



**VOW**

**SUSTAINABILITY  
REPORT 2020**

# SUSTAINABILITY PURPOSE

The Vow group is passionate about preventing pollution, which directly connects to the group's *purpose* of mitigating climate change. From the start, sustainability has been an integral part of its business activities. Vow's solutions purify wastewater and convert biomass and waste into valuable resources, generating CO<sub>2</sub> neutral energy and biocarbon that decarbonise industrial processes for customers in cruise, aquaculture and a wide range of landbased industries and utilities. These solutions emerge from the group's mission to maximise environmental sustainability impact, creating long-term value for shareholders, the environment, and society.

As the world is in a green transition aiming to reach net zero emissions by 2050 in accordance with the Paris Agreement, Vow believes the group's solutions will be a valuable contribution. This green transition involves a great opportunity for Vow. It is reasonable to assume that Vow will experience increased demand for sustainable technology and solutions as more companies look for climate change adaptation and mitigation. Consequently, Vow sees a great potential for profitable growth for all business activities in its key markets.

In the daily work to pursue the group's purpose and deliver on the group's mission, Vow is directed by a set of core values:

- We are passionate about preventing pollution, giving waste value, and mitigating climate change.
- We have a proactive approach and are responsible in what we do.
- We strive to always be innovative and deliver the best solution.

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# ABOUT VOW

## BUSINESS

Vow develops and delivers world leading technology and solutions that bring an end to waste and help industries decarbonise. The solutions contribute to climate change mitigation and create a cleaner world.

Vow's solutions purify wastewater and convert biomass and waste into valuable resources, generating CO<sub>2</sub> neutral energy and biocarbon that decarbonise industrial processes. Key industries for Vow's solutions include cruise, biogas, metallurgical, minerals, plastic to energy, end-of-life tires, power to heat, waste management, agriculture, aquaculture and food processing. Vow's solutions are scalable and standardised, and the company has proven delivery capabilities. Many of the group's solutions are also patented.

The Vow group's main activities are R&D, sales & marketing, engineering, procurement, and project management. The group is organised in three operating segments: Projects Cruise, Aftersales and Landbased. The segments Projects Cruise and Aftersales are mainly based on the Scanship operations, while segment Landbased includes the ETIA operations, as well as certain landbased operations in Norway.

## EMPLOYEES AND LOCATIONS

The Vow group is headquartered at Lysaker, Norway and the parent company Vow ASA is a Norwegian public limited liability company listed on the Oslo Børs (Oslo Stock Exchange) (ticker: VOW), with employees in Norway, France, Poland and the US. Vow has offices in Tønsberg (Norway), Davie in Florida (USA), Gdynia (Poland), Compiègne (France) and Bray sur Somme (France), and warehouse facilities in Tønsberg and Davie.

The group has 138 employees from 18 different nationalities, of which 25 are women and 113 men.

## SEGMENTS

**Projects Cruise** includes sale of wastewater purification, garbage handling, food waste treatment and sludge processing solutions for the cruise and aquaculture industry. Systems are either sold to shipyards for newbuild constructions or as retrofits to ships in operation. When delivering to shipyards, the yard is installing the systems under supervision from Vow, through the Scanship operations. When systems are delivered to shipowners for ships in operation, these are delivered as turn-key solutions, where Scanship is responsible for installation. All systems delivered are commissioned by Scanship personnel undergoing full compliance testing. Production of Scanship systems is outsourced to subcontractors.

**Aftersales** is related to sale of spares and consumables, as well as service on delivered systems. As the number of delivered systems increases, so is the market for Aftersales.

**Landbased** is mainly based on the business of ETIA, which was acquired by Vow in 2019. ETIA designs and provides plants to valorise biomass residues and waste into renewable products, chemicals and fossil free energy through pyrolysis solutions. ETIA offers proven solutions for turning waste into valuable green products and climate friendly energy, solutions for food sterilisation and debacterisation, and plants for mineral processing, which are used throughout the industry.

In 2020, Vow launched Vow Industries as an incubator for business development in its Landbased segment. The launch of Vow Industries and the new company Vow Green Metals marks a significant strategic shift for Vow. With Vow Green Metals, Vow expands its business, and launches a new company which will offer 'decarbonisation as a service', stand-alone or together with partners. Vow Green Metals will be spun off to existing shareholders and listed.

**18**  
NATIONALITIES

**138**  
EMPLOYEES

**25** **113**  
WOMEN MEN

## SUSTAINABILITY LETTER FROM THE CEO

# BUILDING A SUSTAINABLE AND PROFITABLE BUSINESS – AND DOING GOOD

In Vow we are convinced that finding ways to stop pollution, mitigate climate change, and promote circular economy by valorising waste make business sense. Sustainability has been the hallmark of our business from the very start.

During the past two decades we have built a profitable business, created value for shareholders and safe and meaningful jobs, by helping cruise ship owners prevent sea pollution. Today, around half of all large cruise ships in the world have Vow technology onboard to prevent discharge to sea of wastewater and garbage.

But our solutions are not only applicable in the cruise industry. We also provide increasingly relevant technologies and solutions to a wide range of land-based industries, supporting them in their efforts to decarbonise their value chains and contribute to a circular economy.

During the past year, we have partnered with steel and advanced material industries to reduce their dependence on fossil coal. We have teamed up with energy companies to remove fossil hydrocarbons from their energy mix. We are working with municipalities and commercial recycling companies to valorise their waste streams and turn waste into valuable raw materials.

While engaging with leading players, we have gradually come to realise that Vow is likely to be playing an even more profound role in the shaping of sustainable economic activity than we have ever before understood. A case in point is our launch, demerger and subsequent separate listing of Vow Green Metals, a company dedicated to supporting the metallurgical industry decarbonise by providing sustainably produced biocarbon.

### ACTING ON UN'S SUSTAINABILITY GOALS

The UN's Sustainable Development Goals (SDGs) represent a meaningful way to describe our sustainability measures.

With our waste to energy carbon capture technology we create clean energy from waste for immediate use onboard cruise ships and in various landbased industries. With this, we are advancing SDG 7 Affordable and clean energy.

With our innovations within wastewater purification and waste to energy we help improving the sustainability of sea traffic and landbased industries. With these technologies, we are advancing SDG 9 Industry, innovation and infrastructure.

With our solutions for wastewater purification and waste valorisation we are advancing sustainable production, and with our solutions for debacterisation we are advancing sustainable consumption. Thus, we are advancing SDG 12 Responsible production and consumption.

With our waste to energy carbon capture technology that reduces the use of fossil fuels and lower CO<sub>2</sub> emissions, we are advancing SDG 13 Climate action. Furthermore, as our purpose is tightly aligned with SDG 13, this goal works as a main guide in the integration of the SDG's.

With our technologies for wastewater purification, food waste and garbage handling onboard cruise ships along

with our solutions for the aquaculture industry, we are advancing SDG 14 Life below water.

### SUSTAINABILITY AS STRATEGY

To further strengthen our commitment to sustainability across all the ESG dimensions, Vow joined the UN Global Compact in 2020.

This demonstrates our commitment to accelerate the integration of the UN Sustainable Development Goals into the business and to make the UN Global Compact and its ten principles an integral part of Vow's strategy, culture, and day-to-day operations.

By participating in the UN Global Compact, Vow has committed to submitting a Communication of Progress (CoP) annually describing the company's efforts to implement the ten principles in the areas of human rights, labour, environment, and anti-corruption.

Material environmental, social and governance topics have been identified through stakeholder engagement, and with involvement of company executives and the board. The most important topics are listed in this report, together with a detailed description of key improvement areas and performance targets for 2021.

### RISKS AND OPPORTUNITIES

As environment, social and governance (ESG) considerations and the transition to a green economy are taking hold in most areas of politics and business, an increasing number of investors are demanding truly green and sustainable investment opportunities. Meaning not only resilient to climate change and regulatory changes, but also financially sustainable.

In Vow we are taking a similarly holistic view on our business and its impact on environment, social and governance topics. As part of our strategy, we have considered what impact initiatives such as The Financial Stability Board's Task Force on Climate-related Financial Disclosures (TCFD) and the new EU Taxonomy for sustainable activity could have on our business. With the implementation of the EU Taxonomy, Vow is well positioned to be categorised as a green company. We have already committed to complying with the minimum safeguards within the EU Taxonomy; OECD Guidelines for Multinational Enterprises, the UN Guiding Principles on Business and Human Rights and the International Bill of Human Rights.



In short, we believe such initiatives and regulation represent great opportunities for Vow. Our detailed assessment of this is presented in this report.

### FEEDBACK APPRECIATED

We have come far, but we also identified several areas where we can and must improve. Respectful of the need for everyone to continually strive to improve, we have developed goals for the future and will work to improve the integration of sustainability in our day-to-day activities, as well as the group's reporting of sustainability results.

Going forward, Vow will continue to refine our sustainability strategy and reporting. We will continually and relentlessly be looking for ways to improve the reporting quality and relevant standards to comply with.

I would like to thank you all for your continued support and welcome all and any ideas about how we can further improve the way we work and reinforce the global transition to a greener and more sustainable future, and by that a more profitable and valuable Vow.

Henrik Badin  
CEO, Vow ASA



## HIGHLIGHTS AND KEY INSIGHTS 2020

- E**
- ▶ Multiple partnerships for decarbonising industry
  - ▶ ETIA named top biomass solution provider in Europe
  - ▶ Established Vow Green Metals
- S**
- ▶ Positive social impact through multiple initiatives
  - ▶ 50% women in new hires
  - ▶ 1.8% sick leave and zero accidents
- G**
- ▶ Put together dedicated sustainability group
  - ▶ Commitment to UN Global Compact
  - ▶ First sustainability report in accordance with GRI



In the annual listing by Energy CIO Insights, ETIA was listed among the top ten biomass solution providers in Europe for 2020. Companies listed as top biomass solution providers are at the forefront of providing biomass solutions and transforming business.

### EMPLOYEES

■ Women ■ Men

#### Total 2020



#### New hires 2020





Vow Green Metals will build, own, and operate plants that produce high value biocarbon and CO<sub>2</sub> neutral gas for metallurgical industries.

In the annual listing by Energy CIO Insights, ETIA was listed among top ten biomass solution providers in Europe for 2020. Companies listed as top biomass solution providers are at the forefront of providing biomass solutions and transforming business.

#### PARTNERSHIPS

- Vow and **Bellona** agreed to join forces to solve one of the major environmental challenges by utilising Vow's pyrolysis technology which converts sludge, organic waste, and other types of biomass into biocarbon and biogas.
- Cooperation agreement with **Tinfos AS** to distribute Vow's onshore 'Plastic to Electricity' solution in selected countries and markets, starting with Indonesia and Malaysia. The mobile and container-based solution converts plastic waste to electricity through pyrolysis.
- Strategic partnership agreement with the global energy company **Repsol** to explore multiple

applications and solutions to produce clean and renewable energy for CO<sub>2</sub> emission reduction.

- Strategic memorandum of understanding with **ArcelorMittal**, the world's leading steel and mining company, to work on a project to build a biogas production plant that will reduce CO<sub>2</sub> emissions produced during the steelmaking process.
- Letter of intent with **Elkem**, one of the world's leading suppliers of silicon-based advanced materials, with the aim of reducing fossil CO<sub>2</sub> emissions from the production of silicon and ferrosilicon products for the global market.
- Agreement with **Betula Energy** whereby Vow will supply technology and equipment to produce biocarbon to a new plant that Betula Energy (former Biogreen AS) will establish in Bamble, a municipality

in South-East Norway.

- Vow and **BluHope** have teamed up to promote plastic neutrality in the Sabah region in Malaysia, preventing plastic waste from ending up in the oceans.
- Sponsor of 2021 **49'er FX Helene & Marie**, sailing for Cleaner Oceans to the Olympics in Tokyo 2021.
- Multiple partnerships with research institutions and charities.

#### DEVELOPING VOW GREEN METALS

Inspired by strong interest for Vow's solutions for the metallurgical industry, a growing demand for industry decarbonising and recent strategic agreements, Vow ASA is planning to spin off Vow Green Metals as a new and separate entity. The appointment of Cecilie Jonassen as Chief Executive Officer (CEO) is an important step towards the demerger and separate listing of Vow Green Metals later this year. The spin-off is part of Vow's strategy to create shareholder value by developing and delivering technologies and solutions that prevent pollution, safeguard the environment and combat climate change.

Vow Green Metals will build, own, and operate plants that produce high value biocarbon and CO<sub>2</sub> neutral gas for metallurgical industries. The first plant will be located at Follum in Eastern Norway and is planned for completion in 2022. Vow has already secured agreements with forest owner Viken Skog and municipal waste company Lindum to supply forest waste and waste wood respectively as feedstock, and agreements with metals giant Elkem and district heating company Vardar to deliver biocarbon and CO<sub>2</sub> neutral gas.

Vow's ambition for Vow Green Metals goes far beyond the plant at Follum. Demand for biocarbon is expected to increase significantly in the next few years, driven partly by increasing CO<sub>2</sub> taxation and corporate net zero strategies. The demand for biocarbon in Norway alone is estimated at 400 000 tons annually by 2030. For comparison, initial capacity at Follum will be 10 000 tons per year.

#### GREEN FINANCING

##### Enova

Enova has confirmed a grant of up to NOK 81 million to support Vow's project for industrial production of biocoal for metallurgical industry at Follum in Eastern Norway. The plant at Follum will be owned and operated by Vow Green Metals, currently a wholly owned subsidiary of Vow ASA.

*Enova is a Norwegian state-owned enterprise established to promote a shift towards more environmentally friendly energy consumption and production, as well as the development of energy and climate technology.*

##### Innovation Norway

Innovation Norway awarded grants and loans to Scanship AS, a subsidiary of Vow ASA, to further commercialise the application of its patented pyrolysis technology for chemical recycling of plastic waste. The loans and grants, a total of NOK 19 million will be used to build a plant in Norway to demonstrate the conversion of plastic waste into energy.

*Innovation Norway is the government's instrument for innovation and development of Norwegian enterprises and industry.*

##### Green financing from DNB

Vow secured NOK 320 million long-term financing from DNB, securing financing of Vow Green Metals' first stage development and establishing a strong financial foundation for further innovation and project development in landbased industries. The financing is classified as "green financing" at attractive terms, and within the DNB Sustainable Product Framework. This framework includes verification by DNV, an assurance and risk management company, and is based on the international Green Loan Principles (GLP).

#### INITIATIVES AND COMMITMENTS

##### Global Reporting Initiative (GRI)

This report has been prepared in accordance with the GRI Standards: Core option. In accordance with GRI, Vow has identified material topics for the group and its stakeholders, which this report is structured upon. GRI is the overarching framework for this report.<sup>1</sup>

##### Euronext guidance on ESG reporting

In the preparation of this report, Vow has used the Euronext ESG Guidance for identification of stakeholders and relevant themes, prioritisation, implementation and reporting processes.

##### Task Force on Climate-Related Financial Disclosures (TCFD)

TCFD is a set of recommendations created to improve and increase reporting of climate-related financial information. Vow is working on implementing the TCFD recommendations and plans to improve the reporting on the TCFD topics over the next years.

### Norwegian Accounting Act

Together with the Annual Report 2020, this report addresses the legal requirements specified under Section 3-3c of the Norwegian Accounting Act ("Regnskapsloven") for reporting on corporate social responsibility.

### UN Global Compact (UNGC)

UNGC is a voluntary initiative based on CEO commitments to implement universal sustainability principles and to take steps to support UN goals. Vow delivered its Letter of Commitment in August 2020 and will report on its annual Communication on Progress (COP) within August 2021.

### OECD Guidelines for Multinational Enterprises (OECD Guidelines)

The OECD Guidelines are recommendations addressed to multinational enterprises for responsible business

conduct in a global context consistent with applicable laws and internationally recognised standards. Vow's activities are carried out in alignment with the OECD Guidelines.

### The UN Guiding Principles on Business and Human Rights

The UN Guiding Principles on Business and Human Rights are a set of guidelines to prevent, address and remedy human rights abuses committed in business operations. Vow acts with due diligence to avoid infringement, and to address adverse impacts on human rights.

### The International Bill of Human Rights

The International Bill of Human Rights consists of the five human rights treaties of the United Nations. Vow's activities are carried out in alignment with the International Bill of Human Rights.

## UN GLOBAL COMPACT

In August 2020, Vow joined the UN Global Compact. This demonstrates our commitment to accelerate the integration of the UN Sustainable Development Goals (SDGs) into the business and to make the UN Global Compact and its ten principles an integral part of Vow's strategy, culture and day-to-day operations. By participating in the UN Global Compact, Vow has committed to submitting a Communication of Progress (CoP) annually describing the company's efforts to implement the ten principles in the areas of human rights, labour, environment and anti-corruption.

### HUMAN RIGHTS

**Principle 1:** Businesses should support and respect the protection of internationally proclaimed human rights; and

**Principle 2:** make sure that they are not complicit in human rights abuses.

### LABOUR

**Principle 3:** Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

**Principle 4:** the elimination of all forms of forced and compulsory labour;

**Principle 5:** the effective abolition of child labour; and

**Principle 6:** the elimination of discrimination in respect of employment and occupation.

### ENVIRONMENT

**Principle 7:** Businesses should support a precautionary approach to environmental challenges;

**Principle 8:** undertake initiatives to promote greater environmental responsibility; and

**Principle 9:** encourage the development and diffusion of environmentally friendly technologies.

### ANTI-CORRUPTION

**Principle 10:** Businesses should work against corruption in all its forms, including extortion and bribery.





# STAKEHOLDERS AND MATERIALITY

The information in this report covers all consolidated subsidiaries within the Vow group unless otherwise specified. With this being Vow's first ever sustainability report, the group aims to continuously improve stakeholder dialogue as Vow grows and develops as a company. As part of the preparations for this report, Vow established a designated sustainability group.

## STAKEHOLDERS

Vow has identified several stakeholders as listed below:

<b>Customers</b>	Suppliers/workshops	Policy makers
<b>Employees</b>	Business partners	Authorities
<b>Investors/shareholders</b>	Research partners	Unions
	Corporate management	Media
	Board of directors	NGOs
	Classification society	Lenders
	Local community	Competitors

After careful consideration and discussion, customers, employees and investors/shareholders have been identified as the most important stakeholders. Vow's customers are paramount for driving sales of our solutions. Furthermore, achieving the ambition of preventing pollution and enhancing climate change mitigation depends on Vow having successful customer

relationships. The employees are essential in the day-to-day operations of the company, as well as for the progress of the company. Finally, investors/shareholders are key in providing funding for both operations and R&D, as well as incentivising innovation and driving sustainability.

### Type of dialogue and material topic interests for key stakeholders:

Stakeholder	Type of dialogue	Type of interest/activity
<b>Customers</b>	Conferences, e-mail, meetings, podcast, social media, telephone, web page	Circular economy, climate action (decarbonisation), environmental innovation, governance/risk/compliance, partnerships, product safety/quality, responsible sourcing and procurement, waste valorisation, anti-corruption
<b>Employees</b>	E-mail, intranet, meetings, personal development, podcast, Teams/Whatsapp groups, telephone, web page, webcast	Circular economy, climate action (decarbonisation), diversity and equal opportunities, human capital development, environmental innovation, occupational health and safety, waste valorisation, anti-corruption
<b>Investors/shareholders</b>	Corporate reporting, e-mail, podcast, presentations, roadshows, telephone, webcast	Circular economy, climate action (decarbonisation), environmental innovation, governance/risk/compliance, human and labour rights, waste valorisation, anti-corruption

The most frequently used channels for stakeholder dialogue are email, telephone, and meetings. However, Vow also finds it valuable and efficient to communicate widely with stakeholders through the Vow website, social media and the Vow podcast.



**MATERIALITY**

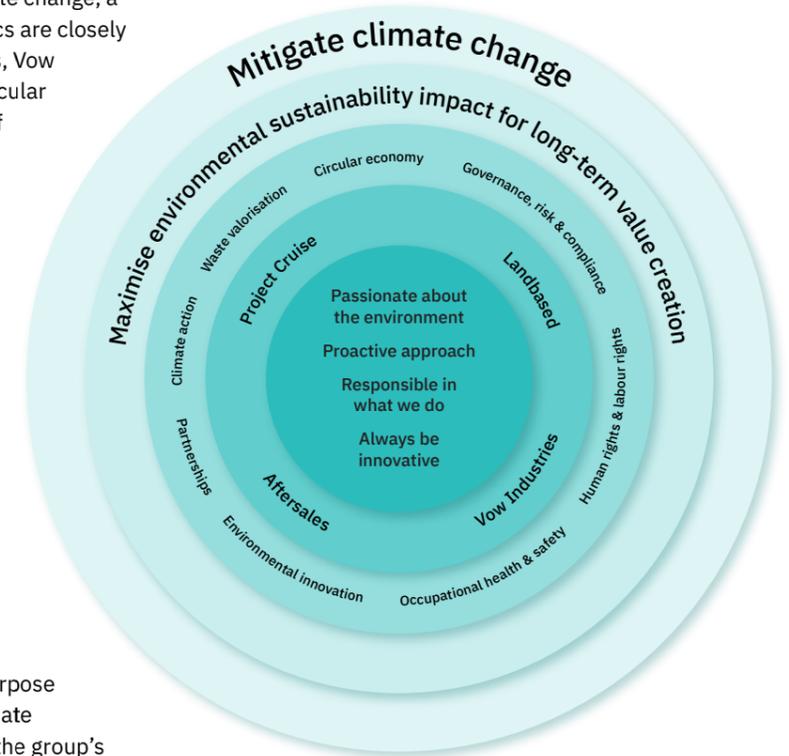
Material topics are those that reflect an organisation's significant economic, environmental and social impacts; or that substantively influence the assessments and decisions of stakeholders. Material topics for Vow and its stakeholders have been identified through stakeholder engagement, the executives and the board. The most important topics are listed in a materiality matrix.

**MATERIALITY MATRIX**



Environment and climate action	Social responsibility	Sustainability governance
<b>Climate action</b> Mitigating climate change through industry decarbonisation and taking responsibility for Vow's own emissions.	<b>Occupational health and safety</b> Employees who feel safe at work help Vow succeed with its mission. Vow strives to achieve a vision of zero harm to people, the environment and society.	<b>Governance, risk and compliance</b> Important topics are ethical business conduct, transparency, regulatory compliance, climate risks and opportunities.
<b>Waste valorisation</b> Turning waste into valuable resources and clean energy for customers through Vow's technology and solutions.	<b>Human capital development</b> Vow's employees are the group's most important resources. Human capital development is a priority in the coming years.	<b>Anti-corruption</b> Vow recognises its responsibility as an international business actor to continuously work on anti-corruption.
<b>Circular economy</b> Providing customers with solutions that bring an end to waste, and in addition, taking circular economy into own operations.	<b>Diversity and equal opportunities</b> Vow has a diversified workforce. Increased diversity and equal opportunities are important priorities in the coming years.	<b>Responsible sourcing and procurement</b> Ensuring good governance in the supply chain, taking ESG factors into account.
<b>Environmental innovation</b> Behind Vow's solutions are environmental innovations contributing to climate change mitigation, waste valorisation and circular economy.	<b>Human and labour rights</b> Vow is committed to respecting fundamental human and labour rights, both in our own internal business and in our relations.	<b>Product safety/quality</b> Vow's products and services are subject to strict requirements in terms of quality and safety, maintaining strong customer relationships.
<b>Partnerships</b> Collaboration is key to reach net zero by 2050. Partnerships enable Vow to pursue its purpose of climate change mitigation and pollution prevention, and to pursue the mission to maximise environmental sustainability impact, as well as social impact.		

As Vow is providing solutions to help mitigate climate change, a natural consequence is that the most material topics are closely linked to the environment. Through careful analysis, Vow finds that climate action, waste valorisation and circular economy are at the top of the list. At the moment of writing this report, the management group uses a general management approach towards all the material topics in the materiality matrix. The management and board meet twice a year to discuss and evaluate material topics for Vow. Material topics are also discussed during board meetings multiple times a year. Furthermore, along with employees, the management has decided on specific goals for each material topic. By setting specific goals for the next year(s) Vow will be better equipped to evaluate the work and performance on each material topic. As part of the continued sustainability work, Vow will work on a more specific management approach and evaluation practices linked to material topics.



The illustration to the right highlights the overall purpose of the company, which is to be a key enabler of climate change mitigation. Through Vow specific solutions the group's mission is to maximise environmental sustainability impact for long-term value creation. Vow addresses material topics through core values that are at the heart of Vow's value creation.

*Illustrative overview of the value creation within the company.*



## OUR CONTRIBUTION TO THE UN SDG'S

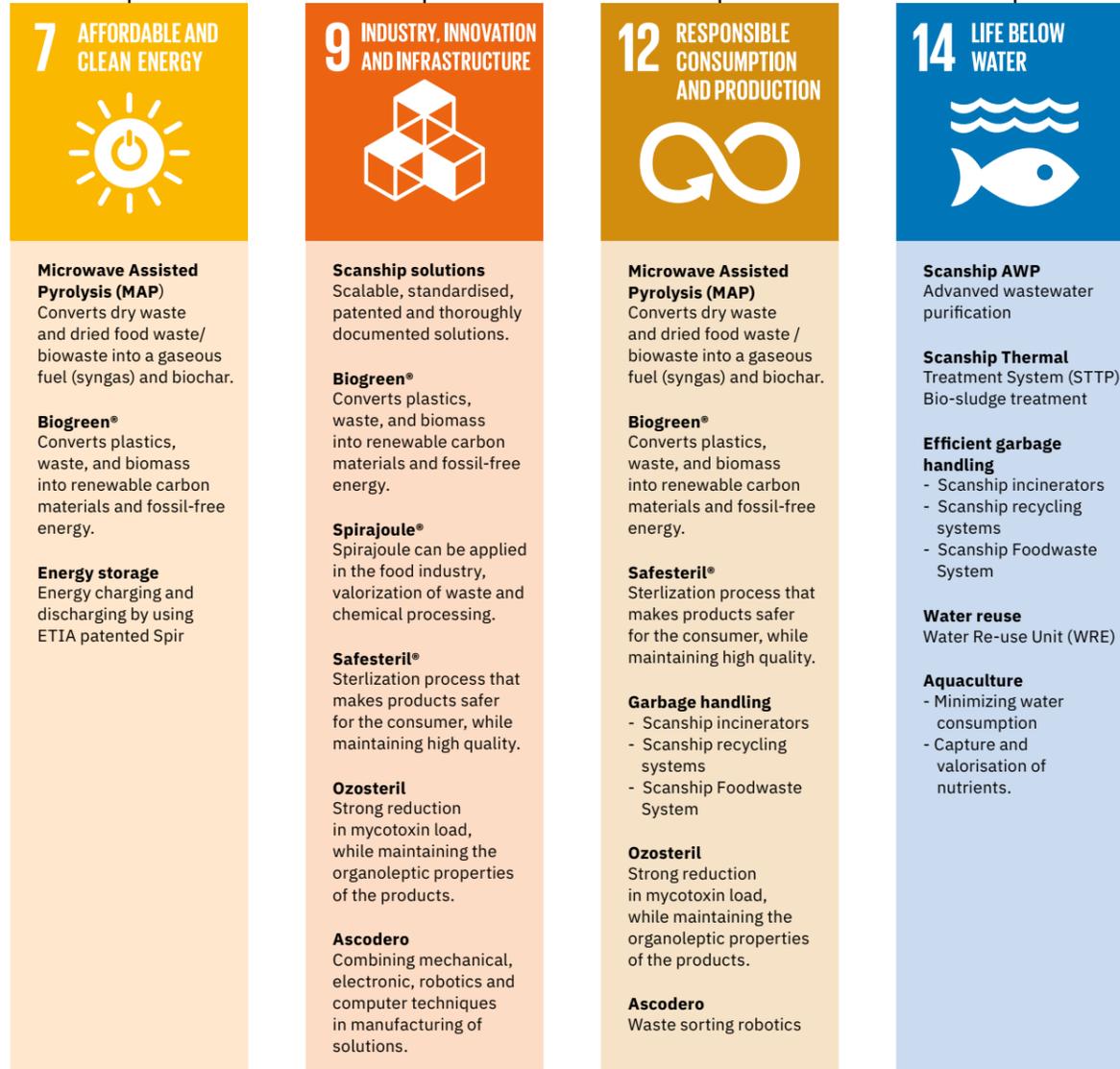
Guiding the group in its work, the United Nations' Sustainable Development Goals (SDGs) are a key part of the group's strategy development. The SDGs are a global call for action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity. Each goal has a separate list of targets, and by achieving all 169 targets, the 17 SDGs will be met. Vow is working to meet several of these goals, with special emphasis on five of the SDGs.

				
<p><b>SDG 7:</b> <b>Affordable and clean energy</b> With our waste to energy carbon capture technology, we create clean energy from waste for immediate use on board cruise ships and in various landbased industries. With this, we are advancing SDG 7.</p>	<p><b>SDG 9:</b> <b>Industry, innovation and infrastructure</b> With our innovations for wastewater purification and waste to energy we help improving the sustainability of sea traffic and landbased industries. With these technologies, we are advancing SDG 9.</p>	<p><b>SDG 12:</b> <b>Responsible production and consumption</b> With our solutions for wastewater purification and waste valorisation we are advancing sustainable production, and with our solutions for debacterisation we are advancing sustainable consumption. Thus, we are advancing SDG 12.</p>	<p><b>SDG 13:</b> <b>Climate action</b> With our waste to energy carbon capture technology that reduces the use of fossil fuels and lower CO<sub>2</sub> emissions, we are advancing SDG 13. Furthermore, as Vow's purpose is tightly aligned with SDG 13, this goal works as a main guide in the group's integration of the SDG's.</p>	<p><b>SDG 14:</b> <b>Life below water</b> With our technologies for wastewater purification, food waste and garbage handling onboard cruise ships along with our solutions for the aquaculture industry, we are advancing SDG 14.</p>

OVERALL SDG GOAL



SDG PILLARS



# ENVIRONMENT AND CLIMATE ACTION

In Vow, environment and climate action is embedded in the business strategy and solutions provided to customers. To further highlight the importance of environment and climate action, Vow has selected strategic UN Sustainable Development Goals that correspond to the solutions provided for the customers.

The goal is to emphasise how the Vow solutions are aligned with the UN Sustainable Development Goals. In addition, the chosen goals function as a guiding path for the work on sustainability. Along with strategic and research partnerships, the work on sustainability continues to progress. Furthermore, Vow recognises that in-house initiatives are key in a holistic perspective on sustainability. This is an area getting increased attention and Vow will continuously work on its in-house environmental footprint.

## SUSTAINABLE SOLUTIONS

Vow serves key markets by providing sustainable solutions to help clients with decarbonisation and climate change mitigation by giving value to waste. Thus, Vow becomes an enabler in taking waste from one process and making it into valuable input for the next. Vow has identified climate action, circular economy, waste valorisation and environmental innovation as material topics for the company in relation to the company's purpose and mission. As a company focusing on environmental technology, innovation has a significant impact on company development and client solutions.

Vow's purpose is to mitigate climate change, which is something the group does by investing in and developing solutions for industries to decarbonise through waste valorisation. Over the recent years, investor interest for more sustainable investment opportunities has grown, and more and more investors are looking for investments which are resilient to climate change and regulatory changes.

Vow offers solutions through six distinct brands: Scanship, Biogreen, Spirajoule, Safesteril, Ozosteril and Ascodero.

## Scanship

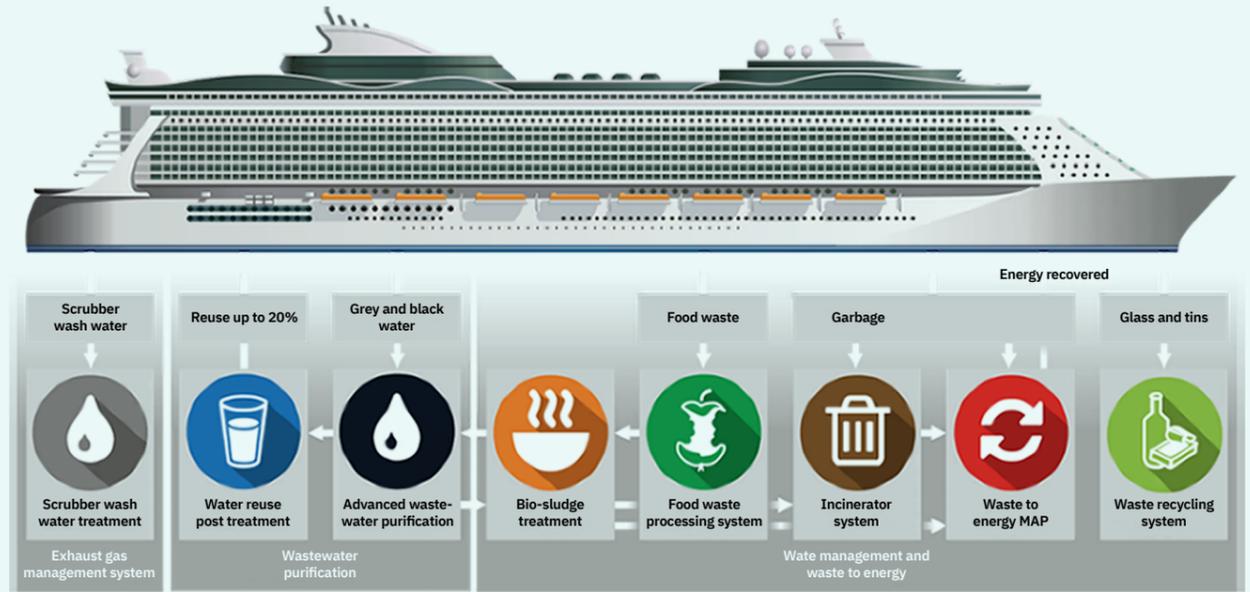
Scalable, standardised & patented



Scanship provides advanced technologies for processing waste and purifying water for cruise ships, aquaculture and landbased industries. Scanship's systems convert all waste and wastewater into clean energy and purified water which meets the highest international discharge standards. Any residuals from the Scanship processes can be recovered, recycled or reused.

All Scanship systems comply with the IMO-MARPOL pollution regulations. Scanship was one of the first companies in the world to obtain an Alaska-approved advanced wastewater system in 2003 and first to obtain approval for the new IMO MARPOL 227(64) special area Baltic Sea in 2013.

Cruise ships on every ocean have Scanship technology installed which processes waste and purifies wastewater. For several years, Scanship has been the market leader in the cruise industry. Fish farmers are adopting similar solutions, and public utilities and industries use Scanship solutions for sludge processing, waste and plastic management, as well as biogas production on land. Scanship's solutions are scalable, standardised, patented and thoroughly documented, and Scanship's capability to deliver is well proven. Scanship offers solutions that are key to bringing an end to waste and minimising pollution, which is required in a truly sustainable circular economy.<sup>2</sup>



The Scanship total clean ship system is highly efficient with the seamless interface, reduced footprint, and low cost of operation. The solutions preserve and protect water and air resources.

## Scanship case for cruise ship

Vow has a clear ambition to deliver sustainable technical solutions to help customers reduce emissions and achieve their goals in a circular economy. The UN Sustainability Development Goals are reflected in Vow's innovations as the group strives to do its part in

protecting the planet and people living on it. The next generation cruise ships will take a giant leap towards waste valorisation onboard and not simply waste destruction, thus advancing SDG 9 and 12. These ships will harbour technology enabling them to significantly reduce the energy consumption and CO<sub>2</sub> emissions from waste handling and facilitate carbon capture and storage (CCS) through biochar production.

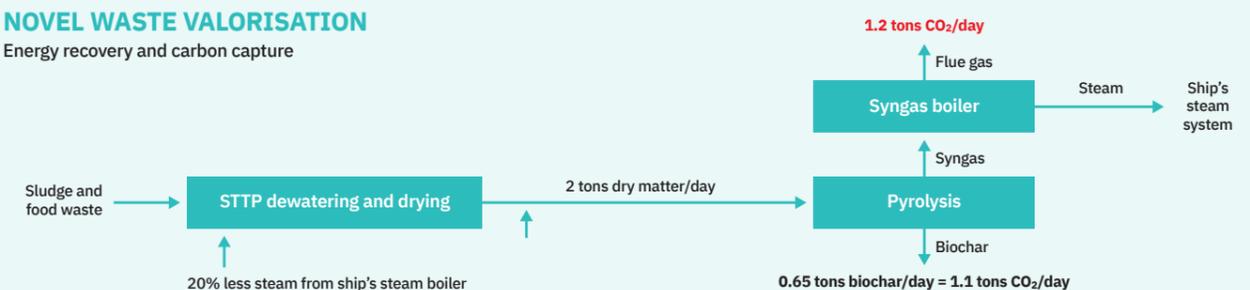
Illustration of the traditional and novel waste handling systems.

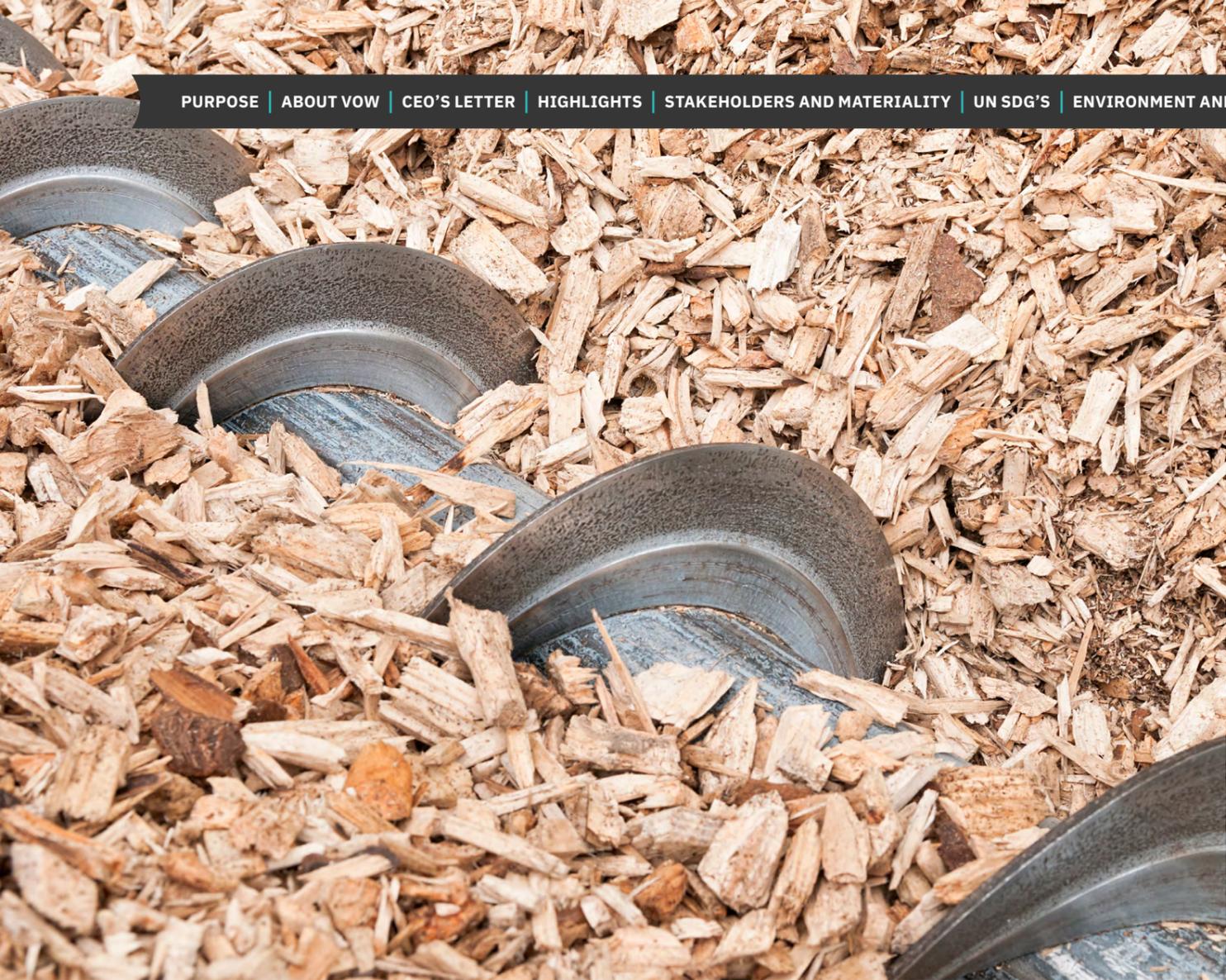
## TRADITIONAL WASTE DESTRUCTION



## NOVEL WASTE VALORISATION

Energy recovery and carbon capture





The outputs of traditional waste destruction are flue gas, waste heat and ash, which are not reused or valorised today. In the novel configuration this is replaced by a thermal dewatering and drying process followed by microwave assisted pyrolysis (MAP) and a boiler. The MAP converts the dried waste into biochar and synthesis gas (syngas). The syngas is used locally in a dedicated syngas boiler to produce steam needed elsewhere on board, reducing the need for fossil fuel. The thermal dewatering will reduce the need for drying capacity by 50 per cent, offering significant savings in energy consumption of the system. This novel system produces clean energy from waste, reduces the need for fossil fuel and requires 40-50 per cent less energy than traditional waste destruction, advancing SDG 7 (even more specifically SDG sub-target 7.3).

Traditional drying and incineration of waste emits approximately 3.8 tons of CO<sub>2</sub> per day into the air in this example. By capturing carbon from the waste in the stable form of biochar 1.1 tons of CO<sub>2</sub> are offset per day as a direct method of CCS. In total with CCS and the

reduced need for fossil fuel, the novel system will reduce CO<sub>2</sub> emissions from waste handling by 70 per cent, thus advancing SDG 13 (even more specifically part of SDG sub-target 13.1 adaptive capacity to climate related hazards).

Traditional incineration will result in the production of ash, a waste product with no beneficial use. However, the biochar is a valuable product that could be applied in several applications onshore such as agriculture, soil remediation or to clean air or water, bringing an end to waste and advancing SDG 12 (even more specifically advance SDG sub-target 12.2, 12.4 and 12.5). This novel solution for waste management on ships is also a business solution that advances SDG 14 by improving resource efficiency by waste valorisation and preventing marine pollution.

This new offering is a direct result of Vow's innovative mindset and passion for valorisation of waste as an important part of a sustainable future and a circular economy.

**Biogreen®**  
Universal tool for heat treatment



Biogreen is a patented pyrolysis solution that has been in operation since 2003. Biogreen decarbonises industrial processes by converting plastics, waste, and biomass into renewable carbon materials and fossil-free energy. This is an extremely versatile system, based on an electrically heated screw conveyor, the Spirajoule®, designed for advanced thermal treatment in temperatures up to 800°C and beyond. Biogreen is a flexible pyrolysis solution to produce biochar, oil, solid fuels and syngas from biomass residues. Whether it is a food debacterisation, minerals dehydration, biochar production or waste treatment, a solution can be tailored to customer needs. With a precisely controlled continuous and fully automatic process Biogreen supports the circular economy and industrial decarbonisation sustainably.<sup>3</sup>

**Spirajoule®**  
Valorisation of bulk products



The heart of Vow's pyrolysis processes is the electrically heated screw conveyor - the Spirajoule - a universal tool for heat treatment of bulk products and residues. Thanks to its flexibility Vow has developed multiple applications across various domains of industry. Whether it is food debacterisation, mineral dehydration, biochar production or waste treatment, Vow is ready to prepare a solution tailored to customer needs. The Spirajoule technology is an exclusive process for thermal treatment. It is designed with a warm screw conveyor heated by a low voltage current. The temperature of the screw is maintained due to the joule effect. Treated product temperature is precisely controlled by the regulation of the screw temperature setting. The time the material is treated is regulated by the setting of the screw rotation speed. It is a simple and economical process with accurate and efficient operation for the heat treatment and valorisation of bulk products in a wide temperature range of up to 800°C.<sup>4</sup>

**CLIENT TESTIMONIALS**

*"The Biogreen process offers our business a strongly CO<sub>2</sub> negative solution. Biochar produced in the plant serves as a carbon sink and can collect CO<sub>2</sub> emission certificates. The energy generated in the pyrolysis process is used to provide sustainable energy on site replacing energy generated from fossil fuel. These factors can offer reduction of the CO<sub>2</sub> footprint by approx. 5 500 tons to 8 000 tons per annum in our plant. This emission reduction potential represents a great added value for our customers in chocolate industry."*

**Circular Carbon GMBH**

*"By using the Biogreen solution, approx. 7000 tons of wood waste will become approx. 1500 tons of biochar sequestering approx. 3000-4200 tons of CO<sub>2</sub> annually."*

**NSR AB**

**Safesteril®**  
Innovative and safe sterilisation process



Safesteril is a completely natural and safe sterilisation process. It only uses heat to safely and gently reduce the microbial load of sensitive raw materials, without compromising on important characteristics like flavour, taste, colour or moisture. Safesteril will make the product safer for the consumer, while maintaining its high quality. Safe sterilisation of spices or dried materials is the ultimate solution for micro-reduction. Thanks to a homogeneous treatment due to a non-static exposure to steam and to the non-condensation of steam on the product, Safesteril has a minimal impact on the colour and other heat sensitive properties.<sup>5</sup>

**Ozosteril®**  
Economical and cost-efficient solution



Ozosteril is the leading solution for the continuous ozone sanitation of dehydrated products of all shapes like powder, granulated, crushed, shopped, flakes and

several other types of products. The Ozosteril ozone process is the best alternative to thermal processes for sensitive products. Ozosteril achieves a strong reduction in mycotoxin load, while maintaining the organoleptic properties of the products. Taste, colour and moisture are preserved.

This technology is based on the unique and patented combination of a vibrating conveyor and ozone injector. Ozone, a molecule consisting of three oxygen atoms, is a powerful oxidant that destroys mycotoxins and pesticides. Ozosteril is a patented process, developed by ETIA. Ozosteril offers an alternative to steam treatment, chemical fumigation and irradiation. It is an organic non-thermal sanitation solution that preserves food quality. This is a cost-efficient solution based on decades of experience from Safesteril, our leading steam sterilisation process.

**Ascodero**  
Solutions for a variety of sectors



Ascodero produces tailored solutions that help customers create a more efficient workflow in their production line or custom mechatronic solutions for specific tasks. Ascodero delivers high-end solutions in mechatronics, by combining mechanical, electronic, robotics and computer techniques in the manufacture of their solutions. Furthermore, Ascodero exploits the development within AI technology and robotics to become an important actor within waste sorting. Waste sorting robotics based on artificial intelligence is a game changer in waste management and particularly in metal scrap industry.

Ascodero's solutions serve customers from small to large companies in a variety of sectors such as industry, aeronautics, rail, agriculture, food, automobile, capital goods, luxury goods, pharmaceuticals and textiles.<sup>6</sup>

**PARTNERSHIPS**  
Strategic partnerships

Forming strong partnerships is essential for Vow. Vow has strategic partnerships with several businesses in multiple industries across the globe. Furthermore, Vow has formed partnerships with NGO's, research and academia. Collaboration is key to reach net zero by 2050, and strategic alliances enable the Vow group to pursue its purpose of climate change mitigation and mission to maximise environmental sustainability impact.

**New partnerships in 2020**

Vow entered into a cooperation agreement with Tinfos AS to distribute Vow's onshore "Plastic to Electricity" solution in selected countries and markets, starting with Indonesia and Malaysia. This cooperation has potential to create a healthy triple bottom line, which means having positive impact on both people, the planet and prosperity.

In addition, Vow entered into a strategic partnership with Repsol to explore multiple applications and solutions to produce clean and renewable energy for CO<sub>2</sub> emission reduction. Repsol, headquartered in Spain, is a global multi-energy provider and it is one of the first energy companies to make a net zero emissions commitment by 2050 aligned with the climate objectives set out by the Paris Agreement and the UN Sustainable Goals.

Another important milestone was that Vow and Bellona agreed to join forces to solve one of the major environmental challenges by utilising Vow's pyrolysis technology which converts sludge, organic waste, and other types of biomass into biocarbon and biogas.

Towards the end of the year 2020, it was announced that Vow will join forces with a world leading manufacturing company, later announced to be the world's leading steel and mining company ArcelorMittal, to build a biogas production plant to reduce CO<sub>2</sub> emissions from metallurgical processes. The two companies will cooperate on engineering, business modelling and financing of a dedicated biogas plant for an industrial facility in continental Europe, with the aim to have the plant operational in 2022.

**New partnerships in 2021**

In February 2021, Vow and Elkem, one of the world's leading suppliers of silicon-based advanced materials, signed a Letter of Intent to join forces with the aim of reducing fossil CO<sub>2</sub>-emissions from the production of silicon and ferrosilicon products for the global market. The two companies will join competence and technology solutions to develop and manufacture biocarbon and other products for Elkem's production processes. The biocarbon will be produced at Vow's planned plant at Follum, outside Oslo in Norway, from a sustainable feedstock comprised of forestry wood mass, wood waste and other wood materials.

Later in February 2021, it was announced that Vow and Betula Energy have entered into an agreement whereby Vow will supply technology and equipment to



Vow's onshore "Plastic to Electricity" solution has potential to create a healthy triple bottom line, which means having positive impact on both people, the planet and prosperity.

produce biocarbon to a new plant that Betula Energy will establish in Bamble, a municipality in South-East Norway. At this location, Betula Energy, which is the new name of former entity BioGreen AS, will establish bioenergy and biocarbon production from forest wood mass in the form of pellets, biocarbon and bio-oils. Vow will supply the process equipment for the biocarbon production, and orders will be placed by Betula Energy once they have secured financing planned within 2021.

In early summer, it was announced that Vow and BluHope is teaming up to battle plastic waste in Malaysia with support from France and Norway. This is seen as a key milestone toward the realisation of the goal for Sabah and Timor-Leste, and a follow up on the agreement between Kota Kinabalu City Mayor, Noorlia Awang Alip and Kota Kinanalu City Hall (DBKK) and BluHope to implement solutions to plastic pollution in and around the capital city. Vow will contribute with expertise and pyrolysis technology from ETIA to Sabah Plastic Neutral. Thus, Vow will aid in protecting and restoring pristine ecosystems and ocean areas, a great start for the UNESCO Ocean Decade.

**Research partnerships**

In Vow there is a strong collaboration between the R&D department, the rest of the group and other research organisations and businesses. The path from development to delivery is often short. R&D centres in France and Norway support the development and testing of new materials and process conditions.

**VOW with NGI<sup>7</sup>**

Every year Norway generates about 1.2 million tons of various organic waste, such as waste timber, garden

**MAIN OVERVIEW OF THE WORK DONE BY VOW'S R&D DEPARTMENT**

Vow is working closely with customers to find best methods for valorisation of biomass and waste.

Vow is constantly driving research and innovations by developing new application areas for biochar and decarbonising industrial processes.

Research centre in France – one Biogreen bench unit:  
<http://www.biogreen-energy.com/pyrolysis-research-center>

<https://etia-group.com/heat-treatment-testing-center>

Research centre in Norway – one Biogreen bench unit and one MAP unit:  
<https://nowaste.no/en/projects/biochar-pilot-plant-a-circular-kinder-egg>

waste, forestry residues, food waste and sewage sludge, which is often contaminated. The pyrolysis process generates biochar, while destroying microplastics and organic pollutants. Biochar could carry significant value

as sorbent for soil remediation and purification of air and water. Thus, contaminant leaching, emissions and environmental risk would be reduced. Furthermore, an important co-benefit of biochar is carbon storage, combatting climate change.

The objective in this project is to create sustainable products for soil, air and wastewater treatment from organic waste, and in the process defuse toxins and plastics and collect released energy. The project will work with pyrolysis as a tool and develop biochar with optimised binding properties as sorbents. Optimised biochar sorbents will be tested and used in real-world contamination scenarios. Pyrolysis conditions of the contaminated waste will be optimised to maximise economic and environmental benefits, analysed through cost-benefit and life-cycle analyses. Revenue streams will mainly be generated through valuable, clean, internationally saleable sorbents. Reduced landfilling charges for contaminated soil will add to the total benefits.

In view of a circular economy, the world-wide societal value of sustainable, cost-effective sorbents could be enormous. Main Vow relevant SDGs addressed are SDG 9 Industry, Innovation and Infrastructure (especially sub-target 9.4 and 9.5), SDG 12 Responsible Production and Consumption (especially sub-target 12.2, 12.4 and 12.5), and SDG 13 Climate Action (especially sub-target 13.1). Read more about the project and participants in the reference on page 45.

**SLUDGEFFECT with NTNU/NGI<sup>8</sup>**

Today, there is a scarcity of R&D initiatives regarding practical ways to mitigate the harmful presences of hazardous substances of sewage sludge and e-waste plastic within a circular economy. The Sludgeeffect project will explore this in the context of addressing SDG 12, in combination to synergies and trade-offs to other SDGs. As part of this project Vow collaborates with multiple organisations and businesses.

The project will combine state-of-the-art knowledge and analysis of the presence of contaminants in sewage sludge fertilisers and e-waste plastic, with the literature and novel experimentation on how to remove hazardous substances through pyrolysis at high temperature (>700°C). It will provide a proof-of-concept that hazardous substances risks can be mitigated through high temperature pyrolysis in Norwegian waste streams, while making useful raw materials. This project will investigate how to integrate this risk mitigation within an

SDG analysis and circular economy approach. Moreover, it will investigate how to optimise this process to achieve a better environmental footprint and finally, how to advance this kind of technology to develop products in the current regulatory and market situation in Norway.<sup>9</sup> Read more about the project and participants in the reference on page 45.

**MAFIGOLD with NMBU<sup>9</sup>**

This project will contribute to streamlining the use of renewable biomass from agriculture and aquaculture to plant fertilisers and soil improvement products and will contribute to new knowledge about fertiliser strategies and how the ecosystem in soil responds to these. The main Vow relevant SDGs addressed by this project are SDG 12 and SDG 13.

First, the project will look at technical solutions for dewatering, desalination, drying and logistics for fish sludge, livestock manure and fibre residues from food waste treatment. Based on the raw materials, the participants will compose complete fertiliser products and soil mixtures / soil improvement products that best correspond to the plants' nutritional needs. The fertiliser products must be processed into fertiliser pellets or granules. Furthermore, the project will test the release of nutrients from the various products throughout the growing season, so that the user can get advice on how the fertiliser and soil products can be used in the best possible way. The effect on the earth's physical and chemical properties and micro-life must also be tested. To document climate accounts when using these products, net greenhouse gas emissions will be calculated from processing, transport and use of the products developed in the project.

Read more about the project and participants in the reference on page 45.

**IN-HOUSE ENVIRONMENTAL FOOTPRINT**

Vow has examined the in-house environmental footprint in 2020 from the companies located in Norway. During 2021, Vow will gather and analyse emissions data from the whole group incurred in 2021. The group will report on numbers for scope 1 and scope 2 emissions for all companies in the sustainability report for 2022.

**GOAL FOR 2021:**

Report on scope 1 and scope 2 emissions in 2022 for 2021.

**Travel from home to work**

The group's three largest offices are located within a 15-minute walking distance to the nearest train or bus station. The Vow group has a total of 13 company cars including service vehicles at its disposal. Two of the cars are electric and are located in Norway. In the future, the group will choose electric or the most fuel efficient cars, when electric cars are not the optimal choice, when purchasing or leasing new company cars. In Norway all the offices have electric car chargers.

Due to the Covid-19 pandemic, there has been extensive use of home office in 2020 and so far in 2021, as recommended by the authorities. This is expected to continue further into 2021.

**Office buildings**

Most of the employees in Norway are located at the office in Tønsberg. A building process has started for a new office building in Tønsberg. The project is estimated to be finalised during the autumn of 2022. The new office building will have a BREEAM certification, which is the most widely used standard in Norway for environmental certification of buildings. A BREEAM certified project fulfils a set of environmental criteria. One of the attributes of the new building is green roof.

Emissions from air travel (kg) – 2020					Scanship AS
Fuel	CO <sub>2</sub>	Nirous oxides	Hydro carbons	Carbon monoxide	Energy (kWh)
35 103.63	76 105.90	50.28	12.76	282.64	258 213.85

Emissions from air travel (kg) – 2020					Scanship AS
Fuel	CO <sub>2</sub>	Nirous oxides	Hydro carbons	Carbon monoxide	Energy (kWh)
120 331.73	263 193.78	167.15	38.45	1 009.34	880 613.95

To ensure that Vow takes the impact on environment into account when planning business travels, Vow will implement environmental topics in the travel policy for the group.

**GOAL FOR 2021:**

Implement environmental topics in travel policy.

Green roofs save energy, absorb water, and contribute to increased biodiversity. It is also durable. The new office building will replace the old office and have a smaller environmental footprint.

The group also plans to make improvements of other office facilities during 2021 to reduce the environmental footprint. A goal for 2021 is to have recycling in all offices.

**GOAL FOR 2021:**

Ensure recycling in all offices.

Electricity consumption in the Norwegian entities was 55 020 kWh in 2020 compared with 55 099 kWh in 2019.

**Business travels**

In 2020, there was less traveling compared to earlier years due to the Covid-19 pandemic. People employed in the Norwegian companies travelled 605 235 kilometres in total by airplane, compared with 2 074 685 kilometres in 2019. Total emissions from air travels are shown in the table below.

**Passionate employees**

Vow has employees who are passionate about the environment. The group plans to initiate an awareness campaign for employees to encourage and raise awareness about climate and environment impact from everyday choices. This initiative will increase awareness for the group's internal sustainability strategy, which is necessary to be on the forefront of the green transition.

**Goal for 2021:**

Initiate awareness campaign for employees.

# SOCIAL RESPONSIBILITY

Paramount for sustainable value creation is management involvement and strategic attention. Even though there is a strong emphasis on the environmental aspect of ESG today, Vow recognises the importance of both the social and the governance aspect. In Vow, corporate responsibility is defined as achieving commercial profitability in a way which is consistent with fundamental ethical values and with respect for individuals, the environment and society.

Vow respects human and labour rights, establishes good environmental, health and safety (EHS) standards, facilitates good dialogue with stakeholders and generally operates in accordance with applicable regulatory frameworks and good business practice. Business

depends on the trust of consumers, contractual parties, authorities, shareholders, employees and society at large. In order to gain trust, Vow depends upon professionalism, expertise and high ethical standards in all aspects of its work.

## EMPLOYEES, DIVERSITY AND EQUAL OPPORTUNITIES

Country	Male	Female	Sum	Male (%)	Female (%)
Norway	65	14	79	82%	18%
France	35	7	42	83%	17%
Poland	3	1	4	75%	25%
USA	10	3	13	77%	23%
<b>TOTAL</b>	<b>113</b>	<b>25</b>	<b>138</b>	<b>82%</b>	<b>18%</b>

The employees are the cornerstone of the Vow group. As of 31 December 2020, the group had 138 employees (155 as of June 2021). The majority of employees are full-time employees. In Scanship AS there are two male employees working 80 per cent. There is still work to be done in terms of gender diversity, and this is something that is being taken into consideration, especially in terms of recruitment. For the period 2020, 50 per cent of new

employees in Scanship AS were female. This resulted in a doubling of female employees for Scanship AS, indicating that the group is moving in the right direction. Furthermore, there is a broad range of nationalities among the Vow employees. Today, Vow counts 18 nationalities among its employees. The majority of employees are between 30 and 50 years old.

Norway	Male	Female	Sum	Male (%)	Female (%)
< 30 years old	5	1	6	83%	17%
30-50 years old	33	12	45	73%	27%
> 50 years old	27	1	28	96%	4%
<b>Total</b>	<b>65</b>	<b>14</b>	<b>79</b>	<b>82%</b>	<b>18%</b>

France	Male	Female	Sum	Male (%)	Female (%)
< 30 years old	8	0	8	100%	0%
30-50 years old	16	6	22	73%	27%
> 50 years old	11	1	12	91%	9%
<b>Total</b>	<b>35</b>	<b>7</b>	<b>42</b>	<b>83%</b>	<b>17%</b>

Poland	Male	Female	Sum	Male (%)	Female (%)
< 30 years old	0	1	1	0%	100%
30-50 years old	2	0	2	100%	0%
> 50 years old	1	0	1	100%	0%
<b>Total</b>	<b>3</b>	<b>1</b>	<b>4</b>	<b>75%</b>	<b>25%</b>

USA	Male	Female	Sum	Male (%)	Female (%)
< 30 years old	1	0	1	100%	0%
30-50 years old	6	3	9	67%	33%
> 50 years old	3	0	3	100%	0%
<b>Total</b>	<b>10</b>	<b>3</b>	<b>13</b>	<b>77%</b>	<b>23%</b>

Vow group	Male	Female	Sum	Male (%)	Female (%)
< 30 years old	14	2	16	88%	12%
30-50 years old	57	21	78	73%	27%
> 50 years old	42	2	44	95%	5%
<b>Total</b>	<b>113</b>	<b>25</b>	<b>138</b>	<b>82%</b>	<b>18%</b>



**GOAL FOR 2021:**

Perform annual employee satisfaction survey.

Vow will conduct yearly employee satisfaction surveys to get a better understanding of the level of employee satisfaction in the group. This will allow Vow to improve if there are areas where employee satisfaction is not adequate.

**The board of directors – Vow ASA**

Total board members	4
Females	50%
Males	50%
Over 50 years old – females	2
Over 50 years old – males	2

The Vow ASA board of directors has a 50% gender balance. Board members are elected by the general meeting for a term of two years unless otherwise determined by the general meeting. The AGM held on 23 May 2020 re-elected Narve Reiten as chair of the board, as well as Susanne Schneider, Benedicte Bakke Agerup and Bård Brath Ingerø as board members. The constitution of the board balances specific industry experience with a combination of financial background, management experience and industrial experience. In December 2020, Hanne Refsholt replaced Benedicte Bakke Agerup as board member.

The board's tasks include the overall management and supervision of the company. The board prepares an annual plan for its work, emphasising goals, strategies and execution. The board is also responsible for ensuring that the operation of the company is compliant with the company's values and ethical guidelines. The chair of the board is responsible for ensuring that the board's work is performed in an effective and correct manner.

**HUMAN CAPITAL DEVELOPMENT**

At Vow, employees are encouraged to participate in seminars, workshops and conferences consistent with their interests and the interests of Vow. The bar is set low so that employees easily can suggest events of preference. Vow believes that the opportunity to suggest initiatives for human capital development is a great motivation for the employees.

For the coming year, Vow has set several goals to enhance and further structure human capital development. Vow will make sure that all employees get training in the Code of Conduct, including anti-corruption. In addition, Vow will conduct annual employee satisfaction surveys to get a better understanding of employee satisfaction in the group. By encouraging a two-way communication, Vow can build trust and enhance motivation among employees.

**GOALS FOR 2021:**

- Increase human capital initiatives.
- Training in Code of Conduct for 100% of employees, including anti-corruption.
- Perform annual employee satisfaction survey.

**OCCUPATIONAL HEALTH AND SAFETY**

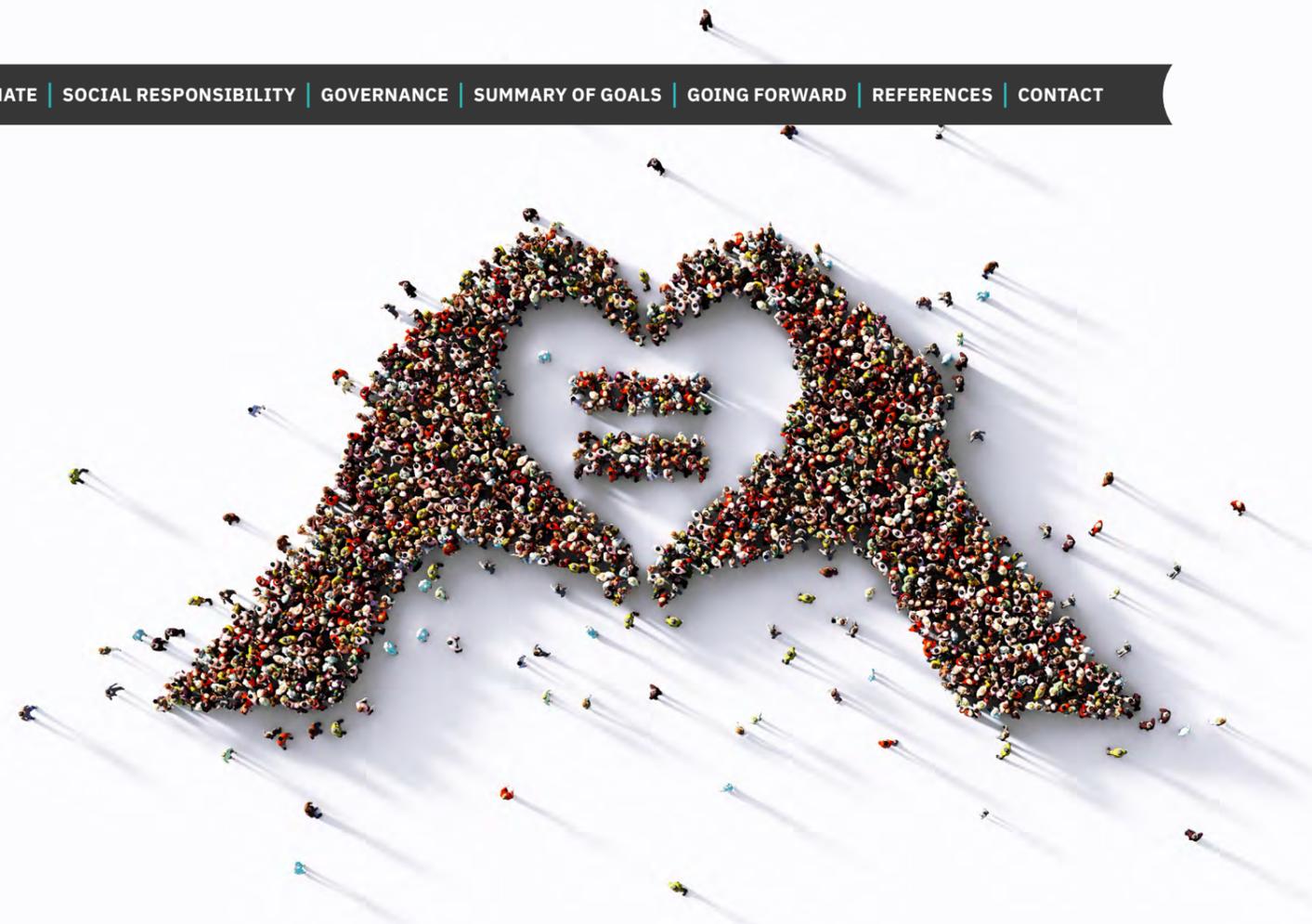
Vow strives to promote an open corporate culture that fosters interaction and reflects its core values. In promoting Vow's principles for good business operations, we shall respect local values and norms, and achieve success by bridging the divide between different cultures and interests. Vow companies shall always comply with local regulatory requirements in the countries in which they operate. Responsible operations require vigilance and the exercise of good judgement on the part of both management and employees.

A key contributor to a strong corporate culture is providing employees with good occupational health and safety. Employees who feel safe at work help Vow succeed in its mission. Vow strives to achieve a vision of zero harm to people, the environment and society, and work purposefully and systematically to reduce the environmental impact.

Vow has a relatively low absence due to illness with 1.8 per cent in 2020 and 2.3 per cent in 2019. No injuries or accidents causing material damages or personal injuries were reported during 2020. A goal for 2021 is to keep ensuring zero incidents of serious injuries.

**GOALS FOR 2021:**

- Zero incidents of serious injuries.
- Increase health initiatives for employees.



*Vow is committed to respecting fundamental human and labour rights.*

**RESPECT FOR HUMAN AND LABOUR RIGHTS**

Vow companies shall promote corporate conduct that reflects respect and consideration for others. In its operations, the group shall respect fundamental human rights as described in international human rights conventions, such as the UN Convention on Human Rights and the labour rights conventions of the International Labour Organization (ILO). Vow is committed to respecting fundamental human and labour rights, both in its own internal business and in relations with business partners, suppliers, customers and others who are directly affected by the group's activities. The group works systematically with important issues such as non-discrimination, the right to privacy, the right to negotiate, employment contracts, protection against harassment and management-employee collaboration.

To further increase the group's commitment to human and labour rights, Vow will enhance efforts on human and labour rights in selection and review of suppliers.

**GOAL FOR 2021:**

Enhance efforts on human and labour rights in selection and review of suppliers.

**SOCIAL PARTNERSHIPS**

Vow believes in being a contributor to the broader society as well as to the environment. The group supports multiple charities and collaborates with several university students and academia.

**Social initiatives**

List of charities and charitable initiatives Vow supports in chronological order:

- 2019 Norwegian Cruise Line Cruising with a Cause
- 2019 Boys and Girls Club 13<sup>th</sup> Annual Wild About Kids with NCL
- 2019 SACC Golf Tournament
- 2019 Nordic Cup Charity Golf Tournament, Nansen Field and the Norwegian Seaman's Church, Hole Sponsor
- 2019 Nova High School Navy Junior Reserve Officer Training Corp Drill Team
- 2020 Swedish Church's Golf Tournament (previous years we played under Leif Griffin's sponsorship)
- 2020 Nordic Cup Charity Golf Tournament, Nansen Field and the Norwegian Seaman's Church, Hole Sponsor

- 2020 The Life Center of Miramar City Covid Relief Gift Card Giveaway
- 2020 Movember to support Men's Mental Health and Awareness
- 2020 Husøy and Foyland IF
- 2020 Support for the "Hospital jugglers" at Vestfold Hospital
- 2021 Madison's Golf Tournament with Disney Cruises
- Annual Norwegian Seaman's Church Golf Tournament
- NACC Membership and annual networking events
- 2021 49'er FX Helene & Marie, sailing for Cleaner Oceans to the Olympics in Tokyo

### Sailing for cleaner oceans

Vow is a proud supporter of Helene Næss and Marie Rønningen's adventure towards the Olympics in Tokyo. Helene and Marie have been sailing together since 2013. According to Helene, the last seven years have all been about Olympic sailing in the 49er FX class. Over the years, the duo has experienced the challenge of plastic

pollution in the oceans. Therefore, sustainability is an important topic for the two sailors. Vow and the sailor duo share the passion for climate change mitigation and cleaner oceans. Thus, Marie and Helene are perfect ambassadors for Vow and the group's purpose of mitigating climate change when they are sailing for cleaner oceans. Vow supports Helene and Marie financially to help them reach their goal of the Olympics in Tokyo. Read more about Helene and Marie's journey and sustainability emphasis on [helenemariesailing.com](http://helenemariesailing.com).

### Partnerships with students/academia

Vow values collaboration and partnerships with students and academia. The new generation is encouraged to make research on the vast opportunities linked to Vow's technical solutions. Vow has partnered with students on several levels, including bachelor level, master level and doctoral level across different universities in Norway.

Examples of thesis work is listed below:

Doctorate level	Master level	Bachelor level
Industrial PhD on "Anaerobic digestion of pyrolysis products" at the University of South-Eastern Norway; 2020-2022	"Anaerobic Digestion of Aqueous Pyrolysis Liquid and Implementation in ADM1" at the University of South-Eastern Norway; 2021	"Adsorption separation of antibiotic by MOFs and Biochar" at the University of Stavanger
	"Biochar produced from the waste products: characterisation and use" at the Norwegian University of Life Sciences, 2021	"Carbon capture by Adsorption" at the University of Stavanger
	Master thesis "Feasibility of using biochar to recycle nutrients from aquaculture." at the Norwegian University of Life Sciences; 2021	

*"The opportunity to work with Scanship for my PhD work is very rewarding – especially learning from talented and experienced colleagues. I get to work with an inspiring topic: developing novel and sustainable technologies for a positive environmental impact."*

*Gudny Øyre Flatabø, PhD candidate in Process, Energy and Automation Engineering at University of South-Eastern Norway, Porsgrunn.*



Vow entered into a sponsorship agreement with Norwegian sailors Helene Næss and Marie Rønningen in March 2021. We are looking forward to seeing them sail the FX class in the 2021 Tokyo Olympics.

# SUSTAINABILITY GOVERNANCE

In the work on sustainability, Vow regards sustainability governance as paramount for sustainable long-term value creation. Sustainability governance has seen a growing importance over the recent years, thus for Vow it is getting more specific attention along with traditional corporate governance. Vow applies a holistic view of sustainable governance, implementing both social and environmental governance across business activities.

## RESPONSIBLE SOURCING AND PROCUREMENT

With a great number of suppliers across several countries,<sup>10</sup> Vow actively promotes good working standards in the supply chains. This means setting ethical standards for suppliers, assessing the risk of potential supplier violations of these standards, and engaging in dialogue with suppliers concerning necessary improvements. Efforts to influence suppliers are based on an ambition of continuous improvement and is directed towards the suppliers and product categories where the risk is deemed greatest. This links to our focus on SDG 12 Sustainable production and consumption.

Geographic location of main suppliers:

- Norway
- Poland
- Denmark
- Sweden
- Germany
- Italy
- United Kingdom
- USA
- France
- The Netherlands

During the first half of 2021, the supply chain team has developed a new Code of Conduct for suppliers, which combines the previous work done at both ETIA and Scanship. This Code of Conduct for suppliers includes the UN Guiding Principles on Business and Human Rights and the ten principles of the UN Global Compact. There is also ongoing work on including ESG topics in selection schemes for suppliers, as this becomes more important when choosing suppliers. Moreover, the supply chain team has initiated a rework of the supplier reviews to

incorporate ESG when reviewing suppliers. This work will continue through 2021 in order to have a solid template for thorough review of the suppliers.

### GOALS FOR 2021:

Implement environmental criteria in selection and review of suppliers.

Enhance efforts on human and labour rights in selection and review of suppliers.

Enhance efforts on anti-corruption in selection and review of suppliers.

In 2022, report on ratio of suppliers reviewed in 2021.

## ANTI-CORRUPTION

Corruption is the abuse of a position of trust to acquire personal or business benefits. Vow does not tolerate corruption and expects all managers and procurement officers to promote a strong anti-corruption culture in their department. The companies make active efforts to prevent undesirable conduct and to ensure that their employees are capable of dealing with demanding situations. Vow recognises its responsibility as an international business actor to continuously promote anti-corruption. For 2021, Vow will put even more emphasis on anti-corruption, and training in the Code of Conduct for employees is an important goal for 2021.

### GOAL FOR 2021:

Training in Code of Conduct for 100% of employees, including anti-corruption.



Artist impression of Vow Green Metals' first plant in Norway, planned for completion in 2022.

## PRODUCT SAFETY AND QUALITY

Vow attaches great importance to product safety and quality, good customer service and responsible marketing, and is committed to exercising due diligence regarding consumer interests. Providing top product quality and safety is essential to maintain and secure new and strong customer relationships. The group's products and services are always subject to strict requirements in terms of quality and safety. Vow has not recorded any issues linked to advertising nor product safety or product quality.

### GOAL FOR 2021:

Zero negative incidents linked to product quality and safety.

## GOVERNANCE, RISK AND COMPLIANCE

The Vow group's operations span across four countries and the client reach is global. Thus governance, risk and compliance are highly important to Vow. Vow is subject to Norwegian and international legislation and regulations. Some Norwegian legislation also applies outside the country's border, e.g., the provisions of the penal code that refers to corruption. The group's employees,

representatives and anyone acting on behalf of the group must comply with all legislation and regulations that apply, directly or indirectly, to the work performed for the group. Furthermore, Vow applies a zero tolerance towards money laundering. Vow shall avoid any involvement with assets resulting from criminal activity. Vow has not recorded any incidences of breach of our regulatory, corruption or money laundering policies.

Vow attracts new customers and builds long-term client relationships by providing the best technical solutions at competitive prices as well as demonstrating honesty and integrity in all interactions. Marketing and advertising materials, and other representations to current or prospective customers, must be accurate, truthful and in compliance with applicable laws. Vow does not tolerate any agreements on price fixing, market sharing or other activities that limit free competition.

## Whistleblowing

Whistleblowing notification is intended to pass information about a censurable or possible censurable



incident to someone who is in a position to initiate corrective measures. A censurable incident is an illegal, dangerous or any other act in breach of the group's regulations. Anyone who becomes aware of an incident or situation that appears to contravene rules and guidelines that apply to the group's operations is encouraged to report this. Every employee has the right to report possible censurable incidents. Each employee is encouraged to report on possible censurable incidents but is not normally obliged to do so. However, every employee has an obligation to report on criminal activity and on incidents that could endanger life or health, or the assets of the group. Notification is beneficiary for each employee, for the group and the society as a whole because it offers an opportunity to implement corrective action.

A colleague willing to make a report is an important resource to the group. The group will implement additional whistleblower solutions during 2021.

**GOAL FOR 2021:**  
Implement additional whistleblower solutions.

**Climate risks and opportunities**

Vow has made an assessment of the actual and potential impacts of climate-related risks and opportunities on the organisation's business, strategy, and financial planning where such information is material.

Climate Risk Short term (ST)	Climate Risk Medium term (MT)	Climate Risk Long term (LT)	Impact
Extreme weather	More frequent extreme weather conditions	Changing weather patterns and more frequent extreme weather conditions	<b>ST/MT:</b> Can disrupt power supply and affect operations (increase cost, halt production), damage PP&E, cause delays in the supply chain. <b>LT:</b> Can impact power supply, increase price of electricity (increased cost of production), increase supply chain costs.
Environmental damage from test sites	Serious environmental damage from test sites	Catastrophic environmental damage from test sites	<b>ST:</b> Bad press, increased costs linked to reparation. <b>MT/LT:</b> Serious reputational damage, public loss of confidence among investors, heavy reparation costs, loss of customers.
Unforeseen climate regulation	Unforeseen plans to tightening of climate regulation (ex: MARPOL tightens regulations for cruise ships, waste-handling, etc.)	Unforeseen implementation of stricter/new climate regulation	<b>ST:</b> Potentially affect current solutions and client relationships. <b>MT/LT:</b> Potentially affect business model, revenue streams, costs, and market share.
Lag in predicted climate regulation (EU Taxonomy, etc.)	Lag in/slow implementation of predicted climate regulation (EU Taxonomy etc.)	Inefficient climate regulations	<b>ST/MT:</b> Vow's solutions are not seen as cost-efficient for polluting industries. <b>LT:</b> Vow's solutions and business model do not reach optimal value creation and market valuation.

Opportunities Short term (ST)	Opportunities Medium term (MT)	Opportunities Long term (LT)	Impact
Diversified solutions portfolio for cruise segment and some landbased segments	Increased diversification of solutions portfolio across cruise and landbased segments	Become a catalyst for diversified waste valorisation and circular economy technology through Vow Industries	<b>ST:</b> Solid revenue streams from cruise and increasing opportunities within landbased segment. <b>MT:</b> More diversified revenue streams, new market access, increased investor attractiveness. <b>LT:</b> Increased revenue streams, new market access, increased market shares, increased investor attractiveness, becoming a global leader in waste valorisation and industrial climate change mitigation.
Profitable sustainable technology (Water purification, waste valorisation, biocarbon, food sterilisation)	Profitable sustainable technology and innovation (Waste valorisation, water purification, biocarbon, CCS, food sterilisation)	Climate resilient technology and innovation (Waste valorisation, water purification biocarbon, CCS, foot sterilisation)	<b>ST/MT/LT:</b> Increased and diversified revenue streams. Investments, more attractive loan rates. Natural climate risk mitigation.
Carbon tax	Carbon taxation in line with net-zero by 2050	Extra stringent carbon taxation to ensure net-zero by 2050	<b>ST:</b> Increased interest and revenues from current and potential customers in need of decarbonisation. Further enhance Vow's position as a strategic business partner. <b>MT/LT:</b> Increased revenues from multiple industries looking for efficient decarbonisation. Capture larger market shares within waste valorisation and decarbonisation. Can further increase in-house innovation, and enhance Vow as a desired R&D and strategic business partner.
The EU Taxonomy preparedness	EU Taxonomy screening criteria for circular economy and pollution prevention	Full implementation of EU Taxonomy	<b>ST:</b> Increase attractiveness among investors. <b>MT/LT:</b> Increased market shares, new market opportunities and increased attractiveness among investors.
Strategic partnerships with multiple research environments and key clients	Strategic partnerships with more companies	Strategic partnerships with sectors and sector leaders within heavy industry	<b>ST:</b> Increased innovation. <b>MT/LT:</b> Increased market share regionally and globally.
Increased interest from potential employees who cares about climate change (particularly engineers)	Increased interest from the new generation (Millennials/Gen-Z) of employees across fields (particularly engineers)	Increased interest and reputation as an attractive and desired employer across generations and across fields such as STEM-backgrounds, engineers, business backgrounds, etc.	<b>ST:</b> Attract and retain talented and motivated employees across nations who cares about climate change and innovation. <b>MT/LT:</b> Automatically attract the best and the brightest across nations, generations (especially Millennials and Gen-Z) and backgrounds. Lead to continuous innovation of both the company and solutions. Secure long-term sustainable development of the company.

In terms of managing climate risk, Vow analyses macro trends, policy changes and the state of the climate. Vow follows and monitors news and international organisations such as, but not limited to, the UN, WTO, OECD, IMO, IMF and central banks. Communication with stakeholders such as investors and customers is also valuable for managing climate risk. Assessment of different risks is first done across different parts of the organisation before management conducts a holistic risk assessment along with the board.

Currently, the Vow business model and business solutions are being used to manage climate related risks. Furthermore, as Vow is growing, the company has put more emphasis on sustainability both internally and externally. This work on sustainability is an ongoing process and the work on climate risk is developing. In regard to metrics and targets, Vow is working on gathering data to be able to disclose scope 1, scope 2 and scope 3 GHG emissions. Vow is also using the selected UN SDGs as a guide in its work on climate related risks and opportunities.

#### EU Taxonomy

Vow is actively preparing to apply the EU Taxonomy framework to the group's operations. The ambition is to become even more sustainable and to demonstrate the relevance of the group's technology and solutions to investors and industry customers who are racing to reduce use of fossil fuels, decarbonise their processes and find ways to become net zero. This includes developing sustainability methodologies to define Vow's environmental performance within the taxonomy criteria relevant for its industry. Specifically, this will describe the proportion of Vow's turnover, capital expenditure and operating expenditure associated with taxonomy-defined sustainable economic activities.

At the time of writing this report, the EU Taxonomy has only published the technical screening criteria for economic activities that can make a substantial contribution to climate change mitigation or adaptation. Already today Vow is on track to be aligned with the criteria for climate change mitigation. Even though these first two environmental objectives are highly important, Vow is eagerly awaiting the technical screening criteria for economic activities that can make a significant contribution to the transition to a circular economy, as well as pollution and prevention control. These two activities, coupled with climate change mitigation, are assumed to be most aligned with Vow's business purpose and mission at this point and in the future. Thus,

for Vow the new EU Taxonomy is a great opportunity instead of a potential regulatory risk. Furthermore, Vow is already committed to comply with the minimum safeguards; OECD Guidelines for Multinational Enterprises, the UN Guiding Principles on Business and Human Rights and the International Bill of Human Rights.

#### Covid-19 governance

The main objective of the board of Vow during the outbreak of Covid-19 has been to ensure that the group is taking all necessary measures to protect its people and operations, and to make sure Vow is prepared to handle the potential operational and financial consequences of the pandemic.

Moreover, Scanship Americas participated in "The Life Center of Miramar City Covid Relief Gift Card Giveaway" as a direct response to the local community of Miramar, Florida. This event was a great success in that Scanship was able to give more than 160 individual families a USD 50 gift card to Walmart to help ease some of the pain from this pandemic. Scanship Americas participated with both a financial donation and manpower in terms of volunteers to this cause.

During the outbreak, Vow's business has continued mostly as planned in 2020, and so far in 2021, without significant changes in delivery schedules to the cruise industry. However, the company's Aftersales segment has been, and will continue to be affected, until the world's cruise fleet is back in operation. It cannot be ruled out that some cruise newbuilding schedules could be delayed as a result of the pandemic. It remains uncertain when the market situation will normalise. During 2020, Vow has secured several new contracts, despite the uncertainty and disruption to the global economy. This proves that Vow's business model is robust and that the demand for the company's technology continues to benefit from the growing concern for climate and the environment. The board and management of Vow continue to closely monitor the impact from Covid-19 on the company's main markets and industries, in order to safeguard employees, keep operations running, and maintain a sustainable business model and a solid financial position.



## SUMMARY OF GOALS

Overall goals are to continue to be a market leader in the cruise segment and to be a partner and solutions provider of choice for heavy industry. Furthermore, Vow has developed goals for all material topics related to the environment, social responsibility, and governance. The goals are to be reached by the end of 2021 and will be reported on in 2022. To increase confidence in the quality of Vow's sustainability reporting, the group is planning to obtain external assurance of the sustainability report for 2021.



Overall goals	Material topics
Be a partner/solutions provider of choice for industry and utilities.	Climate action (E) Circular economy (E) Waste valorisation (E) Environmental innovation (E) Partnerships (E, S) Governance, risk and compliance (G)
Continue to be a market leader in the cruise segment.	Climate action (E) Circular economy (E) Waste valorisation (E) Environmental innovation (E) Partnerships (E, S) Governance, risk and compliance (G)

Goals for 2021	Material topics
Report on scope 1 and scope 2 emissions in 2022 for 2021.	Climate action (E)
Implement environmental topics in travel policy.	Climate action (E)
Ensure recycling in all offices.	Climate action (E) Circular economy (E)
Implement environmental criteria in selection and review of suppliers.	Climate action (E) Responsible sourcing and procurement (G)
Initiate awareness campaign for employees.	Climate action (E) Human capital development (S)
Perform annual employee satisfaction survey.	Diversity and equal opportunities (S) Human capital development (S) Occupational health and safety (S)
Increase human capital development initiatives.	Human capital development (S)
Increase health initiatives for employees.	Occupational health and safety (S)
Zero incidents of serious injuries.	Occupational health and safety (S)
Enhance efforts on human and labour rights in selection and review of suppliers.	Human and labour rights (S) Responsible sourcing and procurement (G)
Enhance efforts on anti-corruption in selection and review of suppliers.	Responsible sourcing and procurement (G) Governance, risk and compliance (G) Anti-corruption (G)
In 2022, report on ratio of suppliers reviewed in 2021.	Responsible sourcing and procurement (G) Human and labour rights (S) Climate action (E) Anti-corruption (G)
Implement additional whistleblower solutions.	Governance, risk and compliance (G) Human and labour rights (S) Climate action (E) Anti-corruption (G)
Training in Code of Conduct for 100% of employees, including anti-corruption.	Governance, risk and compliance (G) Anti-corruption (G) Human capital development (S)
Zero negative incidents linked to product quality and safety.	Product safety/quality (G) Governance, risk and compliance (G)

# SUSTAINABILITY GOING FORWARD

In developing Vow's first sustainability report, the Vow group has performed a 360-degree review of its business. Vow has developed goals for the future and will work to improve the integration of sustainability in day-to-day activities, as well as the sustainability reporting.

Going forward, Vow will develop the internal sustainability strategy and reporting strategy. Vow will look for additional standards to comply with and ways to improve the reporting quality.

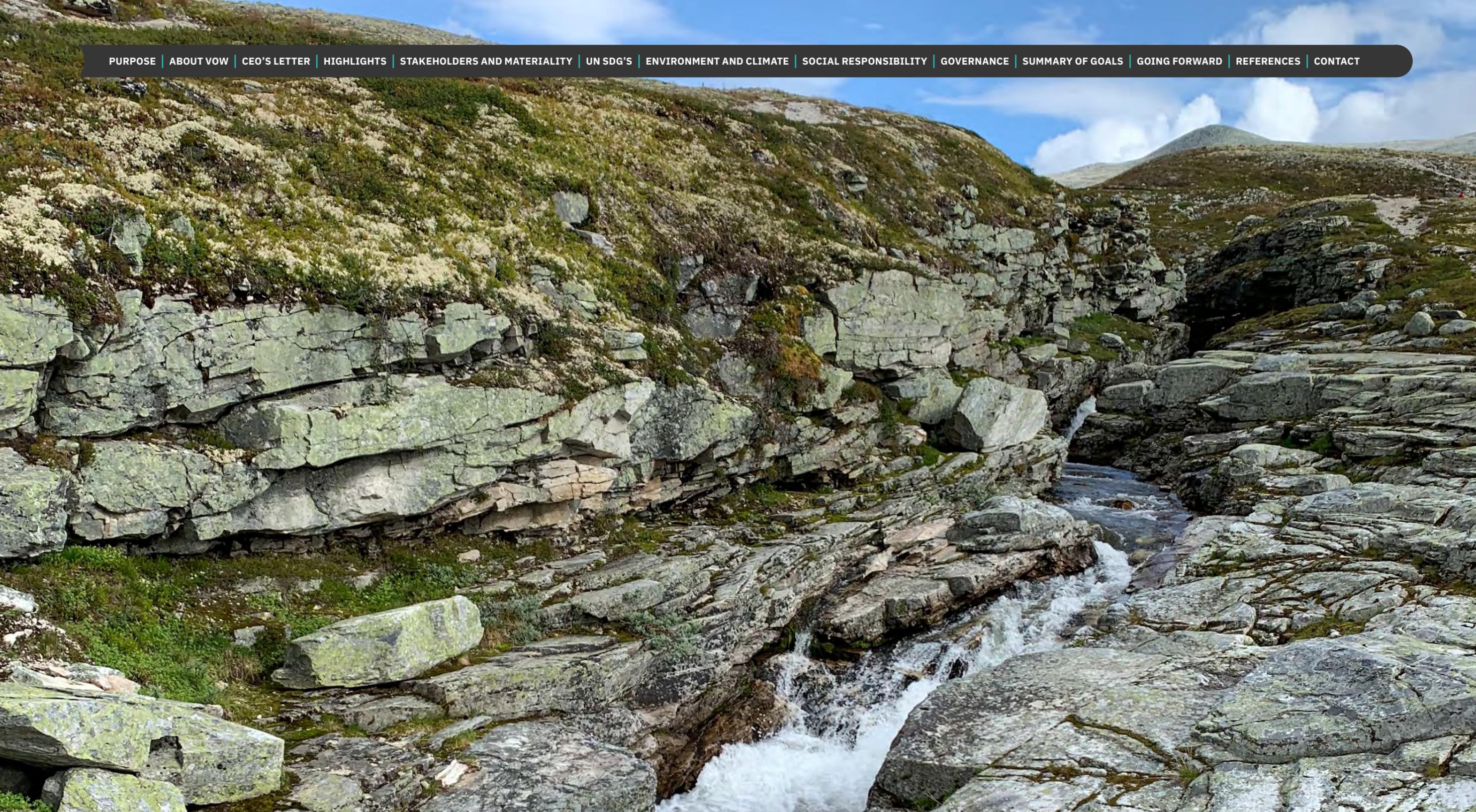
Prioritised areas are collection of environmental and social data, in addition to formalisation of procedures and policies. Vow's ambitions demand the entire group to

align, including all employees and an active management and board that put sustainability at the top of the agenda. It involves that Vow will stay ahead of relevant policy changes and ensure to be well prepared for coming regulations. The precautionary principle is and will continue to be a part of Vow's foundation for responsible business conduct.

## REFERENCES

- 1 The GRI Standards Index for Vow can be found at: <https://vowasa.com/sustainability>
- 2 See website for more information on the different solutions: <https://www.scanship.no/solutions>
- 3 Read more about Biogreen on the Biogreen website where all solutions are presented in more detail: <http://biogreen-energy.com>
- 4 Read more about the Spirajoule technology on the Biogreen website where all solutions and equipment needed are presented in more detail: <http://biogreen-energy.com>
- 5 Read more about the Safesteril solutions on the ETIA website where all solutions and equipment are presented in more detail: <https://safesteril.etia-group.com/safesteril>
- 6 Read more about Ascodero's solutions on the Ascodero website where all solutions and services are presented in more detail: <https://www.ascodero.fr>
- 7 Read more about the VOW project and its participants: <https://prosjektbanken.forskningsradet.no/project/FORISS/299070?Kilde=FORISS&distribution=Ar&chart=bar&calcType=funding&Sprak=no&sortBy=score&sortOrder=desc&resultCount=30&offset=0&Fritekst=vow>
- 8 Read more about the SLUDGEFFECT project and its participants: <https://prosjektbanken.forskningsradet.no/project/FORISS/302371?Kilde=FORISS&distribution=Ar&chart=bar&calcType=funding&Sprak=no&sortBy=score&sortOrder=desc&resultCount=30&offset=0&Fritekst=SLUDGEFFECT&source=FORISS&projectId=299070>
- 9 Read more about the MAFIGOLD project and its participant: <https://www.nibio.no/prosjekter/mafigold>
- 10 Vow has 222 suppliers delivering >1 items in 2020. The geographic location spans mostly Europe and the USA, with Norway, Poland, Sweden, Denmark, Germany, Italy, UK, France and The Netherlands. Vow engages multiple types of suppliers within: technical engineering services, drive technology, valves, pumps, vacuum pumps, fans, compressors, hydraulic cylinders, instrumentation, fluid handling technology, steel skids, parts and machines, refractory, motors, water treatment.





**VOW**

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