

# ANNUAL REPORT 2018

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## Cover illustration:

Controlled release of medication in the human body is an important theme in SINTEF's nanomedicine research. The illustration shows a gel capsule, produced here in magnified form for demonstration purposes. In its research in the field, the capsule used by SINTEF Industry is several thousand times smaller. It has been developed to transport packages of active substances to the locations where they are needed in the patient's body, where they are then released.

Photo: Geir Mogen/SINTEF

# ABOUT SINTEF

SINTEF is one of Europe's largest research institutes, with multidisciplinary specialist expertise in the fields of technology, the natural sciences, and the social sciences.

SINTEF is an independent foundation which since 1950 has been responsible for innovation through development and research assignments for industrial and public sector clients in Norway and abroad.

Our vision is: "Technology for a Better Society"

# Research and innovation for customers all over the world



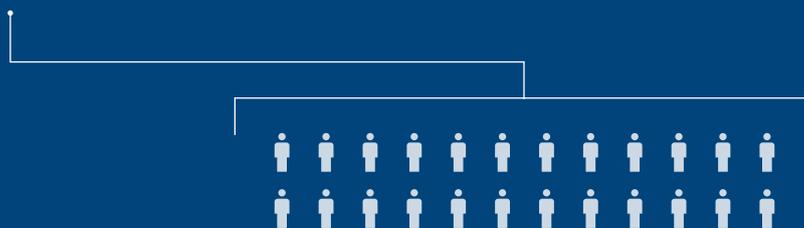
NOK 3,3 billion  
revenues

NOK 407 million  
international sales

## Seven out of ten employees are researchers



■ 71% research scientists ■ 13% managers and administrative personnel ■ 9% engineers ■ 7% technical personnel



55% of our research scientists have a PhD

# A good year for SINTEF

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2018 was a good year for the SINTEF Group. After many challenging years, we have now seen two years of satisfactory financial results, with revenues at the level we need to invest in new research and advance wealth creation and effective technologies that benefit wider society.

We have invested a lot of work in 2017 and 2018 to develop a new Group strategy, which has now been approved by the SINTEF Board. We shall continue to build on our strength as an independent, market-oriented research institute offering high levels of excellence.

Our ambition is to be a world-leading research institute that promotes competitiveness and solutions that are beneficial to society. Our activities are now rooted in the UN's sustainability goals, and we will be in the market for growth opportunities that support these goals. For this reason we shall, to an even greater extent than previously, assume the role of a development partner for our clients by exploiting the multidisciplinary enshrined in the "One SINTEF" concept and our ability to promote industrial and political dialogue.

These are large and demanding tasks in a world experiencing rapid technological advances and dramatic upheavals, and facing significant social challenges. The situation demands new solutions, and a society that prioritises research and innovation. Here at SINTEF, we are looking forward to making an even stronger contribution in these fields in the years ahead.



Alexandra Bech Gjörv  
CEO



# The SINTEF year in brief – 2018

**A GREENER OIL INDUSTRY:** The recently established low-emissions centre, headed by SINTEF and NTNU, was awarded NOK 120 million in state funding for research that will help towards achieving near-zero emissions from the Norwegian shelf by 2050.

**BUILDING QUALITY:** SINTEF is celebrating 60 years of publication of the *Byggforsk* handbook series. These handbooks contain instructions representing the quality standard for practical solutions to construction engineering challenges. They also provide interpretations of the regulatory frameworks stipulated by the public building authorities.

**SEED CORN FUNDING FOR NEW INDUSTRIES:** With the aim of developing new and viable technology companies, SINTEF established a new early-phase fund worth NOK 500 million in investment capital. The European Investment Fund and several private sector Norwegian investors are contributing to the fund.

**ROBOTICS:** The SINTEF spin-off Zivid is creating new industrial opportunities by fitting robots with 3D cameras that mimic human vision. In 2018 the company was awarded the Research Council of Norway's innovation prize for this invention.

**KNOWLEDGE POOL IN OCEAN SPACE:** The Norwegian government intends to continue work to complete the Ocean Space Centre – a major Norwegian project headed by SINTEF and NTNU aimed at promoting research, innovation and education. The goal is to create value for society by generating new knowledge for the Norwegian ocean industry sector.

**ESSENTIAL CCS:** A SINTEF report claims that achieving a full-scale CCS value chain in Norway could generate significant value in the form of industrial development and employment.

**AIR BUBBLES TO COMBAT HURRICANES:** Cold air “bubble curtains” may help to mitigate hazardous weather events. Pilot experiments using a bubble curtain – a device that causes air bubbles carrying cold water to rise from the ocean – will enable SINTEF to help Norwegian entrepreneurs in the battle to mitigate local ocean warming that causes hurricanes.

**CLIMATE-FRIENDLY FOOD PRODUCTION:** As a contribution towards the responsible and ecologically sustainable supply of food across the world, Yara and SINTEF are establishing a joint innovation centre for the efficient and climate-friendly production of fertiliser and food.

**SMART SHIPS:** SINTEF researcher Walter Caharija is one of many technologists working to ensure that the world can transport goods safely and inexpensively using autonomous ships. In spring 2018, his highly-cited scientific article earned him SINTEF's prize for outstanding research.

**MULTIDISCIPLINARY MERGER:** SINTEF is integrating its social sciences research community within the Group's technology institutes. The aim is to consolidate research fields such as health, transport, technology management, safety, digitalisation and working life, and by doing so boost SINTEF's ability to fulfil its vision of “Technology for a Better Society”.



# REPORT OF THE BOARD OF DIRECTORS



SINTEF's Board of Directors. From left: Ole Swang, Christina Wår Hanssen, Bård Myhre, Marit Reitan, Tor Grande, Walter Qvam, Mari Thjømmøe, Arne Birkeland, and Grete Aspelund.

Photo: Thor Nielsen

## Report of the Board of Directors, 2018

*2018 was a good year for SINTEF and we achieved many of our objectives. Our financial development was satisfactory and in line with our aims. Allocations of research programmes by the Research Council of Norway and the EU have been satisfactory and we have established a new seed capital fund. Work has progressed with a revised group strategy and we have implemented significant organisational changes.*

SINTEF is a non-commercial research institute, organised in the form of a foundation with subsidiary companies. Through its outstanding solution-oriented research, knowledge production and commercialisation of research results, SINTEF generates significant assets for its Norwegian and overseas clients, for the public sector, and for society as a whole. Our vision is "Technology for a better society".

SINTEF collaborates with clients throughout Norway and in the international market. The company's headquarters, with the majority of its employees, is in Trondheim, but SINTEF

has significant activity in Oslo and Raufoss. It also has operations in Mo i Rana, Tromsø, Bergen, Ålesund, Grenland and Hirtshals, as well as an office in Brussels.

SINTEF has established a partnership and a close strategic and collaborative relationship with the Norwegian University of Science and Technology (NTNU). It also has a close working relationship with the University of Oslo and a number of other Norwegian and international research institutes. This collaboration promotes high technical quality and is essential if Norway is to succeed in important research fields and as an innovative and adaptable industrial nation.

Following the revenue shortfall connected with the drop in the price of crude oil since 2014, we have implemented significant reorganisation of our operations and have succeeded in creating new growth to replace activities that no longer exist. The Board of Directors is pleased that SINTEF in 2017 and 2018 achieved results and earnings

in line with its objectives, and that the company can thus maintain its freedom of action and ability to carry out essential investments in laboratories, scientific equipment and knowledge development.

The Board notes that SINTEF and its clients were awarded valuable assignments in connection with the announcement of the Research Council of Norway's industrial programmes at the beginning of 2019.

### Strategy and role in society

Major upheavals are taking place in the global community and in the Norwegian economy. Most observers are of the opinion that there is greater uncertainty regarding future developments than was assumed just a few years ago. The basis of SINTEF's business activity is the development of technological expertise and putting it to work in order to create assets in close collaboration with industry, the public sector and the universities. Our clients seek strategic dialogue with SINTEF at management level, and wish to obtain access to SINTEF's extensive and in-depth expertise.

There is a greater need than before to integrate technological expertise with industrial sector familiarity and technology with expertise in the social sciences.

This means that a number of new demands must be met if interaction within the organisation is to be efficient in contributing the best ideas and projects that SINTEF as a whole can offer.

With this in mind, SINTEF has been working since the summer of 2017 on a new corporate strategy. SINTEF shall continue to operate as an independent, market-oriented research establishment with a high level of excellence. At the same time we will to a greater extent than in the past assume the role of a key development partner for our clients by making use of our multi-disciplinary expertise and ability to enhance industrial and political dialogue.

The Board has decided to make the UN's sustainability goals the foundation of our work, and consequently to seek growth potential for SINTEF in activities that support these goals. Our ambition is to be a world-leading research institute that promotes competitiveness and solutions that are beneficial to society. An element of this is our work on the digitalisation of our own products, and our efforts to form alliances and collaborative arrangements with other research and industrial centres. We are also placing greater

emphasis on contributing directly to new business operations, including technology commercialisation for new companies. The Board has also launched an initiative to examine SINTEF's assets with an eye to improving conditions for growth in research and innovation activity, while also promoting sound asset management.

The top-priority research fields of the institutes will always be the most important element of SINTEF's work and strategy. In addition to efforts in these top-priority fields, in 2018 a great deal of work was dedicated to the definition and development of a number of new, multidisciplinary areas of involvement. We are therefore pursuing a number of strategic growth platforms, which we have called "group commitments". The work of realising the potential in these commitments is financed by sources including basic funding from the Research Council of Norway.

Substantial changes have also been effected in SINTEF's corporate organisation in 2018. From 1 January 2018, the Foundation's organisation has been modified in that all research activities now take place in subsidiaries that are organised in the form of limited-liability research companies. With the exception of 82 employees enrolled in the state pension fund, employees of the SINTEF Foundation were transferred to SINTEF AS from 1 January 2018. In this way the Foundation becomes the figurehead of the SINTEF Group, and the company is legally well equipped



to support its various assignments: research activities, commercialisation of research results, property management and financial management. The changes help to reinforce our ability to fulfil our role in society while also reducing risk to the Foundation's capital assets.

SINTEF AS currently consists of the three institutes that were previously organised within the Foundation. The institute known as SINTEF Industry is the result of the merger of SINTEF Materials and Chemistry and SINTEF Petroleum AS, effective from 1 January 2018, as well as amalgamation with the Tel-Tek Foundation in Grenland in south-eastern Norway.

In 2018 the institute known as SINTEF Technology and Society was closed down and the technical groups of which it consisted were integrated with the institutes SINTEF Digital, SINTEF Building and Infrastructure and SINTEF Industry.

From 2018, SINTEF Manufacturing AS was incorporated into the Research Council of Norway's basic funding system, thereby attaining the status of a research institute in the technical-industrial arena.

### **Putting our property portfolio to better use**

The SINTEF Foundation owns substantial assets that are at the disposition of the Group's operational units. Developed and undeveloped leasehold sites surrounding the universities in Trondheim and Oslo represent the most important assets registered on the balance sheet. The amalgamation of technical groups between SINTEF and the universities is

an important factor for the success of the technical co-operation and SINTEF therefore leases considerable additional areas at NTNU in Trondheim.

NTNU's Campus project and the ambitions connected with Oslo Science City, both of which prioritise innovation, start-up activities and collaboration with industry, represent unique opportunities for further development of our strategic position and our real estate assets. Therefore, to ensure continued co-location and further reinforce collaboration with the universities, industry and start-up environments, the Board will prioritise work on a forward-looking development of SINTEF's property portfolio. This will take place in close co-operation with the universities and the other participants in these campus projects. More active involvement of this kind in relation to property matters must support SINTEF's objectives and be characterised by efficient asset and risk management.

### **Commercialisation of research results**

SINTEF further consolidated its commercialisation work in 2018 with the successful establishment of the SINTEF Venture V seed fund. The fund will invest in and develop new companies that base their activities on technology with the research groups at SINTEF and NTNU as their starting point.

The fund's investment capital is NOK 500 million, of which SINTEF's share is NOK 110 million. The European Investment Fund (EIF) is contributing NOK 155 million, and a number of private Norwegian investors are participating in the fund, in addition to SINTEF: KLP, Gjensidigestiftelsen, Sparebankstiftelsen DNB, SpareBank1 SMN Invest, MP Pensjon, Reitan Kapital and Orkla.

By the end of 2018, SINTEF had 17 start-up companies in its portfolio, which during the year have received a total of NOK 40 million from SINTEF venture funding. If one takes into account investors in the public policy instrument system, these companies have received NOK 161 million in 2018.

In 2018, Zivid AS was awarded the Research Council of Norway's Innovation Prize and the Norwegian Tech Award. The company was founded in 2015 as a spin-off from SINTEF's research groups. Zivid has developed an advanced 3D camera that provides robots with vision, opening up completely new possibilities to the industry.





## HSE

Health, safety and the environment have the highest priority at SINTEF, and systematic work is in progress to safeguard our employees' safety and working environment.

SINTEF's overall goals for its HSE work are:

- We shall maintain a sound and health-promoting working environment.
- We shall achieve zero occupational sickness absence.
- We shall incur zero levels of accidents, injuries, damage and loss.
- SINTEF shall stand out as a company with a clear environmental profile.

In 2017 the corporate management decided to implement an HSE campaign in four selected areas for improvement:

- Intensified effort to improve technical safety, orderliness and tidiness.
- Managers shall exercise well-defined safety management.
- Employees must give more thought to risks and barriers.
- Employees shall to be more aware of their responsibility.

The target group is all managers and employees at SINTEF. Creating a good safety culture is a job that calls for patience, but so far it looks as if the commitment to the HSE campaign has had a positive effect that can be measured in a reduction in the number of personal injuries in 2018.

In 2018 an internal audit was carried out at all the institutes, the target group being research managers. The audit

addressed safety culture, practices, leadership, areas of responsibility and skills.

HSE training is important and our programmes are updated regularly. The e-learning course "SINTEF HMS-Intro" was revised in 2018. A risk management tool was also developed for use in project implementation. The institutes carry out local training to ensure the safety of our employees working in laboratories and workshops.

A working environment study is carried out in alternate years, the last being in 2018. This is part of the survey of different working environment factors and management as required by law. Issues in the field of safety attained the best scores of all.

All known HSE incidents are reported weekly to Group Management and every board meeting commences with a review of HSE status and an analysis of incidents. In 2018, 32 accidents and 37 near-accidents were recorded. Following a drop in reported numbers in the spring of 2017, the curve shows an increase in 2018, with 532 hazardous conditions and observations. The Board sees this as a positive trend in terms of developing a safety culture. Work is in progress with initiatives aimed at encouraging the reporting of issues in connection with fieldwork and business travel.

In 2018, 24 personal injuries were recorded, of which eight required medical treatment. Three injuries resulted in absence from work, and 16 were classed as first aid injuries. This represents a reduction since 2017, when the number of personal injuries was 31. In 2018, the frequency of injuries necessitating absence (H1) and personal injuries (H2) was 1.0 and 2.7, respectively, down from 1.4 (H1) and 4.3 (H2) in 2017.

Incidents have revealed the need for closer collaboration with NTNU in order to ensure greater levels of experience sharing in connection with HSE incidents, and a collaborative forum has been set up for HSE, contingency and safety. The aim is to become involved in one another's efforts to safeguard the working environment.

Chemical substances are in widespread use at SINTEF. The relocation of potentially explosive peroxides revealed a need to tidy up the chemical storage facility as well as to audit procedures and provide additional training in the handling of hazardous chemicals.

SINTEF is certified according to OHSAS 18001:2007 (Health and Safety Management System). The follow-up audit was carried out in December 2018 and revealed no non-conformances. In 2018, SINTEF was enrolled in EPIM JQS, as well as in Achilles JQS.

In 2018, state-sponsored intelligence activity was the most prominent open threat reported in the annual threat assessment issued by the Norwegian Police Security Service (PST). We acknowledge that, as a research institute, SINTEF is exposed, and this is taken into account in our procedures and monitoring activity, also on the part of the Board, by way of measures to reduce vulnerability. This has involved technical system initiatives such as access control and vulnerability interviews with employees from high-risk countries. Work is also in progress to develop risk assessment tools for use when recruiting from nations with which Norway does not have formal co-operation regarding security policy.

### Financial independence

In 2018 SINTEF reported an ordinary operating profit of NOK 185 million, compared with NOK 206 million in 2017. The operating profit from ordinary operations improved somewhat in 2018 (NOK 162 million) after correction for non-recurring revenues from allocations connected with EU projects in 2017 (NOK 160 million). Profit before taxes was NOK 201 million, compared with NOK 234 million in 2017. Net operating revenues are 2.7 per cent up on 2017.

We focus strongly on sales efforts, cost reductions and other measures designed to ensure good profitability. In the period 2015-2017 we have carried out cost reduction initiatives with a combined annual effect of over NOK 300 million. In 2018 we have focused on increased growth, with a greater level of commitment to collaboration between the institutes.

At the start of 2019, all the institutes have generally healthy order books. This is the result of proactive sales efforts combined with a number of significant resource adaptations carried out in recent years. We are seeing a positive development in most of our market areas, including oil and gas, at the beginning of 2019.

At the close of 2018, SINTEF's overall liquidity situation was satisfactory. SINTEF has established a joint arrangement within the Group for the investment of its liquidity

reserves. The portfolio is invested in accordance with the document *"Regler for finansforvaltning i SINTEF"* (Rules governing financial management at SINTEF), dated October 2018. In 2018 an average of NOK 337 million has been available for administration, compared with NOK 320 million in 2017. Our low-risk profile contributed to a marginal negative yield of -0.3 per cent in 2018 (compared with 4.8 per cent in 2017 and 0.2 per cent in 2016). We reduced our share ownership significantly prior to the drop in value in the fourth quarter of the year.

SINTEF is exposed to currency exchange fluctuations as a result of some of its project revenues being in foreign currencies, although project costs are entirely or largely in Norwegian kroner. Futures contracts are employed to reduce this risk. We have specifically evaluated risk and freedom of action in the event of a serious collapse of the Euro.

It is essential that SINTEF succeeds in creating a financial surplus that can be invested in new research and skills development. In 2018, SINTEF invested NOK 73 million in laboratories, scientific equipment and other operating equipment. The corresponding amount in 2017 was NOK 112 million.

SINTEF currently enjoys a robust financial position. As of 31 December 2018, SINTEF's equity is NOK 2,500 million, which is 59 per cent of its total assets. Corresponding figures for 2017 are NOK 2,348 million and 57 per cent. The corresponding figures for the SINTEF Foundation are NOK 2,215 million (NOK 2,112 million in 2017), which constitutes 95 per cent (66 per cent in 2017) of our total assets.

The annual profits of the SINTEF Foundation in 2018 were NOK 122 million, compared with NOK 152 million in 2017.

Our equity and operational status, combined with cost-saving initiatives and a satisfactory order book, provide us with a good basis for declaring the organisation a going concern. The Boards of the subsidiary companies have made similar assessments, and all have concluded that we have the basis for meeting the requirements of the going concern assumption. The Board is not aware of any circumstances that have arisen since the close of the accounting year which affect its opinion regarding the financial position of either the Foundation or the Group. On this basis, the Annual Accounts have been prepared according to the going concern principle.

## Clients

SINTEF generates growth and development opportunities for private and public sector enterprises, contributing to their asset creation and to positive developments in society. This is our most important contribution to society.

In 2018, SINTEF completed 4,985 projects on behalf of a total of 3,534 large and small clients. These comprised assignments for both private and public sector clients in fields such as renewable energy, oil and gas, the marine and industrial sectors, building and infrastructure, as well as enabling technologies, health and welfare and social science research.

A significant number of the projects make use of specialist skills drawn from all parts of the SINTEF organisation. A broad-based approach, involving a variety of different specialist groups, provides unique opportunities for developing sound multidisciplinary solutions to major, complex social challenges linked to fields such as digitalisation, health and welfare and the green transition.

Participation in the major, forward-looking research centres which are partly financed by government entails significant interaction with Norwegian and overseas clients. SINTEF is currently participating in nine Centres for Research-Based Innovation (CRIs) and eight Centres for Environment-Friendly Energy Research (CEERs) which were established in 2016 and 2017. Taken together, these activities involve the participation of just over 200 industrial enterprises. Participation in these centres provides these companies with long-term knowledge development at the forefront of international research, and contributes to important networks and enhanced competitiveness.

A thorough understanding of our clients' real requirements calls for open and effective communication with our clients at a number of organisational levels. This also involves increased levels of dialogue and contact with the public authorities, firstly in Norway, but also in the EU and in other countries. In 2018, SINTEF arranged a series of meetings of a strategic nature with many international companies, public authorities and institutions.

Project management, combined with a clear aptitude for implementation and teamwork in project performance, as well as high quality in project deliveries have been the focus of considerable attention by the management team in 2018.



SINTEF implements a large number of projects in collaboration with clients associated with the Research Council of Norway's industry-oriented programmes. These projects are classified as Private Sector Innovation Projects and Private Sector Skills Projects. In 2018 SINTEF participated in 338 applications for project funding, totalling NOK 5.6 billion. SINTEF's share of the amount applied for was NOK 2.3 billion. An analysis performed in February 2019, when 90 per cent of the applications had been processed, showed that 39 per cent of them had been approved. The Board considers this result satisfactory. SINTEF's budget for approved projects was around NOK 884 million.

In December, SINTEF was awarded coordination responsibility for a new research centre that will contribute to achieving close to zero emissions from operations on the Norwegian continental shelf by 2050. This centre, which will be called "LowEmission", has been promised NOK 120 million in funding by the Norwegian Government. A number of oil and supplier companies will also contribute to the financing of the centre. The total budget for the centre is close to NOK 350 million over a period of eight years. Between now and 2050 the centre will develop new expertise and technology which by 2030 shall have helped to reduce emissions of greenhouse gases from operations on the shelf by 40 per cent.

## Research fields

In order to maintain its capacity for innovation and influence it is essential for SINTEF to achieve an appropriate balance between scientific publication and contract-based research. The most important form of advertising



our research results occurs when new technology and systems are made use of by our clients and by society, but international publication is also of considerable value. The Board underlines the importance of SINTEF contributing to its own skills development and the development of new knowledge by means of publication.

Publication contributes to creating awareness of and reinforcing scientific quality, which is essential to success in the market and for recruiting the best research talent. Our aim is to publish at least one peer-reviewed scientific publication per research scientist per year. In 2018 the figure was 0.80 publications per research scientist per year, compared with 0.95 and 0.71 in 2017 and 2016, respectively.

SINTEF's international standing is significant for the effective exploitation of research funding in Norway. This is clearly demonstrated by the EU research programmes, where SINTEF has succeeded in becoming by far the largest Norwegian player. Participation in the EU Framework Programmes is key to enhancing the quality of SINTEF's scientific output, enabling it to remain in the forefront of international research in fields such as ICT, biotechnology, energy, nanotechnology, and materials science.

Investment in laboratory facilities is crucial if Norway is to continue to develop as a knowledge-generating nation, boost its global competitiveness and attract the best students and research scientists. In the last ten years, SINTEF has invested NOK 1.3 billion in laboratories, scientific equipment and buildings. In collaboration with its partners, SINTEF has achieved good results in the Research Council of Norway's Financing Initiative for Research Infra-

structure (INFRASTRUKTUR), launched in 2016. This has contributed to initiating investments in national infrastructures in 2017-2018, in which SINTEF is a partner or participant. SINTEF submitted a significant number of applications in the autumn of 2018, with allocations due to take place during 2019.

In December 2018 the Norwegian Ministry of Trade, Industry and Fisheries adopted a concept for a future knowledge centre for ocean space technology – the Ocean Space Centre. This is an important step toward the establishment of this centre. Quality assurance work has shown that the concept is socio-economically profitable, and the next step is to prepare a report on a start-up pilot project, which will be submitted in June 2019. The aim is that financing of the pilot project will be included in the state budget for 2020.

Strategic collaboration with universities and other research institutes is vital if we are to maintain robust national research arenas. The strategic collaboration between NTNU and SINTEF is of considerable importance. This collaboration contributes towards keeping SINTEF's applied research in the international academic forefront, while enabling NTNU to carry on extensive research activities directed at finding specific solutions to issues facing industry and society.

Third party analyses demonstrate that our 68-year collaboration has been highly significant for Norwegian research and innovation. Both the Board and the management of SINTEF and NTNU are working actively to maintain this valuable collaboration in the future.

SINTEF is an active participant in international research projects. Together with NTNU, we are engaged in a strategic collaboration with leading research centres in Japan and the USA in the fields of energy and materials science. Considerable importance is attached to collaboration in the European Energy Research Alliance (EERA) and the European Association of Research and Technology Organisations (EARTO), both of which have important strategic roles in European research. Nils Røkke of SINTEF has been appointed to head the EERA, which is a collaboration between 250 research institutes in 30 European countries.

Priority is assigned to the SINTEF Group's strategic initiatives, typically involving three-year cross-disciplinary research projects in fields that are of special importance

to SINTEF. In 2017 eleven new strategic group initiatives were commenced which were continued in 2018. These are linked to the fields of Big Data, health and welfare, petroleum technology, mobility, autonomy, smart towns, 3D printing, the circular economy, clean seas and SINTEF's role as an agenda setter in social debate. In 2019, group initiatives are further developed to form an important instrument in the new corporate strategy, and altogether NOK 37 million is allocated to a total of 17 strategic group initiatives.

Research centres financed by the Research Council of Norway are of major importance for technical development, innovation and asset creation in industry. These are long-term focus areas that demand high scientific quality and collaboration between participants in research and industry. For SINTEF, organisations such as the Centres for Research-Based Innovation (CRIs) and the Centres for Environment-Friendly Energy Research (CEERs) are particularly important.

In January 2019 an analysis of the impacts of energy-related research was submitted to the Minister of Petroleum and Energy. The report was prepared by the analytical advisory companies Impello and Menon on behalf of the Research Council of Norway, and demonstrates the effect of ten years of the RENERGI and ENERGIX research programmes, based on factors such as information provided by the Centres for Environment-Friendly Energy Research (CEERs). The results show that NOK 4 billion has been invested in research into sustainable energy, and that 48 selected projects have realised a value of NOK 16 billion, with a potential yield of NOK 100 billion. Additional gains are in the form of such things as supply reliability, knowledge building and climate benefits. This is an important analysis which demonstrates the enormous significance of investing in long-term research.

## People

SINTEF's aim is to be an attractive workplace offering unique development opportunities. The working environment assessment carried out at the beginning of 2018 indicated that on average SINTEF's employees rate the company highly. The response rate was 93 per cent. Since the previous study in 2016 we have seen progress associated in particular with the issues of the quality of collaboration with other parts of SINTEF's organisation, evaluation of projects and project support apparatus, and of the

perception of assistance from staff and support functions. Compared with other institutes that use the same survey, SINTEF scores particularly highly in aspects connected with management, both at project level and organisationally.

The results of the survey confirm that overall, SINTEF is a good place to work, although some items for improvement were also identified. The work of applying the results to the continued development of SINTEF as a workplace is continuing according to prioritised action plans. Proven challenges are being followed up using specific initiatives.

It is important to ensure the quality of middle management. SINTEF is working systematically to develop its management resources, with a focus on individual managers and team spirit. Greater emphasis is being placed on the development of managers for major, complex projects, and on enhancing their aptitude for efficient teamwork, crossing technical and organisational boundaries as part of the "One SINTEF" concept. A new system for employee development was implemented throughout SINTEF in 2018.



SINTEF continues to be successful in competition for skilled employees in the global market. We place great emphasis on taking care of and fostering the development of our current staff, while at the same time working to ensure future recruitment by means of promotional activities in the domestic and global markets. Across the board, SINTEF achieves a very high approval rating in surveys in which students rank the attractiveness of workplaces. In 2018 we are in sixth place among Norway's most attractive employers of technology students according to the major survey carried out by Universum.

Work continued to improve the efficiency of operations by consolidating business activities in larger institutes, and

in 2018 the institute SINTEF Technology and Society was phased out as a separate entity.

As of 31 December 2018, SINTEF had a total of 1,944 employees. In 2018 SINTEF experienced an overall staff turnover of 8.4 per cent, and within the scientific personnel category the turnover was 8.6 per cent. Employees leaving SINTEF represent an important contribution to skills development in industry and the public sector.

55 per cent of the research scientists at SINTEF have doctoral degrees, an increase from 44 per cent over the last ten years. 469 of our employees in 2018 (24 per cent) originate from a total of 72 countries outside Norway. This shows that SINTEF is attractive to international research scientists and that we are successful in bringing highly qualified researchers to Norway. SINTEF's foreign employees provide a valuable source of scientific and cultural expertise. The majority of employees from outside Norway are from Germany and France.

In 2018, the sickness absence rate was 3.9 per cent, which is somewhat higher than the goal of 3.5 per cent. Occupational sickness absence was recorded at 0.4 per cent. SINTEF is an "Inclusive Working Life" (IA) enterprise and sickness-related absences are systematically followed up by the relevant institutes. Line managers, supported by HR personnel, are jointly responsible for following up sickness absence.

### Equal opportunity and family policy

The Board and Group Management are fully committed to promoting equal opportunity at SINTEF. One of SINTEF's objectives is to increase the proportion of women among both its research scientists and managers. The President



of the SINTEF Group is a woman. When vacancies arise, SINTEF aims actively both to recruit women and to develop female managers from its own ranks. Structural imbalances in recruitment practices applied in the educational establishments are nevertheless reflected in SINTEF's staff.

SINTEF is a party to the following agreements between professional associations: NHO/Tekna, NHO/NITO, NHO/Forskerforbundet, NHO-Abelia/LO-NTL and NHO-Abelia/Parat. Salaries and conditions of employment are determined by negotiation and discussion with employee representatives in the respective labour organisations. Women are considered on an equal footing with men. We carry on systematic monitoring to ensure that undesirable salary differentials do not arise.

The gender distribution within SINTEF is shown in the table below:



81 per cent of our work force are full-time employees. 22 per cent of female employees and 17 per cent of males work part-time. One reason for part-time employment is that employees can take advantage of the opportunity to reduce their working hours while receiving an early negotiated pension. SINTEF makes little use of temporary employment contracts. At the end of the year, 68 employees (3.5 per cent) were in temporary positions, 26 of them women and 42 men.

SINTEF's working environment survey for 2018 revealed no significant gender differences among employees in terms of how they perceived their work situation. We will continue to develop focused initiatives to ensure that SINTEF remains an attractive workplace for both sexes.

To ensure that foreign employees are well taken care of, SINTEF has established an integration programme for employees from other nations and their families. The programme offers expat services, free Norwegian lessons and teaching in English at the SINTEF School. Diversity management is one of the themes of the SINTEF School's manager development programme. Findings from the working environment study indicate that overseas employees enjoy working at SINTEF.

SINTEF goes to great lengths to meet the needs of employees with special requirements. As part of our IA objectives we are committed to adapting workplaces to those of our employees who either have, or develop, disabilities. This work takes place in close co-operation with the Norwegian Labour and Welfare Administration (NAV), and we make full use of available public support arrangements. It is a defined IA objective that we shall pursue the current practice of focusing on skills in connection with recruitment, rather than on any limitations resulting from a disability.

SINTEF shall be an organisation with room for rounded individuals who have a life outside their workplaces. We therefore allow flexible arrangements to meet the individual's needs, such as flexible working hours for all employees and special arrangements for parents with young children.

## Internationalisation

SINTEF's ambition is to be a world-leading research institute. Internationalisation is an integral part of SINTEF's business operations. We have had considerable success in our internationalisation strategy in the following areas: the

strengthening of our academic network, participation in the EU's research programmes, international sales of R&D services and international recruitment. However, we must acknowledge that we have yet to find workable solutions to the problem of establishing a profitable presence outside Norway, and work is continuing on this aspect of our internationalisation strategy.

SINTEF is by far the largest Norwegian participant in the EU Framework Programmes for research and development. As part of the EU 7th Framework Programme, which was completed in 2013, SINTEF was granted participation in 254 projects, and the role of Project Co-ordinator in 55 of these. A total of EUR 149 million in support funding has been awarded by the EU. Research linked to some of the projects commenced in the 7th Framework Programme has continued until 2018. We have a high level of activity in connection with Horizon 2020 (the 8th Framework Programme) which commenced in 2014. As of October 2018, SINTEF has been granted participation in 158 projects in this programme, including the role of co-ordinator in 42. The EU has awarded SINTEF a total of EUR 109.5 million in support funding.

In order for us to fulfil our role in society, it is essential for us to be able to develop international networks and globally competitive concepts that bring state-of-the-art know-how to our clients. The fact that SINTEF is competitive in the EU research market shows that we have the ability to develop internationally recognised expertise, as well as to establish consortia consisting of Norwegian and



international companies and research institutes. In many cases, Norwegian companies obtain funding and opportunities to collaborate with their clients with regard to innovation by way of our EU projects.

The biggest challenge we face in connection with EU research projects has been that there is sometimes a lack of clarity regarding framework terms and that the EU's compensation arrangements are tailored to research practices in other countries, where the host nations cover the greater part of the costs. In 2015, Norwegian authorities established the "STIM-EU" scheme and the financial frameworks have subsequently been gradually increased in the state budgets. As a result of the scheme, EU research has become a smaller drain on the resources of the institutes, although the funding is still not enough to cover our costs in EU projects.

SINTEF has an office in Brussels on the same premises as NTNU and the University of Bergen. The aim of our presence here is to reinforce networks and our participation in EU research collaboration. Experience from three years of operation has shown that our presence is important. In September 2018, SINTEF arranged a seminar in Brussels for the second time, this time in collaboration with NTNU, including important meetings with the European Commission, the Norwegian authorities and industry representatives. We are also working actively on our strategic positioning and preparations for "Horizon Europe", EU's next framework programme for research and innovation, due to commence in 2021.

The authorities have set out an ambitious EU-related research strategy which has been followed up with consolidation of the budgets for STIM-EU and other stimulation schemes. Further funding increases, in step with the extended scope of the EU programme, are crucial if the stated research strategy aims are to be met and stable terms of reference established. It is essential that SINTEF should receive full coverage of its costs for participation in EU projects, equivalent to the coverage for projects funded by the Research Council of Norway.

SINTEF's international sales in 2018 amounted to NOK 407 million, compared with NOK 449 million in 2017. This corresponds to 13 per cent (14 per cent in 2017) of SINTEF's total sales. We have completed assignments for clients in 61 countries. EU projects represent 50 per cent of our international activity (as in 2017).



## The external environment

SINTEF's environmental policy demands that we take into account environmental issues both in our daily operations and in the way in which we carry out our research. SINTEF is a world leader in research into renewable energy, climate and environmental technology, and our results and standing display high quality and extensive expertise in the field of environmental research.

SINTEF is certified according to the ISO 14001:2015 environmental standard and in 2018 we have made a conscious effort to achieve a greater integration of environmental management practices. The follow-up audit was carried out in December 2018 and revealed no non-conformances. In 2019 work will continue on evaluation tools, the implementation of objectives and effective measurement parameters.

By way of the "Ung i SINTEF" (Young at SINTEF) workshop and increased employee involvement with regard to environmental issues in our own operations, SINTEF has received valuable suggestions regarding how to work with the external environment. In our work on environmental management, emphasis has been placed on effective dialogue and organisation through SINTEF Eiendom, and we are experiencing better acceptance among the institutes.

In 2018, SINTEF experienced no reportable incidents that impacted on the external environment.

## Ethics

SINTEF operates on the basis of a clear ethical platform. "Ethics, values and leadership" are key aspects of SINTEF's strategy. Our ethical guidelines are accessible to everybody on SINTEF's website.

Ethics-related work at SINTEF encompasses research ethics, business ethics and ethics in interpersonal relationships. SINTEF's research ethics are based on the guidelines of the national ethics committees, on the principles promoted by the European Group on Ethics in Science and New Technologies, on international conventions such as the Vancouver Convention and on Norwegian law. In 2017 a new Norwegian Act relating to the organisation of research ethics was passed.

SINTEF complies with the EU Charter and Code, or the "European Statement on Researchers" and the "Code of Conduct for the recruitment of research scientists". From an EU perspective, this is both an obligation and an aid to creating an attractive European research environment.

SINTEF expects and requires its suppliers and business partners to be familiar with and accept our ethical values. Suppliers and business partners involved in our activities are obliged to submit written acceptance of our code of ethics.

Ethical issues are on the agenda in management team meetings and departmental meetings. For many years it has been our practice that HSE and ethical issues top the agenda in all internal meetings. Group Management regularly includes ethics as a topic in its meetings, which are attended by the company's Ethics Representative. The Ethics Representative is experiencing that involvement in

ethical issues at SINTEF is on the rise.

The follow-up ethical guidelines is the responsibility of management. SINTEF has its own Ethics Representative, and in 2018 the Board decided to replace the Ethics Council with the Ethics Representative's Council, which constitutes the Ethics Representative's prior discussion forum and is recruited from among the employee representatives and management of SINTEF.

From 2018, work commenced to revise SINTEF's ethical guidelines (the "Ethical Compass"). In line with the Norwegian Act relating to the organisation of research ethics work (*lov om organisering av forskningsetisk arbeid*), SINTEF has prioritised the development and revision of its ethics training programme. The courses on research methods and a new project manager's course include a new training module on ethics. Ethics training has also been developed for the "Management Platform" ("*Lederplattformen*") – a new training scheme for managers at SINTEF.

The Ethics Representative acts as an advisor and discussion partner for SINTEF's entire organisation and also participates in connection with a number of external activities. The Ethics Representative arrangement means that SINTEF satisfies the requirements of the Norwegian Working Environment Act regarding an anonymous in-house notification channel.

## SINTEF's role in society

SINTEF's role in society is a key component of our strategy and daily operations. The strategy specifies that SINTEF shall be an attractive partner that exploits its multidisciplinary capability and ability to enhance industrial and political dialogue in order to generate competitiveness and address the challenges facing society.

The major social challenges of our time are described in the UN's 17 Sustainable Development Goals. The Board has decided that the need to meet the sustainability goals shall form the basis of the work of attaining SINTEF's vision. In 2018, SINTEF grouped its projects in accordance with the sustainability goals, enabling us to measure our activities in those areas covered by the goals.

Our social responsibilities also address the way in which we administer our business activities, linked to issues such



as human rights, employee rights and social conditions, the external environment and the battle against corruption. SINTEF has developed policies and guidelines linked to all these fields, which have been incorporated into our management system and ethical guidelines. Employee rights are also safeguarded by means of SINTEF's collective salary agreements and the monitoring of our responsibilities as an IA enterprise.

SINTEF is a member of the UN Global Compact, and actively applies its ten principles on human rights, work standards, the environment and anti-corruption. SINTEF reports annually on its status (Communication on Progress) in relation to these principles in accordance with the requirements set out in the Compact. This status report is part of SINTEF's annual reporting process and is published on our website.

SINTEF is a member of Transparency International, an organisation dedicated to the elimination of national and international corruption, and adheres to the guidelines and advice provided by this organisation.

An active dialogue with wider society is a key aspect of SINTEF's role. This includes both our role as a supplier of terms of reference and research-based facts as a basis for public debate and the shaping of policies, and work to strengthen the terms of reference for research and for SINTEF. In 2018 we augmented our efforts relating to contact with society and the authorities.

### **Corporate governance at SINTEF**

SINTEF's central administrative bodies are the Board of Directors and the Council. The Board is the Foundation's principal administrative body, while the Council acts in an advisory function, with authority as stipulated by the Norwegian Act relating to Foundations and SINTEF's Articles of Association.

SINTEF's Council acts in a supervisory role to ensure that the Foundation's objectives are adhered to in accordance with the Articles of Association. It also appoints the Board, determines the remuneration of Board members and appoints an auditor. The Council is headed by the Rector of NTNU. 25 Council members are elected by the board of NTNU, half of whom are appointed on the basis of recommendations from the University of Oslo, the Norwegian Confederation of Trade Unions (LO), the Con-

federation of Norwegian Enterprise (NHO), the Norwegian Society of Graduate Technical and Scientific Professionals (Tekna) and the Board of SINTEF. Three members of the Council are elected from among SINTEF's employees. The Council appoints an election committee which proposes external board members who are selected by SINTEF's Council.

The Board of the SINTEF Foundation also acts as Board of the SINTEF Group and the Board of SINTEF AS. The activities of the four limited research companies are governed by their Articles of Association, shareholders' agreements, corporate agreements and instructions issued to their respective Boards. Principles for the Group's administration and co-ordination with related activities have been established in accordance with SINTEF's overall goals and strategy. In 2018 a corporate agreement was entered into with SINTEF Manufacturing AS.

The Board is made up of nine persons. Two have full-time posts at NTNU, four are from industry or public sector administration, and three are permanent employees of SINTEF. The Board has responsibility and authority in all matters which are not assigned to the Council. The Board acts in accordance with SINTEF's Articles of Association and the Norwegian Acts relating to Foundations and Limited Liability Companies. The Board appoints the Group President and determines his or her salary and other employment terms, as well as determining the budget and principles for remuneration of the group management. In 2018 the Board held ten Board Meetings, one of which was a telephone conference. Two were carried out in writing.

SINTEF's Group Management is responsible for the management of the entire scope of SINTEF's business activities. The Group President is responsible for daily operations in accordance with the Articles of Association of the Foundation and corporate agreements and in all other respects in accordance with the Acts relating to Foundations and Limited Liability Companies. The Group President has authority to act on behalf of the Foundation and SINTEF AS, except in connection with the purchase, sale and mortgaging of property and the purchase and sale of companies.

SINTEF has established a system of financial risk reporting on a four-monthly basis. The risk environment is discussed by the management and Board of each of the research institutes, as well as at Group Management and Board

levels. Risk-reducing initiatives are defined and implemented on a continuous basis.

In 2017, SINTEF was certified according to the ISO 9001, ISO 14001 and OHAS 18001 standards following a certification process carried out by DNV GL.

In 2018 SINTEF revised and developed its systems ensuring compliance with the new Norwegian Act relating to the protection of personal data (*personopplysningsloven*). A joint overview has been prepared for the legal entities which make up SINTEF, showing how all administrative processing of personal data is carried out pursuant to the new personal data regulations. A personal privacy declaration has also been prepared for employees, as well as a declaration for users, clients and others. A system has also been prepared for the risk assessment of personal data in connection with research projects, together with a separate system for the risk assessment of the processing of personal data by the management system. In addition, a system has been prepared for non-conformance handling using the Synergi system, with descriptive guidelines for the reporting non-conformances to the Norwegian Data Protection Authority.

SINTEF's management system incorporates a shared system (*Synergi*) for handling accident reports, unwanted incidents, other non-conformances and proposals for improvement. SINTEF is registered in Achilles, which is a joint qualification system for suppliers to the oil and gas industry.

In order to reinforce its corporate governance, the Board of SINTEF resolved in 2016 that an annual Report on Corporate Governance should be prepared, in accordance with the Norwegian recommendation for corporate governance and company management (the NUES Standard). The report is based on the fifteen articles of the NUES recommendations and describes how the Foundation satisfies those recommendations. The report is published at the same time as SINTEF's Annual Report.

### Future prospects and challenges

Society is undergoing significant changes, of greater impact and at a higher tempo than ever before. Digitalisation, automation, artificial intelligence, new materials and advanced robotic technology are causing enormous changes in all aspects of social and working life. SINTEF has

considerable skills and expertise in these fields, and is uniquely qualified to make an active contribution to successful transition processes in both the private and public sectors. The combination of cutting-edge skills in enabling technologies and domain know-how related to robust Norwegian industries and areas of society, is of major importance to the majority of Norwegian businesses.

Digitalisation is also of major importance to SINTEF's work processes, communications, knowledge-sharing and research. The Board and Management focus continuously on the potential SINTEF has for working purposefully with these themes in the future. In 2018 the "Digital 21" report was submitted to the Government, defining four principal areas in which Norway is recommended to involve itself, with a total of 54 recommended initiatives. The committee was chaired by Morten Dalsmo, Executive Vice President of SINTEF.

New technology is of major importance to the development of asset creation and solutions linked to the key social challenges that Norway is facing. SINTEF contributes towards ensuring that its clients are able to boost their profitability by means of efficient processes and new technologies that can create new products and growth in new markets. In the public sector, SINTEF contributes to innovation linked to fields such as health and welfare, mobility, the environment, public safety, and the efficient management of services.

A readjustment of society calls for an increasing degree of multidisciplinary approaches and technological know-how. What were once distinct fields and sectors are becoming increasingly merged because the technology they use is



shared. The interplay between people, technology and the societal security is crucial to the development of effective systems and methods. Thus, in 2018 SINTEF adopted organisational measures which create closer integration of technological, scientific and social science research.

In 2017 the OECD presented a country-based study of the Norwegian innovation system that emphasised the important role and significance of the research institutes in Norwegian industry. However, the OECD is concerned about the very low level of financing of the technical-industrial institutes. Whereas SINTEF's basic funding is 7 per cent, many corresponding institutes in Europe receive funding of 20-50 per cent. The OECD points out that low levels of basic funding have drawn the research institutes very close to their clients. However, this also makes them highly dependent on solvent clients in the established industrial sector. A consequence of this may be that the

operations of the institutes become locked to the existing industrial segments, limiting scope for renewal and skills development in new areas.

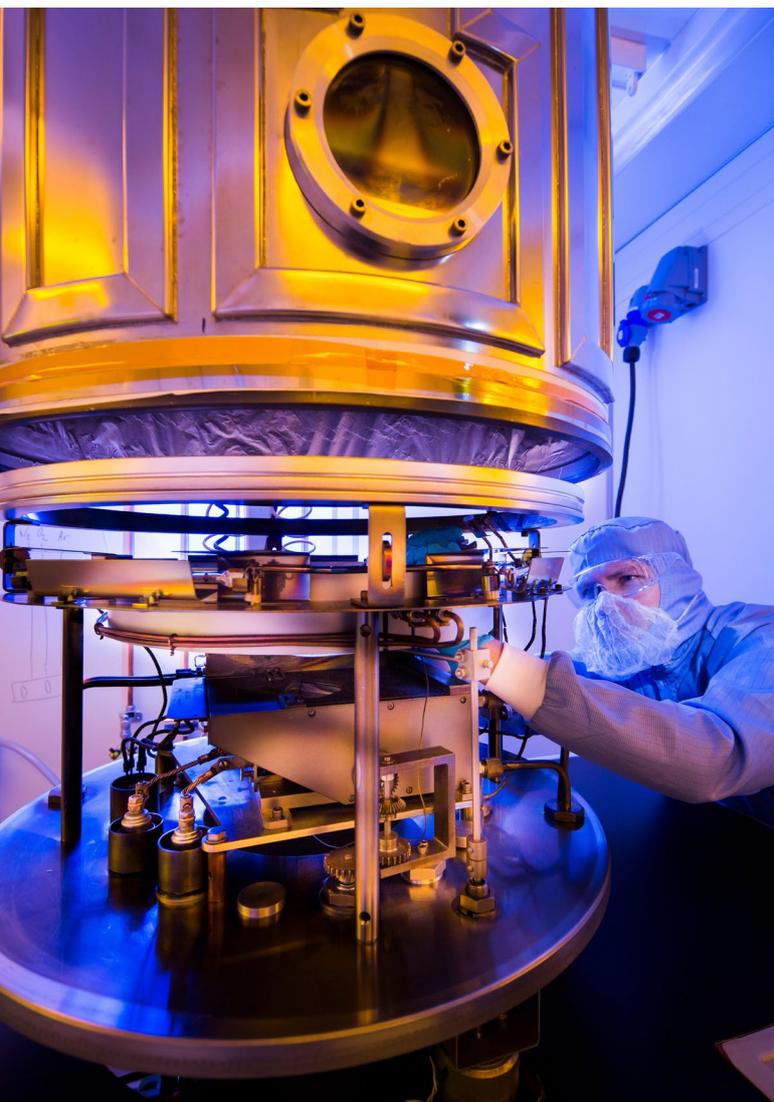
In December 2018, the Research Council of Norway presented a synthesis report to the Government that collated evaluations of Norwegian research institutes in the period from 2014 to 2018 and provided recommendations to the authorities. The report established that the research institutes represent an important and valuable component of the Norwegian research system, which generally fulfils its assignments in a satisfactory manner, delivers research of high quality, commands on the whole good customer satisfaction and is highly relevant. It is also stated that the functions and assignments of the institutes could be handed over to other players without impairing the overall ability of the innovation system to produce relevant skills and expertise.

Based on this, the Research Council recommends, among other things, that basic funding be increased to at least 15 per cent and that full reimbursement of costs must be provided for participation in EU projects.

The Board is pleased that the state budget for 2019 augments basic funding for the technical and industrial research institutes. We are hoping for a further increase towards the goal of 15 per cent in the next few years.

The Board is also generally satisfied with the revised long-term plan for research and higher education that was presented by the Norwegian government in 2018 and considered by Parliament in February 2019. We note that there is good agreement between the priorities in the long-term plan and SINTEF's corporate strategy.

The challenges generated by climate change, and the need to develop a zero-emissions society, became even more evident with the latest report of the IPCC which was presented in the autumn of 2018. The green transition represents a key motivation for restructuring. SINTEF intends to concentrate its efforts on climate change technology and adaptation, renewable energy, energy storage, energy efficiency, and CO<sub>2</sub> capture and storage (CCS). We are assigning high priority to our future research activities in these fields and wish to accelerate research connected with climate-positive technologies that may contribute to reducing the concentration of greenhouse gases in the atmosphere.



The 2017 Government White Paper on greener, smarter and more innovative industry shows that there is potential for growth in Norwegian industry, both in goods manufacture and the process industry, while the oil and gas sector will continue to be important. Developments in fields such as digitalisation, robotisation, advanced materials, skilled workforces and organisation may contribute to a re-industrialisation of Norway. We are positioning ourselves to participate in this development, among other things by the creation of SINTEF Industry, by consolidating the position of SINTEF Manufacturing, and through close collaboration with our industrial clients.

Through the establishment of SINTEF Ocean, we have achieved a more integrated and vigorous approach to the aquaculture industry. The potential for increased commercial growth connected with the sea in coming decades is significant, which is of considerable importance for Norwegian asset creation and sustainable global food supplies. SINTEF intends to be a competent R&D partner for

industry, the public authorities and society by combining cutting-edge technical research with first-class analysis and concept development.

For SINTEF, servicing start-up businesses and small and medium-sized enterprises (SMEs) effectively is of high priority. Closer collaboration with competent business owners' communities and industrial clusters is an important element in developing better R&D support in these fields. The Board is pleased that Norwegian Government Report 2018:5 "*Kapital i omstillingens tid*" (Capital in a period of transition) emphasises the need to improve access to capital in the seed phase, but in our opinion the proposed initiatives should have been more vigorous.

The Board would like to thank all employees and joint-venture partners for their efforts and co-operation in 2018. We also wish to thank the co-owners of subsidiaries and representatives from the business community and society who participate in SINTEF's many boards and councils.

Trondheim, 27. March 2019



Marit Reitan



Walter Qvam  
Chairman



Christina Wår Hanssen



Tor Grande



Mari Thjømøe



Ole Swang



Grete Aspelund



Arne Birkeland

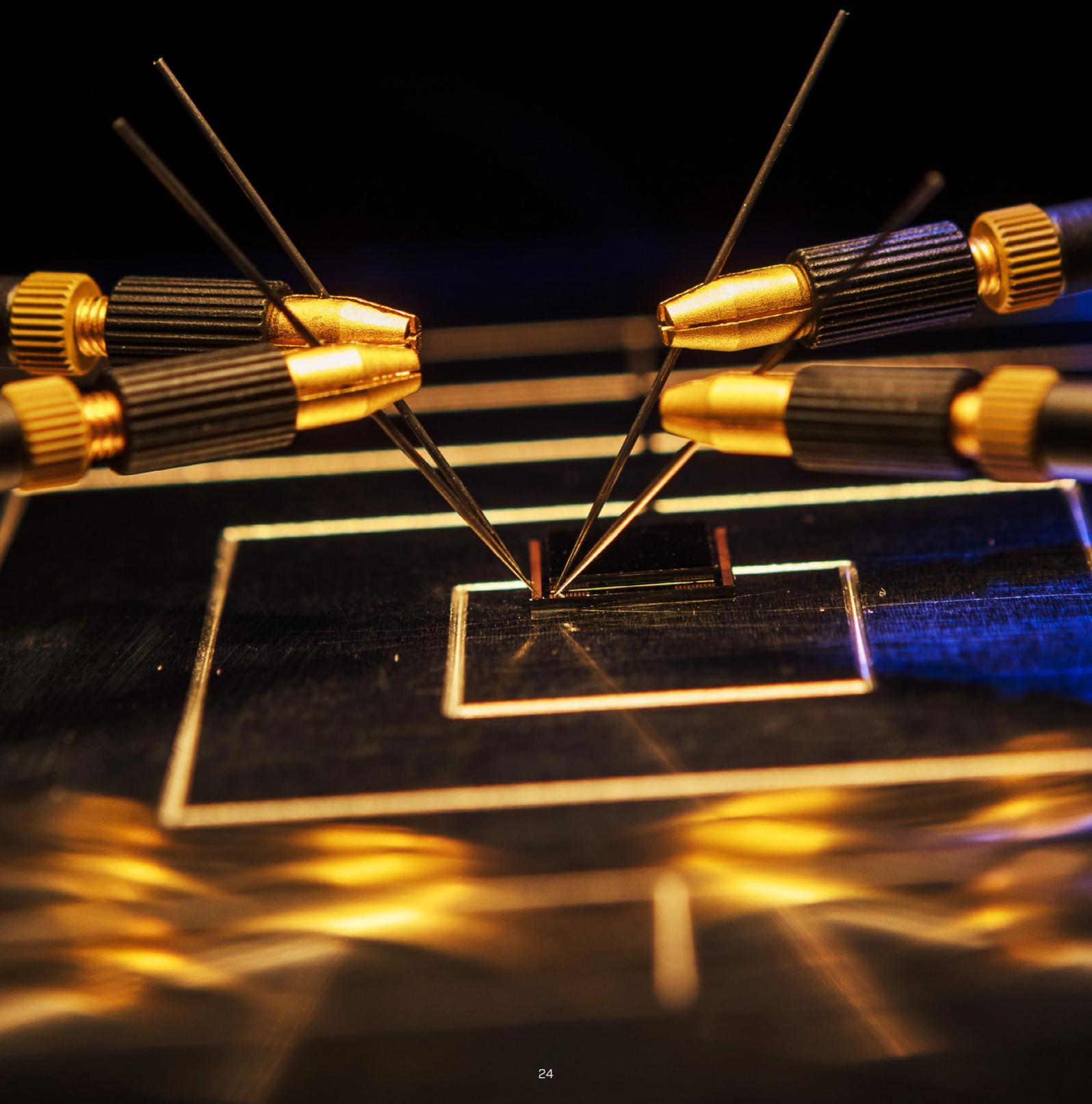


Bård Myhre



Alexandra Bech Gjørsvik  
President – CEO

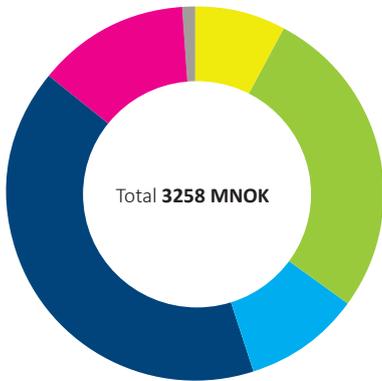
# RESULT 2018



# Key figures 2018

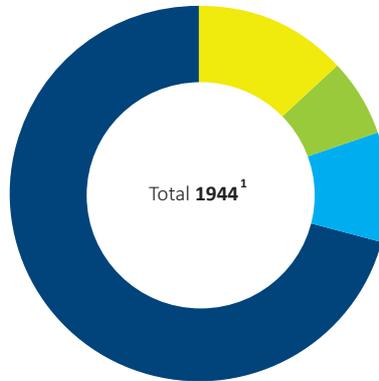
## Sources of finance

(% of gross operating income)



RCN basic grant	8%
RCN project support	27%
Public sector	10%
Business and industry	41%
International contracts	13%
Other sources of income	1%

## Employees

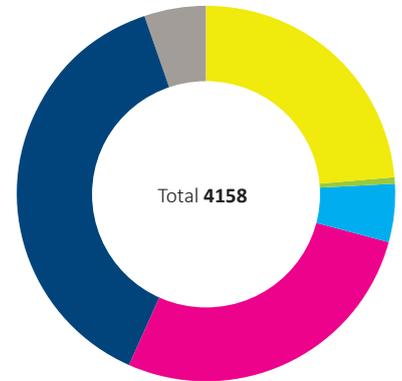


Administration	259
Technical personnel	127
Engineers	182
Researchers	1376 <sup>2</sup>

<sup>1</sup> not including SINTEF Holding  
<sup>2</sup> of whom 754 hold doctorates

## Publications

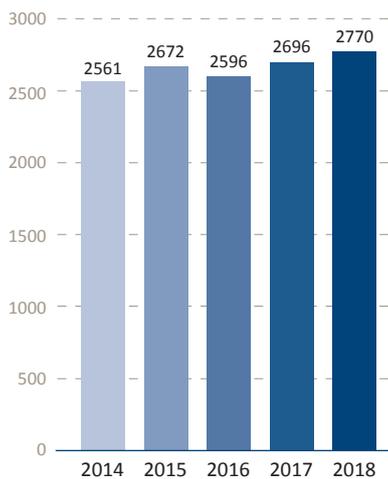
(including popular dissemination)



Academic articles in journals, series or anthologies	991
Academic monograph	5
Academic lectures and posters	212
Reports	1144
Popular articles and talks	1595
Textbooks, etc.	211

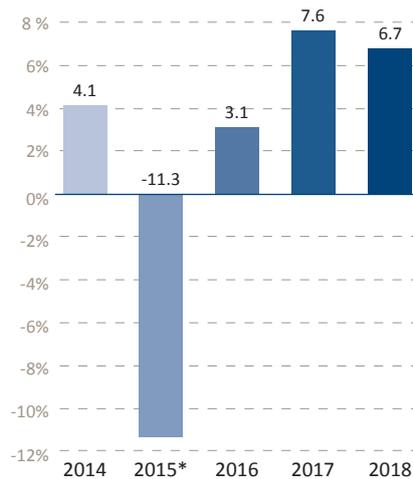
## Net operating income

(MNOK)



## Net operating margin

(%)



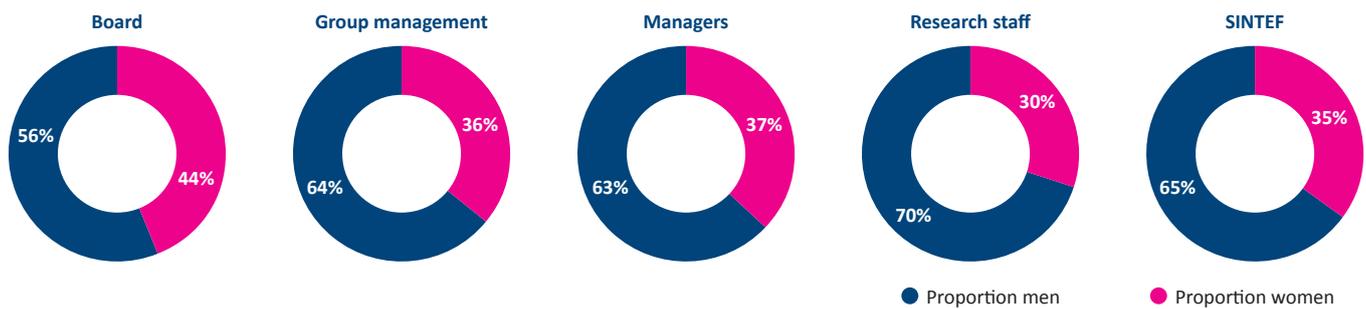
\* Operating margin inclusive of a one-off expenditure item of NOK 353 million in connection with the change-over to the new pension scheme.

## Investments

Scientific equipment and buildings  
 (% of net operating income)



## Equal opportunities in SINTEF



## Key financial figures

MNOK	2014	2015	2016	2017	2018
<b>Result</b>					
Gross operating income	2 936	3 162	3 147	3 239	3 258
Net operating income	2 561	2 672	2 596	2 696	2 770
<b>Operating result</b>	<b>106</b>	<b>-301</b>	<b>80</b>	<b>206</b>	<b>185</b>
Financial revenues	70	54	52	51	39
Financial expenditures	33	46	35	22	22
Profit/loss before tax	143	-293	97	234	201
<b>Annual result</b>	<b>94</b>	<b>-236</b>	<b>56</b>	<b>169</b>	<b>143</b>
<b>Balance</b>					
Fixed assets	1 435	1 329	1 300	1 243	1 188
Current assets	2 414	2 360	2 322	2 897	3 052
<b>Sum assets</b>	<b>3 849</b>	<b>3 688</b>	<b>3 622</b>	<b>4 140</b>	<b>4 240</b>
Equity capital	2 394	2 126	2 178	2 348	2 500
Long-term liabilities	17	48	52	52	47
Short-term liabilities	1 438	1 514	1 392	1 740	1 693
Liabilities	1 455	1 562	1 444	1 792	1 740
<b>Sum equity and liabilities</b>	<b>3 849</b>	<b>3 688</b>	<b>3 622</b>	<b>4 140</b>	<b>4 240</b>
<b>Profitability</b>					
Operating margin %	4.1	-11.3	3.1	7.6	6.7
Total profitability %	4.6	-6.6	3.6	6.6	5.3
Profitability of equity capital %	6.1	-13.0	4.5	10.3	8.3
<b>Liquidity</b>					
Net cash flow from operational activities	19	431	193	549	356
Degree of liquidity 1	1.7	1.6	1.7	1.7	1.8
<b>Solidity</b>					
Equity capital %	62	58	60	57	59
Operating working capital	976	845	929	1 157	1 359

# Profit and Loss Statement 2018

## Profit and Loss Statement

Figures in NOK thousand

The SINTEF Foundation			SINTEF	
2017	2018	Notes	2018	2017
<b>OPERATING REVENUES AND EXPENDITURES</b>				
1 650 334	18 412		2 949 048	2 958 087
134 705	0		244 214	226 813
129 949	262 644		64 898	53 668
<b>1 914 988</b>	<b>281 057</b>	<b>2</b>	<b>3 258 160</b>	<b>3 238 568</b>
308 671	5 065		487 858	542 319
<b>1 606 317</b>	<b>275 991</b>		<b>2 770 301</b>	<b>2 696 249</b>
1 067 198	87 760	3, 11	1 910 977	1 865 928
75 354	31 852	4, 5	120 931	116 886
0	0	4, 5	4 460	0
331 076	144 030	3, 5	549 141	507 884
<b>1 473 628</b>	<b>263 642</b>		<b>2 585 510</b>	<b>2 490 698</b>
<b>132 689</b>	<b>12 349</b>		<b>184 792</b>	<b>205 552</b>
<b>FINANCIAL REVENUES AND EXPENDITURES</b>				
46 194	109 502	6	-4 277	-5 823
8 286	2 465		23 435	16 686
138	8 816		0	0
13 287	1 457		25 793	26 890
6 662	-463	8	-6 294	13 195
511	770		2 446	1 061
11 375	1 510		19 763	21 234
<b>62 681</b>	<b>119 497</b>		<b>16 450</b>	<b>28 653</b>
<b>195 370</b>	<b>131 846</b>		<b>201 242</b>	<b>234 205</b>
43 415	9 681	14	58 346	65 559
<b>151 955</b>	<b>122 165</b>		<b>142 896</b>	<b>168 646</b>
			<b>21 028</b>	<b>15 479</b>
			<b>121 868</b>	<b>153 167</b>
<b>ALLOCATIONS</b>				
46 194	90 765	10		
105 761	31 399	10		
<b>151 955</b>	<b>122 165</b>			

## Balance sheet

Figures in NOK thousand

The SINTEF Foundation			SINTEF	
2017	2018	Notes	2018	2017
<b>ASSETS</b>				
<b>Non-current assets</b>				
<b>Intangible assets</b>				
86 931	0	4	Concessions, patents, licences, trademarks, etc.	77 822 86 931
160 596	87 132	14	Deferred tax assets	224 461 265 491
<b>247 527</b>	<b>87 132</b>		<b>Total intangible assets</b>	<b>302 284 352 422</b>
<b>Fixed assets</b>				
383 125	367 206		Unserviced sites, buildings and other real property	543 511 571 494
29 713	9 717		Buildings under construction	29 471 32 862
107 917	0		Scientific equipment	192 371 196 860
10 254	0		Tangible operating assets, inventories, tools, office equipment, etc.	20 843 19 772
<b>531 009</b>	<b>376 923</b>	<b>5</b>	<b>Total fixed assets</b>	<b>786 197 820 988</b>
<b>Non-current financial assets</b>				
850 825	953 366	6	Investments in subsidiary companies	0 0
12 539	189 078	9, 13	Liabilities due to companies in the same Group	0 0
0	0	6	Investments in affiliated companies and jointly-controlled enterprises	52 571 36 026
0	0	13	Loans to affiliated companies	1 818 0
207	157	7	Investments in shares and units	5 985 5 917
0	0	11	Pension plan assets	3 516 2 542
32 927	31 470	9	Other long-term receivables	35 129 25 055
<b>896 498</b>	<b>1 174 071</b>		<b>Total non-current financial assets</b>	<b>99 020 69 540</b>
<b>1 675 034</b>	<b>1 638 125</b>		<b>Total non-current assets</b>	<b>1 187 500 1 242 950</b>
<b>Current assets</b>				
9 006	0		Inventory of finished goods	10 174 9 710
355 722	548	21	Work in progress	543 817 602 571
<b>364 728</b>	<b>548</b>		<b>Total goods</b>	<b>553 991 612 281</b>
<b>Receivables</b>				
236 317	4 487	16, 18	Client receivables	484 542 503 124
34 954	164 449	13	Consolidated current receivables	0 0
14 206	1 004		Other current receivables	61 400 56 908
<b>285 477</b>	<b>169 940</b>		<b>Total receivables</b>	<b>545 941 560 032</b>
<b>Investments</b>				
0	18 521	8	Market-based shares	44 693 37 780
139 985	121 001	8	Market based bonds and other securities	291 983 337 793
0	0	7	Shares in portfolio companies/other financial instruments	25 521 0
<b>139 985</b>	<b>139 521</b>		<b>Total investments</b>	<b>362 197 375 573</b>
<b>783 767</b>	<b>372 856</b>	<b>18, 19</b>	<b>Bank deposits, cash, etc.</b>	<b>1 590 182 1 349 434</b>
<b>1 573 956</b>	<b>682 865</b>		<b>Total current assets</b>	<b>3 052 312 2 897 320</b>
<b>3 248 990</b>	<b>2 320 990</b>		<b>TOTAL ASSETS</b>	<b>4 239 812 4 140 270</b>

## Balance sheet

Figures in NOK thousand

The SINTEF Foundation			SINTEF	
2017	2018	Notes	2018	2017
<b>LIABILITIES AND SHAREHOLDER'S EQUITY</b>				
<b>Equity</b>				
Paid-in equity				
71 350	71 350		71 350	71 350
			Foundation's equity	
<b>71 350</b>	<b>71 350</b>		<b>71 350</b>	<b>71 350</b>
<b>Revenue reserves</b>				
703 986	794 751		0	0
			Reserve	
1 336 329	1 348 992		2 143 711	2 006 498
			Other equity	
<b>2 040 315</b>	<b>2 143 743</b>	<b>10</b>	<b>2 143 711</b>	<b>2 006 498</b>
<b>Total revenue reserves</b>				
			284 779	269 989
			Minority interests	
<b>2 111 665</b>	<b>2 215 093</b>		<b>2 499 840</b>	<b>2 347 837</b>
<b>Total equity</b>				
<b>Liabilities</b>				
<b>Provisions for liabilities</b>				
14 039	0	11	32 680	34 044
			Pension plan liabilities	
8 354	0	17	11 646	8 217
			Other provisions for liabilities	
<b>22 393</b>	<b>0</b>		<b>44 326</b>	<b>42 261</b>
<b>Total provisions for liabilities</b>				
<b>Other long-term liabilities</b>				
0	0	13, 16	2 336	2 733
			Debts to credit institutions	
28 995	0	9, 13	0	0
			Long-term loans, Group companies	
0	0		0	7 191
			Other long-term liabilities	
<b>28 995</b>	<b>0</b>		<b>2 336</b>	<b>9 924</b>
<b>Total other long-term liabilities</b>				
<b>Current liabilities</b>				
0	0	16	0	193
			Debts to credit institutions	
98 768	30 418		163 624	180 047
			Accounts payable to suppliers	
0	110	14	18 285	2 488
			Current taxes	
90 871	22 643		182 993	173 297
			Tax withholdings and other public taxes/duties	
309 086	802		745 111	609 020
			Advance payments from clients	
0	51 126	13	0	0
			Current liabilities (Group)	
0	0		931	0
			Proposed dividend	
587 212	798	15	582 367	775 203
			Other current liabilities	
<b>1 085 937</b>	<b>105 898</b>		<b>1 693 310</b>	<b>1 740 248</b>
<b>Total current liabilities</b>				
<b>1 137 325</b>	<b>105 898</b>		<b>1 739 972</b>	<b>1 792 434</b>
<b>Total liabilities</b>				
<b>3 248 990</b>	<b>2 320 990</b>		<b>4 239 812</b>	<b>4 140 270</b>
<b>TOTAL LIABILITIES AND SHAREHOLDER'S EQUITY</b>				

## Statement of Cash Flow

Figures in NOK thousand

The SINTEF Foundation		SINTEF	
2017	2018	2018	2017
<b>CASH FLOWS FROM OPERATIONAL ACTIVITIES:</b>			
195 370	131 846	201 242	234 205
-46 194	-109 502	4 277	5 823
-115	0	-1 519	-9 431
75 354	31 852	125 391	116 887
0	50	478	0
-13 148	8 354	-2 338	-11 916
-4 929	0	-4 766	-4 929
0	463	11 470	0
-427	0	-464	-221
56 867	-548	58 754	103 265
66 257	-4 487	18 582	44 720
-23 638	26 018	-16 423	9 663
-23 806	70 689	0	0
77 553	14 885	-38 960	61 359
<b>359 144</b>	<b>169 620</b>	<b>355 724</b>	<b>549 425</b>
<b>CASH FLOWS FROM INVESTMENTS:</b>			
21 755	0	0	16 147
-80 054	-11 525	-81 490	-111 661
0	0	7 665	2 689
-48 184	-225 675	-21 477	-76 111
<b>-106 484</b>	<b>-237 200</b>	<b>-95 301</b>	<b>-168 936</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES:</b>			
-13 251	0	-397	-6 874
0	0	-7 191	0
0	0	-193	0
0	1 457	-11 893	-4 495
0	0	0	5 524
-444	0	0	-7 943
0	0	0	5 552
<b>-13 695</b>	<b>1 457</b>	<b>-19 674</b>	<b>-8 236</b>
238 965	-66 123	240 748	372 253
0	-344 788	0	0
1 211	0	0	1 211
543 591	783 767	1 349 434	975 970
<b>783 767</b>	<b>372 856</b>	<b>1 590 182</b>	<b>1 349 434</b>

# SINTEF Building and Infrastructure

SINTEF Building and Infrastructure is a research institute for the sustainable development of buildings, infrastructure and mobility. We create value for our customers and society through research and development, research-based consultancy, certification and knowledge dissemination through,

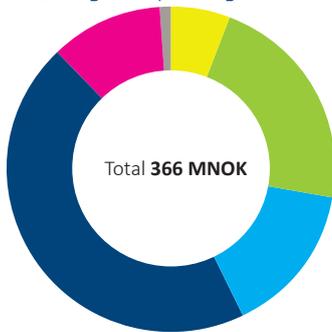
among others, the SINTEF Building Research Design Guides. We offer specialist expertise in areas such as architecture, building, water, transport, digital transport solutions and economics. We develop future solutions for the built society.

Photo: Thor Nielsen/SINTEF



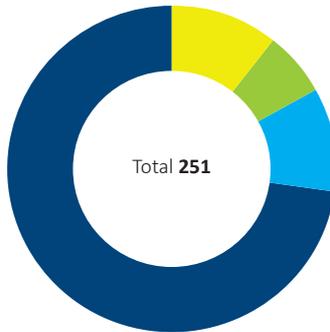
## Sources of finance

(% of gross operating income)



● RCN basic grant	6.0%
● RCN project support	22.0%
● Public sector	15.0%
● Business and industry	45.0%
● International contracts	11.0%
● Other sources of income	1.0%

## Employees

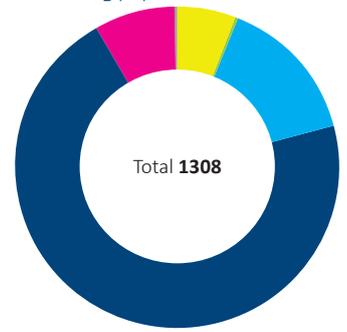


● Administration	27
● Technical personnel	16
● Engineers	26
● Researchers	182*

\*of whom 70 hold doctorates

## Publications

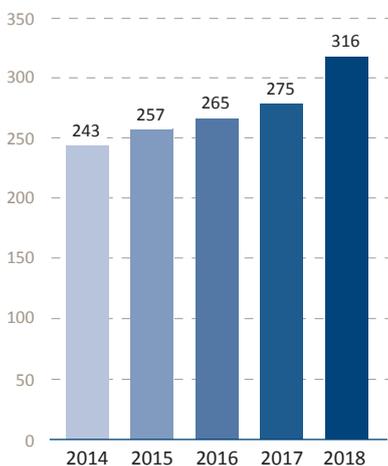
(including popular dissemination)



● Academic articles in journals, series or anthologies	79
● Academic monograph	2
● Academic lectures and posters	192
● Reports	929
● Popular articles and talks	105
● Textbooks, etc.	1

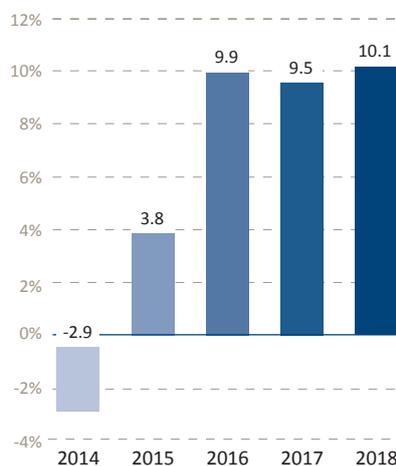
## Net operating income

(MNOK)



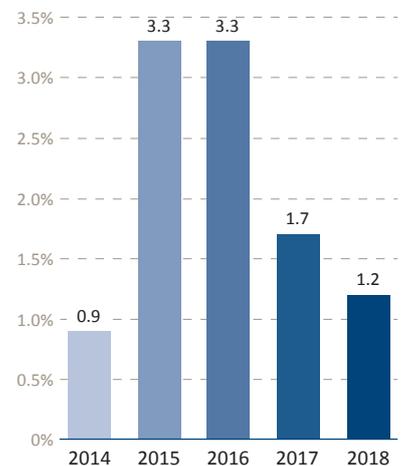
## Net operating margin

(%)



## Investments

Scientific equipment and buildings  
(% of net operating income)



Parts of the SINTEF Technology and Society institute were incorporated into SINTEF Building and Infrastructure as of 1 July 2018.

# SINTEF Digital

SINTEF Digital carries out applied research and innovation in the fields of digital technologies, health and the social sciences. We are experiencing a major digital transformation in which automation, innovation, artificial intelligence, cyber security and advanced robot technology will change our working lives

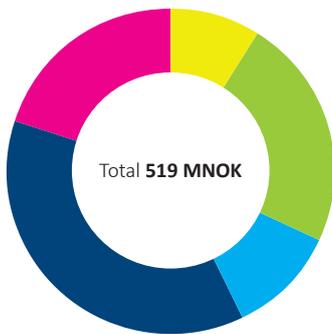
and social structures beyond recognition. Our multidisciplinary specialist expertise enables us to help our clients implement a successful transition while at the same time boosting profitability and growth in new markets.

Photo: SINTEF/Werner Juvik



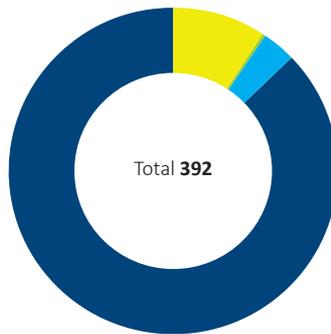
## Sources of finance

(% of gross operating income)



RCN basic grant	9.0%
RCN project support	23.0%
Public sector	11.0%
Business and industry	37.0%
International contracts	20.0%

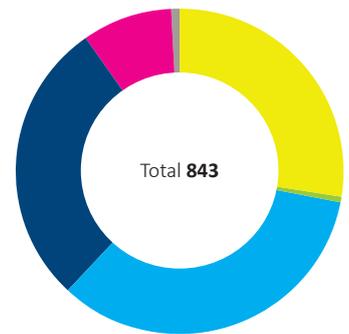
## Employees



\*of whom 184 hold doctorates

## Publications

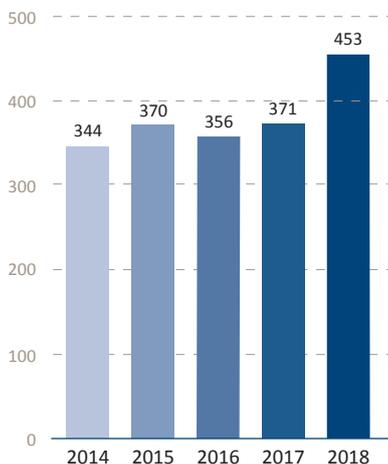
(including popular dissemination)



Academic articles in journals, series or anthologies	234
Academic monograph	3
Academic lectures and posters	287
Reports	238
Popular articles and talks	75
Textbooks, etc.	6

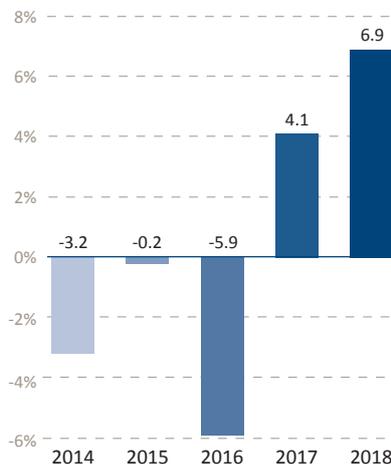
## Net operating income

(MNOK)



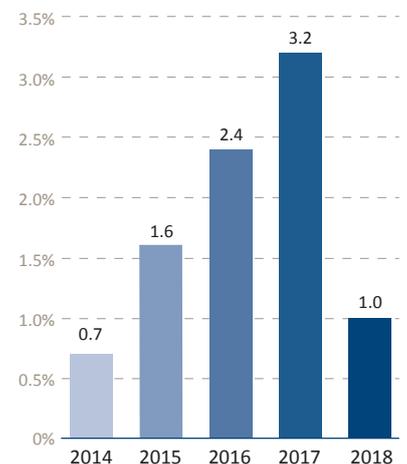
## Net operating margin

(%)



## Investments

Scientific equipment and buildings  
(% of net operating income)



Parts of the SINTEF Technology and Society institute were incorporated into SINTEF Digital as of 1 July 2018.

# SINTEF Industry

SINTEF Industry carries out contract-based research offering high levels of expertise in the fields of materials and nanotechnology, biotechnology and nanomedicine, sustainable energy, process technology, metals production and processing, petroleum technology, applied chemistry and industrial economics. Sustainable

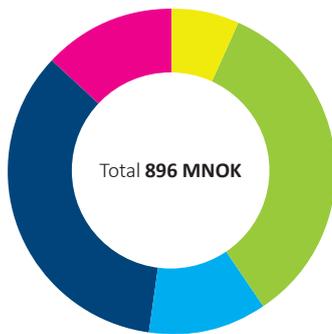
development and wealth creation are fundamental to all our activities. Our multidisciplinary knowledge base acts as a foundation for the development of enabling technologies and cross-disciplinary solutions across a broad range of market sectors in close collaboration with our clients and research partners.



Photo: SINTEF/Thor Nielsen

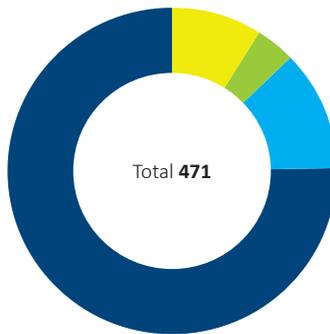
## Sources of finance

(% of gross operating income)



- RCN basic grant **7%**
- RCN project support **34%**
- Public sector **12%**
- Business and industry **35%**
- International contracts **13%**

## Employees

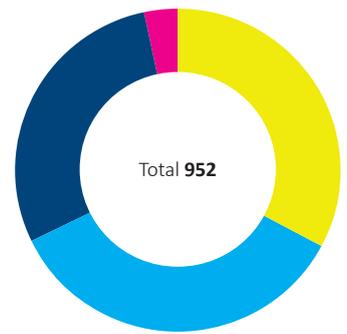


- Administration **42**
- Technical personnel **19**
- Engineers **56**
- Researchers **354\***

\*of whom 253 hold doctorates

## Publications

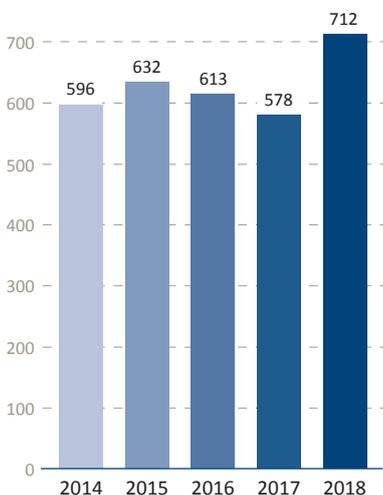
(including popular dissemination)



- Academic articles in journals, series or anthologies **313**
- Academic lectures and posters **333**
- Reports **276**
- Popular articles and talks **30**

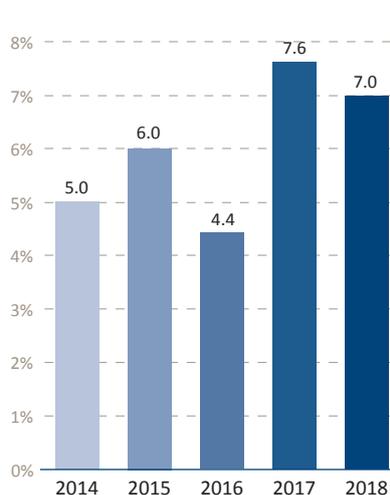
## Net operating income\*

(MNOK)



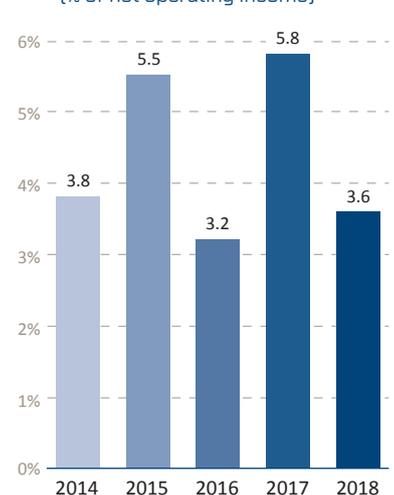
## Net operating margin\*

(%)



## Investments\*

Scientific equipment and buildings  
(% of net operating income)



\* Figures for 2014–2017 apply to the SINTEF Materials and Chemistry institute (including Teltek in 2017).

# SINTEF Energy Research

SINTEF Energy Research’s mission is: We shape the future’s energy solutions

We work from three main perspectives:

- Norway: Continuity of supply and competitiveness
- Europe: Innovation to realize energy and climate targets
- Globally: Sustainable energy systems

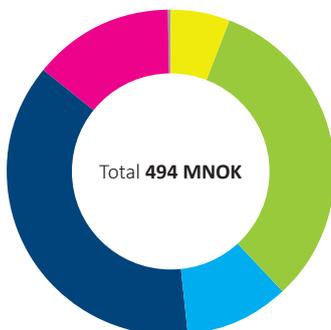
Our strategic focus is on transmission, smartgrids, hydrogen, offshore energy systems, zero-emission transport, energy efficiency, CCS, hydropower, offshore wind, and bioenergy.



Kristin Jordal is a Research Manager at SINTEF Energy, and has led the CEMCAP-project funded by the European Commission. CEMCAP partners have looked at 5 CO<sub>2</sub>-capture technologies for the cement industry. This is an important project since more than 5% of manmade CO<sub>2</sub>-emissions come from cement production. Volker Hoening from VDZ received his sample from Kristin Jordal after presenting the CEMCAP oxyfuel research. The project was selected to be featured on EU’s research portal, Cordis. Photo: SINTEF

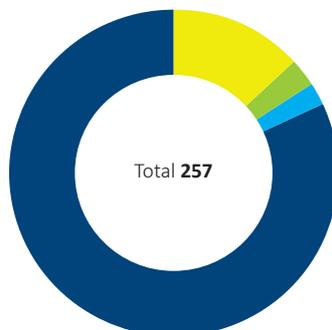
## Sources of finance

[% of gross operating income]



- RCN basic grant 5.9%
- RCN project support 32.2%
- Public sector 10.5%
- Business and industry 37.4%
- International contracts 13.8%
- Other sources of income 0.2%

## Employees

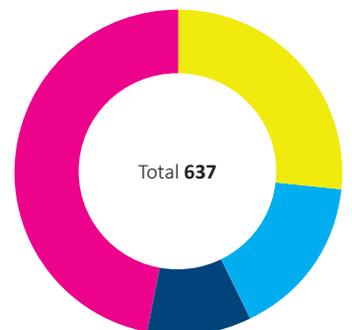


\*of whom 120 hold doctorates

- Administration 34
- Technical personnel 7
- Engineers 6
- Researchers 210\*

## Publications

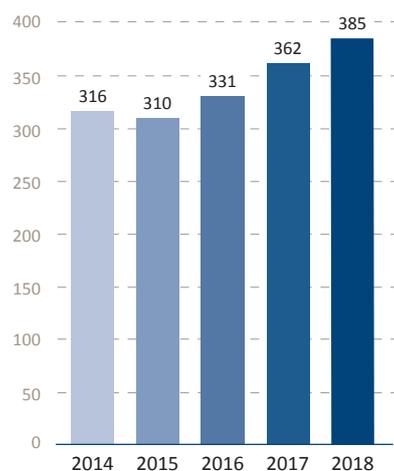
[including popular dissemination]



- Academic articles in journals, series or anthologies 171
- Academic lectures and posters 102
- Reports 66
- Popular articles and talks 298

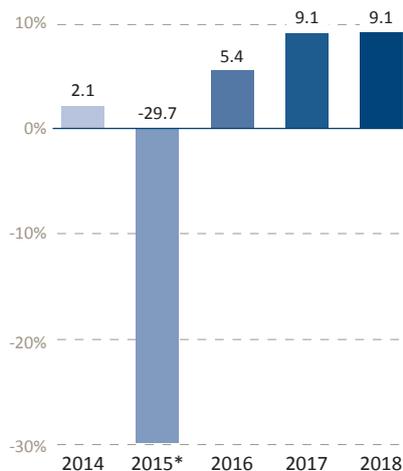
## Net operating income

(MNOK)



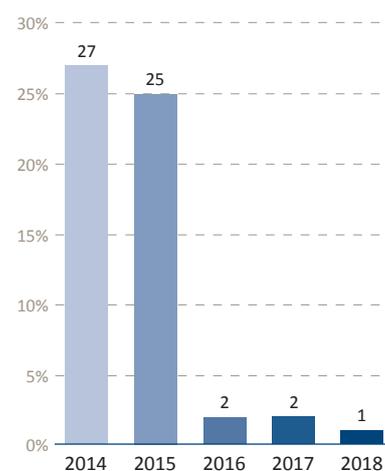
## Net operating margin

(%)



## Investments

Scientific equipment and buildings  
(% of net operating income)



\* Operating margin inclusive of a one-off expenditure item of NOK 79 million in connection with the change-over to the new pension scheme.

## Key financial figures

MNOK	2014	2015	2016	2017	2018
<b>Result</b>					
Gross operating income	399	397	439	467	494
Net operating income	316	310	331	362	385
<b>Operating result</b>	<b>7</b>	<b>-92</b>	<b>18</b>	<b>33</b>	<b>35</b>
<b>Annual result</b>	<b>13</b>	<b>-63</b>	<b>14</b>	<b>28</b>	<b>28</b>
<b>Balance</b>					
Fixed assets	219	252	237	221	210
Current assets	404	292	288	384	408
<b>Sum assets</b>	<b>623</b>	<b>544</b>	<b>524</b>	<b>605</b>	<b>618</b>
Equity capital	406	325	339	368	396
Liabilities	217	219	185	237	222
<b>Sum equity and liabilities</b>	<b>623</b>	<b>544</b>	<b>524</b>	<b>605</b>	<b>618</b>
<b>Profitability</b>					
Operating margin %	2.1	-29.7	5.4	9.1	9.1
Total profitability %	5.0	-13.9	4.6	7.0	6.5
Profitability of equity capital %	6.9	-23.2	6.1	10.6	10.0
<b>Liquidity</b>					
Net cash flow from operational activities	-32	49	33	98	14
Degree of liquidity	1.9	1.3	1.6	1.6	1.8
<b>Solidity</b>					
Equity capital %	65.2	59.7	64.7	60.8	64.1
Operating working capital	189	74	104	148	187

# SINTEF Manufacturing

SINTEF Manufacturing is Norway's leading centre of expertise in manufacturing. Our ambition is to create sustainable and effective solutions which provide competitive advantages for the Norwegian manufacturing industry. We provide expertise

in automated production, product and production development, lean, value chain management and material technology, as well as laboratory and engineering services.

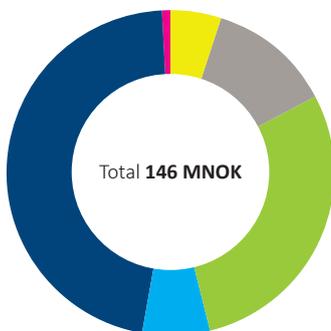


In SINTEF Manufacturing we have customers in both the manufacturing industry, as well as the agri- and food industry

Illustration: SINTEF Manufacturing

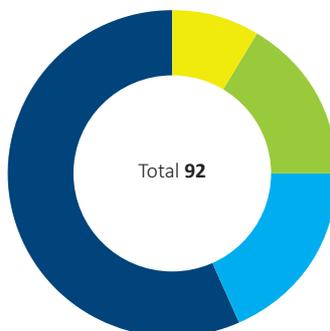
## Sources of finance

(% of gross operating income)



RCN basic grant	5.0%
RCN strategic programme	12.4%
RCN project support	28.8%
Public sector	6.7%
Business and industry	46.3%
International contracts	0.8%

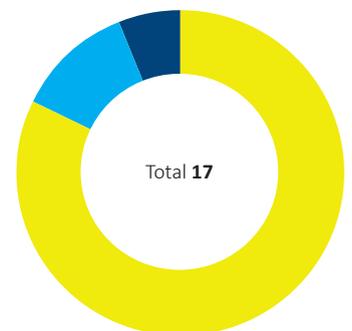
## Employees



\*of whom 25 hold doctorates

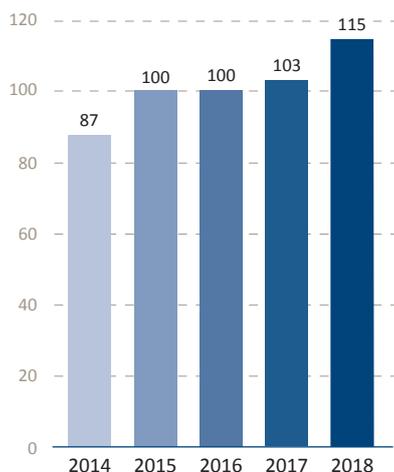
## Publications

(including popular dissemination)



Academic articles in journals, series or anthologies	14
Academic lectures and posters	2
Reports	1

### Net operating income (MNOK)

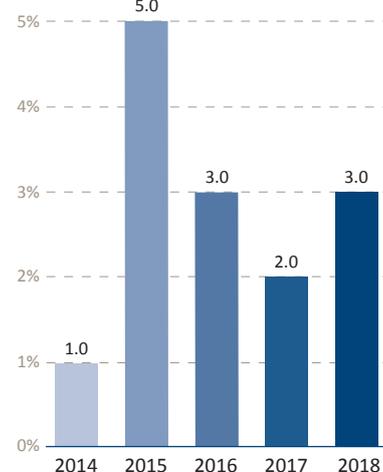


### Net operating margin (%)



### Investments

Scientific equipment and buildings  
[% of net operating income]



## Key financial figures

MNOK	2014	2015	2016	2017	2018
<b>Result</b>					
Gross operating income	107	125	128	132	146
Net operating income	87	100	100	103	115
<b>Operating result</b>	<b>2</b>	<b>5</b>	<b>-3</b>	<b>2</b>	<b>6</b>
<b>Annual result</b>	<b>2</b>	<b>4</b>	<b>-2</b>	<b>1</b>	<b>4</b>
<b>Balance</b>					
Fixed assets	8	11	14	13	12
Current assets	48	47	47	53	73
<b>Sum assets</b>	<b>55</b>	<b>58</b>	<b>60</b>	<b>66</b>	<b>85</b>
Equity capital	17	18	16	17	21
Liabilities	39	40	45	48	64
<b>Sum equity and liabilities</b>	<b>55</b>	<b>58</b>	<b>60</b>	<b>66</b>	<b>85</b>
<b>Profitability</b>					
Operating margin %	2.5	4.9	-2.6	2.1	4.9
Total profitability %	4.2	8.7	-4.2	3.4	7.6
Profitability of equity capital %	3.3	8.0	-4.9	7.2	7.0
<b>Liquidity</b>					
Net cash flow from operational activities	-2	13	3	1	2
Degree of liquidity	1.4	1.5	1.2	1.2	1.1
<b>Solidity</b>					
Equity capital %	30.1	31.1	26.2	26.2	24.8
Operating working capital	13	15	9	10	9

# SINTEF Ocean

SINTEF Ocean carries out research and innovation linked to the ocean space on behalf of national and international industrial clients in the maritime, offshore petroleum, fishing, and aquaculture markets. The Institute also has one of the world's leading research groups in the field of marine environmental

technology. Our ambition is to maintain Norway's leading position in marine technology and biomarine research by combining outstanding professional research with our position at the global cutting edge in the fields of analysis and concept development.

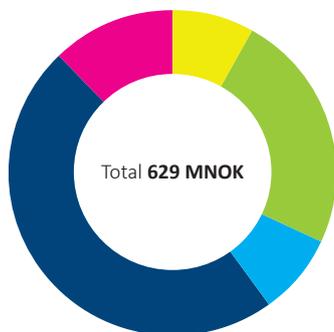


The Government has decided to continue the work to realize the Ocean Space Center in Trondheim. The goal of the centre is to secure value creation through competitive Norwegian ocean industries. The quality assurance states that the initiative is economically profitable, and the project is now entering a new phase with goals for completion in 2025.

Photo: Headspin

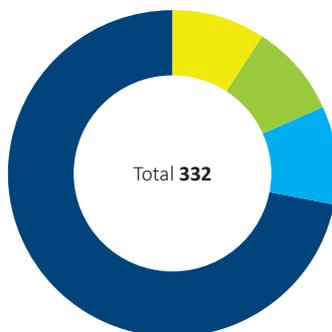
## Sources of finance

(% of gross operating income)



- RCN basic grant **8.3%**
- RCN project support **23.7%**
- Public sector **8.2%**
- Business and industry **47.7%**
- International contracts **12.1%**

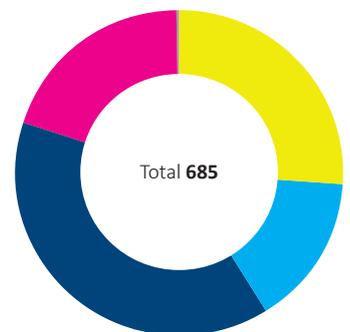
## Employees



- Administration **31**
  - Technical personnel **30**
  - Engineers **33**
  - Researchers **238\***
- \*of whom 128 hold doctorates

## Publications

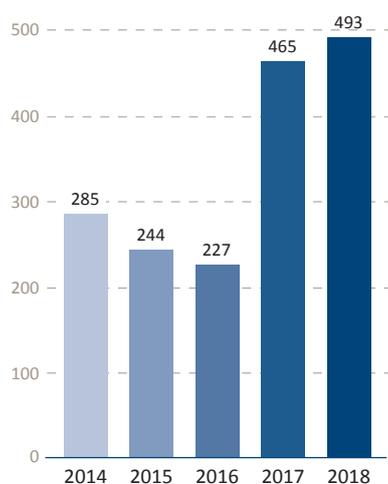
(including popular dissemination)



- Academic articles in journals, series and anthologies **180**
- Academic lectures and posters **103**
- Reports **265**
- Popular articles and talks **136**
- Textbooks, etc. **1**

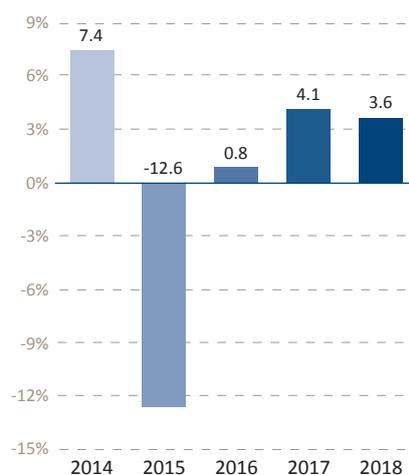
## Net operating income

(MNOK)



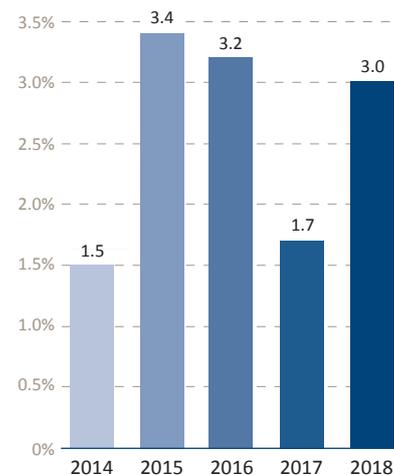
## Net operating margin

(%)



## Investments

Scientific equipment and buildings  
(% of net operating income)



## Key financial figures

MNOK	2014	2015	2016	2017	2018
<b>Result</b>					
Gross operating income	332	303	279	602	629
Net operating income	285	244	227	465	493
<b>Operating result</b>	<b>21</b>	<b>-31</b>	<b>2</b>	<b>19</b>	<b>18</b>
<b>Annual result</b>	<b>19</b>	<b>-29</b>	<b>1</b>	<b>18</b>	<b>19</b>
<b>Balance</b>					
Fixed assets	98	97	88	144	185
Current assets	292	272	262	611	629
<b>Sum assets</b>	<b>390</b>	<b>390</b>	<b>369</b>	<b>756</b>	<b>814</b>
Equity capital	252	223	223	383	404
Liabilities	138	146	127	373	410
<b>Sum equity and liabilities</b>	<b>390</b>	<b>390</b>	<b>369</b>	<b>756</b>	<b>814</b>
<b>Profitability</b>					
Operating margin %	7.4	-12.6	0.8	4.1	3.6
Total profitability %	2.7	-5.0	3.8	5.5	3.8
Profitability of equity capital %	3.9	-14.2	1.7	8.4	6.6
<b>Liquidity</b>					
Net cash flow from operational activities	57	12	41	118	40
Degree of liquidity	2.1	1.9	2.2	1.7	1.6
<b>Solidity</b>					
Equity capital %	64.6	60.4	63.8	50.7	49.6
Operating working capital	159	131	141	256	237



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