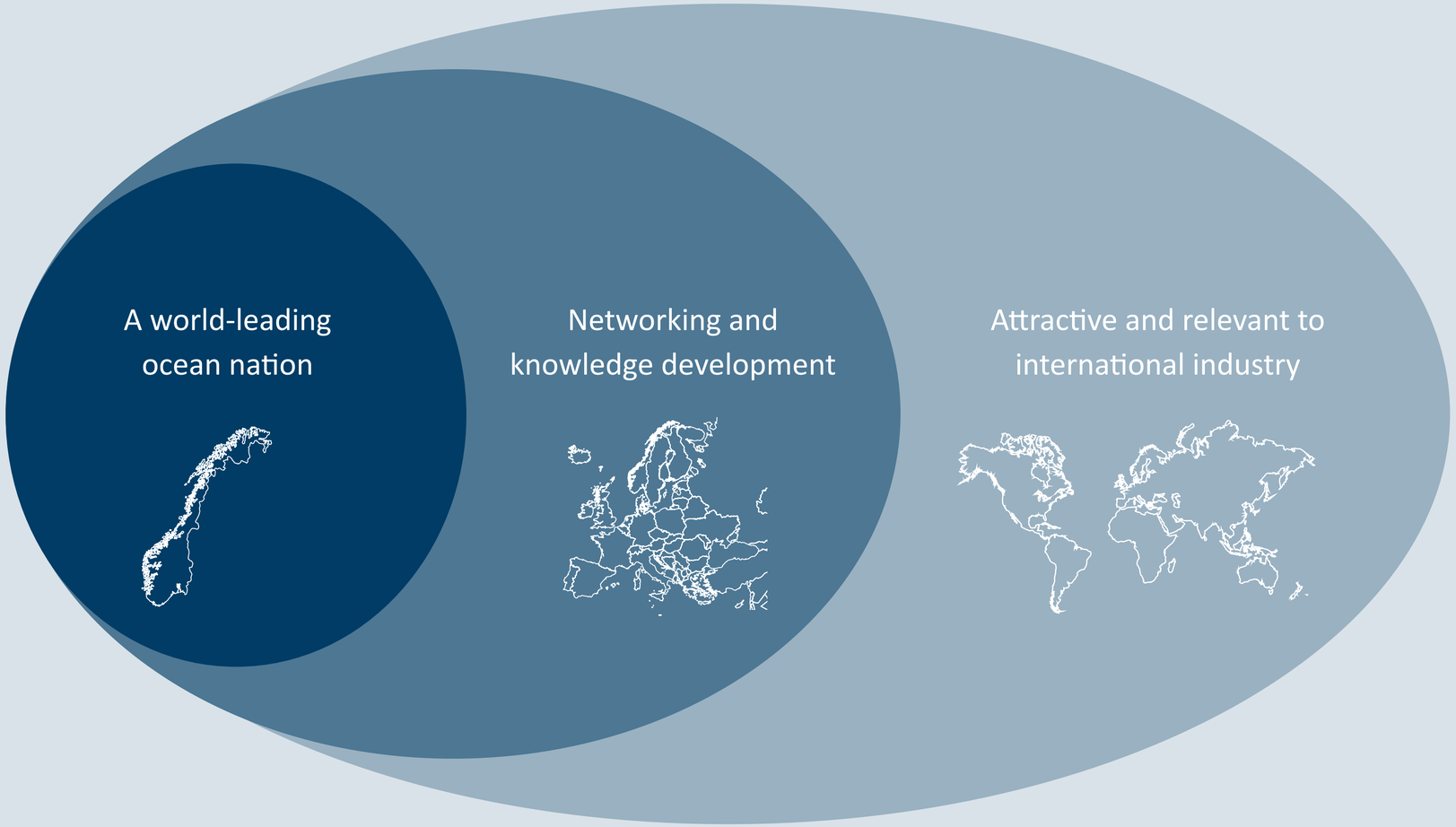
Technology for a better society

Our mission in a Norwegian, European and global perspective



About SINTEF Ocean

SINTEF Ocean carries out ocean and ocean-related research and innovation projects for Norwegian and international clients.

Our main activities are industry-focused projects that span the entire biomarine and maritime value chain, as well as other projects focused on the energy sector and the climate and environment. Our ambition is to maintain Norway's leading position in marine and biomarine research. Together with business and government agencies, we develop solutions for sustainable ocean use. At the same time, we help to solve important national and global challenges.

A vast amount of restructuring will be required to achieve the green shift. This will require knowledge and innovative solutions within our market areas, which are: food, energy, the environment and transportation. This is how we will contribute to transitions in areas where Norway is a leader.

SINTEF Ocean works closely with the Norwegian University of Science and Technology (NTNU) in order to support research and teaching naturally related to our activities.

We are also firm believers in the importance of maintaining regular contact with stakeholders and industry organisations within our areas of activity and are party to a number of formal cooperation agreements.

SINTEF Ocean's head office is in Trondheim, although we also have employees based in Ålesund, Tromsø, Oslo, Bergen and Frøya. We have two subsidiaries, SINTEF Ålesund and SINTEF Nord in Tromsø.

Foreword by CEO Vegar Johansen

The numerous resources offered by the ocean will be key to solving global challenges related to the climate, environment, transportation, energy and food.

At SINTEF Ocean, we are committed to contributing sustainable technology research and solutions that benefit society. The world is more turbulent and complex than ever, and the need for SINTEF's expertise is growing. Although our framework conditions are more demanding, our research scientists are involved in ongoing collaborations with businesses and the public sector contributing their knowledge and insights to solve major societal challenges.

SINTEF has decided that our activities must be guided by the UN Sustainable Development Goals. The UN has declared that during the 10-year period from 2021 to 2030, the focus will be on the ocean and that an extraordinary worldwide effort will be made to learn more about this, and ensure that society can use this knowledge to meet the Sustainable Development Goals. The Ocean Decade is also important for SINTEF Ocean and results in extra attention being paid to the opportunities inherent in sustainable ocean use.

SINTEF's multidisciplinary expertise gives us an advantage when it comes to taking a leading position in the development of ocean industries, which are so important for Norway. The collaborations with NTNU and other partners, nationally and internationally, mean that we are well positioned to take market shares and lead developments in our wide-ranging research areas.

In 2023, we continued to see high levels of client activity in the fisheries and aquaculture market, the maritime industry, the new biomarine industry and environmental impact assessments for the oil and gas industry. We are actively involved in a number of the Research Council of Norway's business-oriented programmes and several EU projects. This ensures that we have a long-term project portfolio in which we can renew our ability to deliver knowledge to the business sector, also in the future.

The current international security policy situation is tense, with uncertainties and new security challenges both globally and nationally. This is impacting energy markets, amongst other things, and creating uncertainty in global supply chains. One of the most important issues in Europe will be making itself less dependent on fossil energy sources overthe next few years. This will require a huge effort and the expansion of renewables such as wind and solar.

Renewable ocean energy is an important focus area for SINTEF Ocean. We continue to expect a high demand for projects related to offshore wind in particular, but also for alternatives such as floating solar energy solutions.

The building of the Norwegian Ocean Technology Centre is extremely important for Norway as an ocean nation and when it comes to finding good, sustainable solutions to many of the challenges we face today. The long-term market outlook for such activities has been analysed in connection with the planning of the Centre. Based on this outlook, there is reason to be optimistic about the future.

However, it will take more than new technology and good business models to reach the climate goals. Political commitment and incentives will be required, and there will have to be an emphasis on research and policy development along those axes that can make a difference with respect to the climate and business development. In 2023, SINTEF Ocean also played an important role in delivering research that provides innovations and new knowledge for policy-making and social development.

The ocean industries comprise a progressive business sector that, together with strong research environments, can find solutions that will both realise the outlined growth in ocean industries and find sustainable solutions.

SINTEF Ocean is growing, our scientific output has high impact, and we have world-leading laboratories and knowledgeable, dedicated employees that make us optimistic about the future.

Best regards,

Vegar Johansen

CEO, SINTEF Ocean
May 2024

Our prioritised research areas

SINTEF Ocean is prioritising eight research areas in which we are leveraging our multidisciplinary expertise, infrastructure and tools across the institute to solve major challenges facing the ocean industries in the future.

Collaborations in these areas of research help us work smarterand more holistically on our clients' projects and needs, as well as contribute to our long-term goals and organisational development.

Sustainable feed

Digital oceans

Fisheries

Aquaculture

Renewable energy

Sustainable oceans

Coastal infrastructure

Maritime transport

Sustainability

SINTEF Ocean's activities are guided by the UN Sustainable Development Goals, and our vision, "Technology for a better society". The organisation is striving to achieve a science-based sustainable transition. Our primary contributions to sustainable development are through our services offered to businesses and society, which aim to produce new technological solutions and innovation that result in international competitiveness – on nature's terms.

SINTEF Ocean enjoys an observer status in the United Nations Environment Assembly and the negotiations on a new, legally binding, international agreement on plastics pollution. We are also closely monitoring the negotiations on a new global agreement on the exploitation and protection of marine biodiversity. In addition to this, we carry out our own internal environmental work.

Our research activities make the greatest contributions to the following goals:

At the UN summit on 25 September 2015, world leaders adopted 17 global sustainability goals and the Agenda 2030 to ensure sustainable development. This means that the world's countries have taken on the task of eradicating poverty, fighting inequality and stopping climate change by 2030.

Clients, projects and funding

SINTEF Ocean offers world-class knowledge, technology and laboratories to help develop the ocean-based solutions of the future. We collaborate with industrial clients, knowledge environments and public enterprises and agencies, both nationally and internationally.

Around 8% of SINTEF Ocean's budget is funded by the state through a so-called 'basic grant'. The rest of our income is obtained in open competition. The Research Council of Norway and the European Union are the largest funders of research when it comes to both knowledge development projects and applied- and business-oriented research. The institute is in a strong position for many of the programmes.
A significant proportion of our portfolio is also made up of customer-driven projects. In 2023, SINTEF Ocean completed 1 182 projects for 426 clients, large and small.

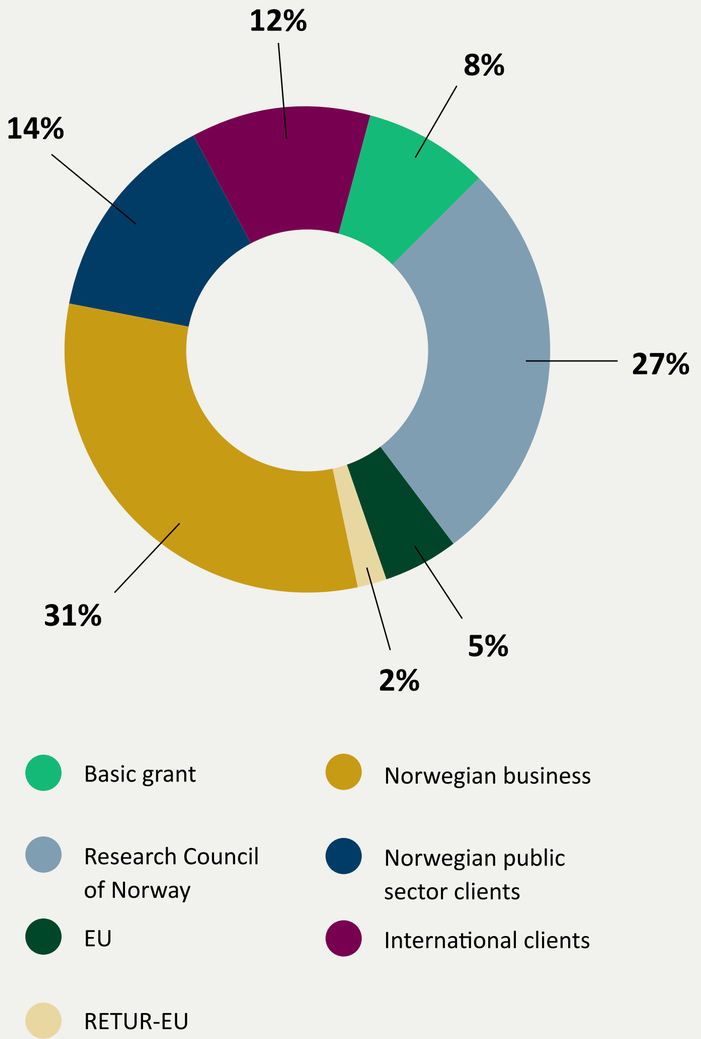
A significant number of projects were carried out in collaboration with other SINTEF institutes. This interdisciplinary approach results in unique opportunities for developing good solutions.

1 182
PROJECTS

426
CLIENTS

Funding sources

% of gross operating income



Hurtigruten has been sailing up and down the Norwegian coast for 130 years. It is our home. If we are to continue sailing for another 130 years, we need to change the way we sail. We are incredibly proud to be partnering with SINTEF on the development of zero emission vessels by 2030. SINTEF, in the role of project manager, contributes analysis, research and development. Together, we want to create groundbreaking solutions within energy efficiency and battery power.

Hedda Felin (CEO, Hurtigruten)

SINTEF is an important partner for Ava Ocean. We are shipowners with crew on the Arctic Pearl and have developed unique technology designed to protect biodiversity when harvesting renewable resources. Documentation is essential when harvesting Iceland scallops in the northern waters around Svalbard and when it comes to replacing outdated technology on a global basis. SINTEF is contributing to the documentation/ development of the technology and the utilisation of valuable resources. We look forward to our continued collaboration.

Øystein Tvedt (CEO, Ava Ocean AS)

The reason we are at SINTEF Ocean is that it is here that we can find the best expertise in the world when it comes to testing models, and in our experience over many years, the institute provides the best basis for dimensioning our designs.

Martin Søreide (Technical Director, ScaleAQ)

Research scientists from SINTEF Ocean at the Arctic Circle Assembly in Reykjavik, Iceland, in October.

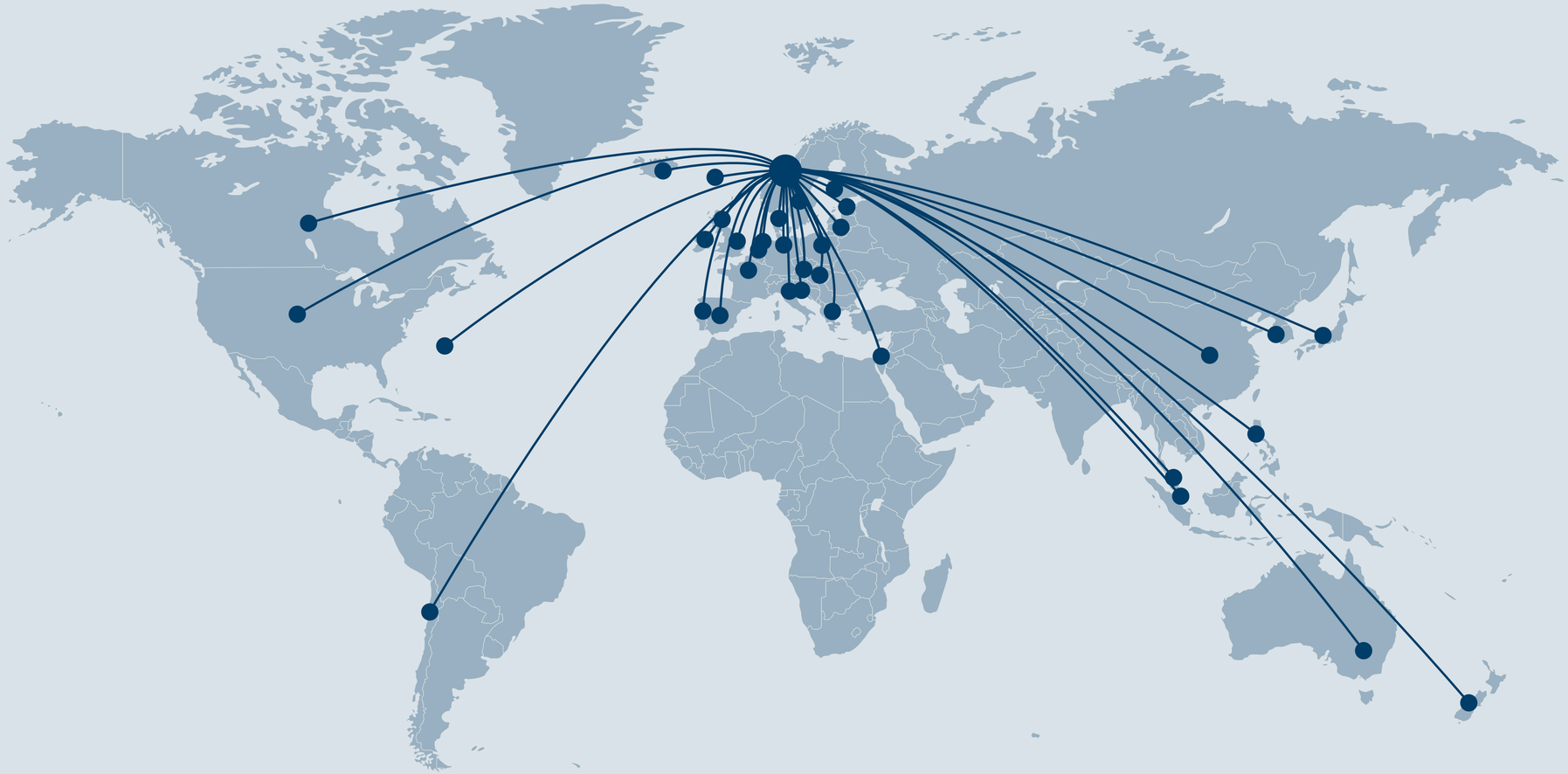
International research activities

SINTEF Ocean also conducts an extensive amount of international research. We do this in a number of ways, including by carrying out customer driven projects for international clients and by participating in the EU research programmes, where we both head and are part of a number of large research projects. SINTEF has had an office in Brussels since 2015. Its purpose is to literally shorten the path to action. This has produced positive results for SINTEF Ocean.

Of the institute's gross income, 15.5% came from activities for international stakeholders in 35 different countries, both in and outside of Europe.

Horizon Europe is the EU's ninth research and innovation programme and will run from 2021 to 2027. Horizon Europe is the successor to Horizon 2020. One important innovation in the new programme is the introduction of ambitious social missions to which the European Commission wants concrete and ambitious solutions by 2030. One of the missions is "Healthy Oceans, Seas, Coastal and Inland Waters", which is particularly relevant for SINTEF Ocean.

SINTEF Ocean has clients and projects in Norway and across the world



Research centres

Centres for Research-based Innovation (SFIs) are a scheme established by the Research Council of Norway that provides opportunities for long-term collaboration, innovation and development between industry and research environments.

Centres for Environment-friendly Energy Research (FMEs), also under the Research Council, carry out long-term research into renewable energy, energy efficiency, CO_2 management and social science.

SINTEF Ocean headed four national research centres in 2023:

- SFI Blues (2020-2028)
- SFI Exposed (2014-2023)
- SFI Harvest (2020-2028)
- SFI Smart Maritime (2015-2023)

And participated in:

- FME NorthWind (2021-2029)
- SFF Amos (2013-2023)
- SFI Dsolve (2020-2028)
- SFI Move (2015-2023)
- SFI Autoship (2020-2028)

SFI Smart Maritime's final conference in 2023

SFI Harvest Days 2023

Illustration: SFI Blues

SFI Blues

The mission of SFI Blues is to help Norwegian industry develop, build and operate floating structures designed for tomorrow's needs within renewable energy, aquaculture and coastal infrastructure. This will help to diversify Norwegian ocean industries and thus increase their robustness and competitiveness with respect to solving global challenges.

→ www.sfiblues.no

SFI Exposed

SFI Exposed has developed knowledge and technology that enables safe, robust and efficient fish farming in exposed locations. Today, much of the Norwegian coast is inaccessible to industrial fish farming because it is remote and exposed to demanding wind, waves and currents.

The centre has benefited from Norway's strong position and knowledge in the maritime sectors, such as aqua-culture and offshore, and enabled safe and sustainable seafood production in exposed coastal and ocean locations. Technical innovations, such as autonomous systems, offshore structures and vessels, are required to maintain production under all conditions and allow more robust, safe and controlled operations.

→ www.exposedaquaculture.no

SFI Harvest

SFI Harvest

SFI Harvest develops knowledge and technology that facilitate the responsible harvesting and processing of lower trophic marine resources, thus contributing to the sustainable and profitable growth of the Norwegian biomarine industry. The technological innovations developed by SFI Harvest will enable food production for the world's growing population from marine species that are currently rarely exploited.

→ www.sfiharvest.no

SFI Smart Maritime

SFI Smart Maritime

SFI Smart Maritime has researched various energy efficiency and emissions cutting measures in the maritime sector. The centre's activities and associated projects have developed powerful analytical and predictive models and tools for calculating and simulating technical solutions for, for example, hulls, propellers, power systems and fuels. These tools have been tested and used in collaboration with industry and have contributed to the development of low-level and zero-carbon ship concepts.

Improving the energy efficiency of ships will have a significant positive environmental impact and be an important global contribution to the green shift. Continuing to refine the centre's results will be an important factor in achieving the vision of a climate-neutral maritime industry.

→ www.smartmaritime.no

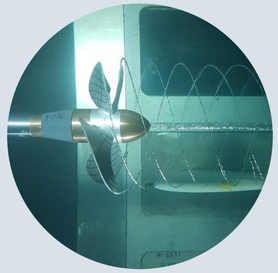
Our laboratories

For SINTEF Ocean, our research infrastructure represents platforms for knowledge, collaboration and greater utility. Our extensive and broad portfolio of laboratories and testing facilities provides the organisation with a wide range of opportunities, but it also requires constant maintenance and innovation. In many of our research facilities, we work closely with NTNU, and we rely on our research infrastructure in our collaborations with industry and research environments. In addition, we develop a number of software applications used both in our research and by industry, such as ShipX, SIMA, SINMOD, OSCAR and DREAM.

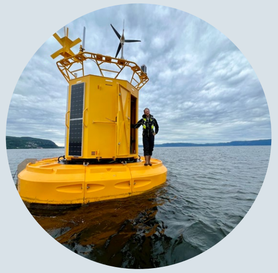
For more information about our laboratories please see: https://www.sintef.no/en/ocean/laboratories2/

Here are some of our laboratories and testing facilities:

The Ocean Basin Laboratory



The Cavitation Tunnel



OceanLab

The Marine Structures Laboratory

ACE (full-scale aquaculture laboratory)

The Norwegian Centre for Plankton Technology

The Ship Model Tank and Model Production

The Ecotoxicology Laboratory/Oil Laboratory

The Norwegian Seaweed Centre

The Norwegian Ocean Technology Centre

SINTEF Ocean is heavily involved in the development of the Norwegian Ocean Technology Centre, which is aiming to be one of the world's most advanced facilities for marine engineering research and education. The centre will mainly be based in Trondheim with wet and dry laboratories, workshops, teaching facilities, offices and meeting rooms. Infrastructure in the Trondheim Fjord, Ålesund, Hitra and Frøya is also being upgraded. The centre will contribute to the development and restructuring of ocean industries locally, nationally and globally, and will provide SINTEF Ocean with access to world-class facilities and premises.

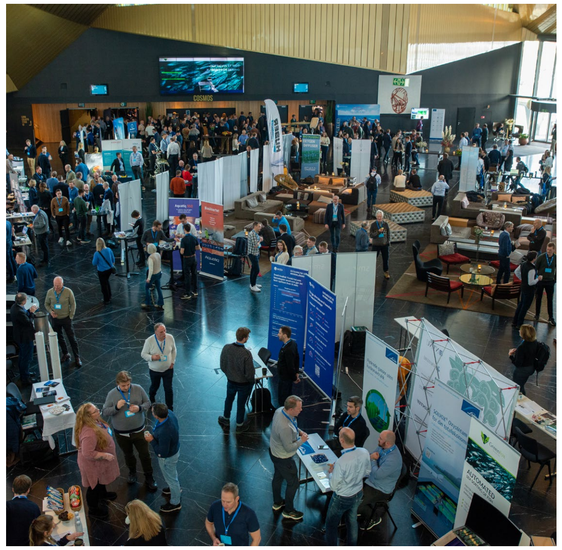
The construction of the Norwegian Ocean Technology Centre is well underway. The zoning plan for the construction project was approved in 2021 and the start-up grant was provided through the national budget for 2022. Construction commenced in 2023. This was marked by the laying of a foundation stone by the then Norwegian Minister for Fisheries and Ocean Policy, Bjørnar Skjæran. According to the plan, the centre will be completed in 2028, and will provide opportunities for improving ocean monitoring and developing more sustainable food, renewable energy and climate-friendly ships. "It will be an important centre for Trondheim as Norway's technology capital, for Norway as a whole and for ocean industries internationally," CEO Alexandra Bech Gjørv said as the foundation stone was laid.

For more information about the Norwegian Ocean Technology Centre, see: www.ntnu.no/norskhavteknologisenter

Laying of the foundation stone in August 2023

Statsbygg/LINK Arkitektur

Illustration of the completed centre



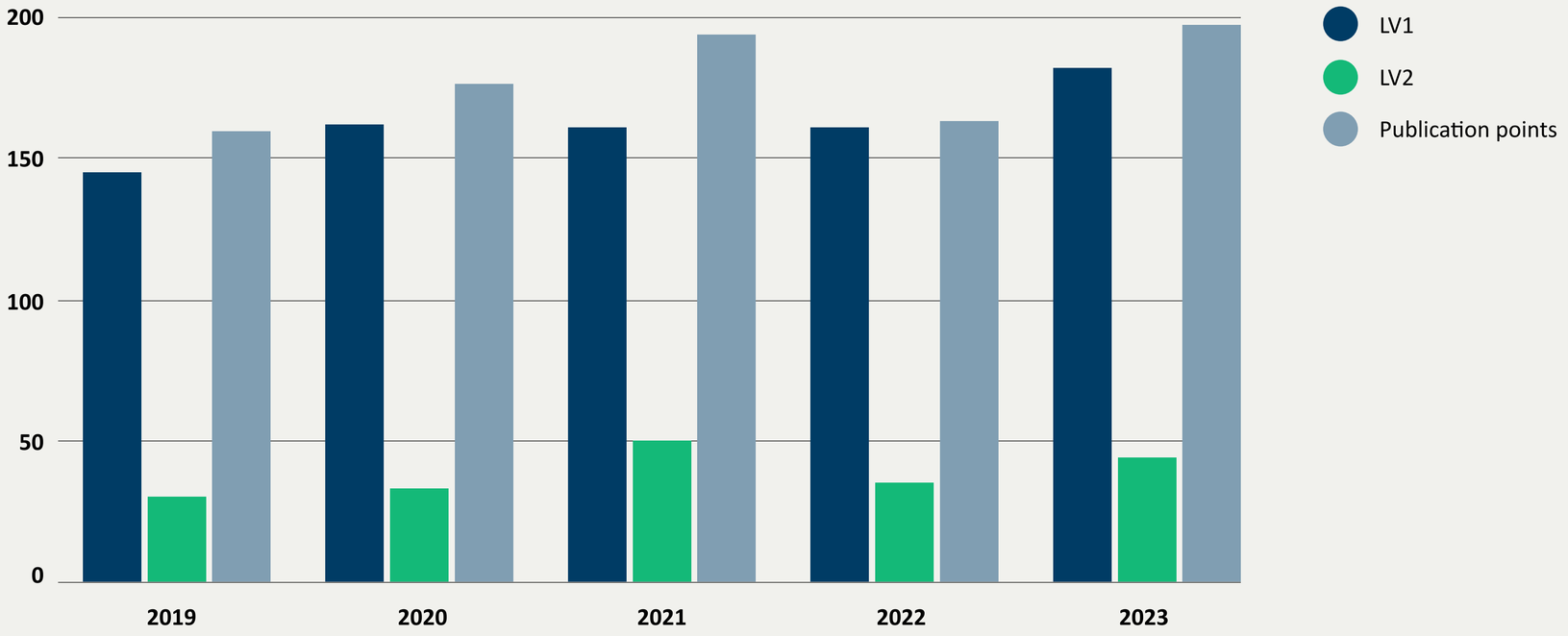
Visibility

SINTEF Ocean's research scientists strongly believe that research should be available to the public and endeavour to communicate their knowledge and findings in an understandable way. Their research is disseminated through numerous channels, such as media, public meetings, debates, webinars and social media, as well as SINTEF's own channels such as the SINTEF's blog, the popular science podcast "Smart forklart", the research magazine Gemini, newsletters and websites. SINTEF Ocean's research scientists also host and attend numerous conferences and various types of events throughout the year.

The institute was mentioned 693 times by media in 2023: 326 times in internationally and 367 times nationally. The mentions reached a total potential audience of around 25.1 million.

Scientific publishing

SINTEF's activities are based on high scientific quality combined with the application of research results. To add value and innovation for society and clients, SINTEF research scientists must be at the forefront of international research. Scientific quality is documented through scientific publishing and citations.



Employees

At the end of 2023, SINTEF Ocean had 384 employees from 34 different countries. The organisation takes a deliberate approach to recruitment in order to ensure the organisation grows and to fulfil our social mission. We are very proud of our employees, who help make SINTEF's vision a reality and fulfil its purpose and shape the ocean-based solutions of tomorrow.

Our motto is that SINTEF is a workplace for people with knowledge and enthusiasm. Our core values are honesty, generosity, courage and unity, and HSE and ethics are of particular importance to us.

384
EMPLOYEES

34
NATIONALITIES

Board and management

The board visited the new testing pool at Valgrinda in connection with a board meeting in September.

THE BOARD

- Alexandra Bech Gjørv (Chair), *President and CEO, SINTEF*
- Reidar Bye, *Executive Vice President and Deputy CEO, SINTEF*
- Ingrid Schjølberg, *Dean and Professor, Faculty of Information Technology and Electrical Engineering, NTNU*
- Jorunn Seglem, *Managing Director, KBAL in the Knutsen Group*
- Rune Torhaug, *Director of EU Government and Public Affairs, DNV*
- Erik Gjerdene, *Director, The Norwegian Shipowners' Association*
- Sverre Johansen, *Secretary General, The Norwegian Fishermen's Association*
- Ulf Sverdrup, *Director, The Norwegian Institute of International Affairs*
- Lars Henning Fehn, *Senior Engineer, SINTEF Ocean*
- Bjørn Ola Berge, *Senior Research Scientist, SINTEF Ocean*
- Tom Ståle Nordtvedt, *Senior Research Scientist, SINTEF Ocean*
- Trine Thorvaldsen, *Senior Research Scientist, SINTEF Ocean*

SINTEF Ocean's management group (Arne Fredheim was not present when the photo was taken).

MANAGEMENT

- Vegar Johansen, *CEO*
- Merete Øverli Moldestad, *Deputy CEO*
- Arne Fredheim, *Research Director, Dept. Energy and Transport*
- Bård Wathne Tveiten, *Research Director, Dept. Fisheries and New Biomarine Industry*
- Hans Vanhauwaert Bjelland, *Research Director, Dept. Aquaculture*
- Dariusz Eirik Fathi, *Chief Research Director, Dept. Ships and Ocean Structures*
- Mimmi Thrones-Holst, *Research Director, Dept. Climate and Environment*
- Anne Berit Heieraas, *Communications Director*
- Julie Brandhaug, *Financial Manager*
- Sarah Sandvær Eva, *Adviser*

Key financial figures

SINTEF Ocean is organised as a limited company, and its owners are:

The SINTEF Foundation (71.6%)
The Norwegian Shipowners' Association (16.2%)
DNV (5.4%)
The Federation of Norwegian Industries (2.7%)
The Norwegian Maritime Directorate (2.7%)
The Norwegian Fishermen's Association (0.8%)
NHO Shipping (0.5%)

SINTEF Ocean is a not-for-profit organisation, and we do not distribute dividends to our owners. The resources generated by our activities are exclusively used to fulfil the purposes of the institute.

Results **NOK millions**	**2019**	**2020**	**2021**	**2022**	**2023**
Gross operating income	670	633	704	778	805
Net operating income	515	521	575	623	643
Operating profit	**32**	**21**	**25**	**7,7**	**2,7**
Profit for the year	**34**	**29**	**30**	**9,9**	**15,3**
Balance sheet					
Fixed assets	152	152	161	168	166
Current assets	709	775	804	959	931
Total assets	**860**	**927**	**966**	**1128**	**1096**
Equity	438	467	497	507	522
Liabilities	422	460	469	621	574
Total equity and liabilities	**860**	**927**	**966**	**1128**	**1096**
Profitability					
Operating margin %	6,2	4,0	4,4	1,20	0,40
Return on total assets %	5,4	9,8	4,3	1,80	2,0
Return on equity %	9,2	7,3	7,5	2,69	3,0
Liquidity					
Net cash flow from operating activities	109	80	32	29	1,2
Liquidity ratio	1,7	1,7	1,8	1,57	1,65
Solvency					
Equity in %	51	50	51	45	48
Operating working capital	304	328	348	350	367

Highlights

Susi Schaefer, ARDITI/MARE-Maderia

ECOLOGICAL RESTORATION

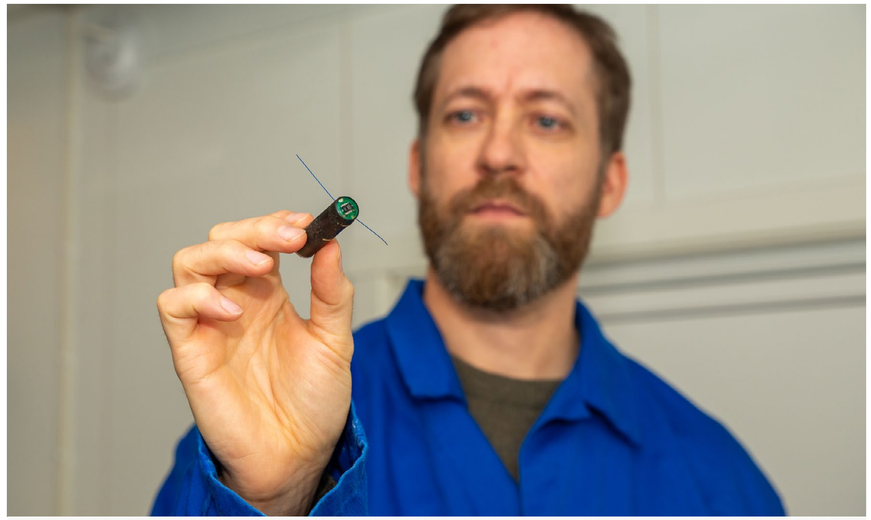
The EU CLIMAREST project, which received funding in the summer of 2022, is well underway. SINTEF Ocean is heading and coordinating the project, which is developing ecological restoration tools and activities at five demonstration sites in Europe – from Svalbard in the north to Madeira in the south. Many restoration measures are currently being implemented at the demonstration sites, and the project has sought new participants who can test the solutions from 2024 to 2025. The research scientists are also developing an open toolkit, where users can learn about best practices in ecological restoration, find data recommendations for their cases, model scenarios, and forge links with relevant networks and stakeholders.

SUSTAINABLE FEED

The research area sustainable feed was high on the agenda at SINTEF Ocean in 2023. The government wants to ensure that all feed for farmed fish and livestock comes from sustainable sources and to increase self-sufficiency. At the same time, the aquaculture industry has high growth ambitions, which will require large amounts of feed. SINTEF Ocean has therefore launched the report “Roadmap for industrial production of Norwegian feed ingredients (protein)”, which points out the potential for using marine and land-based ingredients, as well as cultivated plants and organisms such as insects, beach worms and macroalgae. Research scientists are working on this in numerous research projects, such as AlgScaleUp, SUSFEED, SIDESTREAM and GP Seaweed, and the centre SFI Harvest.

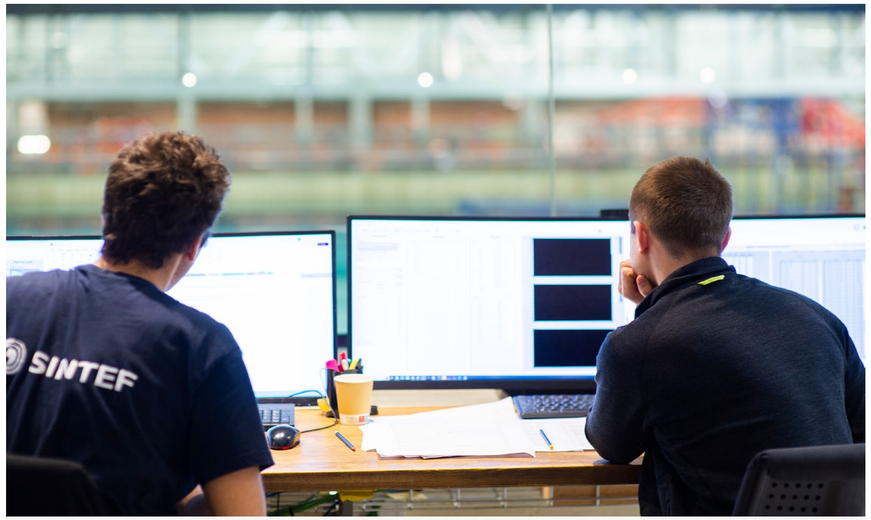
NET PEN TESTING IN THE OCEAN BASIN LABORATORY

In March, ScaleAQ demonstrated and tested their new subsea net pen system to researchers, business partners and customers in the Ocean Basin Laboratory. Forces and movements, both in the moorings and in the net pen's actual structure, were tested. The basin is suitable for such tests because it can generate waves, currents and wind that simulate the weather offshore. This provides unique opportunities for testing models under realistic conditions. The Ocean Basin Laboratory holds up to 40 million litres of water and is a very important laboratory for SINTEF Ocean. It is used to test ships and ocean structures, as well as various renewable energy solutions.



IMPLANTS FOR FISH HEALTH

The aquaculture industry is very important for Norwegian food production and value creation, and the government has high ambitions regarding its sustainable growth. SINTEF Ocean is developing new forms of production for the aquaculture industry, such as closed production at sea, and ocean aquaculture. Fish welfare in the fish farming industry was also high on the media agenda in 2023. In the RACE Welfare project, research scientists investigated how fish health, growth and well-being are affected by various factors in the environment. The research has resulted in a new advanced implant that can simultaneously collect data on the blood oxygen content, heart rate, activity, compass direction and temperature of the fish.



SHIP TUNNEL SIMULATIONS

We use simulation tools to carry out research into new systems and scenarios. For example, in 2023, simulations were conducted for the planned ship tunnel in Stadlandet, with the aim of verifying its main dimensions and fender layout, as well as determining any operational limitations. Approximately 2,500 hours of ships entering and exiting the tunnel were simulated for Havila Kystruten. The simulation model was comprehensive in terms of the ship itself, the dynamic wind, current and wave conditions, as well as the seabed conditions, the tunnel and the fenders.

POPULAR OFFSHORE WIND

The demand for renewable energy sources is growing, and offshore wind will be an important contributor to Norway's and Europe's energy transition. Offshore wind energy can be harvested by both bottom-fixed and floating wind turbines, and SINTEF's research environments have world-leading expertise in this field. SINTEF Ocean is currently working on areas such as anchoring systems, dynamic power cables, wave loads, structural response and environmental impact. The institute is a partner in FME NorthWind and was awarded several new offshore wind projects in 2023. The BWAVEs project, for example, is aiming to develop advanced calculation methods for extreme wave loads on bottom-fixed wind turbines.

SUSTAINABLE FOOD TRANSPORT

The food value chain accounts for about 33% of total global greenhouse gas emissions. Research, innovation, advanced technology and simple measures will all be required to cut these emissions. SINTEF Ocean is working on sustainability in the food sector through the EU-based ENOUGH project, which aims to cut emissions in the European food value chain. Around 60% of all food is refrigerated or frozen at some point in the food chain. These are energy-intensive processes and a major source of emissions. Therefore, one important element of the project is to improve energy efficiency and reduce energy use in connection with refrigerating, freezing, heating and drying food.

Waterborne Days

AUTONOMOUS SHIPPING

SINTEF Ocean's research on autonomous shipping via the EU-based AEGIS, AUTOSHIP and MOSES projects has gained a great deal of attention. For example, one of the most extensive tests of autonomous vessels in Norwegian waters was carried out under the auspices of AUTOSHIP. The projects have contributed to international forums and the development of regulations, while AEGIS won the award for best project in the category "Market uptake" at the Waterborne Days in Brussels in September. It is gratifying for SINTEF Ocean that our commitment to autonomous ships has produced good results, and the investment has also resulted in several new EU projects.

Alexander Fathi

NEW WAVE MACHINE

The Ship Model Tank got a new wave machine in late autumn. This is the first and largest single delivery of special equipment in connection with the construction of the Norwegian Ocean Technology Centre. The more than 10-metre wide, 30-tonne wave machine from the Netherlands was installed in the Ship Model Tank. Originally from 1939, this has now been rebuilt to make space for the new basin building at Tyholt in Trondheim. The magnitude of the machine illustrates the volume of water it is designed to handle, and the necessity of good cooperation between the disciplines involved in the construction project, both in Norway and the Netherlands.

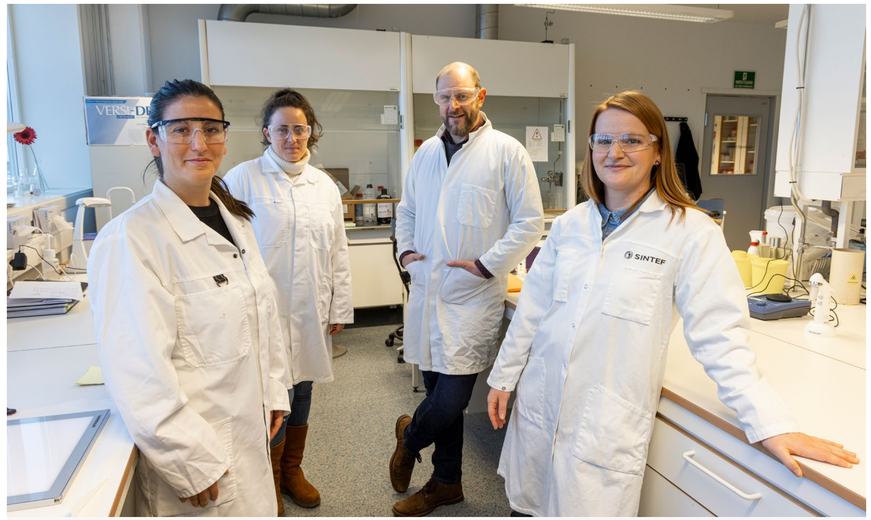
Vard Design/Hurtigruten

ZERO EMISSION SHIPS

SINTEF Ocean is involved in many low/zero emission technology projects for the maritime industry. Sea Zero is a project started by Hurtigruten and SINTEF in spring 2022. The aim is to build zero emission coastal express ships using sustainable and circular solutions, and the project includes everything from design, propulsion, energy and fuel, to hotel operations and digital solutions. The work really gained momentum in 2023, and the project now consists of 14 industry-level stakeholders, R&D institutions and government agencies with broad expertise in the maritime industry and environmental technology. The project also received NOK 67 million in support from Green Platform in 2023. SINTEF is responsible for project management and contributing to the analysis, research and development. In addition to piloting coastal express ships, a lot of generic R&D will be conducted from which many stakeholders will benefit.

CO_2 CAPTURE WITH KELP

Ocean cultivation will be required to meet the food, feed, materials and energy needs of a growing global population. Norway, with one of the world's longest coastlines, can play a leading role in achieving this development. SINTEF Ocean carries out a lot of activities related to the industrial cultivation and use of kelp. The Norwegian Seaweed Centre was established in collaboration with NTNU and includes a kelp facility in Frohavet off the coast of Trøndelag. The kelp farm covers 205 000 square metres and consists of 55 000 metres of rope on which the kelp can grow. The first seedlings were deployed in December and will be harvested in summer 2024. One of several projects that will take advantage of the plant is the JIP Seaweed Carbon Solutions pilot project, which is investigating kelp farming's carbon capture and storage potential.



POISONOUS PLASTICS

SINTEF Ocean's research scientists continue to carry out important research into how toxic plastics affect marine life. Chemicals from plastic products are released as soon as they enter the ocean. In the Micro-Level LEACH project, research scientists investigated a number of plastic products, the chemicals they contain and the quantities. They were very surprised at how many different chemicals they found in the products. There were also a large number of chemicals that the research scientists could not identify with certainty because they cannot be found in established libraries. This demonstrates how little we know about the products we surround ourselves with and how toxic these products can be for living organisms when they end up in nature.

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