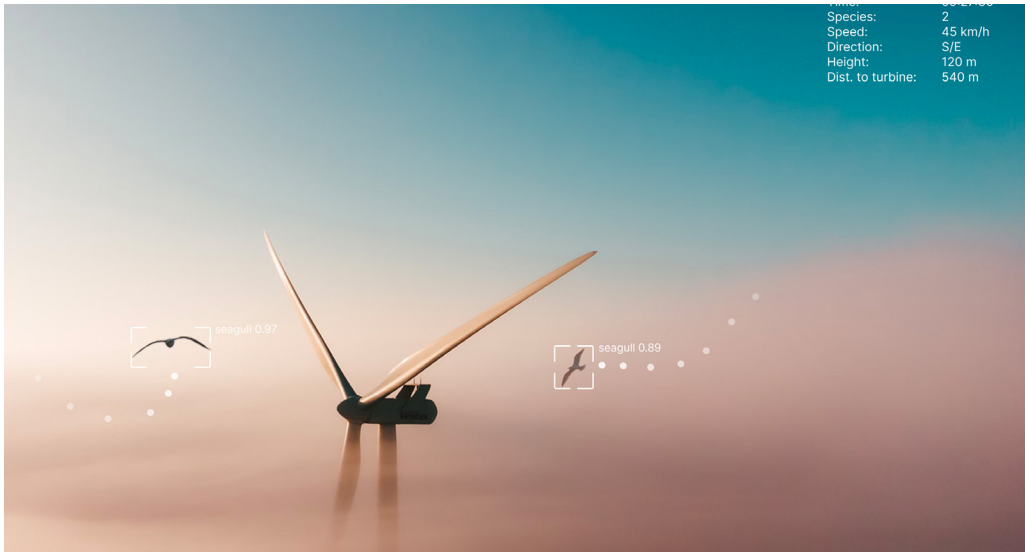
nysnø
Climate Investments



2022 Climate Impact Report





Dear reader,

I am delighted to introduce to you our inaugural climate impact report, which highlights the remarkable endeavors of our portfolio companies in their quest to mitigate future climate gas emissions.

We call it avoided emissions. We are seeing a clear trend that investors are increasingly dedicated to reducing emissions, and in the future, we believe avoided emissions will become a key metric that will have financial implications and will be used to measure the performance of companies.

I believe that in the coming years, investors and companies will be increasingly valued for their contribution to the reduction of global emissions. The establishment of a standard methodology for carbon accounting will contribute to channeling capital towards investments with a tangible climate impact.

While it may be challenging to discover a novel and groundbreaking approach to calculating climate impact, it should not deter us from persisting and giving our utmost to seek solutions. The accounting of avoided emissions is a complex topic.

Earlier this year, Nysnø launched a report, “How to measure climate impact”, that outlines a methodology for the accounting of avoided greenhouse gas emissions. The methodology has been developed in collaboration with other prominent climate investors as part of Project FRAME. We have now implemented this methodology in the calculations for our portfolio of direct investments and are proud to announce the estimated contribution of avoided emissions generated by our 19 portfolio companies towards 2030 to 7 million tons CO_2 equivalents (CO_2e).

Bear in mind that through our portfolio of funds, Nysnø has provided growth capital to more than 185 companies. The future climate impact from these is not included in our current calculations. Going forward, we will work to also include the avoided emissions from our fund portfolio into Nysnø's overall calculation of avoided emissions.

Looking forward, as a state climate tech investor, I see it as one of our missions to contribute to push for more climate accounting. When we, as investors, consider an investment, we calculate financial returns based on expected future cash flows and risk. Our goal is to encourage the global investment community to adopt a similar mindset for climate impact. To achieve this, we need to have a standardized methodology that can measure the climate impact based on expected future carbon flows. This will enable us to compare and prioritize projects that provide the greatest benefit to the environment.

I hope you will enjoy the report, and that it will inspire you to start calculating climate effects from the projects you are involved with. Stagnation is regression, so let`s push forward to measure climate impact!

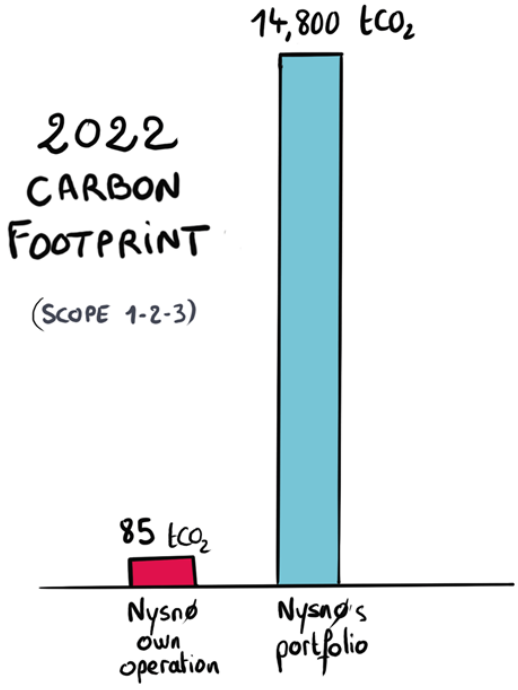
Siri Kalvig
CEO
Nysnø Climate Investments

Climate Impact
Realized and forward looking

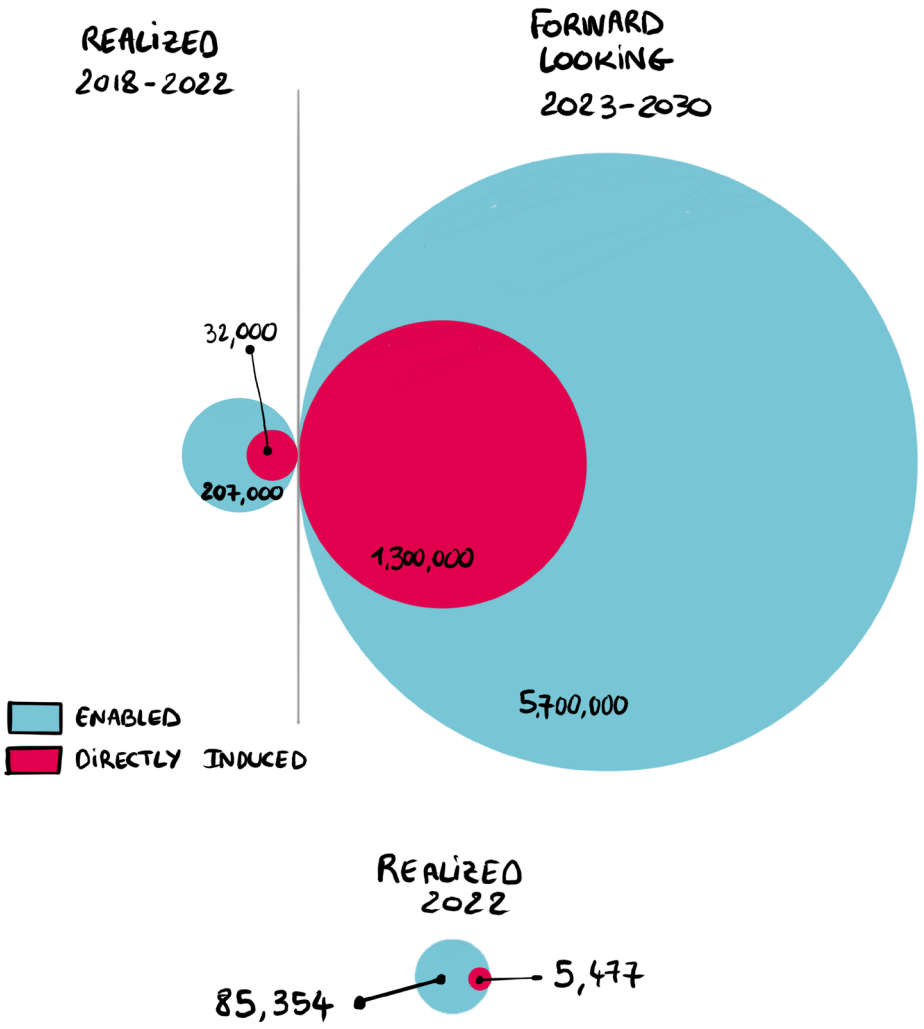
Nysnø is reporting on Scope 1–3 emissions, from both our own operations, and from our portfolio companies. We also report the realized and the future avoided emissions generated by our portfolio companies. The methodology for how we calculate the avoided emissions (scope 4), is published on Nysnø's webpages. We adjust our calculations according to our ownership in the company, which is ranging from 2–18% with an average 9%. Nysnø indirectly holds investments in over 185 companies through our current 14 funds. It is important to note that the CO_2 footprint and avoided emissions generated by these companies is not accounted for in this report. However, we are committed to including this impact in future assessments.

Scope 1–3

The carbon footprint of Nysnøs own operations is for 2022 estimated to 85 tonnes CO_2e. The equity adjusted footprint from our portfolio companies is for 2022 estimated to 14 800 tonnes CO_2e.



Nysnøs carbon footprint for 2022: 85 tonnes CO_2e



Scope 4 – Avoided Emissions

We report the cumulative avoided emissions achieved by our portfolio companies, both in terms of realized emissions reductions and projected avoided emissions reductions until 2030, adjusting for our share of ownership. We differentiate the avoided emissions reductions based on recurrence (recurring or one-off effects) and causality (directly induced or enabling effects). We have identified four of our portfolio companies as "foundational solutions" recognizing their significant contributions to addressing climate challenges, but without quantitative assessing their emissions reductions. We have conducted quantitative assessments of the CO2 emissions avoided by 15 of the 19 companies within our portfolio, in collaboration with MoreScope AS.

Our realized avoided emissions from 2018 to 2022 is estimated at 240,000 tonnes of CO_2e, of which 32,000 tonnes of CO_2e are categorized as directly induced effects.

Considering a realistic growth projection for our portfolio, we estimate avoided emissions at 7 million tonnes CO_2e from 2023 to 2030, of which 1.3 tonnes is categorized as directly induced effects. This is further described in the methodology document.

The cumulative avoided emissions in 2030 is estimated to 7.2 million tonnes CO_2e given a likely development in the portfolio

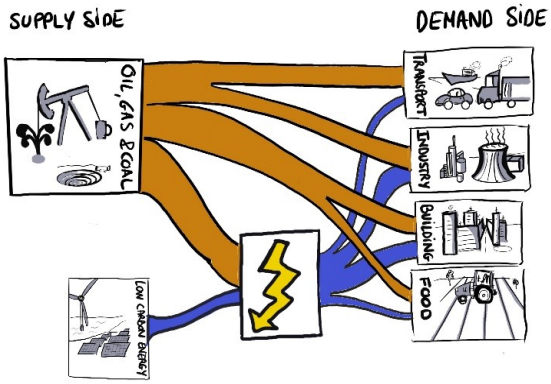
Mission – how to reach Net Zero?

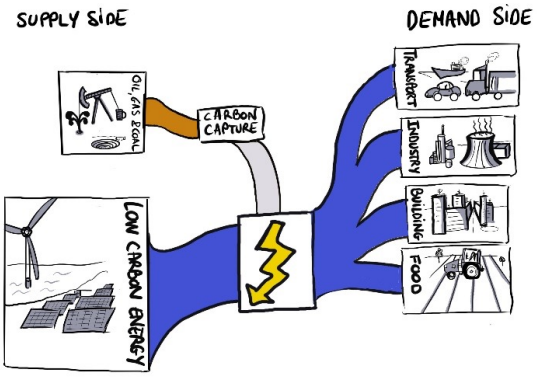
Energy Transition

In 2021, 78% of our energy came from the combustion of fossil fuels such as coal, natural gas and oil, according to the IEA.

According to the IPCC, the combustion of fossil fuels in boilers and engines is responsible for the majority (approximately 80%) of the greenhouse gas (GHG) emissions.

This is the reason why fighting climate change has often been associated with the need for an **ENERGY TRANSITION.**





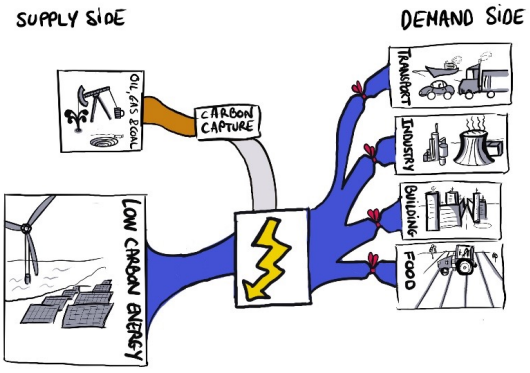
Electrification

Walking on the path to Net Zero Emission (NZE) means that our energy needs to come from low carbon energy sources. This mainly implies electrical sources such as solar and wind power. It also necessitates the replacement of boilers with heat pumps and fuel engines with electric motors.

In one word **ELECTRIFICATION**.

Better, Less and Re-use of Energy

While low carbon energy resources are theoretically unlimited, it is important to acknowledge that there is no such thing as a free lunch. The deployment of large-scale solar, wind, and nuclear energy will require time and resources, and it will always come with some form of footprint. That is the reason why beside the electrification of everything our energy intensity needs to be improved through **BETTER, LESS and RE-use OF ENERGY.**



AMINA

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Making EV charging simple, safe and affordable

mission

Electrification of the transport sector will be crucial to achieving a definition society. In 2021, CO_2 emissions from the transport sector amounted to nearly 8 billion tons, which corresponds to 20 percent of global emissions. Three quarters of these emissions are related to passenger and freight transport. The IEA estimates that passenger kilometers can double by 2070. Even with anticipated growth in transport demand, following the NZE Scenario requires transport sector emissions to fall by about 20% to less than 6 Gt by 2030.

EY has estimated a European need for 13 million charging points by 2050 and 65 million by 2035, of which around 85% of these will be home chargers. To date, a few million EV chargers have been installed in Europe.

Solution

Amina is a Norwegian EV charging company that was established in 2021 with the ambition of commercializing and selling a simple, safe and affordable EV charger. Amina's enabling climate technology will be part of the solution as the global car fleet becomes increasingly electrified.

Identified Climate effects

Lower climate footprint in relation to manufacturing due to form factor & low weight

Enables electric mobility by offering affordable charging points

> Enabling a more sustainable car fleet

mission

The mobility sector is facing major changes and strong demand for more sustainable solutions and new business models. Car subscription is expected to make a substantial impact on the automotive industry. Car manufacturers and industry experts estimate that 20-30% of new car sales globally will be in the shape of a subscription service already by 2025.

Electrification of transport is an important measure to achieve the climate goals – and electric passenger cars and the access of these will play a crucial role.

Solution

To accelerate the adoption of zero- and low-emission cars, business models that offer purchases with less commitment and predictable expenses will be an effective tool. Such solutions will speed up the transition from fossil to electrical cars, which is particularly important in Europe, where zero emission car sales are still relatively low. Consumers demand more environmentally friendly transportation and easily accessible digital services that seamlessly adapt to unique needs and convenience-oriented lifestyles. Casi's car subscription services provide the needed flexibility and bundled services that meet modern customers' expectations.

Identified Climate effects

Offers Mobility as as Service, which reduces private car ownership

Enables electric mobility by offering a low-commitment business model

Right-sizing the car fleet: With Casi's flexible subscription, the customer can drive a suitably sized car most days, and swap to a larger car when required

CENATE

mission

Boosted by the electrical cars market, the demand for battery is growing extremely fast. Making battery cheaper and better is one of the key challenges to allow electrical vehicles to outcompete fossil fuel driven ones.

The demand for battery is expected to increase by sixteen times between 2021 and 2030 if we want to reach the Net Zero objectives (IEA WEO 2022).

The battery industry is on fast track to develop new technologies and new material to help reaching that goal. One of the key innovations resides in the type of minerals used to store the lithium in the batteries. Some of these minerals are very expensive or have a high carbon footprint or both.

Solution

Cenate develops and operates a production plant of silicon-based anode material to replace graphite in lithium-ion battery. Cenate's anode material enables lower carbon footprint and better features in terms of performance.

Identified Climate effects

Lower carbon footprint anode material

Electrification of everything (EV, Grid)

DISRUPTIVE TECHNOLOGIES

"

Change the way buildings collect data

mission

The global electricity demand is increasing and will therefore provide a rising share of the total final energy consumption in all economies. To align with a definition scenario, the global electricity demand will be 150% higher than the global demand today according to the IEA. Carbon emissions from buildings operations need to more than halve by 2030. A smarter use of electricity is therefore crucial for reaching the NZE goals.

According to IPCC, agriculture industry accounts for just below one quarter of the words total GHG emissions. Around one third of the food produced is wasted, either in between harvest and retail (14%) or at end use (17%). Food loss thereby accounts for about 8% of the global GHG emissions.

Solution

Sensor technology that monitors both electricity use in private and commercial buildings, as well as monitoring food temperatures can help achieving a reduction both in energy use and in food waste.

Disruptive Technologies has developed the world's smallest sensors.

Customizable, scalable, and secure sensors that gather data from anywhere and effortlessly integrate with any operations. The sensors collect data continuously and delivers insights to an analysis tool chosen by the user. The possibilities for use are countless – from workplaces and private homes to administration of industrial and commercial facilities, manufacturing facilities and warehouses, cooling storage and power plants. No glue, screws, technical expertise, or pairing is necessary. Every sensor comes with a strong adhesive that lets you attach the sensor exactly where you need it.

The result is a smarter use of resources, where businesses and individuals can make decisions based on secure data, thereby drastically reducing their consumption, improve efficiency and increase sustainability and welfare.

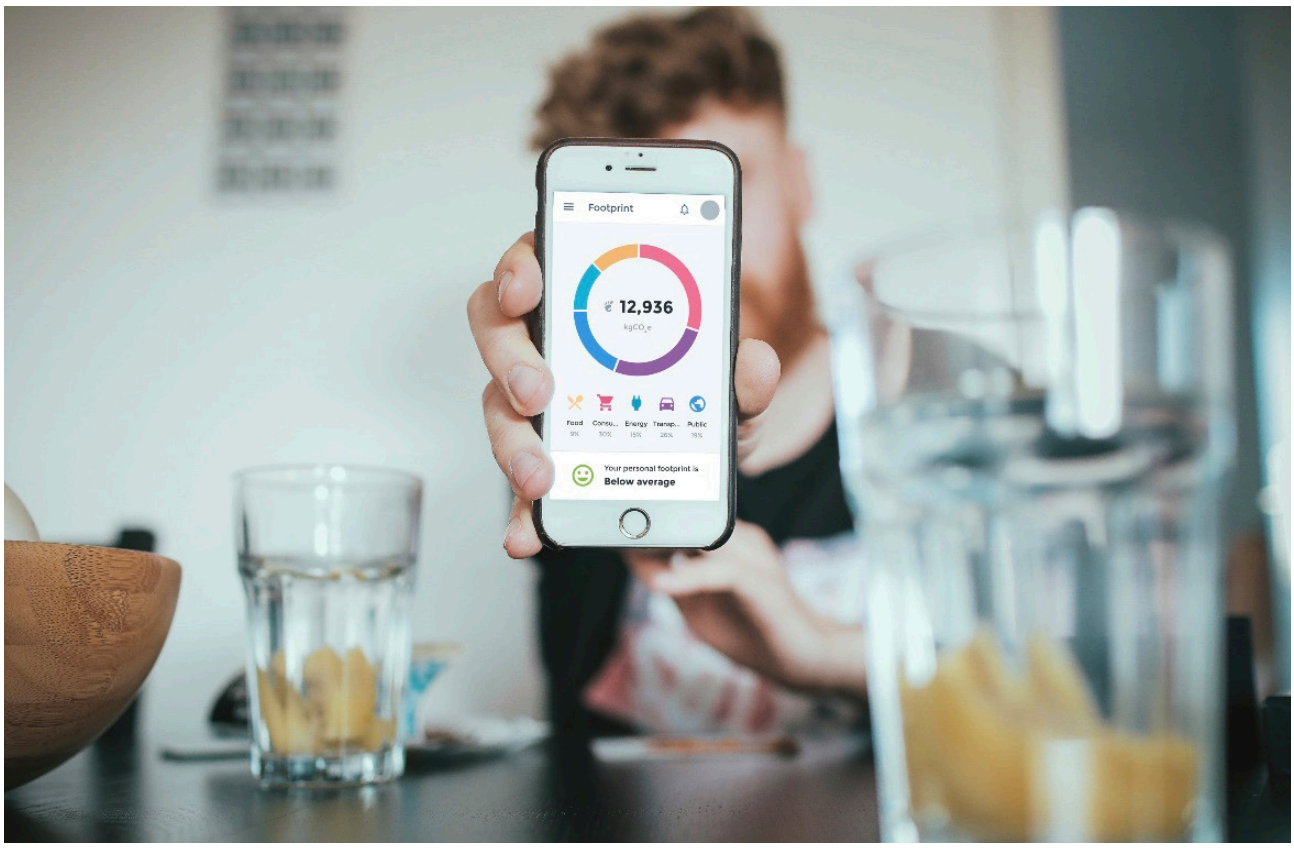
To reach a definition Scenario, carbon emissions from buildings need to halve by 2030

Identified Climate effects

Behavioral and operational changes make buildings and cities more sustainable

Reduces food waste

Enables retrofit and adaptation of old and/or obsolete technology and equipment



Ducky

mission

2/3 of global emissions are a direct result of individual consumption, and the richest 1 % are expected to account for 16% of total global emissions by 2030. The average per Norwegian is ~11.1 tCO_2e/yr. By contrast, the 1.5°C will require an average footprint of 2.3 tCO_2e/yr per capita by 2030. High-income individuals can reduce their footprint by 9.2 tCO_2e/yr per capita from 10 lifestyle changes made within food, transport and housing.

Solution

Ducky has the technology, data and outreach to enable changes in consumption and document the results over time. Ducky Challenge is a gamified, research-based engagement platform that aims to engage employees, create awareness and build a sustainable culture within companies and organizations. Ducky Insights provides a world-leading and easily integrated data services (API's) to help companies and organizations to engage their costumers to reduce their personal climate footprint.

Ducky Insights also help companies to act on their emissions.

"

Actions you can be proud of

Identified Climate effects

Reducing the emissions footprint through awareness and competition

AI-powered solutions to inspect and maintain critical energy infrastructure

Identified Climate effects

Enables renewable energy integration with grid utilization and flexibility

Smart grids have a direct impact on energy efficiency and CO_2 reduction

Mission

The 80 million km of transmission grids that power the world are under increasing pressure: aging infrastructure, variable power generation and shifted electricity demand. As transmission grids expand to accommodate more renewable power and demand in transport and industry, grid maintenance and inspection is becoming more important.

Today, most operational decisions are based on analysing how power load flows locally, which works well when loads are predictable in a local or national system. The future of transmission grids means solving these challenges to accommodate more variable, renewable load whilst maintaining stability and security of supply. Better grid maintenance and operation can also reduce the risk of power outages and devastating effect from forest fires.

Digital monitoring and control devices are needed to provide system information in real-time and allow for remote error detection and rapid response to any faults.

Solution

eSmart Systems is an AI-driven software company that captures, analyzes, visualizes and converts real-time operational data from transmission grid into actionable insights. This includes power grid infrastructure inspections with automatic detection of grid anomalies and peak load predictions based on smart meter data. eSmart's AI-products dramatically improve operational efficiency and sustainability. eSmart delivers systems to leading transmission and distribution system companies in Europe and US, as well as prominent utilities and energy retailers.

Greenbird

mission

Achieving Net Zero will demand that we use our energy in a smarter way. At the same time, the operations of the electrical grid are becoming more complex and require a high degree of sophistication. Data and more specifically Big Data are becoming a central piece of the puzzle to solve the climate challenge. According to IEA, the energy demand from data centres and data transmission networks account for around 3% of global electricity use.

Solution

Greenbird delivers solutions to the utilities for helping them to handle and make value out of the increasing volume of data available. Greenbird Utilihive is an IPaaS (Integration Platform as a Service), optimized for utilities. It is purpose built for Energy and Utility applications with pre-built connectors, preconfigured data flows, predefined data models and visualization tools designed for today's digital utility. This enables accelerating the speed of renewable, distributed power.

By using Greenbird, the final user can get better insight on their power consumption and the utilities can improve the performance of their grid operations.

Serve more than
230 utilities in 14 countries

Identified Climate effects

More efficient and reduced use of energy in big data for utilities

Accelerating the speed of renewable, distributed power

"

Industrial heat redefined: Very-high temperature heat pumps

HEATEN

Mission

Heat is the world's largest energy end use, accounting for almost half of the global energy consumption in 2021. According to IEA, over 50% of the heat produced is used for industrial purposes i.e. metals, plastics, food and beverages, chemicals, textiles, carbon capture, automotive, power-to-X. Combustion of fossil fuels is dominating the heat production, and is generating around 75% of heating and cooling the industry and for buildings in EU.

Solution

Heaten has developed a very-high temperature industrial heat pump with their innovative piston compressor as the core component, the HeatBooster. The HeatBooster can replace fossil fuel burners in industrial processes that require temperatures ranging from 80 to 200°C. The heat pump actively recovers waste heat from an industrial process and heats it up again for reuse .

Heat pump is an efficient way to electrify the production of heat for the industry. Depending upon the configuration of the process, the amount of energy required can be 3 to 5 times lower than with conventional boilers.

Combined with the increase of renewables in the electrical grid, the electrification of the heat supply will contribute to reducing GHG emissions by replacing conventional fossil-driven heat supply.

1 kW electricity can supply

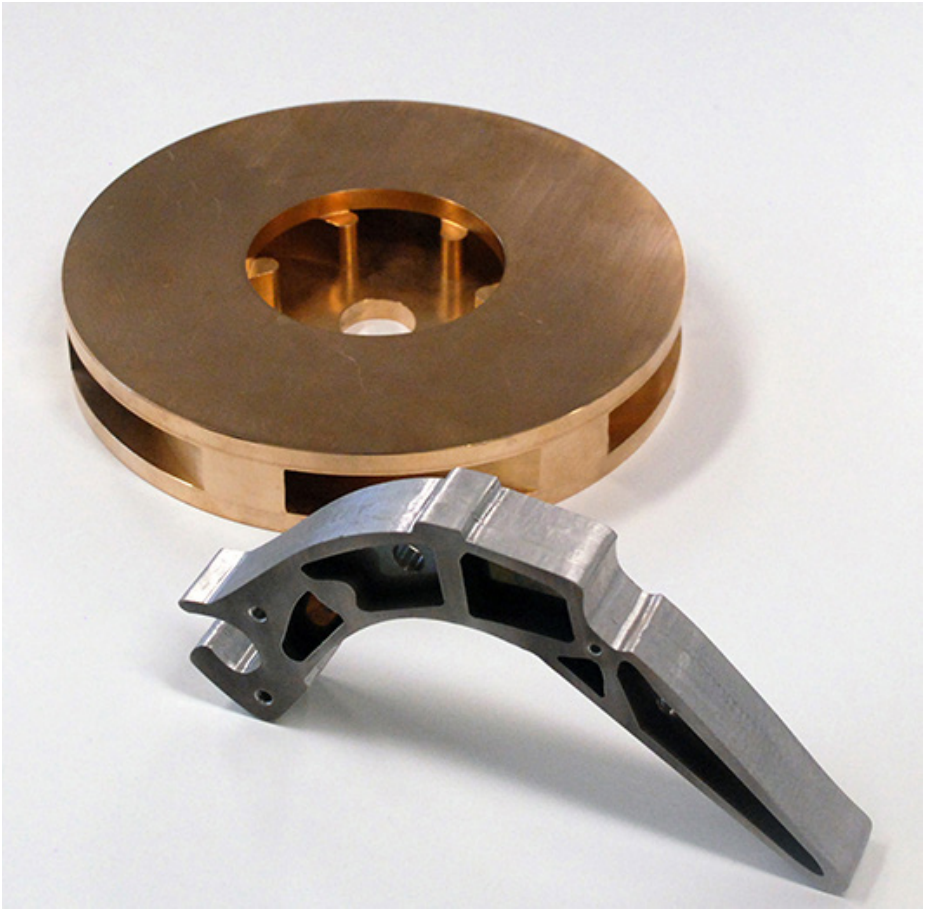
3 to 5kW heat

Identified Climate effects

Replacing fossil fuels with clean power

Reduces the overall energy efficiency by recovering waste heat

HIPtec



"Better, cleaner, and faster alloy manufacturing

mission

Over the past years CO_2 emissions from the iron and steel sector have risen, due to an increase in steel demand and the required energy for production. According to the IAE , the sector is responsible for about 8% of the global final energy demand. Steel is one of the most energy and emissions-intensive bulk materials produced globally.

Solution

HIPtec's novel manufacturing technology involves a combination of Additive Manufacturing and HIPping. This combination of methods provides a high material utilization while limiting the post-processing. In addition to this, the HIPtec method enables targeting material use in a more specific manner which will produce robust components with a lower weight than comparables. Additive manufacturing directly reduces the energy consumption as the material utilization is improved.

Identified Climate effects

Reduces the amount of raw material input per component produced

Energy consumption is lower than comparable methods

Reduces weight for freight of manufactured components

MORROW

Mission

Morrow is speeding up the energy transition with cost-effective and sustainable batteries.

Batteries will play a crucial role in the energy transition through two key contributions: firstly, providing the renewable energy storage needed to balance an energy market increasingly reliant on intermittent energy sources such as wind and solar energy. Secondly, to enable the electrification of the transport sector by equipping electrical vehicles with cost-competitive batteries and sustainably produced batteries.

Solution

Based in Norway, Morrow is on a mission to develop and deliver next-generation batteries with a new and innovative cathode material (LMNO). These batteries replace cobalt, reduces nickel and lithium, and maximizes the use of clean and abundant manganese.

Starting production from the factory in Arendal in 2024. Developing the LMNO battery, free of cobalt and reduced nickel and lithium

Identified Climate effects

Lower carbon footprint

Electrification of everything (EV, Grid)

NorSun

A leading supplier of premium silicon wafers for the solar industry

mission

40% of global CO_2 emissions come from power and heat production and use. A successful transition to energy systems that does not emit CO_2 hinges on the successful and rapid scaling of renewable power technologies such as solar, wind and hydropower. In a NZE Scenario, the share of renewables in the grid must be increased from 28% up to 88%, and the solar output needs to increase by 23 times to reach these targets. (IEA WEO 2022).

Global demand for solar power has been rising steadily during the last two decades parallel to cost reductions. However, most production facilities are themselves powered by non-renewable power sources to produce and transport key components that are needed to deliver solar panels to markets.

Solution

NorSun produces highly efficient monocrystalline silicon wafers with the world's lowest CO_2 footprint.

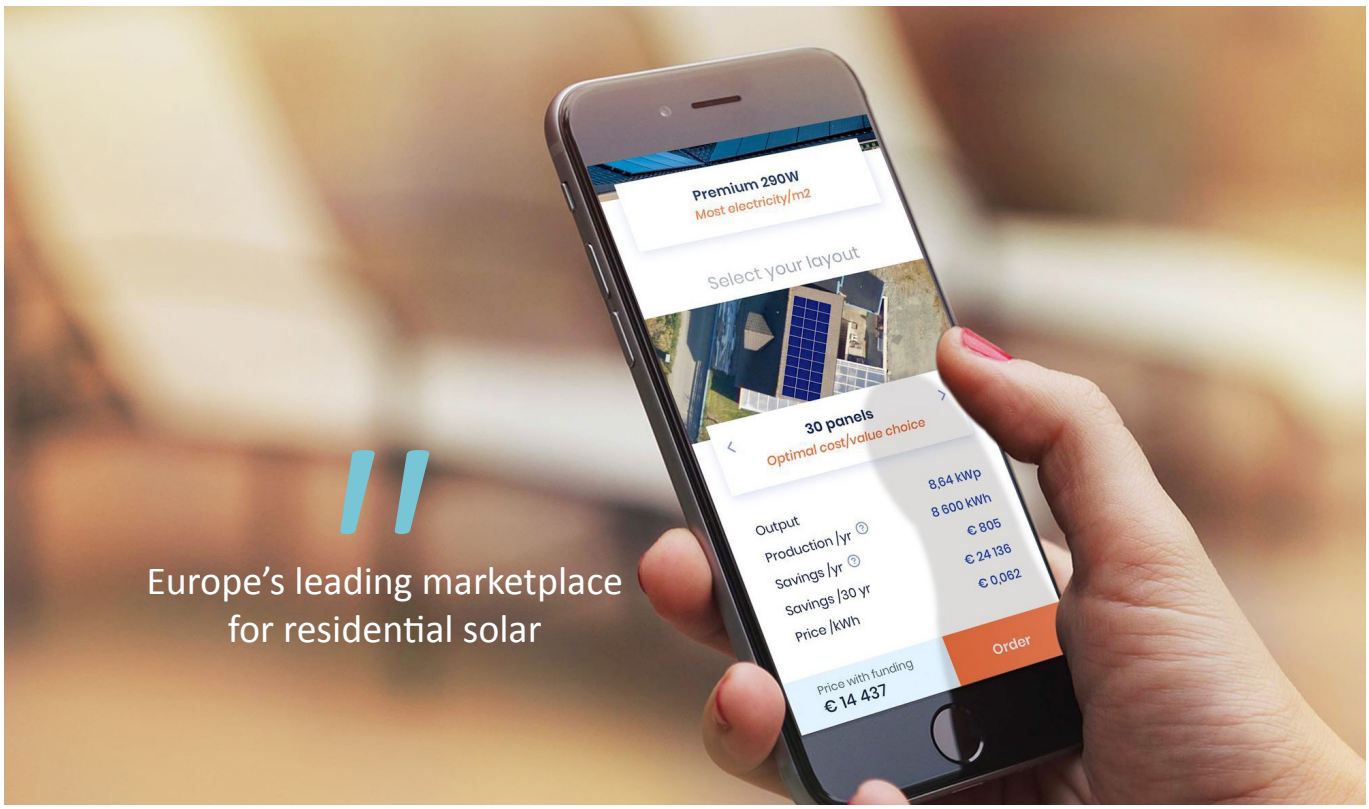
Through an Environmental Product Declaration (EPD) – the low CO_2 footprint has been validated and independently verified with international standards to communicate transparent and comparable information about the life-cycle environmental impact of the wafers.

Identified Climate effects

NorSun wafers have a lower carbon footprint (at manufacturing stage) than the industry average

NorSun wafers are a key component in solar panels that produce on-site renewable power

OTOVO



mission

Solar power needs to be deployed at scale to reduce the emissions from current energy production. Electricity production from solar panels could represent up to a third of the total electricity production within 2050 (IEA WEO 2022).

Solution

Residential solar power is a proven solution that is ready to scale: the technology is available; it is cost competitive and consumer demand is on the rise. Otovo enables homeowners to invest in solar panels and batteries through their unique marketplace and fleet of installers.

Even though residential solar-power production is planned and designed to meet the energy demand of the home, power can also be delivered directly to the grid in hours of peak production and low on-site consumption. This means that power production from residential solar both expands European power production capacity and is a renewable replacement to the greenhouse gas emissions from the current power production mix.

7379
installations in 2022

46,8 MW
installed in 2022

Identified Climate effects

Produces renewable solar power

More efficient deployment of new solar energy

REEtec

Up to 90% less carbon intensive separation of rare earth elements

Identified Climate effects

Lower carbon footprint of REE

Providing elements critical in the green transtition

mission

The electrification of everything will generate an enormous demand for rare earth elements (REE). The target REE for REEtec is Neodymium-Praseodymium (NdPr), which is a critical part of permanent magnets constituting a core element in electrical motors (electrical Vehicles) and electrical generators (wind turbines).

Bloomberg has estimated that there will be a sixteen times demand growth for REE in electric vehicles engines alone by 2030. Adamas Intelligence expects that the demand for NdPr permanent magnets will exceed 140,000 mt by the same year. Today, the NdPr market is heavily dominated by China who controls approximately 85% of global supply.

Solution

REEtec has developed a separation method for REEs that is more efficient and less carbon intensive than the competition.

REEtec's first plant for the separation of REEs will provide annual production of NdPr oxides which representing approx. 5% of the estimated demand in the EU, or sufficient for magnet production for approx. 1.5 million passenger EV motors.

THORVALD

Empowers growers to maximise yield sustainability

Thorvald is generating avoided emissions by

43 to 261

tonne CO_2e per robot

Identified Climate effects

Reduced need for seasonal workers commuting by aircraft

Reduces crop loss and related input factors

Replaces diesel fuel with electric power

mission

Agriculture is one of the largest contributors to climate change, accounting for 23% of global GHG emissions. At the same time, the agriculture system is extremely vulnerable to climate change. Rising temperatures pose a significant threat to crop yields while encouraging weed and pest proliferation. As both land and labor force available to farmers is restricted, more efficient and sustainable farming practices are required to meet the expected increase in demand – while simultaneously reducing GHG emissions.

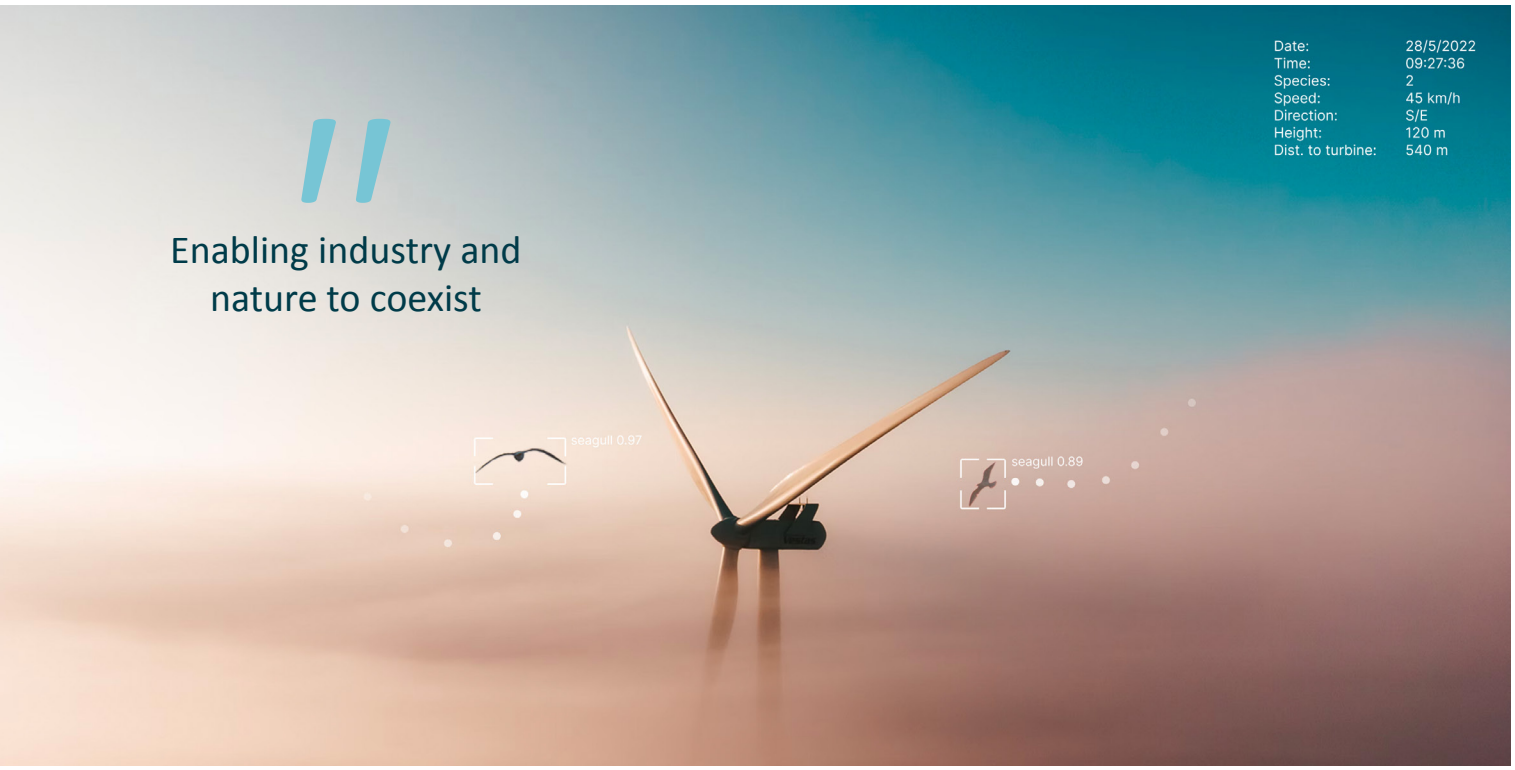
Solution

Saga Robotics spins out from the robotics research community at the Norwegian University of Life Sciences (NMBU). Saga Robotics has developed the autonomous robot Thorvald – a unique farm robot. Thorvald is electric, autonomous and can solve numerous tasks within agriculture. Thorvald is currently used, among other things, to treat plants with UV light at night, which reduces the need for pesticides. In the future, Thorvald will be able to pick and harvest, simplify logistics, remove weeds and mow the grass.

Thorvald is battery-powered and significantly lighter than a diesel-powered tractor, resulting in reduced direct emissions. Also, Thorvald contributes to a drastic reduction of pesticides and fertilizers whilst improving crop yield , efficient disease control and better food delivered to consumers.

Another positive climate effect enabled by Thorvald, is the reduction in the need for manual labour in the form of seasonal workers travelling by plane.

spoor



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Enabling industry and nature to coexist

mission

IEA estimates that wind turbines must produce 8000 TWh yearly from within 2030 to reach a Net Zero Scenario. A lack of a systematic and precise approach for measuring the potential damage to wildlife, habitats, and communities continues to leave wind developers, regulators, and other stakeholders in an uncertain position. Wind developers are required by law to conduct bird impact assessments and suggest monitoring plans. Due to the lack of data today, there is an excessive reliance on the precautionary principle when evaluating the effects of wind-farm projects, which can delay the development of projects significantly.

Solution

Spoor has developed a cutting-edge AI-based technology to identify and track birds for development and operation of wind farms. This can accelerate the development of an average wind project by 3 months.

The technology captures extensive datasets on bird activity for developers, operators, and regulators. Spoor provides analytical insight for environmental impact assessments to calculate project risk and enable intelligent investment, development, and operational decisions to protect biodiversity. Spoor software can detect and track birds up to 2 km away using video.

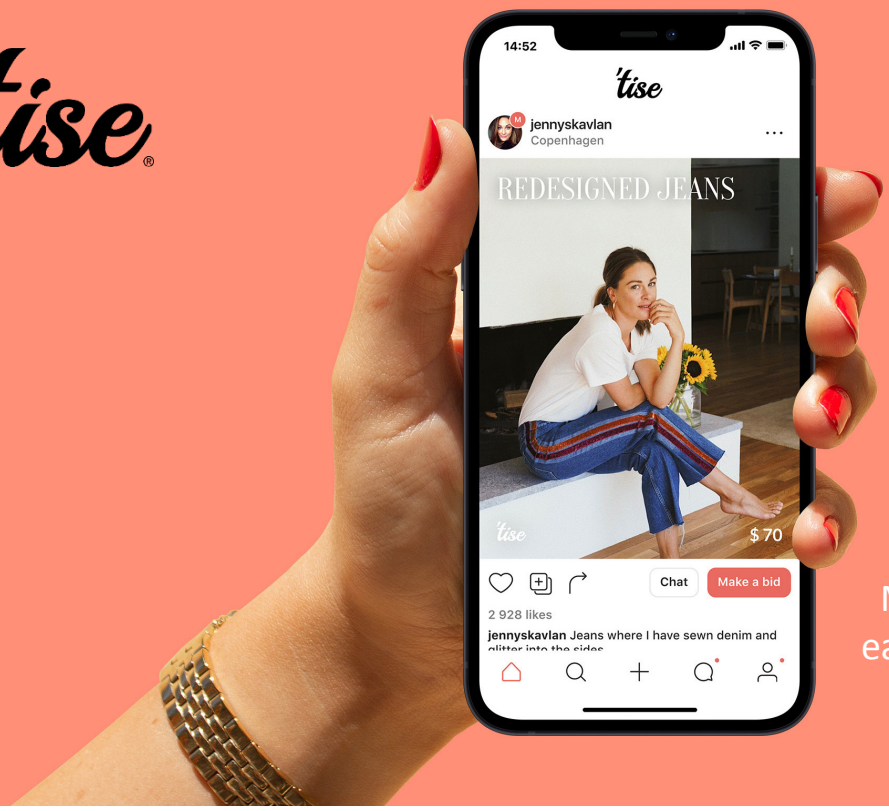
Spoor software can detect and track birds up to

2 km away

using video

Identified Climate effects

Enables wind projects



"Making second-hand easier than buying new

Mission

Global clothing production doubled from 2000 to 2015 and data shows we now use items 36% less than before. The combined forces of increased production and led usage has resulted in the fashion industry emitting 2.1 billion tons GHG emissions annually and this corresponds to 4% of global greenhouse gas emissions in 2018 (Ellen MacArthur Foundation, 2021). According to European Environment Agency (EEA), Europeans consume on average 26 kg of textiles per person per year, and production of new textiles generate 15–35 tons of CO_2/ton produced.

A driver of increased emissions is when apparel and textiles end up in waste streams that ultimately lead to landfill or incineration. Landfill emits greenhouse gases – including methane – as they compose over many decades, or instantly as they are burnt. In Norway, an estimated 90 % of donated clothes is exported to global resale markets. In the Nordics, most textile waste is incinerated to produce power and heat that emits greenhouse gases.

Solution

A global shift of our habits starts with enabling individuals to make better choices. Tise works to make second-hand everyone's first choice using their mobile app – offering inspiration and integrated logistics more than 3 million users in the Nordics.

The Ellen MacArthur Foundation has identified four business models that hold the potential to increase use and reduce resource intensity at the same time: resale, rental, repair and remaking. If these solutions scale to a 23% market share in 2030, 340 million tons of emissions can be reduced annually.

1.85 million
Items sold on Tise in 2022

Identified Climate effects

Items sold on Tise can replace a purchase of a new, unused item

Items sold are diverted from export to global second-hand markets, landfill, waste systems or incineration

TORGHATTEN

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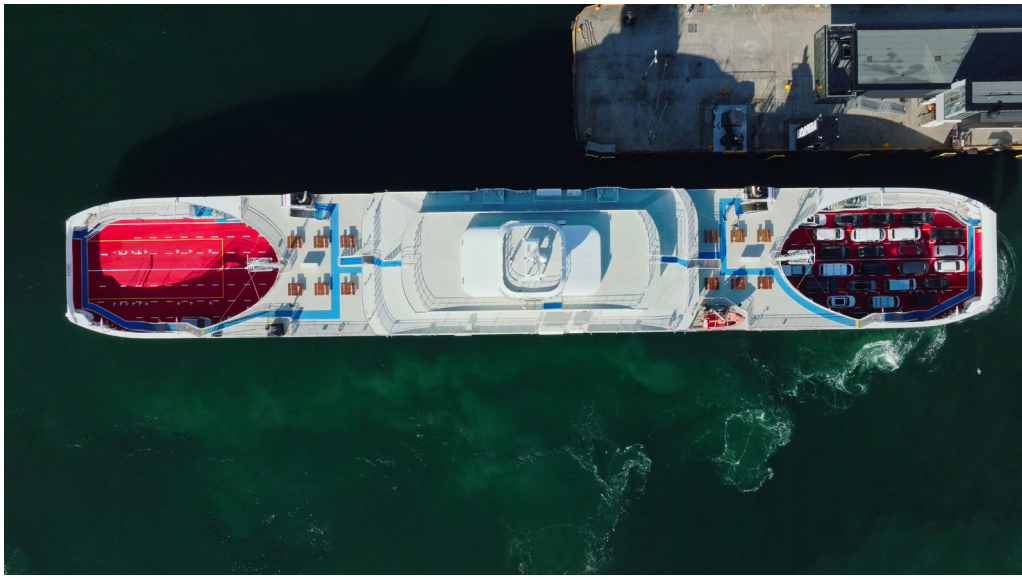
Deploying low and zero-emissions energy for sea transport



mission

Greener transport is crucial to achieve Norway's climate goal of halving emissions by 2030. Ferries and buses are also well-suited for electrification. Estimates show that if ferries use more battery and hydrogen technologies and city buses become electric, emissions can be reduced by 2.4 million tons of CO_2e from 2021 to 2030.

Solution

Torghatten is one of Norway's largest transportation groups and operates routes for ferries, express boats and buses all across the country. The company has set ambitious targets to achieve green fleet renewal by investing in new technology like battery-electric and hydrogen fuel cell passenger and car ferries.

This means that year-on-year, every kilometre travelled with Torghatten is travelled with less emissions. Torghatten is working on Science Based Targets to measure progress. Combined with public tenders asking/demanding for low- or zero emissions transport the goal is to reduce emissions drastically by 2030.

Ferries, express boats, and buses are critical infrastructures in Norway. Accessible, climate-friendly, safe and affordable public transportation is crucial in creating zero-emission societies.

Torghatten ASA is one of the country's leading transport companies, with core business is within sea, land, and air transportation – distributed across ferries, speedboats, buses, and air traffic throughout Norway.

Battery electric or hydrogen fuel cell technology at the accepted cost, time frame and so on – these effects are directly induced. Over time, one can expect more and more companies to deliver the same.

Torghatten aims to annualy reduce their missions per nautical mile with 6%

Identified Climate effects

Battery-electric and hydrogen fuel cell passenger and car ferries in Norway

vårgrønn

The Dogger bank project alone will Dogger Bank produce renewable energy to 6 million homes

Identified Climate effects

Generation of renewable power

Contribute to technology development in floating offshore wind

Mission

The development of offshore wind will play a crucial role in the energy transition and the road to a net zero-emission society.

According to IEA, global wind electricity generation in 2030 needs to supply approximately 7.900 TWh to get on track with the NZE Scenario for 2050. To meet this target, it is necessary to raise average annual capacity additions to almost 250 GW, more than double 2020's record growth.

Solution

Vårgrønn is a Norway-based offshore wind company powering the energy transition through development, construction, operation, and ownership of offshore wind energy and infrastructure. The company ambition is 5 GW installed and sanctioned offshore wind capacity by 2030 in the Northern European market.

Vårgrønn currently has a 20% interest in the Dogger Bank (UK). Once completed in 2026, Dogger Bank will be the world's largest offshore wind farm. The project will have a combined installed capacity of 3.6 GW.

Vårgrønn will contribute with green energy supply that will reduce GHG emissions. Specifically, the Dogger Bank project which will produce renewable energy to ~6 million UK homes. Vårgrønn will also contribute to drive technology development in floating offshore wind.

Z·E·G

"Delivering clean hydrogen solutions with superior efficiency and game-changing technology

Mission

Hydrogen is central to reach our Net Zero ambition.

It`s contribution to the reduction of emissions ranges from decarbonisation of the transport sector (fuel cell vehicles) to the decarbonisation of heavy industries for heat production or steel production.

According to the Hydrogen Council, clean hydrogen could contribute with up to 20% of the total CO_2 abatement needed in 2050.

Today, 98% of global hydrogen is produced from natural gas by steam methane reforming technology without carbon capture. This method of production is called grey hydrogen. To contribute to the reduction of emissions, hydrogen will have to be produced in a way which emits much less CO_2 than today's processes.

Solution

ZEG develops and manufactures plants able to produce hydrogen from natural gas (blue hydrogen) or biogas (red hydrogen) with integrated carbon capture.

This means that ZEG enables the production of low carbon hydrogen that can in turn enable the decarbonization of hard-to-abate sectors.

When biogas is used as feedstock to produce hydrogen, the capture and sequestration of the CO_2 generated by the process leads to removal of CO_2 from the atmosphere, or negative emissions. In the future, carbon removal technologies such as ZEG technology will be critical to secure the 1.5 deg C warming limit.

In 2022, ZEG has started the construction of its first plant in Norway at CCB Energy Park, Kollsnes.

Identified Climate effects

Low carbon fuel production

Enabling low carbon transport (Fuel cell)

Enabling decarbonization of hard to abate sectors (steel, fertilizer…)

Carbon removal through red hydrogen production

The climate effect from our fund portfolio

Since its establishment in 2018, Nysnø has made 13 fund investments, providing growth capital to over 185 companies. However, it is important to note that the future climate impact resulting from these investments is not included in the calculations presented in this report.

Moving forward, our objective is to enhance collaboration and knowledge sharing within the investment community. In the next edition of this report, we aspire to incorporate the potential for avoided emissions coming from our fund portfolio. By doing so, we aim to provide a more comprehensive assessment of our climate impact.

Fund	Description
SARSIA SEED	Sarsia Seed Fund II is an early-stage technology fund targeting innovative growth companies in clean energy and healthcare. The investment focus lies in technologies and businesses that create value through a strong emphasis on sustainability.
ARCTERN VENTURES	ArcTern Ventures Fund II invests in innovative technology companies with significant potential to reduce greenhouse gas emissions and address sustainability challenges. The investment focus is on technologies within renewable energy, energy storage, mobility, advanced materials, resource efficiency, and food and agriculture technology.
ALLIANCE VENTURE	Alliance Venture Delta is a venture fund that invests in technology companies with digital solutions for increased sustainability and green transition. The fund will seek out digital business models within renewable energy, aquaculture, healthcare, the maritime sector, and finance, and invest where there is a positive contribution to one or more of the sustainability goals.
e	Energy Impact Partners is a venture company that focuses on technology for the energy and power sectors while addressing the climate crisis. EIP is a technology-focused venture investor that invests in companies involved in electrification, renewable and distributed power generation, intelligent operational solutions, mobility, smart homes and cities, and cybersecurity.
ASTANOR	Good Harvest Ventures I invests in companies within the food, ocean, and agriculture sectors. World food systems account for over one-third of global greenhouse gas emissions, and food systems are consuming increasingly more energy on a global scale. Astanor invests in companies that make food production, distribution, and consumption more sustainable and resource-efficient.
APVentures ADVANCE & PIONEER	AP Ventures invests in the growing hydrogen industry with the aim of contributing to the development of a well-functioning market and value chain for hydrogen in Norway and globally. Hydrogen is a promising energy carrier for reducing greenhouse gas emissions in sectors where direct electrification is challenging, such as industrial processes and long-distance transportation.

Fund	Description
2150	2150 Urban Tech Sustainability Fund invests in technology that addresses the major challenges faced by the real estate and construction industry in reducing greenhouse gas emissions. The real estate and construction sector alone accounts for nearly 40% of global CO_2 emissions and energy consumption. By 2050, approximately 68% of the population is expected to reside in cities, which also contribute to 70% of global CO_2 emissions and 66% of the world's energy consumption.
verdane	Verdane Idun I (E) invests in energy technologies, sustainable consumption, and strengthened local communities. Increased renewable energy, electrification, and decarbonization are crucial for reducing global greenhouse gas emissions. Circular economy and sustainable solutions enable the reduction of carbon emissions by replacing the use of more carbon-intensive products.
bluefront equity	Bluefront Capital I invests in companies that make aquaculture and seafood businesses more sustainable. Seafood has a lower carbon footprint per kilogram of edible product compared to meat from sources such as chicken, pork, and beef. By replacing meat with plant-based diets and incorporating fish, thereby reducing meat consumption, calculations from Klimakur 2030 estimate a reduction of 2.9 million tonnes of CO_2e in Norway.
Validé	Validé Invest II invests in energy, health, and smart technology. Renewable energy and climate technology are particularly emphasized, and all investments are intended to contribute to at least one of the UN Sustainable Development Goals.
Sandwater	Sandwater Fund I is a Norwegian venture fund that invests in early-stage growth companies in resource efficiency, energy transformation, industry and health technology in the Nordics. They will invest in growth companies that contribute to reducing greenhouse gas emissions and supports the Sustainable Development Goals.
ARCTERN VENTURES	ArcTern Ventures Fund III is a venture fund that invests in innovative technology companies that accelerate the transition to a low-carbon society and help solve the climate challenge. The fund will invest in technology companies that contribute to reduced greenhouse gas emissions within renewable energy, mobility, circular economy, sustainable food, and agriculture and industrial decarbonisation.
HITECVISION	HitecVision New Energy Fund will invest in renewable energy production, green energy infrastructure, and decarbonisation. The HitecVision fund's investment universe will be centred around renewable power production, battery production, offshore and onshore wind, hydrogen and ammonia production, and carbon capture and storage.

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Nysnø has incorporated numerous analyses conducted by renowned experts in the field of energy and climate, including the International Energy Agency and Bloomberg NEF New Energy Outlook. We selectively utilize analyses that are rooted in technological advancements aimed at restricting global warming to below 2 degrees Celsius, and preferably below 1.5 degrees Celsius, by the end of the year 2100. These analyses offer diverse estimations for key climate technologies, such as energy efficiency, electrification, renewable energy, and enhanced resource efficiency. It is important to note that the impact of an individual company's efforts to reduce greenhouse gas emissions may vary in accordance with market dynamics, technological advancements, and patterns of utilization. Below, we have provided a compilation of pertinent analyses for reference:

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