



**FFI** Norwegian Defence  
Research Establishment



# Strategy of the Norwegian Defence Research Establishment (FFI)

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2021–2024



FFI turns knowledge  
and ideas into  
an effective defence

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# Introduction

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**FFI's main strategy is rooted in the institute's by-laws. It provides direction for all other strategies and plans of action at the institute.**

Each strategy is based on previous strategies. It is shaped by external impulses, challenges and guidelines. Our strategy must be consistent with the long-term plan for the defence sector: 'Ability to defend – commitment to preparedness' and the new vision for FFI for the years 2021–2024.

This edition of FFI's strategy is not a new strategy, but an adapted and updated version of the previous strategy that has been aligned with the long-term plan and new vision.

Kjeller, 1 December 2021

**Espen Skjelland**

*Director General (acting)*

# The challenges

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The defence of the nation is one of the government's most important tasks and the principle task of the defence sector. The ability to manage crises and armed conflicts in the country's own and in allied regions is crucial. Security policy and technological development heightens the challenges that already exist. This results in higher demands.



Since the Industrial Revolution, research-based knowledge and technological advances have laid the foundation for security, progress and growth. Norway's freedom, independence and the growth of the modern nation are largely based on our ability to leverage technological developments.

Groundbreaking technological advances are now driving change at an unprecedented rate and scope. This provides opportunities we have never seen before. And with that challenges. Although new technology has served society well, history has taught us that technology in the wrong hands can both threaten and undermine democracy.

We must acknowledge that much of future technology will be available to everyone. Democratic control of the use of new technology is increasingly difficult. We must respond to these challenges together with our allies by maintaining technological superiority. This strengthens our ability to meet the basic needs for safety, security and protection of both the country and its population.

Research and development are essential for ensuring that we also have effective and sustainable armed forces in Norway in the future. Increased focus on research and development and closer collaboration with the Armed Forces, defence industry and commercial technology communities will contribute important insight into and an understanding of new security threats. Collaboration also paves the way for the opportunities represented by new technology. It facilitates an important Norwegian contribution to upholding allied leadership in technological developments.

An important part of Norway's contribution of forces to NATO is a strategic focus on the national knowledge community for applied science and defence and security-related technological development. These efforts also lay the groundwork for increased innovation, industrial growth and national value creation.

◀ *Satellites developed at FFI have become an important factor in the surveillance of our waters. Illustration: Nanoavionics*

# Our purpose

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**FFI aims to produce relevant research and development based on the institute's military technological and scientific expertise. FFI is dedicated to providing the political and military leadership with timely, research-based and independent advice for the development of defence policy, defence planning and administration of the sector.**

**FFI aims to:**

- stay up to date on scientific, technological and military technical developments through its own research and in collaboration with other national and international research communities, and assess the consequences for the defence sector.
- stay informed about current plans and assessments for the structure of the defence sector and major equipment procurements, provide advice and help ensure the continuous processing and implementation of the plans with the support of the professional expertise of the institute.
- contribute on the basis of its own research and expertise and within its own area of responsibility to supporting and improving the operational capability of the Armed Forces and effective operation of the defence sector.
- have knowledge of and insight into issues and areas of particular significance for Norway and Norwegian conditions, as well as other conditions of fundamental importance for the country's defence and, on the basis of this, provide advice on how military technical innovations can be used.
- insofar as compatible with the institute's purpose, contribute to societal security and industrial and technological development in Norway, including carrying out tasks for the civil authorities, industry and the business community.
- coordinate its activities and collaborate with other national and international scientific and technological institutions, insofar as appropriate and acceptable from a security perspective, and
- communicate research-based knowledge.



FFI focuses on needs and  
is at the forefront of scientific  
and technological developments.  
This enables the institute to  
contribute to a strong defence  
and a safer society.

# Our values

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**FFI's values are creative, enterprising, broad-minded and responsible. These four values characterise us and our relationships with others.**

Our values support the strategic direction we have adopted and we need them to achieve our goals. They help promote the culture we want to establish at FFI. They define our personality, both internally and externally, and ensure that we come across loud and clear. They form part of our identity, making us distinctive and impossible to emulate.

**CREATIVE** – We create space for idea development and non-traditional thinking.

**ENTERPRISING** – We are offensive and at the forefront. We help accelerate new knowledge, progress and breakthroughs.

**BROAD-MINDED** – We identify new technologies and trends. We actively share knowledge, ideas and information with others.

**RESPONSIBLE** – We deliver on our promises. We are reliable, we know how to listen and we always consider the client's needs.

*FFI's preparedness laboratory is the one lab in Norway that can analyse samples containing extremely toxic chemicals, pathogenic microorganisms, radioactive materials and explosives.*

*Photo: Espen Wang-Naveen / FFI*





- ▼ How do whales respond to human activity?  
Probes with suction cups map movement.  
Photo: FFI





# Ethics

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**Our activities must be characterised by a high ethical standard, high-quality work and the willingness to make bold and innovative decisions.**

Our research is supported by a positive and strong culture based on high scientific standards. The organisation will continue to maintain knowledge and awareness of research ethical standards. The guiding principle is systematic training and continuous awareness in all research communities and on all levels of the organisation.

# FFI's vision 2021-2024

## IMPACT GOAL

The Norwegian Armed Forces' operational capability, cooperation with allies and the Total Defence capability are strengthened through R&D and utilisation of the technological development

## PERFORMANCE GOALS

**1**

Advice regarding the formulation of defence policy is strengthened

**2**

Operational capability is improved through R&D-based knowledge for operational activities, education, training, exercises and evaluation

**3**

R&D-based knowledge is used in planning and implementation of materiel investments

**4**

Technological opportunities are utilised faster

**5**

Knowledge production is strengthened through strategic R&D cooperation with allies and selected actors

**6**

The Total Defence and civil-military cooperation are strengthened through R&D and utilisation of the technological developments

**7**

The national industry and technology base is strengthened through R&D

## ACTIVITY GOALS

Strengthened corporate governance

Strengthened interaction

Sound administration

## INPUT GOALS

Appropriate competence and adapted capacity

Effective use of ICT

Strengthened leadership development and employeeship

**The vision prepared by the Ministry of Defence for FFI is new and applies to the long-term period of 2021 to 2024.**

It demonstrates the institute's most important priorities and focal areas for the next few years. At the very top of the figure to the left is a summarised statement of the desired overall impact of FFI's work on the outside world: *"The Norwegian Armed Forces' operational capability, cooperation with allies and the Total Defence capability are strengthened through R&D and the utilisation of technological developments."*

This impact goal is to be achieved through seven performance goals, as listed in the white boxes. These are described and explained in more detail on the following pages of this strategy document.

Supporting efforts aimed at achieving the performance goals requires prioritising activities and efforts throughout the entire organisation. The activities have three goals: improved performance management, responsible administration and strengthened interaction within the institute. The three input goals are: appropriate expertise and adapted capacity, efficient use of ICT and strengthened leadership development and employee engagement.

## PERFORMANCE GOAL 1

# Long-term thinking

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### **Recommendations on defence policy design are reinforced.**

FFI is a key adviser in efforts to prepare long-term plans for the defence sector. Here we provide comprehensive, research-based recommendations on arrangements for the Armed Forces over the next four years and in the longer-term perspective. FFI also makes a significant contribution to the Chief of Defence's Military Council (FMR).

The institute views the defence sector as a whole across the various agencies. FFI will coordinate its contributions to the strategic development of the Armed Forces and in doing so, engage in dialogue with the Chief of Defence, heads of the different military branches, and the ministry. In an annual report, FFI analyses the balance between the Armed Forces' duties, structure and finances and examines selected technology fields in depth.

*Norwegian defence policy is passed by the Norwegian Parliament (Stortinget). FFI is involved in and provides the elected representatives with the best possible decision-making basis.*

*Photo: AdobeStock*





*FFI will be involved in communicating and forming opinions about the defence of Norway.*









## More operational capability

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**Operational capability is improved through R&D-based knowledge for operational activities, education, training, exercises and evaluation.**

Knowledge is most valuable to the Armed Forces if it provides an advantage where it really matters. Preparedness and collaboration in the Armed Forces are essential. The Norwegian forces will improve the speed at which they are ready for action and be better prepared for crisis and war. Joint operational cooperation will also be improved – between branches of service, with allies and with the actors involved in the Total Defence concept.

FFI is a versatile institute with a focus on research, development and advice on all levels of the Armed Forces. This covers everything from battery testing to general recommendations for the long-term organisation of the Armed Forces. We examine everything from microbiological threats to space technology. At the end of the day, everything we do should result in improved operational endurance and capability.

Joint Norwegian operations must be developed at the same pace as threats, new equipment, technology and changes at our allies. In the future, the Armed Forces will, among other things, have better and more systematic access to FFI's knowledge in connection with major exercises.

◀ *The NASAMS air defence system is the result of a triaxial collaboration between FFI, the Armed Forces and industry, in this case Kongsberg Defence & Aerospace. Photo: Norwegian Armed Forces*



# Investments must pay off

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**R&D-based knowledge is used to plan and implement materiel investments.**

One third of the defence budget will now be spent on investments.

Investing in new materiel is one of the most important driving forces behind the development of effective and relevant armed forces. In an era when technology is developing rapidly, it is vital to invest in materiel that utilises technological opportunities and that can be updated throughout its lifespan, allowing the equipment to be modified to suit tasks and the threat landscape. When we evaluate new materiel, the desired effect must therefore be more important than structural solutions.

FFI will strengthen its ability to plan, implement and provide research and advice that supports materiel procurement efforts. We will identify what has worked well and less well, so that we can benefit from the lesson learned in future procurements.

◀ *FFI contributed to choosing the F-35 as Norway's new fighter aircraft.  
Photo: Norwegian Armed Forces*

## New technology and risk

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**Technological opportunities are utilised faster. Using new technology in a military context can have a significant impact.**

For the Armed Forces, adopting new technology can be risky if the technology has not been tested or used operationally before. It can also be difficult to imagine how new technology can perform tasks in new ways. For investors and industrial companies, there is risk involved in developing untested technology for new markets.

The fact that new technology is available does not mean that it is a matter of 'plug and play' for the Armed Forces. The technology must be tested, matured and often developed further before it is ready for use. FFI helps reduce risk for both the Armed Forces and Norwegian companies. This is achieved by facilitating experimentation with and testing of the usefulness of new technology. FFI will establish and further develop test arenas for innovation around the country where research and industry collaborate.

*The robotic dog Freke was developed by Boston Dynamics. ▶  
FFI explores the possibilities offered by technology for the Armed Forces.  
Photo: Espen Hofoss / FFI*





## Strategic partnerships

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**Knowledge production is strengthened through strategic R&D cooperation with allies and selected actors.**

We collaborate with various expert communities both at home and abroad. Through these partnerships, especially with allies, we gain access to some of the world's leading research communities and develop expertise and solutions together with our allies.

Much of the partnership work carried out by FFI and national knowledge communities is currently operational and linked to specific projects and problems that must be solved. The collaboration most often takes place through professional networks in which the expertise of FFI and other organisations complement each other.

In addition to national research and education communities, FFI also works with various Norwegian technology companies on the development of prototypes and the industrialisation of products that can benefit the Armed Forces.

*FFI and the Kongsberg Group test systems  
for the automatic shooting down of drones.  
Photo: Espen Wang-Naveen / FFI*





*As an organisation, FFI will  
combine scientific specialisation  
with practical skills.*









## Stronger Total Defence

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**The Total Defence and civil-military cooperation are strengthened through R&D and the utilisation of technological developments.**

Civil-military cooperation is an important mainstay in the defence of Norway.

The further development of the Total Defence involves the contribution of civil and military, public and private resources to strengthening national security and societal security: our Total Defence capability. The goal is to utilise available and limited resources to improve the nation's resistance and endurance across the crisis spectrum. This makes sense from a socio-economic perspective.

FFI will illustrate how the Total Defence capability should be developed further in order to increase defence capabilities. The institute has expertise and research that can provide knowledge to those specialising in preparedness, also in civilian sectors.

◀ *FFI practices the detection and analysis of hazardous materials together with the Oslo Fire Brigade.  
Photo: Lars Aarønæs / FFI*



Forbets  
forningsinstitutt



## Triaxial collaboration offers new perspectives

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**The national technology and industry base is strengthened through R&D. FFI wants to rethink innovation in system form.**

Since World War II, the triaxial collaboration between the Armed Forces, FFI and industry has been important in terms of building industry and technical expertise in Norway. We now have a defence industry that is niche-based, high-tech and internationally competitive. FFI wants to strengthen this partnership and the innovation ability of the Armed Forces.

Within this context, innovation does not just mean adopting new technology. It can also mean using existing technology in innovative ways, in an effective interaction between existing and new equipment. In addition, new technology must interact with the people and organisation that will be using it.

To ensure that we are able to help the Armed Forces with new technology, FFI has initiated a strategic focus on technology that is not mature enough to use, but that we believe could be of pivotal importance for the Armed Forces.

◀ *During Land X events, the Armed Forces, FFI and industry gather to examine new technology and discuss common problems. The event was held in Rena in 2021.  
Photo: Photo: Espen Wang-Naveen / FFI*

# Our distinctive character

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**FFI is result-oriented. The use of results is the most important criterion for research and development. Knowledge is an important tool, but not a goal in itself.**

**FFI works closely with the Armed Forces, Norwegian Defence Materiel Agency and industry.** We develop systems and prototypes that provide effective and quality-saving operational solutions. It is vital to take the necessary risk at an early stage and finance development that would not otherwise have taken place.

**FFI creates results through teamwork.** FFI collaborates with research institutions and academia both at home and abroad. We translate theoretical results into practical benefits for our clients.

**FFI is a project organisation within which the head of research is the standard bearer.** All projects are goal-oriented and time-limited. They are based on parity of expert knowledge and on a profound understanding of the intended objectives of the project. Among other ways, this is achieved through active participation in the field, exercises, testing and evaluation.

**FFI is a flexible organisation.** We have the ability to concentrate and reprioritise resources. We utilise professional expertise across the organisation. All staff are employed by FFI, not by a specific division. Where circumstances dictate, a change of division and field of work is considered. This makes us better able to tackle significant and demanding tasks.

**FFI carries out a wide spectrum of analyses.** These analyses concern the tasks, structure and finances of the Armed Forces. We determine how these factors are related. The analyses utilise the institute's collective knowledge and expertise.





# Characteristics of FFI leadership

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- Create outstanding and significant results
- Understand the needs of the client, take initiative and seize opportunities
  - Inspire and show direction
- Acknowledge and engage each employee and communicate clear feedback
- Contribute to the community and to FFI as a whole
  - Act as a role model and lead through professional understanding



FFI is a knowledge organisation.  
The institute needs talented leaders with  
good role understanding. These types of  
leadership skills inspire outstanding  
professionals to perform at their best.

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