FFI

Norwegian Defence Research Establishment (FFI)
Annual Report in Brief 2012

THE FFI MODEL

According to FFI bylaws, the Institute shall contribute to the industrial and technological development of Norway as long as contributions of this nature are consistent with FFI's charter. Such participation would include carrying out projects to develop materiel for the Norwegian Armed Forces as well as relevant assignments for civilian authorities and collaborations with Norwegian business and industry in areas of mutual interest.

FFI contributes to considerable value creation in Norwegian industry in areas that also benefit the Armed Forces. This success may in large part be attributed to a **triaxial cooperation between research, industry and end users.** This model of operation is characteristic of FFI's traditional mode of operation and thus may be rightly called "The FFI Model".

In 2012, a third of all FFI projects and commissions involved collaborative efforts with industry.

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FFI

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. Particularly the Institute has developments in science and military technology in focus, which have an impact on political security and defence planning.

OUTLOOK

Innovative power in cooperation with the Armed Forces, the research community, and industry

FFI plays an active role in laying the foundations for further development of the Armed Forces and the ability of Norwegian defence to meet future military challenges and issues of national security.

Science and technology are the central driving forces in the development of modern society in general and the defence sector in particular. FFI is the defence sector's principle professional research arm in the areas of technical and scientific development and expertise. The Norwegian defence sector's collaborative work with FFI lays the foundation for further development of the Armed Forces. Moreover, it strengthens the ability of the Norwegian defence to meet future military and security related challenges.

This is hardly a new situation for the Institute. When FFI was founded in 1946, it was in recognition of two key points – that technology had played a decisive role in the outcome of the Second World War, and that the Norwegian Armed Forces had been insufficiently aware of technology's role in modern warfare. Upon its establishment, FFI was commissioned with three primary goals: FFI would play a vital role in both the modernisation of the Norwegian Armed Forces, the modernisation of Norwegian national industry and of the scientific community in Norway. Upon assessing FFI's status almost 70 years later, FFI has clearly delivered in all three areas. This is best expressed by the fact that Norway now possesses a modern, technologically advanced and effective defence. For FFI this is and will always be the most important thing.

Contribute to industrial development

FFI's bylaws state that the Institute shall, in so far as it is compatible with its other

purposes, contribute to industrial and technological development in Norway. In this capacity, it should take on projects in collaboration with civilian authorities and with national business and industry. There are vigorous connections between the work and research carried out at FFI, and development and production in both large and small Norwegian business enterprises. The most advanced products delivered by the Norwegian defence industry have emerged from a triaxial collaboration between industry, the Armed Forces and FFI. The result of this cooperation is a highly competent, modern and competitive Norwegian defence industry with sales that have more than doubled since 2004 and an export share of 38 percent in 2011.

Challenge and strengthen each other

The defence sector benefits greatly from the existence of a competitive defence industry capable not only of delivering apace with Armed Forces needs, but that also offers the best price, quality and performance - while simultaneously succeeding in the international market. In a time of considerable economic turmoil throughout much of Europe and in an increasingly more competitive international market, the need for innovative thought is great. The ability to capitalise on the innovative power of the triaxial cooperation will be important to ensuring success throughout these demanding times. Further development of this model will enable all three parties to continue challenging and strengthening each other, while simultaneously securing highly competent workplaces and important technology with wide applicability to the civilian sector.

The research triangle

This approach is in line with how the European Union (EU) is directing its future knowledge and industrial policy, towards what is called 'the knowledge triangle' – education, research and innovation. The EU's strategy takes into account the fact that Europe can no longer assert itself in terms of cost-competitiveness, but must instead have innovation and knowledge-based industry in focus. This means that European products and services must be characterised by higher levels of knowledge and a greater content of innovation than products and services from other parts of the world. One criteria for success is the possession of an outstanding research community.

For FFI this means continuing to deliver useful results of outstanding professional quality. To that end, the Institute will always strive to recruit the best talent, further develop our most comprehensive international collaborations and ceaselessly assure the quality of our professional expertise.

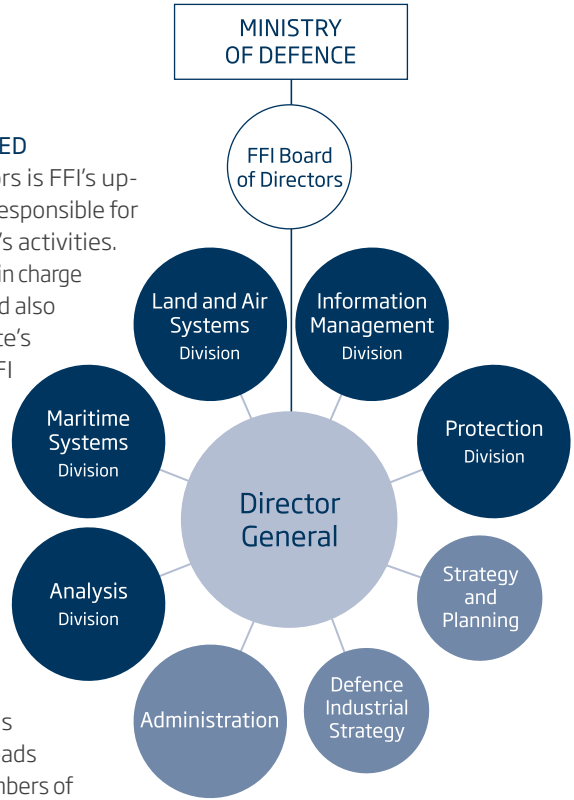
John-Mikal Størdal
Director General

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.

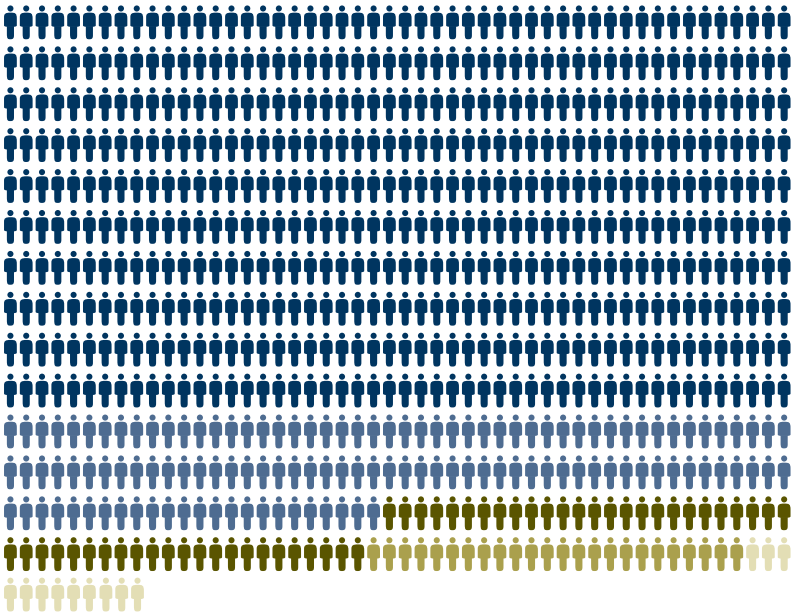
HOW FFI IS ORGANISED

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 Forces' needs, with respect to research and development, are laid out and FFI's proposals for projects are presented.

FFI'S EMPLOYEES



709

employees

- 500 scientific staff
- 124 operations and administrative support
- 49 technical support
- 24 management
- 12 research fellows

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 south of Oslo.

EDUCATION LEVELS

Doctorate degree/PhD: 152
Master's degree: 312
Bachelor's degree: 121
Craft certificate: 49
Other: 75

691

man years

FFI'S BOARD OF DIRECTORS

As of the annual meeting in April 2012, the FFI Board of Directors consisted of the following members: Olaf Valeur, chairman, vice-chairman Kristin Pettersen and board members Jo G. Gade, 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:

Defence research creates development and values

The development of a modern and flexible defence in changing times for technology, as well as for 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 challenges facing both today's armed forces as well as civil society.

Economy

FFI's operating revenues from 2012 were NOK 816.1 million, of which 7.3 percent came from public and private projects outside the defence sector. FFI's total operating costs for 2012 were NOK 809.5 million. The final statement for the year shows a profit of NOK 6.6 million. This amount is entered as a corresponding increase under the item Vested Business Capital in the balance sheet.

In the grant for 2012, the Ministry of Defence instructed FFI that a maximum of 25 percent of the annual turnover could be postponed and transferred to 2013. In 2012, net transfer payments constituted 29.2 percent of the turnover compared to 28.4 percent in 2011. There has been an annual reduction in transfer payments since 2008, and this development is as desired in relation to the set target. The main reason why the transfer has not yet reached the target level is that FFI in 2012 invested more time than anticipated in increasing the number of scientific staff compa-

red to the requirements of the project portfolios.

FFI basically operates on the full cost principle, and thus achieving the maximum possible annual profit is not the primary goal. In accordance with the protocol for the annual meeting between the MoD and FFI of 2011, the Institute itself is responsible for accumulating equity capital up to approximately 10 percent of the operating revenues. By the end of 2012, the figure stands at 6.4 percent.

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 technologically 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 2012, 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 on 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, 15 March 2013

FINANCIAL PERFORMANCE

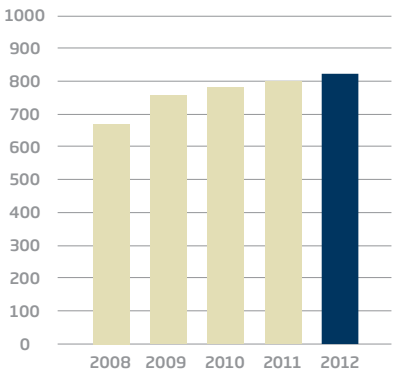
816,1
Operating revenues (mill. NOK)

324
Projects and commissions

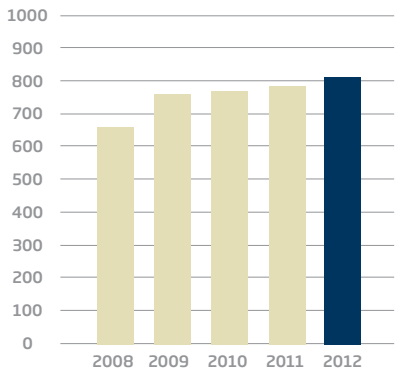
809,5
Running costs (mill. NOK)

6,6
Profit (mill. NOK)

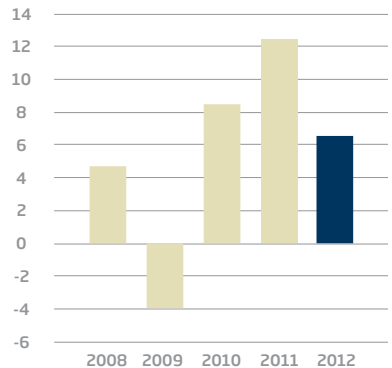
OPERATING REVENUES (mill. NOK)



RUNNING COSTS (mill. NOK)

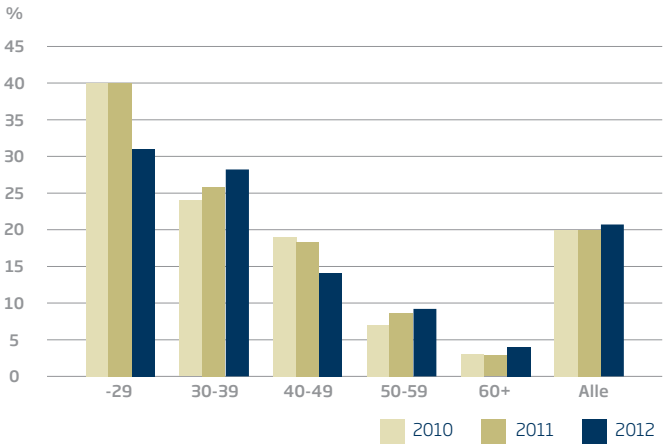


PROFIT (mill. NOK)



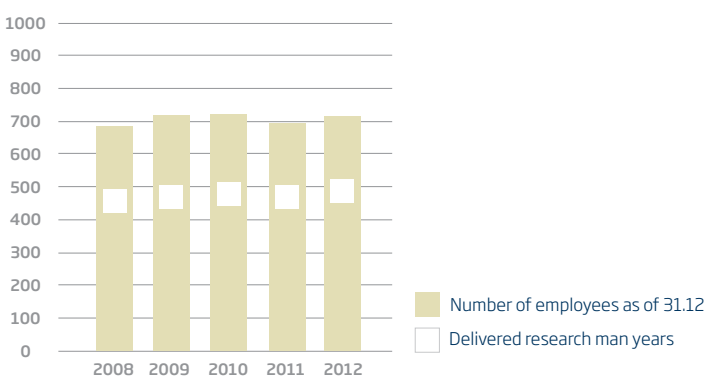
Scientific staff

AGE DISTRIBUTION, WOMEN



Development in the number delivered

RESEARCH MAN YEARS AND EMPLOYEES



GENDER EQUALITY

0 of 9
in the top management are women

10 of 60
in other managerial positions (including project managers) are women

28%
of all employees are women

21%
of FFI's scientific staff are women

8 percentage point 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 cooperation 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.

43,5
research man years

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.

130,6
research man years

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.

84,0
research man years

Maritime Systems Division

The Maritime 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, minesweepers and autonomous underwater vehicles. The interface between vessel and system is an important part of the division's work.

98,7
research man years

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), electronic warfare, the cyber domain, information operations, surveillance, and modeling and simulation technology. The Information Management Division conducts both long-term and applied research in all of the above-mentioned areas in close collaboration with the Armed Forces, our allies and Norwegian industry.

100,4
research man years

RESEARCH ACTIVITY

In 2012, research carried out by FFI contributed to improved operational capabilities in the Norwegian Armed Forces. Through 146 different research projects and 178 smaller commissions, 500 FFI research scientists have developed technology and expertise that will help modernise and streamline the Norwegian defence sector.

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.

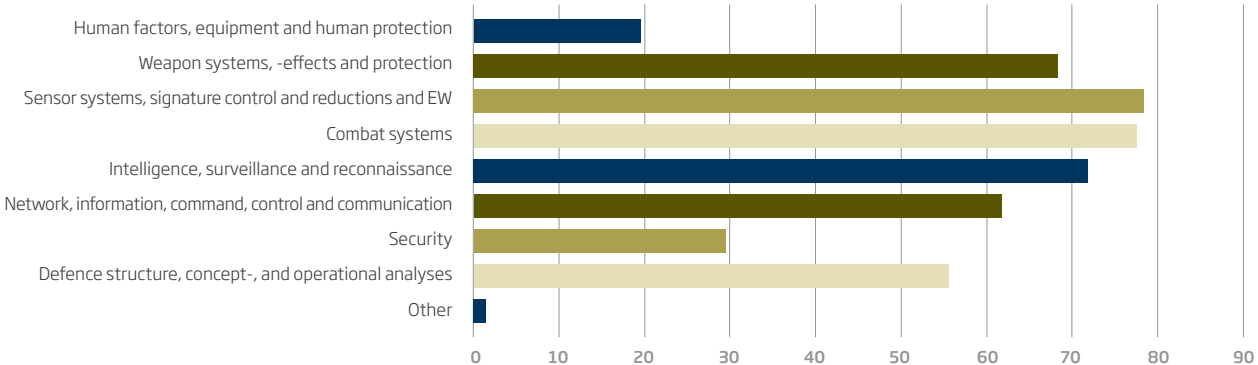
In order to reflect this range of work, which in reports might have several different objectives, the Institute has defined eight areas of activity that form the basis for planning, reporting and presentations.

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, operational EW support to the Armed Forces, 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 2012 was 5,1.

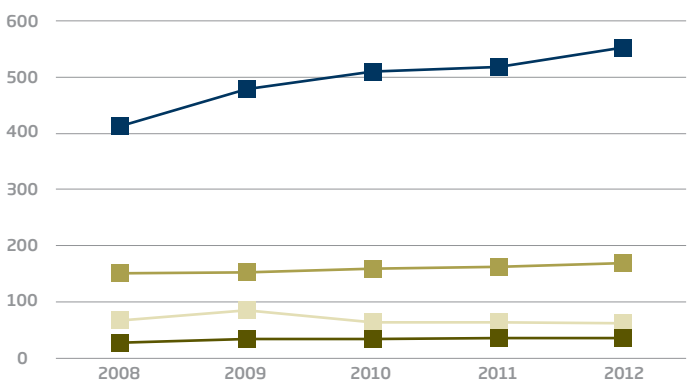
RESEARCH MAN YEARS DISTRIBUTED ACROSS EIGHT AREAS OF ACTIVITY



CUSTOMER SATISFACTION

4,8	5,3	5,2	5,1
Administrative processes	High professional quality	Dialogue and response	Relevant and beneficial

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 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 avoiding duplication of research and on-going development activities in the civil sector.

FFI also collaborates with other relevant Norwegian research communities and institutions such as the Norwegian Research Council, SINTEF, Institute of Marine Research, 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, Fridtjof Nansen Institute, Gjøvik University College, Norwegian Defence Cyber Academy, NORSAR, Norwegian Radiation Protection Authority, Vestfold University College, Norwegian University of Science and Technology, the Universities in Oslo, Bergen, and Tromsø, Norwegian University of Life Sciences, Norwegian School of Economics, Norwegian Institute for Defence Studies, Directorate for Civil Protection and Emergency Planning, Fafo Institute for Applied International Studies, and Eastern Norway Research Institute.

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 2012, FFI collaborated on specific research projects with close to 20 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

598	98	43	36	22
lectures	FFI seminars in Norway and abroad	PhD-students	Master's degree students	students from other categories

TEACHING IN NORWAY

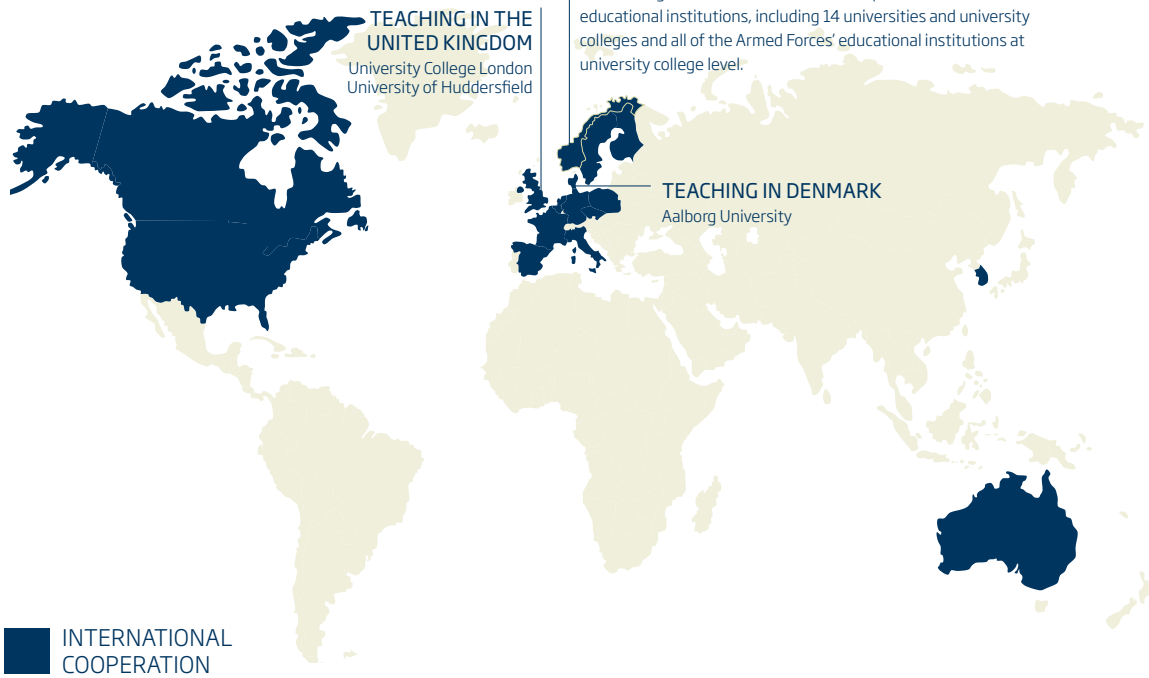
93 of FFI's scientists have been engaged as lecturers, teachers, censors or guides for students/scholarship holders at several educational institutions, including 14 universities and university colleges and all of the Armed Forces' educational institutions at university college level.

TEACHING IN THE UNITED KINGDOM

University College London
University of Huddersfield

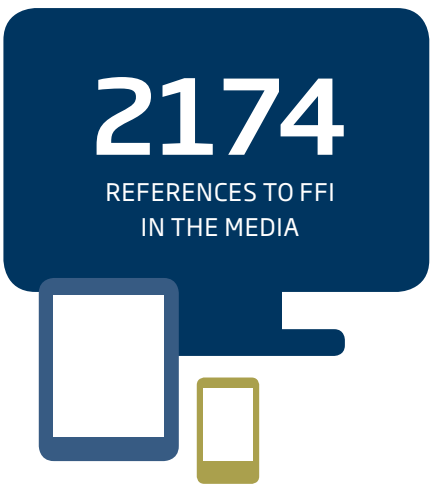
TEACHING IN DENMARK

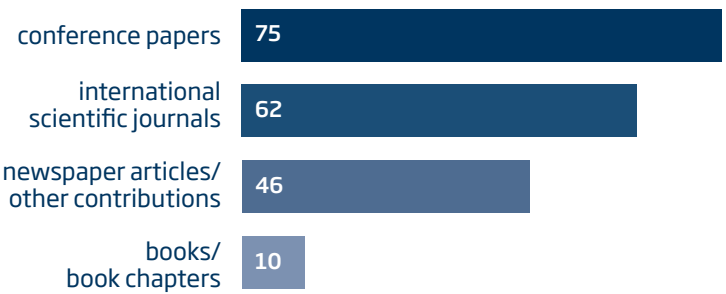
Aalborg University



INTERNATIONAL COOPERATION

193 EXTERNAL PUBLICATIONS





FFI PUBLICATIONS

4	4	67	51	240
FFI focus	FFI facts	FFI notes	FFI travel reports	FFI reports

FFI'S VALUES
Innovative, energetic, far-sighted, responsible

FFI'S VISION
FFI turns knowledge and ideas into an effective defence

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

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