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FFI

Norwegian Defence Research Establishment (FFI)

Annual Report in Brief 2011



FFI's CREST

The FFI crest consists of Norway's national coat of arms upon which an atom and a sword are emblazoned. The national coat of arms is one of the oldest in Europe, and was once the personal coat of arms of the kings in the line of Sverre. However, over time it evolved into Norway's national coat of arms.

FFI's crest was designed by FFI employee Hans Olav Stensrud. It was approved by King Olav V and taken into use in December 1989.

The shield represents three elements: FFI's identity, research and knowledge.

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FFI is the prime institution responsible for defence related research in Norway. Its principal mission is to carry out research to meet the requirements of the Armed Forces. FFI also serves in an advisory capacity to the Ministry of Defence and the Norwegian Armed Forces. The Institute focuses particularly on developments in science and military technology, which have an impact on political security and defence planning.

▶ OUTLOOK

Smart defence, smart research

FFI's vision of turning knowledge and ideas into an effective defence equals operating at the forefront of military technology and assisting in translating new advancements into military capabilities.

In order to do so, extensive cooperation in international research is required. FFI is an active player in bilateral cooperative efforts, and the Institute participates widely in the work of inter-national institutions such as NATO and the European Defence Agency. The relationship with the neighbouring Nordic countries is also very important, paving the way for closer cooperation, both in concrete military capacities and with respect to long-range research.

FFI views multinational cooperation as an important tool to achieve an efficient use of the Institute's collective resources with regards to military research and technological developments. The idea is to draw

upon a broader base of knowledge and benefit from interaction with relevant research communities in other countries.

Budget pressures

In a time marked by economic upheaval and turmoil, many countries are facing ever tighter parameters on their defence budgets. This pressure is expected to continue subsequent to the increasing complexity of modern defence systems and the associated rise in costs. These factors will in turn have an impact on defence research.

In recent years, the Institute has considerably strengthened its presence in international projects and has also entered into strategic collaborative projects with a number of individual countries. This is a course of action the Institute intends to develop further, and is even more relevant in light of the international financial crisis.

There is reason to expect that multinational cooperative research projects will increase, both in Norway and among our allies. NATO's "smart defence" may entail innovative forms of cooperation such as "defence niches" whereby each individual country develops different capabilities and capacities, but with special emphasis and focus on those specific aspects or areas of expertise in which that particular nation excels - in other words, a move towards a cooperation of collective capabilities. This is a development of prime significance to defence planning and defence research in small and medium sized nations.

Demanding

We are now entering a period of assessing and planning collective research in selected areas. This will be a demanding process. A research-based understanding of future security challenges combined with a national insight and perspective on

technological developments must play a decisive role in the foundation upon which a strategy for national security must be built. The extent, to which international collaborative efforts play a role in this, is primarily determined by national government, also with respect to allies sharing common security interests.

All western countries heavily emphasise the inherent possibilities of advanced technology. In recent years, this has generated increased interest and receptivity at the political level for international collaboration and cooperation with respect to materiel. However, experience has shown that there are numerous barriers and challenges to be surmounted before a collaboration of this nature would yield the desired dividends in practice. The lack of coordination and ability to cooperate cost-effectively in procuring common capacities could rapidly result in a situation

whereby the challenges associated with a collective approach outweigh a common convergence towards the desired benefits. For international collaboration efforts to work effectively, they must be long-range and mutually binding.

At the cutting edge

Norway will always strive to remain foremost in the world in using modern technology to achieve a competent and effective national defence, both now and in the future. FFI's goal remains to support the Norwegian Armed Forces in the full spectrum of defence technology and its applications.



Paul Narum
Director General

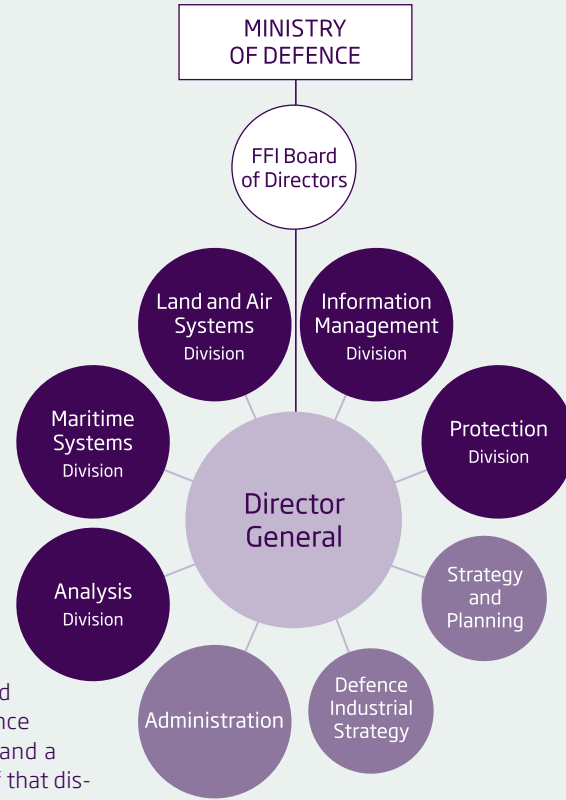
ABOUT FFI

The Norwegian Defence Research Establishment (FFI) was founded on 11 April 1946. The Institute is organised as an administrative agency subordinate to the Ministry of Defence.

HOW FFI IS ORGANISED

The Board of Directors is FFI's uppermost body and is responsible for running the Institute's activities. The Director General is in charge of daily operations and also serves in the Institute's advisory capacity. FFI is organised into five research divisions, with support from a strategy and development unit, a defence industrial strategy group and a central administrative staff that discharges common administrative duties and functions. The heads of these units are members of the Institute's executive group.

FFI's research activities are carried out in project form and each individual project is discussed and assessed in the Defence Research Review Board. Contact between FFI and the Armed Forces is further reinforced by regular meetings with the Ministry of Defence, the different branches of the Armed Forces and the Defence Staff. Here the Armed Force's needs, with respect to research and development, are laid out and FFI's proposals for projects are presented.



FFI'S EMPLOYEES



693
employees



LOCALISATION

FFI is located at Kjeller near the town of Lillestrøm, 25 km northeast of Oslo. The Institute also has a research unit at Karljohansvern in Horten.

EDUCATION LEVELS

Doctorate degree / PhD: 136
Master's degree: 315
Bachelor's degree: 124
Craft certificate: 47
Other: 71

672
man years

FFI'S BOARD OF DIRECTORS

As of the annual meeting in April 2011, the FFI Board of Directors has consisted of the following persons: Johan C. Løken, chairman, vice-chairman Kristin Pettersen and board members Jan Blom, Bente Mikkelsen, Jørn Rangnes, Monica Endregard and Tor Berger. The latter two are representatives for FFI's employees.

► EXCERPT FROM THE BOARD OF DIRECTORS REPORT Research at the forefront

The development of a modern and flexible defence in times of extensive technological, military and security policy, places great demands on existing knowledge and expertise. As the central research institute of the Norwegian Armed Forces, FFI has an important role to play in understanding and evaluating the importance of technological developments and to give advice on the possibilities and challenges associated with procuring and using military materiel. With its thorough understanding of the forces that drive and affect Norwegian security policy at any given time, FFI is well positioned to offer sound advice on how to tackle the tasks that face today's armed forces.

Economy

FFI's level of activity is mirrored in the final statement of earnings for 2011. FFI's operating revenues from 2011 were NOK 796.7

million, of which 9.3% came from public and private projects outside the defence sector. FFI's total operating costs for 2011 were NOK 784.3 million. The final statement for the year shows a profit of NOK 12.2 million. This amount is entered as a corresponding increase under the item Vested Business Capital in the balance sheet.

In the grant for 2011, the Ministry of Defence instructed FFI that a maximum of 25% of the annual turnover could be postponed and transferred to 2012. In 2011, net transfer payments constituted 28.4% of the turnover. There has been an annual reduction in transfer payments since 2008, and this development is as desired in relation to the set target.

FFI basically operates on the full cost principle, and thus achieving the maximum

possible annual profit is not the primary goal. The Institute itself is responsible for accumulating sufficient equity capital.

Status and future outlook

The FFI Board of Directors is highly satisfied with the manner in which FFI is discharging its role as a purveyor of vital expertise essential to society's overall security. To that end, the institute has been highly successful in adapting and modifying its resources and professional direction at any given time.

Furthermore, the board wishes to underline the fact that FFI provides critical expertise in the early phases of procurement processes when purchasing advanced high-tech defence materiel. This is an important and cost-effective effort to reduce uncertainty in the procurement of techno-

logically advanced systems. This Institute's contributions to procurement processes contribute to improved quality, reduced costs and greater operational effectiveness in the Armed Forces.

The board considers that the Institute's utilisation of resources is good, and that the activities undertaken are in accordance with its objectives. The access to projects suggests that the same level of activity should be maintained. At the close of 2011, FFI had the working conditions, the scope, the technological breadth and the quality to enable the Institute to attain its set objectives.

In the longer term, the level of activity at FFI will depend upon the defence budget and other developments within the Armed Forces. Nevertheless, the Board would assert that as long as the Institute also

maintains a long-term perspective in research, this is also well taken care of in the ongoing project planning. The overall goals and strategy, specific strategic steps such as increased participation in national and international collaborative efforts and measures to secure basic funds, are well adapted to the challenges. The Board of Directors considers that FFI is in a strong position to deliver cutting edge research to the Norwegian Armed Forces of the future.

Kjeller, 16 March 2012

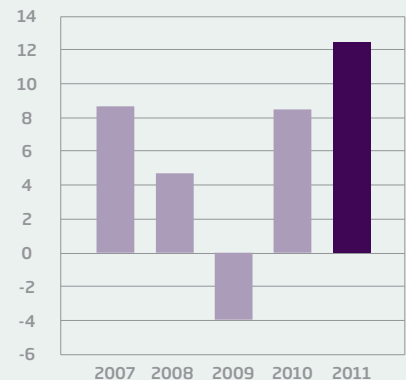
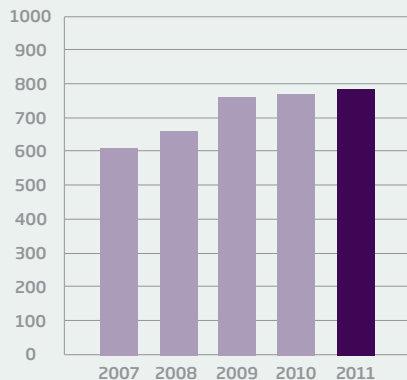
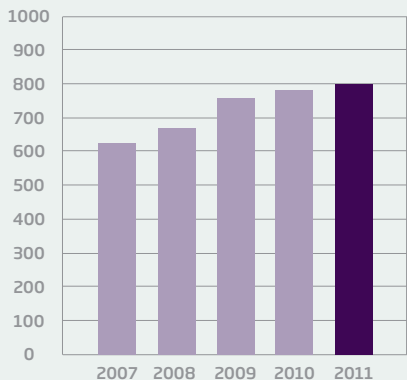
FINANCIAL PERFORMANCE



OPERATING REVENUES (MILL.KR)

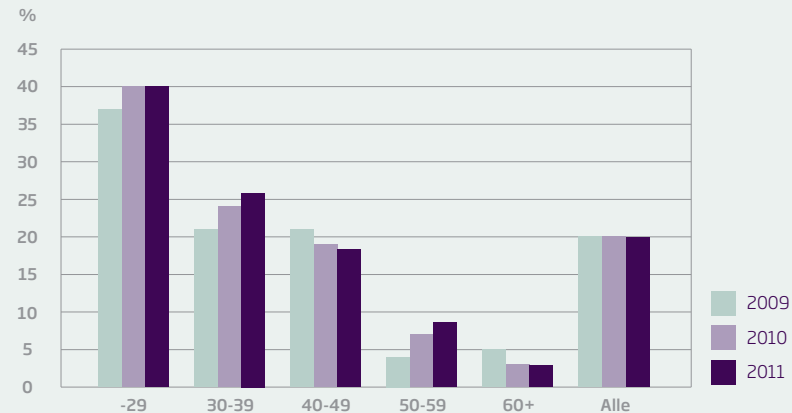
RUNNING COSTS (MILL.KR)

PROFIT (MILL.KR)



Scientific staff

AGE DISTRIBUTION, WOMEN

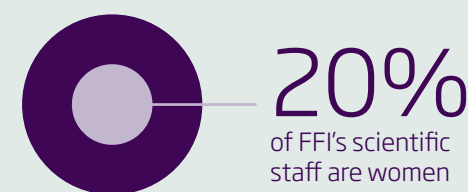
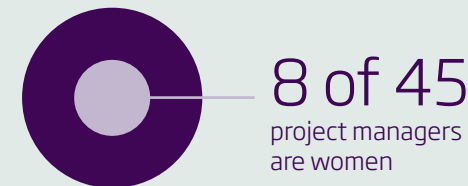
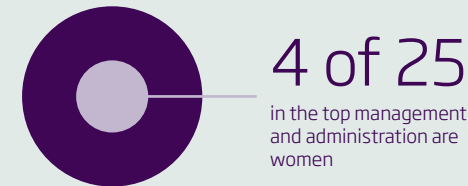


Development in the number delivered

RESEARCH MAN YEARS AND EMPLOYEES



EQUAL OPPORTUNITY



7% increase in the number of women among the scientific staff since 2004

FFI'S DIVISIONS

FFI's research activity is organised into five divisions reflecting the needs of FFI clients and collaborative partners.

Five user-oriented divisions facilitate co-operation with FFI. Each division is headed by a division director, and the division director in conjunction with the individual project managers and research directors, constitute the executive management of that particular division. This means that FFI is a linear, project-based organisation where overall responsibility for results lays with the division directors.



ANALYSIS DIVISION

The role of the Analysis Division is to support the strategic management of the Armed Forces, and the Institute in its advisory role to the MoD. The division conducts broad analyses of matters affecting future tasks, structure and economy of the Norwegian Defence. It places researched-based knowledge into an integrated whole, an approach which requires professional depth and scope and the ability to participate in interdisciplinary collaborations.



LAND AND AIR SYSTEMS DIVISION

The Land and Air Systems Division assists in the reorganisation and development of Norwegian land and air forces. It carries out both long term and applied research, and conducts experimentation directed towards operations, including testing and assessments. Areas of priority for the Land and Air Systems division include surveillance, air and surface-based combat systems and precision guided munitions.



MARITIME SYSTEMS DIVISION

The Marine Systems Division contributes to the development of Norwegian naval capacities. This work comprises operative experimentation, concept and systems development, testing and evaluation for frigates, missile torpedo boats, submarines, mine-sweepers and autonomous underwater vehicles. The interface between vessel and system is an important part of the division's work.



PROTECTION DIVISION

The Protection Division is a national centre of expertise in protection against weapons of mass destruction and conventional weapons. Protection division researchers work on threat assessment, vulnerability analysis and protective measures. Competence in these areas is contingent upon an understanding of how different weapon systems work, and their effects. The Protection Division also makes recommendations for improved preparedness and contingency planning within both the Armed Forces and the civil sector.



INFORMATION MANAGEMENT DIVISION

The work of the Information Management Division is directed towards joint level operations in the Armed Forces, and covers areas within network-based defence (NBD), information operations and modelling and simulation technology. Projects range from technology-intensive research in information and communication systems to "softer" areas of study related to organisational structure and human resources.



RESEARCH AT THE FOREFRONT

In 2011, research carried out by FFI contributed to improved operational capabilities in the Norwegian Armed Forces. Through 128 different research projects and 140 smaller commissions, 482 FFI research scientists have developed technology and expertise that will help modernise and streamline the Norwegian defence sector.

5,1

average score



RESEARCH ACTIVITY

FFI's areas of activity cover a wide range of fields, including basic research and research to increase the level of knowledge. The Institute also supplies its clients with strategic advice, insight into technical developments and support in the procurement of materiel, as well as knowledge regarding phasing-in and testing of military materiel. The range of academic and technical capabilities at the Institute is great. At the same time, FFI interacts with many different players within the Armed Forces - from the political and strategic level in the Ministry of Defence and the Defence Staff, to operators and users of different systems in the field. It also interacts with other public agencies and national and international players within military research, academia and industry.

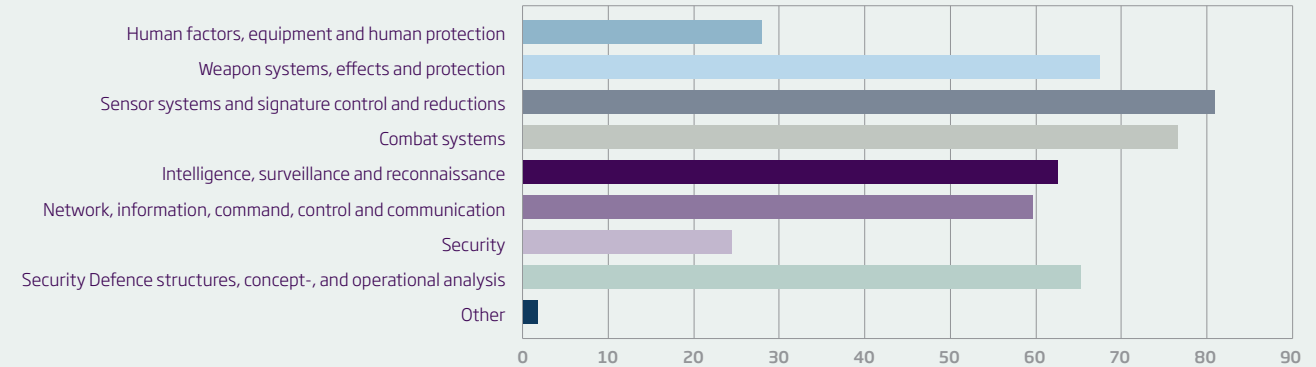
In order to reflect this range of work, which in reports might have several different objectives, the Institute has defined eight areas of activity that form the basis for planning, reporting and presentations.

The demand for professional competence within the Institute's traditional research areas is strong, and in face of complex processes associated with procurement of defence materiel, the need for professional competence and support is increasing. FFI's highest level of activity is within the areas of sensor systems and signature adaptation, closely followed by work on combat systems. Among FFI's largest projects is its support function in the procurement of new fighter aircraft, and testing and adaptation of combat systems in the newly acquired frigates.

CUSTOMER SATISFACTION

A fundamental success factor for FFI is being able to provide research that clients can benefit from. FFI's success depends on a thorough understanding of client needs, concerns and existing solutions. The Institute routinely surveys customer satisfaction upon the conclusion of projects. On a scale from 1 to 6, the average score for customer satisfaction in 2011 was 5.1.

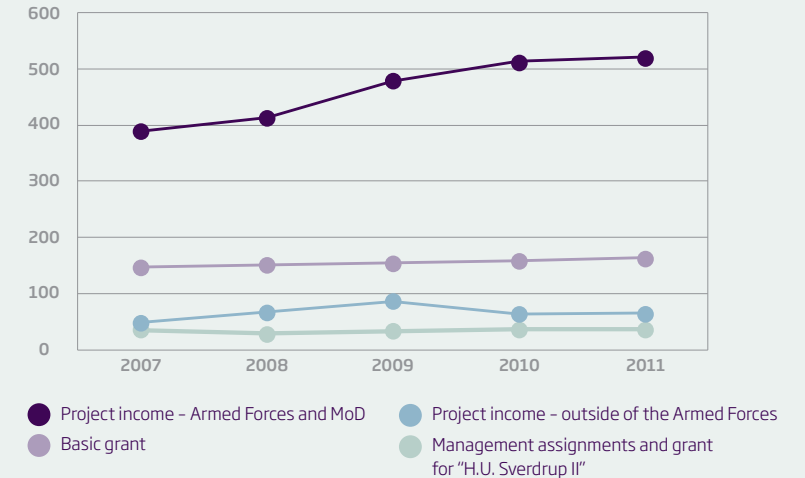
RESEARCH MAN YEARS DISTRIBUTED IN COURSE OF EIGHT AREAS OF ACTIVITY



CUSTOMER SATISFACTION



DEVELOPMENT OF SOURCES OF FUNDING



NATIONAL

As with its international collaborative work, FFI seeks close contact with academia and other research institutions in Norway. The aim is to increase the quality and effectiveness of research, and contribute to transferring knowledge to external institutions.

▶ COLLABORATIVE RESEARCH

Part of FFI's purpose is to carry out research and development for the Norwegian Armed Forces not covered by other national institutions. This objective is somewhat influenced by its goal of being an institution of applied research with close connection to different parts of the Norwegian Defence. There will therefore be areas where other national institutes and academia also contribute relevant expertise. FFI seeks to utilise civilian expertise while avoid duplication of research and on-going development activities in the civil sector.

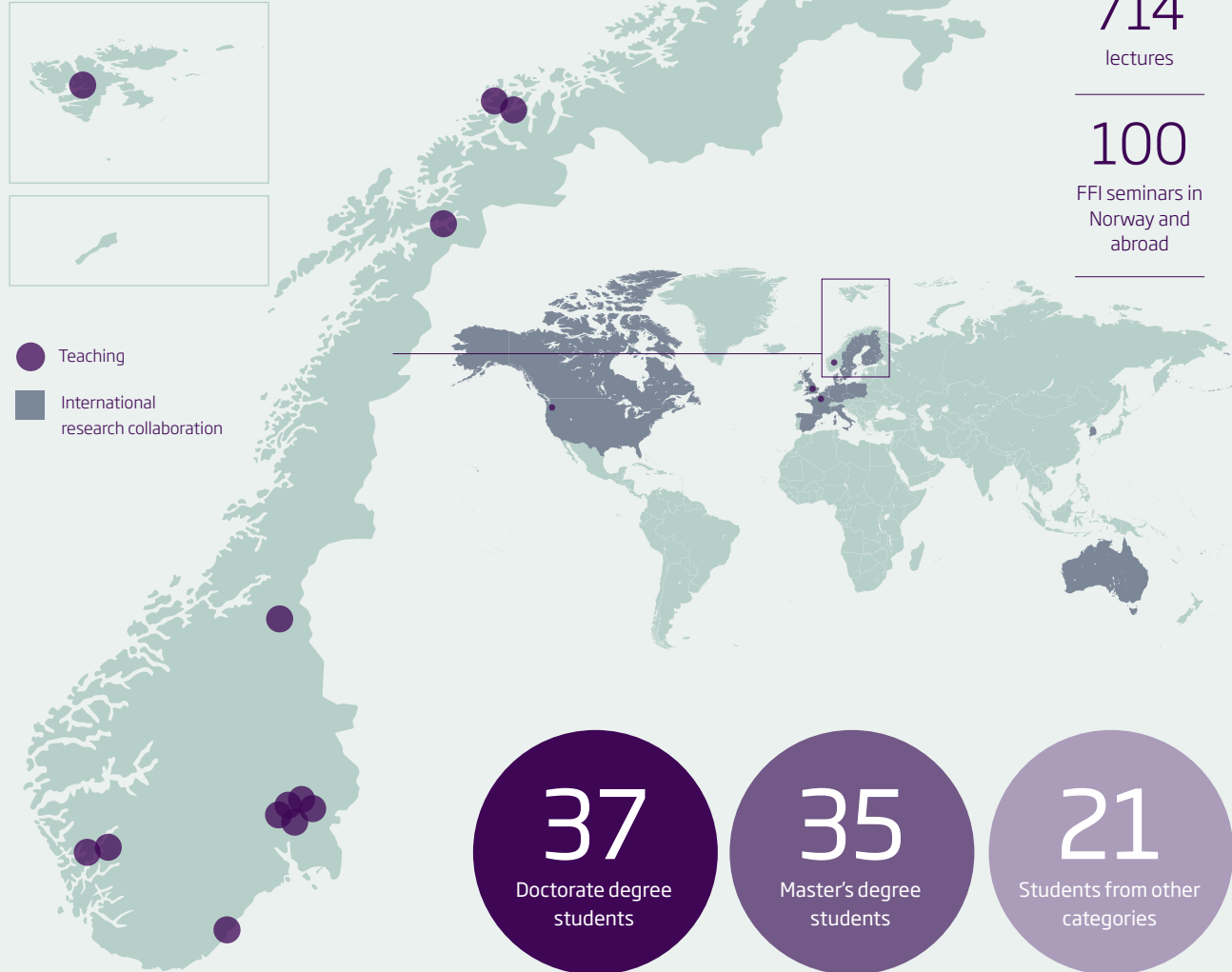
In recent years, FFI has developed a close cooperation with SINTEF, especially in the field of materials science and micro-electronics. This cooperation is carried out in the form of projects that typically have both civilian and military applications, and where FFI accesses and applies the appropriate expertise to meet the needs of the defence sector. FFI also collaborates with other relevant Norwegian research communities and institutions such as the Norwegian Marine Institute, Norwegian Space

Centre, Norwegian Institute of International Affairs, Institute for Energy Technology, Norwegian Mapping Authority, Geological Survey of Norway), Norwegian Geotechnical Institute (NGI), Simula Research Laboratory, Oslo University Hospital HF, Fridtjov Nansens Institute, Gjøvik University College, Norwegian University of Science and Technology, the Universities in Oslo, Bergen, and Tromsø, and the Norwegian University of Life Sciences.

International

Through comprehensive cooperation and collaboration with foreign research communities and sister organisations in NATO and through bilateral and multinational cooperation agreements, FFI can deliver far more knowledge and expertise to the Armed Forces than would be possible only based on its own research. In 2011, FFI collaborated on specific research projects with 16 other countries. Furthermore, through working groups and similar arrangements, FFI was also involved in collaborative efforts with a total of approximately 30 countries.

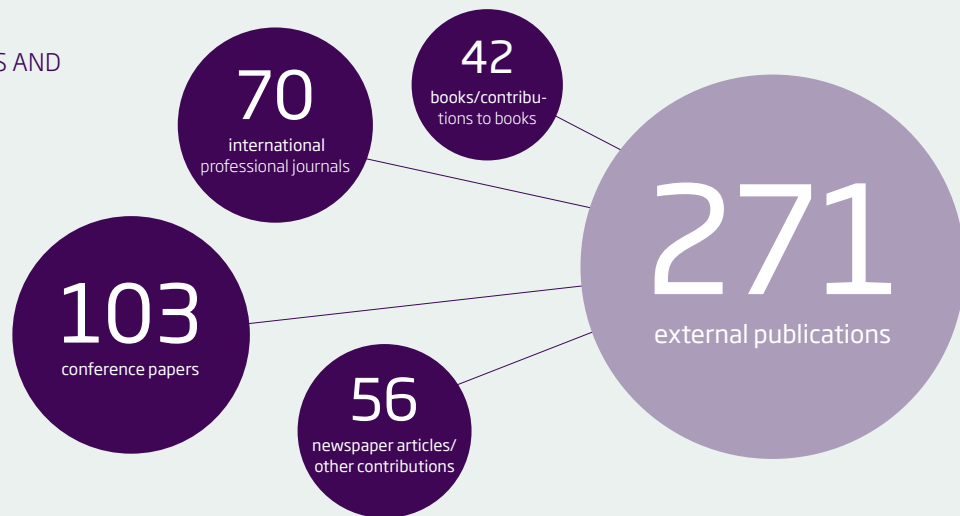
LECTURES, SEMINARS AND CONFERENCES UNDER FFI AUSPICES



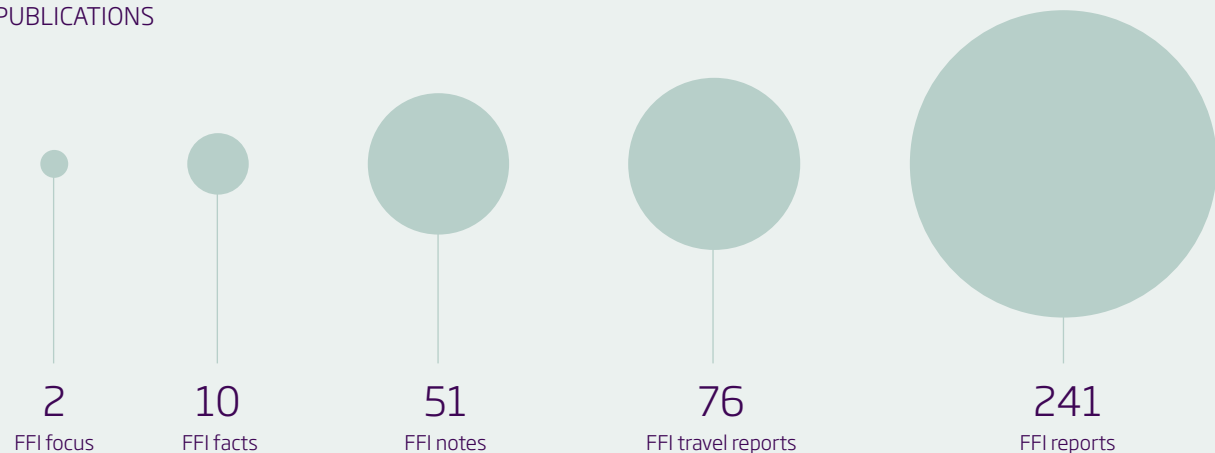
► PUBLICATIONS

FFI EXTERNAL PUBLICATIONS AND COVERAGE IN THE MEDIA

1649
references to FFI
in the media



FFI PUBLICATIONS



FFI'S VALUES

Innovative, energetic, far-sighted, responsible

FFI'S OBJECTIVES

As a research Institute, FFI will:

- contribute to an effective and relevant defence
- contribute to technological and industrial development
- contribute to the overall safety of society
- deliver credible, innovative and useful research

For our clients and for society we will:

- be ethically aware and responsible
- carry out our research efficiently
- communicate research results effectively to targeted recipients
- operate the Institute efficiently

For the FFI community we will:

- be a demanding and stimulating workplace
 - strive continually to heighten competence
 - develop good leaders
-

FFI's VISION

FFI turns knowledge and ideas into an effective defence

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