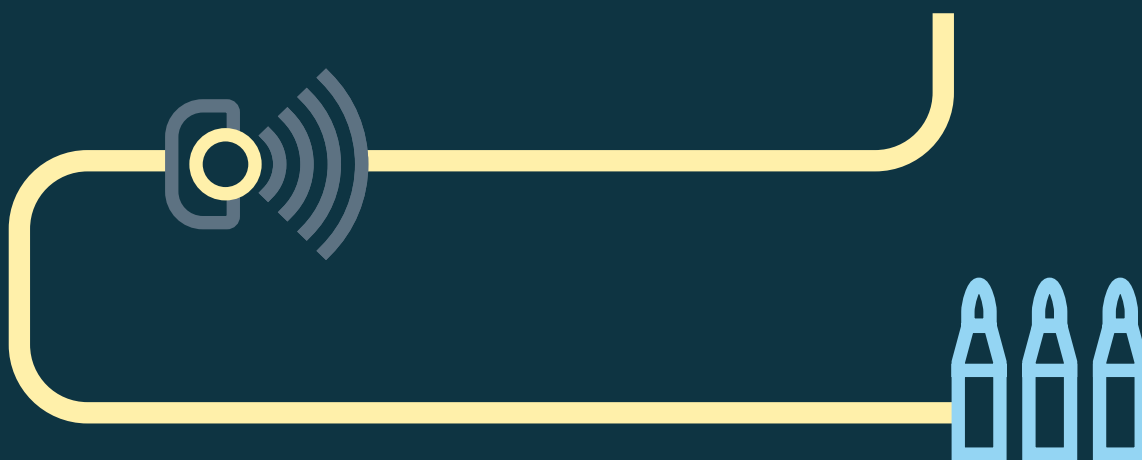
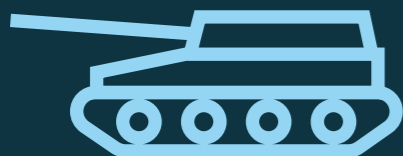




# Roadmap for expanding production capacity in the defence industry



Norwegian Ministry of Defence  
Norwegian Ministry of Trade,  
Industry and Fisheries



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# Foreword



Over the past three decades, defence industrial production capacity has been downscaled in Norway and in most other European countries due to reduced demand. In light of Russia's war against Ukraine, it is essential to reverse the decline in Norwegian production capacity.

Access to air defence systems, missiles, artillery ammunition and other defence materiel will be crucial to support Ukraine's efforts to defend its territory. If we are to continue and increase support for Ukraine, the producers of relevant defence-related products will have to expand their capacity. This will also help to strengthen national and Allied defence capabilities.

The Government has drawn up this roadmap to promote an integrated approach to the challenges associated with increasing production capacity. The measures set out in the roadmap are designed to address both short-term and long-term needs. The roadmap is to serve as a guide for the Government's ongoing efforts to support the expansion of defence industrial production capacity.

It is the defence industry itself that has primary responsibility for expanding production capacity.

Since Russia's full-scale invasion of Ukraine, the Norwegian defence industry has made substantial investments in increasing its own production capacity. The central government administration's most important means of supporting an expansion in production capacity is to enter into long-term, binding contracts with the industry. These contracts provide the companies with the predictability they need to invest in their own efforts to expand capacity.

The Long-term Defence Plan 2025–2036 is Norway's most important tool for increasing Norwegian and Western production capacity. It provides a politically binding long-term framework for central government investments in defence materiel.

The measures needed to continue to support Ukraine and maintain national and Allied preparedness will not always be in line with commercial objectives. In

some cases, the Government has provided support to the Norwegian defence industry to avoid bottlenecks in deliveries of defence materiel to Ukraine, and will continue to do so in the time ahead.

In consultation with industry, the Government has identified four main challenges that need to be addressed in order to increase production capacity in the Norwegian defence industry: access to capital,

regulatory obstacles, potentially vulnerable value chains and long-term access to expertise.

As a response to the war in Ukraine, the Government has provided support for industry efforts to expand production capacity. This roadmap is intended to strengthen and enhance coordination of these efforts in the years ahead.

**Bjørn Arild Gram**  
Minister of Defence

**Cecilie Myrseth**  
Minister of Trade,  
Industry and Fisheries

# 01

## Focus on increasing production capacity in the Norwegian defence industry



The Government will facilitate increased production capacity to enable the Norwegian industrial sector to meet Ukrainian, Allied and national needs. The Government aims to increase production in the Norwegian defence industry in order to prevent, as far as possible, any bottlenecks in the provision of Norwegian and Allied military support to Ukraine.

The Norwegian defence industry has already made significant investments in increasing production capacity. In addition, the Government has taken steps to mobilise further investments in Norwegian production capacity by accelerating the implementation of existing contracts and co-financing efforts to expand capacity in the industry. Financial support provided by the Government is intended to accelerate expansion efforts while triggering and reinforcing investments in defence production from the private sector.

This roadmap presents the Government's comprehensive plan for developing and increasing production capacity in the Norwegian defence industry. The instruments outlined in the roadmap are focused on the areas that will have the greatest strategic military impact for Ukraine, Norway and relevant allies. Priority will be given to areas in which the Norwegian defence industry maintains a competitive

advantage and has a critical role to play in supporting Ukrainian, Norwegian and Allied capabilities.

Priority areas identified by the Government are:

- a. NASAMS air defence systems, rocket motors and military high explosives;
- b. innovative technology that can lead to significant operational advantages;
- c. artillery ammunition and other defence-related production that will be of direct military value.

The measures set out in the roadmap also encompass the defence supply value chains for the various products. The small companies that produce key components and other inputs and the major producers that assemble weapons systems are both important in this context.

The measures set out in the roadmap build on the Norwegian National Defence Industrial Strategy, and are intended to facilitate the implementation of the Long-term Defence Plan 2025–2036 and significantly strengthen the Norwegian Armed Forces. The measures are to enhance Norwegian and Allied capacity to provide effective military support for Ukraine in its fight to defend itself against Russia's war of aggression. The measures are also an important element in the joint Allied effort to boost production capacity in the European defence industry. The roadmap illustrates the Government's solidarity with its allies, and its willingness to participate in burden-sharing and take responsibility for increasing national production in order to meet the needs of the Alliance. The needs of Norway, Ukraine and the Alliance are interconnected and, in many cases, overlap, and therefore have not been specifically prioritised in relation to one another.

Increasing production capacity in the defence industry will be capital intensive. The investment framework in the new Long-term Defence Plan is the Government's

key instrument for funding the increase in production capacity. In addition to the heightened demand for defence materiel as a result of the plan, further measures will be needed to accelerate the production of prioritised defence products and ensure adequate preparedness capacity. Industry-oriented funding instruments may be used to unlock financially sustainable investments. Targeted measures will be introduced to ensure preparedness capacity. The Government will also implement other measures to facilitate the increase in defence production capacity.

Time pressure is a particular challenge. Russia has transitioned to a war economy and significantly increased its production of military equipment. As a result of the current security situation, Ukraine, the Allies and Norway all have an urgent need for defence materiel. The increase in production capacity must therefore be achieved far more quickly than under normal circumstances. The various measures in the roadmap are intended to further advance the rapid and effective expansion of production capacity.

## FACTS

### Financial support for increased production capacity since 2022



Since Russia's full-scale invasion of Ukraine, the Government has provided funding to a number of projects to expand production capacity in the Norwegian and Ukrainian defence industries:

- » An agreement with the Norwegian aerospace and defence company Nammo to provide NOK 1.95 billion for the production of artillery ammunition to meet Norway's national needs. The procurement has an overall framework of approximately NOK 5.23 billion.
- » A joint Scandinavian initiative under which Norway has signed an agreement with Nammo for the delivery of artillery ammunition to Ukraine. Norway will be providing NOK 200 million of the overall framework of approximately NOK 600 million.
- » Norwegian participation in the EU Act in Support of Ammunition Production (ASAP) instrument, which was created to increase ammunition production. Norway's financial contribution is approximately NOK 190 million.
- » Co-financing of ASAP projects in Norwegian companies for a total of NOK 950 million. ASAP funding will trigger major investments in production capacity for ammunition, missiles and explosives.
- » Roughly NOK 1 billion towards the establishment of a new production line for artillery ammunition and rocket motors at Nammo.
- » Up to approximately NOK 940 million towards advance orders of long-lead items with a long production lead time in order to accelerate an upgrade of the NASAMS air defence system and further development of Norway's national air defence structure.
- » Funding to Nammo for the issuing of production licences for artillery ammunition to Ukrainian defence industry.

# 02

## The role of the defence industry in defence and security policy



### 2.1 Production capacity in the defence industry

In the past 30 years most European countries have downscaled their defence industry production capacity. Military contingency stockpiles have also been reduced as a result of the decreased security tensions in Europe since the end of the Cold War.

Russia's war against Ukraine has increased the demand for defence materiel both directly and indirectly. There is a direct demand for all types of defence materiel, in particular for air defence systems and associated missiles and artillery ammunition. In general, the volume of materiel needed to support Ukraine in its battle to defend itself is enormous. There is also a widespread need for cutting-edge technologies. At the same time, there is an indirect increase in demand because the Allies and partners are having to replace donated equipment and expand contingency stocks as part of the effort to strengthen their overall defence capabilities in light of the irrevocable change in the security landscape.

As a result of the changed security landscape, Norway and other European countries must establish new and higher target figures for their national production

and stocks. Expanding defence industrial production capacity is key to building up new contingency stocks.

The Norwegian defence industry has already invested in expanding its production capacity due to changes in the market. In conventional markets, an increase in demand leads to an increase in supply. The defence market differs from typical commercial markets in that suppliers of defence materiel are dependent on government contracts. Although most NATO countries are increasing their defence budgets, there is uncertainty in the market about how long the heightened demand will last. While there will be a need to replenish stockpiles irrespective of Russia's war against Ukraine, there are concerns in the market that a likely decline in demand could in the long term lead to a risk of overcapacity before the investments yield a return.

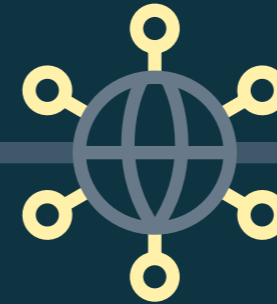
Production to maintain military preparedness is essential and differs from purely commercial production. The government authorities are normally expected to bear the cost of ensuring preparedness, but at the same time, private investors must be

willing to put up risk capital. Maintaining military preparedness thus requires the market and the authorities to work together.

As a rule, investments in increasing production are made once contracts have been signed. Under normal circumstances, the lapse of time between contract-signing and the expansion in capacity does not present a major problem. In today's security situation, where there is significant time pressure, it is crucial to expand production capacity as rapidly as possible. This urgency is due to the critical importance of meeting Ukrainian, Norwegian and Allied needs given the changed security landscape.

Defence procurement is normally carried out through major long-term contracts that can be time-consuming to negotiate. Procurement of advanced defence materiel is costly and delivery times are long. In addition, except in the case of dual-use goods, it is not normally possible for suppliers to modify production processes to serve the civilian market in the event the demand for military equipment declines.

Norway's national defence industrial strategy, the white paper *Cooperation for Security* (Meld. St. 17 (2020–2021)), sets the framework for the Government's efforts relating to the defence industry. The focus is on maintaining and strengthening an internationally competitive Norwegian defence industry capable of developing, producing and supporting military equipment, systems and services in priority areas. However, lessons learned from the war in Ukraine, where defence production capacity is a crucial factor, are not reflected in the white paper. The wide range of equipment donated to Ukraine by Norway and its Allies must be replaced. At the same time, due to the deteriorating security situation, Norway and other Allied countries are having to increase their contingency stocks. The Government has therefore decided to draw up this roadmap to identify and coordinate existing and new measures in order to strengthen production capacity in the Norwegian defence industry.



As a result of the changed security landscape, Norway and other European countries must establish new and higher target figures for their national production and stocks. Expanding defence industrial production capacity is key to building up new contingency stocks.

**FACTS**

## Areas of technological expertise of particular importance to Norway

To ensure that critical materiel systems can be obtained, maintained and further developed in Norway, the Norwegian Armed Forces must have access to a national industry in certain key technology areas. While the international defence industry can meet most of the Norwegian Armed Forces' needs, there are certain areas where it is crucial for Norway to maintain its own technological expertise and industrial capacity. Today's security situation underscores the importance of having a Norwegian-controlled defence industry. The technology areas currently identified as priorities by Norway (see Meld. St. 17 (2020–2021)) are:



**Ammunition, propulsion technologies and military explosives**



**Missile technology**



**Command, control, information, communications and combat management systems**



**Systems integration**



**Autonomous systems and artificial intelligence**



**Underwater technology**



**Materials technology specially developed or refined for military use**



**Lifecycle support for military systems**

The technology areas identified here serve as a prioritisation mechanism for R&D activities, decisions relating to procurement and industrial cooperation commitments as well as for defining Norway's participation in international defence materiel cooperation and Norway's cooperation with other countries' authorities and industries. These prioritised areas of expertise have remained largely unchanged for many years, and as a result much of the Norwegian defence industry's key production and competitive advantage can be found in precisely these areas. As stated in the Long-term Defence Plan (Prop. 87 S (2023–2024)), the list of priority technology areas may be revised. This will be considered in connection with the planned update of Norway's national defence industrial strategy.



## 2.2 What is needed to increase production capacity?



To be effective, the relevant policy instruments and measures must be coordinated across sectors.

In the view of the Government, there are compelling reasons relating to security and defence policy for increasing production capacity in the Norwegian defence industry. Between 2022 and 2024 the authorities and the industry took decisions and implemented measures that will more than double production by Norwegian companies of explosives, propulsion systems and long-range missiles over the next two to three years. The companies report that current demand for these products is several times greater than can be accommodated under the planned production increases. Investments in the Norwegian Armed Forces under the Long-term Defence Plan are further driving national demand. The rise in international demand is also helping to strengthen the Norwegian defence industry.

The Government maintains an ongoing dialogue with the Norwegian defence industry. According to defence suppliers, inadequate access to capital, regulatory challenges, value-chain bottlenecks and a lack of trained personnel pose the greatest obstacles to scaling up production capacity. This is a multifaceted industry, however, so there is a need for customised

solutions tailored to the individual companies. At the same time, the heightened demand for production inputs makes it imperative to begin scaling up capacity as rapidly as possible. To be effective, the relevant policy instruments and measures must be coordinated across sectors. The multinational nature of value chains makes it difficult to boost production using national measures alone, and this roadmap therefore identifies both international and national tools for expanding production capacity.

Norway is well positioned not only to continue scaling up its production of explosives, missiles, air defence systems, but also to increase production of potentially groundbreaking technology as well as artillery ammunition and other products. At the same time, there are some Norwegian defence companies that supply components that are not readily available otherwise on the market. The crucial importance both of the specialised expertise required for the production of these products and the specialised facilities and licences involved mean that the Norwegian defence industry has a competitive advantage and in some cases status as sole supplier. In this context it is

important to prevent, as far as possible, Norwegian production capacity from becoming a bottleneck. To achieve this the Government will implement a range of coordinated measures to support and sustain increased production capacity. This will require the introduction of new policy instruments and measures and improvement of those that are already in place.

Insufficient access to capital is one of the challenges identified by various defence companies, but the companies report differing needs. The problem for some is that the commercial basis for investment is inadequate. Others have a need for early-stage capital in the form of R&D funding, subordinated loans or advance payments in connection with procurement by the Armed Forces. For certain small and medium-sized technology companies, it is difficult to acquire the capital required both to carry out R&D activities and to industrialise the products or components they have developed.

Some companies also point to regulatory obstacles that prevent them from rapidly scaling up production capacity. The regulatory issues that pose the greatest

challenges vary from company to company and from product to product. Some companies report a lack of flexibility in how the authorities interpret applicable rules while others point to challenges associated with having to deal with multiple regulatory authorities. The latter is perhaps particularly problematic for small and medium-sized companies.

In the defence industry, just as in other industries, access to raw materials and components from international value chains is one of the factors limiting expansion of production capacity. Inadequate access to inputs from international value chains is a problem the companies have little control over. It may be difficult to obtain certain components and raw materials used in weapons systems and ammunition, such as explosives, semiconductors, special surface treatments and electronics. Various companies also report a shortage of, and long delivery times for, production equipment. The production of modern, advanced defence materiel requires inputs from multiple countries. The Norwegian defence industry's value chains are closely intertwined with those of suppliers and customers in Europe and the US, for

example. The value chains that Norwegian defence production is part of are vulnerable, and in some cases Norwegian defence production is essential to Allied production of key defence materiel.

Most of the companies also report a long-term need for better access to skills and qualified labour. In their dialogue with the Ministry of Defence, some parts of the industry have pointed in particular to the need for access to highly qualified personnel with expertise in science, technology, engineering and mathematics who are eligible to receive security clearance. While the need for such personnel is not unique to defence industry, it could be a limiting factor for expanding production in the long term. There will be a need to recruit many people rapidly in certain housing and labour market regions.

The Norwegian Defence and Security Industries Association (FSi) estimates that about 80 % of products and services produced by the Norwegian

defence industry go to customers outside Norway. The remainder are provided to the Norwegian Armed Forces or are part of transactions between Norwegian producers. Norwegian defence companies are therefore dependent on long-term, predictable contracts with customers both in Norway and in Allied countries.

In order to meet Norway's own needs for military equipment and components, it is crucial that production capacity is expanded among major suppliers to the Norwegian Armed Forces, whether they are located in Norway or another country. The Armed Forces will make active use of its procurement power to stimulate increased production capacity. However, there is also a clear expectation within NATO and between Allies that each country is responsible for expanding its national industrial base to meet the needs of Ukraine and the Alliance. This was a key point in the declaration issued at the NATO Washington Summit on 10 July 2024.

Norway is well positioned not only to continue scaling up its production of explosives, missiles, air defence systems, but also to increase production of potentially groundbreaking technology as well as artillery ammunition and other products.



## 2.3 Priority measures



Some of the products manufactured by the Norwegian defence industry are either critical weapons systems in their own right or key components of other important Western weapons systems.

Some of the products manufactured by the Norwegian defence industry are either critical weapons systems in their own right or key components of other important Western weapons systems. The most prominent examples of the former are the NASAMS air defence system and the Naval Strike Missile/Joint Strike Missile (NSM/JSM), which are produced by Kongsberg Defence & Aerospace (KDA). Examples of the latter are rocket motors produced by Nammo and military high explosives produced by Chemring Nobel. These key Norwegian production lines form an integral part of vital international value chains for defence materiel.

The NASAMS air defence system is the most advanced complete weapons system produced by the Norwegian defence industry. The US company Raytheon produces missiles and radars for the system while KDA produces fire distribution centres and canister launchers. KDA is a systems integrator and primarily

assembles components produced by its subcontractors. KDA also produces NOMADS (the National Manoeuvre Air Defence System), a key element in the Norwegian Army's air defence capabilities. The Norwegian Armed Forces are already using these systems, and the new Long-term Defence Plan calls for stocks of both systems to be increased significantly. Strengthening Norwegian air defence will provide major benefits to Norway as a whole. The conceptual decision-making process for Norwegian air defence has incorporated both the NASAMS and the NOMADS systems, and stocks will now be increased. Steps will be taken to assess how to exploit the opportunities available in state and defence-sector project models to accelerate the procurement processes for these air defence systems as much as possible.

High explosives are essential in the production of most modern weapons systems and ammunition types. The traditional high explosive TNT is still in

use. In addition, modern explosives such as HMX, RDX and NTO, which have higher explosive power and a number of other advantages, are being used. Chemring Nobel is one of two major European producers of HMX, RDX and NTO. European production of high explosives, especially HMX, falls far short of current needs. Production capacity at Chemring Nobel is set to more than double in the next two to three years with the help of support from the EU and the Norwegian authorities and financing provided by the company itself. Even so, there will be a much larger need that will remain difficult to meet due to the highly specialised expertise and production facilities required, particularly in relation to HMX.

The propulsion system is a crucial component of both air defence missiles and missiles designed for use against land and sea targets. In Russia's war against Ukraine, the extensive use of drones has led to a dramatic increase in the prevalence of air

attacks against military forces, civilian infrastructure and populations. This is the kind of attack that all countries will have to defend themselves against in future conflicts. Nammo supplies rocket motors for many of the critical air defence missiles manufactured in Europe and the US. Support from the EU and the Norwegian authorities together with financing from Nammo itself will enable the company to expand its rocket motor production capacity by about 150 % by 2027. Given the demand for rocket motors, however, it is likely that this increase will be insufficient and that production will have to be scaled up further. The Government will therefore consider additional measures to support further expansion of Nammo's rocket motor production capacity.

## FACTS

### The Norwegian defence industry

The Norwegian defence industry is a multifaceted industrial sector made up of companies of varying sizes with differing forms of production. It is therefore useful to classify the companies by production category. Together, these categories represent essential value chains in the manufacture of defence materiel.

The large defence companies, which develop and produce complete weapons systems, are classified as system suppliers. KDA, which has the expertise and capacity to develop and produce complete air defence and missile systems, communications systems, maritime command and control systems and space-based systems, is the only defence company in the Norwegian defence industry found in this category.

The next category comprises companies that develop or produce advanced products such as ammunition, shoulder-fired weapons, high explosives, sensors, etc. These companies may have the ability and capacity to develop and produce complete subsystems. They specialise in producing solutions for military use but also produce solutions for civilian purposes. Nammo and Chemring Nobel are examples of such companies.



In the third category, the distinction between civilian and military technology and products is blurred. Typically, companies in this category supply, for example, electronics, engineering services and metals processing, or carry out simple assembly tasks and 3D printing. These companies generally deliver to the civilian market as well as the defence industry. They are usually subcontractors to system suppliers and companies that manufacture advanced systems and products. The electronics producer Kitron is an example.

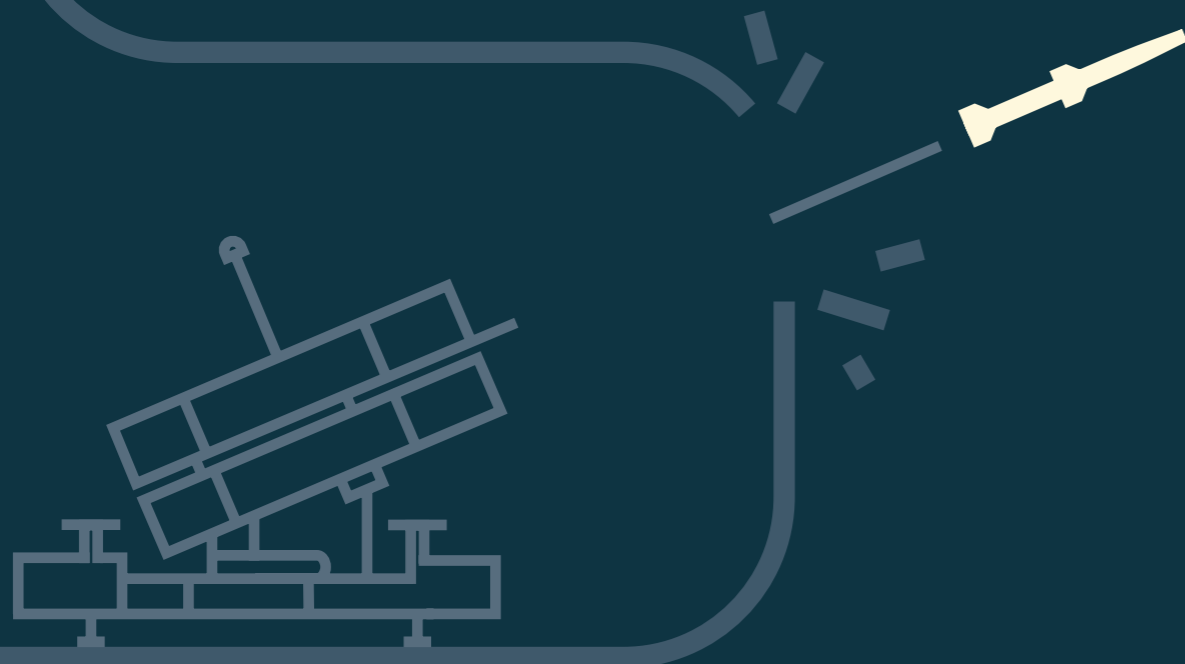
In addition, there are civilian industries and service providers that do not provide products and/or services exclusively designated for military purposes, but nonetheless play a crucial role in the development and production of defence materiel. Examples include providers of electronic components and other items not specifically developed for military use, such as cables, raw materials, metals, energy and logistics.

Much of the technology developed in civilian industry is dual-use and may also have direct military applications. The defence industry is comprised of companies that develop, produce and support equipment and systems designed for military purposes. Suppliers of dual-use technologies and products may also be defined as part of the defence industry when their products are used in products or system solutions developed for military use. Suppliers of dual-use technology and products that are not modified for military use and that have the same civilian and military applications – such as standard ICT equipment, components and software as well as civilian vehicles, tools, generators and construction machinery – are not classified as part of the defence industry.



# 03

## Priority focus areas



### 3.1 Procurement of defence materiel

Public procurement processes are time-consuming. On average, it takes a minimum of four to five years from the time a project is initiated to the signing of a contract. Payments and deliveries do not begin until after this. To address Norwegian, Allied and Ukrainian needs for more rapid access to defence materiel, the Government will work to accelerate procurement processes for defence-related products. In light of the changed security situation in Europe, it is important to take advantage of the flexibility provided in the procurement rules that apply to acquisition of defence materiel.

Under the rules, it is possible to simplify and adapt procurement processes in order to promote more rapid implementation. Before time-consuming reviews are initiated, the need and grounds for potential simplification and adaptation in the procurement processes are to be assessed. The advantages of an accelerated process must be weighed against the risk of unsound investment. In most major investment decisions, the projects are generally quality assured by external experts. This is an important step that provides the Government with an independent assessment, thus further strengthening the basis for its decision-making. For projects where it is clear there is only one option, there may be grounds for an exemption from the requirement to carry out preliminary project assessments or quality assurance

of choice of concept. Such exemptions have been granted previously, for example, in connection with major upgrades of existing infrastructure and procurement to replace donated military equipment.

To expedite the implementation of procurement processes in the defence sector, the Storting has set a higher threshold for procurements requiring the Storting's approval. The threshold for large-scale defence materiel projects has now been raised from NOK 500 million to NOK 1 billion. The aim is to ensure more effective implementation of priority measures in order to rapidly strengthen national defence capability. International defence materiel cooperation on key weapons systems such as missile and air defence systems can help to increase production capacity in Norwegian industry. Cooperation on procurement projects can give rise to a need for larger production volumes and thus lead to expanded production capacity. International industrial cooperation agreements improve market access for Norwegian suppliers, and the requirement to enter into contracts with Norwegian suppliers helps to ensure that some of the outlay for procurement is returned to Norway. Such agreements are targeted towards the priority technology areas set out in Norway's national defence industrial strategy. The Government uses industrial cooperation agreements to maintain and strengthen capacity in the Norwegian defence industry.



In light of the changed security situation in Europe, it is important to take advantage of the flexibility provided in the procurement rules that apply to acquisition of defence materiel.

Experience shows that defence materiel and components developed and produced in Norway make up roughly a third of the procurements delivered to the Norwegian Armed Forces. An increase in orders from the Armed Forces can create more predictable parameters and yield returns that can also be invested in expanding profitable production capacity. In connection with procurement of defence materiel from foreign suppliers, the Government assesses the need to enter into industrial cooperation agreements in accordance with established practice on an ongoing basis.

In line with its political platform, the Government will make use of the opportunities available to Norway under the EEA Agreement, including in the field of defence procurement, where the exemption provisions in place allow for direct procurement of defence materiel and services. The Government will use the exemptions available under the EEA Agreement in order to ensure national security of supply and

preparedness in cases where this is necessary to protect essential national security interests. This may entail direct procurement from national suppliers or a requirement that industrial cooperation agreements with foreign suppliers must be signed. The Ministry of Defence is in the process of revising the current defence sector procurement rules in order to further improve procurement processes. Under the existing rules, there are various mechanisms, for example relating to sanctions provisions and advance payments, that make it possible to impose less stringent requirements on suppliers in connection with contracts. The Ministry of Defence will also begin drafting a new act relating to procurements in the defence and security sectors. The new act will be adapted to the changed security situation in Europe, including the need for accelerated procurement processes and stricter requirements regarding security of supply and preparedness. The Government will also continue to use the flexibility provided in the procurement rules to speed up procurement processes.

### → The Government will give priority to:

- Entering into a contract as soon as possible with KDA on delivery of Norwegian-produced air defence systems in line with the new Long-term Defence Plan (Ministry of Defence);
- Entering into a contract with Nammo as soon as possible on delivery of battle-decisive munitions as rapidly as possible in accordance with the new Long-term Defence Plan (Ministry of Defence);
- Making use of the opportunities available in state and defence-sector project models to accelerate progress in priority projects (Ministry of Defence, Ministry of Finance);
- Employing contract strategies and contract types in the defence sector that will promote a longer-term perspective and enhance predictability and flexibility, including making wider use of advance payments when this can facilitate expanded production capacity, encourage suppliers to give projects greater priority or expedite deliveries (Ministry of Defence);
- Utilising the fact that the threshold for large-scale defence materiel projects requiring the Storting's approval has now been raised from NOK 500 million to NOK 1 billion (Ministry of Defence);
- Making greater use of accelerated procurement processes in areas identified by the Government as key to expanding production capacity, particularly in connection with procurement of ground-breaking technologies (Ministry of Defence);
- Rapidly entering into long-term supply contracts, in line with current rules, for defence materiel defined in the new Long-term Defence Plan as essential for strengthening the Norwegian Armed Forces, and designing a payment profile that ensures rapid, stable deliveries of high-priority defence materiel (Ministry of Defence).

## 3.2 Access to capital and international cooperation



The Government has agreed to allow both direct sales of Norwegian defence materiel and transfer of Norwegian defence-related technology to Ukraine.

Increasing production capacity requires investments on the part of the companies. The question of how long the demand will remain high is one of the uncertainties that companies face. The financial risk associated with investments is closely linked to the developments in the security situation. Such uncertainty will prevent many companies from making investments that do not provide an adequate guarantee of profitability. Thus, investments of potential benefit to society may not be realised.

Some parts of the Norwegian defence industry have limited access to the capital they need to quickly scale up profitable production capacity. Here, the challenges will vary from company to company. The central government administration's most important means of supporting an expansion in production capacity is to enter into long-term, binding contracts with the industry. The new Long-term Defence Plan calls for an increase in allocations to the Norwegian Armed Forces of about NOK 632 billion over 12 years (at 2025 prices). A large proportion of this funding is

to be used for procurement of new defence materiel. Some of this new materiel will be provided by Norwegian companies, either as primary suppliers or as subcontractors.

Companies that produce defence-related products and services are also entitled to use Norwegian state industry-oriented funding instruments – including instruments under the export credit agency Export Finance Norway (Eksfin). Eksfin can finance both export transactions and investments in Norway that facilitate exports, for example investments in the production of goods for export. One such defence industry contract financed by Eksfin is the 2023 export contract between KDA and Poland on the sale of a coastal defence system valued at approximately NOK 16 billion.

Another option is for the state to issue guarantees for the construction of new production facilities for the purpose of increasing production capacity. This has been done previously in connection with the

procurement of combat aircraft, where the state issued a guarantee for the construction of a composites production facility for KDA. The guarantee served to reduce the investment risk for KDA related to the building of the plant.

The Government and Nammo are working together to expand production of rocket motor parts and artillery ammunition. By entering into a long-term agreement on guaranteed production capacity, the Government is making it possible for Nammo to establish new production sites and obtain new production equipment. The result is a significant increase in Nammo's capacity to produce artillery ammunition and rocket motors in the Nordic region.

- Russia's full-scale invasion of Ukraine has made it imperative for the Government to take rapid steps to ensure greater predictability for Nammo. In light of this, the Norwegian Armed Forces have signed an agreement with the company to provide NOK 1.95 billion for the production of artillery

ammunition to meet Norway's national needs. The procurement has an overall framework of approximately NOK 5.23 billion. The agreement has also enabled Nammo to free up its own investment funds, which it can then use to invest in its own production capacity.

The Government has agreed to allow both direct sales of Norwegian defence materiel and transfer of Norwegian defence-related technology to Ukraine. To support the Ukrainian defence industry, the Government has also provided funds to facilitate production of Norwegian artillery ammunition in Ukraine. These are among the steps the Government is taking to promote the development of the Ukrainian defence industry. Moving forward, the Government will consider providing funding to expand production capacity in Norwegian industry regardless of whether this takes place in Norway, Ukraine or Allied countries.

### → The Government will give priority to:

- Pursuing a dialogue with Chemring Nobel to explore opportunities for expanding production capacity for military explosives (Ministry of Trade, Industries and Fisheries, Ministry of Defence);
- Pursuing a dialogue with Nammo to explore opportunities for the company to expand production capacity for rocket motors beyond the framework that has already been decided (Ministry of Trade, Industries and Fisheries, Ministry of Defence);
- Assessing the need to provide capital to facilitate investments in profitable projects that further the achievement of state ownership objectives (Ministry of Trade, Industry and Fisheries);
- Consider the use of risk-reducing measures and any other measures relating to investments that are not likely to be commercially viable, but that will establish new capacity of importance for Norway (Ministry of Defence);
- Considering investment in expanded production capacity in connection with Norwegian production of critical defence materiel (Ministry of Defence);
- Seeking Norwegian participation in the EU's new European Defence Industry Programme (EDIP) (Ministry of Defence);
- Establishing an application-based scheme to fund expanded production capacity in the defence industry that is based on existing industry-oriented funding instruments, and that, when relevant, is aligned with potential Norwegian participation in EDIP (Ministry of Defence, Ministry of Trade, Industry and Fisheries);
- Assessing the need for measures to expand production capacity through the establishment of Norwegian defence industrial capacity in Allied countries and/or in Ukraine (Ministry of Trade, Industry and Fisheries, Ministry of Defence);
- Facilitating increased international defence materiel cooperation (Ministry of Defence);
- Working to encourage the Nordic Investment Bank (NIB) to finance defence-related projects (Ministry of Finance).

## FACTS

### International initiatives to increase production capacity



The EU has launched the Act in Support of Ammunition Production (ASAP) programme, which provides support to European defence companies to expand their production. Norway has contributed approximately NOK 190 million to the ASAP programme. This has led to an overall investment of roughly NOK 3 billion in Norwegian production capacity, with the EU, the Norwegian authorities and the industry itself all providing part of the funding. The Norwegian companies Chemring Nobel, Kongsberg Defence & Aerospace (KDA) and Nammo received ASAP grants for all six project proposals they submitted. The Norwegian ASAP projects more than double the capacity of the companies to deliver explosives, rocket motors, missiles and artillery ammunition.

The EU has also adopted the European Defence Industry Reinforcement Through Common Procedure Act (EDIRPA), a programme to increase coordination in procurements processes. NATO has launched a separate initiative, the Defence Production Action Plan (DPAP), to increase production capacity in the Alliance.

As a follow-up to ASAP and EDIRPA, the EU will establish a European Defence Industry Programme (EDIP). Both the EU and NATO initiatives are intended to scale up production capacity in order to support Ukraine as well as to enable the defence industry to meet the heightened Allied demand for defence materiel more rapidly.



## FACTS

# Industry-oriented funding instruments

The agencies that provide industry-oriented funding instruments employ a range of different schemes to increase access to capital, expertise and networks to promote technology development, innovation, business development and internationalisation. Companies in the defence industry are also eligible for support under these schemes. The schemes are administered by Innovation Norway, Export Finance Norway, Nysnø, Investinor, Siva, the Research Council of Norway and others.

### Research Council of Norway

The *Research Council of Norway* administers a number of different grant schemes designed to promote research activity in trade and industry. Support is available for projects that develop new technologies and solutions and that encourage competitiveness and greater value creation in Norwegian industries.

### Export Finance Norway (Eksfin)

*Export Finance Norway (Eksfin)* is a state enterprise that provides financial services to promote Norwegian exports. Eksfin can provide financing to buyers of Norwegian export products and services in the form of loans and guarantees. It also provides an array of services to Norwegian exporters. Eksfin helps Norwegian businesses to secure contracts abroad.

### Innovation Norway

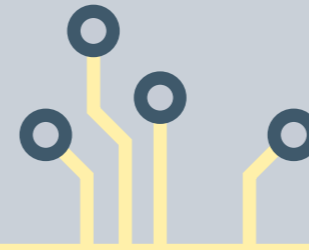
*Innovation Norway* administers lending schemes such as the market-based low-risk loan scheme, which has an annual lending framework of NOK 3.5 billion. The innovation loan scheme encompasses a number of higher-risk lending products, such as green growth loans that are designed to promote the implementation of more and larger-scale green projects across the country. The innovation loan scheme has an annual lending framework of up to NOK 3 billion.

### Siva

*Siva* develops, owns and finances national infrastructure for innovation and business development, including programmes and initiatives such as Business Gardens, Incubators and Catapult Centres. Through its wholly owned subsidiary *Siva Eiendom Holding AS*, Siva invests in sustainable industries, industrial real estate and innovation centres. Siva's property business is self-financing and operates on a commercial basis.

### InvestEU

Norway has signed an agreement with the EU to participate in the new *InvestEU* investment programme (2021–2027). Participation in InvestEU gives the Norwegian business sector access to financial instruments that provide a higher level of support than Norway's own funding instruments.



## 3.3 Regulatory changes

As in other industries, defence companies have to deal with a range of public bodies when seeking to modify production infrastructure or build new facilities in order to increase production capacity. This presents challenges in particular for small and medium-sized companies, and it is important to put in place effective measures targeted to their needs.

To make it easier to produce and sell Norwegian defence materiel for use in Ukraine, the Government has agreed to permit both direct sales to Ukraine and licensed production of Norwegian-developed defence materiel in Ukraine. This makes it possible for Norwegian suppliers to sell defence materiel directly to Ukraine as well as to produce materiel under Norwegian licences in Ukraine.

The Norwegian defence industry has reported that it is essential to ensure sufficient access to electricity in order to increase production capacity. Grid companies have an obligation to connect entities to the grid and may not under current rules differentiate between commercial actors seeking grid access. The Government has decided to introduce a set of maturity criteria designed to ensure that priority is

given to projects that are viable and implementable and to prevent immature projects from taking up grid capacity that could be used for more realistic projects. As set out in the Ministry of Energy's action plan for accelerating grid expansion and improving grid utilisation, essential societal functions and critical infrastructure do not have to queue for grid access in the event of insufficient capacity in the regional and transmission grids. Energy-intensive defence companies are well positioned to score well on the maturity criteria, for example by pointing to long-term supply contracts. It is crucial that entities seeking access to grid capacity contact the relevant grid company at an early stage to facilitate grid connection as rapidly as possible. The Government is also working to determine how much weight to give to defence and security considerations in the grid connection process.

Achieving rapid expansion of production capacity in the defence industry may require action on the part of the municipalities concerned, for instance to expand public services such as schools, health care, housing and infrastructure.

### → The Government will give priority to:

- Identifying any unnecessary regulatory obstacles to establishing new production capacity for priority products such as air defence systems, missiles and explosives, with a view to simplifying the process for the companies concerned (Ministry of Defence, Ministry of Trade, Industry and Fisheries, Ministry of Local Government and Regional Development, Ministry of Climate and Environment);
- Engaging in dialogue at an early stage with the industry and with relevant municipal, county and central government authorities to facilitate effective planning in connection with new industrial areas for the defence industry (Ministry of Defence, Ministry of Local Government and Regional Development);
- Entering into dialogue with relevant municipal and county authorities on the impacts of planned capacity expansions on land use and local communities, for example the need for labour, housing, services and infrastructure (Ministry of Defence);
- Working to determine how much weight to give to defence and security considerations, including the needs of the defence industry, when establishing priorities for grid access (Ministry of Energy, Ministry of Justice and Public Security, Ministry of Defence);
- Making use of the provisions set out in Article 123 of the EEA Agreement that allow for exemptions from the Agreement in cases where this is necessary to safeguard essential national security interests (Ministry of Defence).



## 3.4 Value chains

Investing in the Norwegian Armed Forces is tantamount to paying a higher insurance premium to safeguard our national security. However, there is no guarantee that the insurance provided by our efforts to strengthen Norway's defence capabilities will be enough to cover every eventuality. It is essential that the defence industry is also capable of adapting to new demands in the future, should it become necessary to expand stocks of defence materiel beyond the levels currently planned. The Government is investing in production capacity in the defence industry as part of the effort to strengthen Norway's overall preparedness.

Norwegian defence companies are dependent on subcontractors in their value chains to manufacture their products. These value chains are international and highly complex. It is the defence companies themselves that are primarily responsible for ensuring the viability of their value chains. The authorities for their part will take steps to enhance the resilience of value chains more generally.

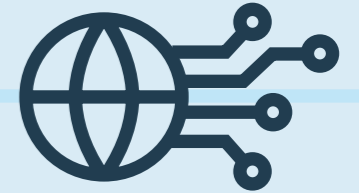
For three decades, the Norwegian defence industry has been dimensioned to meet the needs of peacetime and a stable security situation. As a result, Norway has not maintained the systems previously in place for mapping value chains of strategic importance to the defence industry.

The central government administration already makes advance purchases of components needed

in connection with major procurements. This model could be expanded and used to better meet the need for emergency production capacity. The procurement of long lead items is already an integral part of KDA's cooperation with US defence supplier Raytheon on NASAMS. The Storting has approved a project that allows KDA to invest in long lead items used to produce NASAMS. Under the contract KDA is able to purchase a certain number of these components before orders for NASAMS have been received. This is a way of ensuring that Norwegian procurements are given priority in the order queue and shortening delivery times. A similar approach could be applied for other products as well.

The Ministry of Trade, Industry and Fisheries has set up emergency preparedness councils in various areas including fuel and food security. These councils could serve as a model for establishing a similar emergency preparedness council for suppliers of defence materiel. The areas identified by the Government as priorities for increasing production capacity could define the focus of this council, which should encompass the full breadth of the defence industry.

In the new Long-term Defence Plan, the Government points to the need to define increased production capacity in the defence industry as a political goal for the sector. In line with this, the Government will work along multiple tracks to achieve the necessary level of production in Norway.



### → The Government will give priority to:

- Determining a national target for contingency stocks of ammunition and weapons systems, and assessing the need for and costs of establishing contingency stocks of raw materials and components used in defence materiel (Ministry of Defence);
- Identifying vulnerabilities in the value chains of large and small suppliers that are active in areas defined as priorities by the Government, such as air defence, missiles, propulsion systems and explosives (Ministry of Defence);
- Establishing an emergency preparedness council in the area of production of defence materiel (Ministry of Defence, Ministry of Trade, Industry and Fisheries);
- Strengthening cooperation and clarifying the division of responsibilities relating to production capacity between the Ministry of Trade, Industry and Fisheries and the Ministry of Defence (Ministry of Trade, Industry and Fisheries, Ministry of Defence);
- Facilitating national production of hexamine, a critical input factor in the production of military explosives (Ministry of Defence);
- Assessing and identifying needs related to securing the supply of input factors for national production of explosives (Ministry of Defence, Ministry of Trade, Industry and Fisheries);
- Assessing the need to facilitate certification of additional subcontractors to relevant producers of air defence systems, missiles, propulsion systems and explosives (Ministry of Defence, Ministry of Trade, Industry and Fisheries);
- Mapping access to input factors that are crucial to the production of priority products in the Norwegian defence industry (Ministry of Defence).

## 3.5 Industrialisation of cutting-edge technology



For small innovation companies in particular, public financial support for R&D helps to trigger private investment funding that is crucial for the industrialisation of new technology. The industrialisation of new technology is a key factor in scaling up production of defence materiel. The Government supports R&D activities and is seeking to pave the way for new innovation by establishing a national scheme for defence-oriented R&D at the Norwegian Defence Research Establishment (FFI). In addition, support is provided through FFI's innovation centre for the defence sector (ICE worx) and the Norwegian Armed Forces' own Concept Development & Experimentation (CD&E) scheme for testing and developing new defence materiel to meet the needs of the Armed Forces. A collaborative effort between Innovation Norway and the defence sector is being carried out in 2024–2025 with the aim of developing a common gateway into the defence sector for

civilian businesses. This will include information about funding opportunities and other measures of relevance to actors seeking to cooperate with the defence sector. The Ministry of Defence also offers support under a dedicated R&D support scheme.

NATO stakeholders are further able to participate in a number of multinational innovation activities such as the European Defence Fund (EDF), the NATO Innovation Fund and NATO's Defence Innovation Accelerator for the North Atlantic (DIANA). Funding for dual-use companies come in addition to this.

Strategies, weapons and support methods change quickly in modern warfare, and this in turn affects the list of items that need to be produced. Adaptability and rapid, targeted innovation are crucial in this context and must build on research, industrial cooperation and existing expertise. Optimising

production capacity also requires systematically applying lessons learned. In today's context, this includes experience gained from the war in Ukraine and the kinds of equipment being developed and used in Ukraine. The Government has launched an innovation project involving the authorities, FFI and the defence industry to support Ukrainian innovation and defence capability and transfer lessons learned. This project builds on the existing three-way collaboration in which industry, researchers and users work together to identify deficiencies to be addressed and measures that can be implemented. The project will also serve to strengthen FFI's collaborative efforts and networks, and will provide access to experience and knowledge gained from the ongoing war in Ukraine, which can be used to improve future Norwegian defence capabilities.

In April 2023, the Norwegian Defence Materiel Agency (FMA) launched an internet portal that provides information of use to the defence industry on the procurement process in the defence sector, as well as the legal and political frameworks, and industrial and materiel cooperation. The portal is also intended to be easily accessible for small and medium-sized businesses and other actors not traditionally considered part of the Norwegian defence industry. Work is now under way to further develop the webpage on defence materiel of relevance to Ukraine.

The transition from the R&D phase to industrial production represents a crucial step that poses many challenges. The measures presented in this section are designed specifically with this in mind.

### → The Government will give priority to:

- Targeting national defence-related R&D funding towards cutting-edge technologies such as quantum technology and artificial intelligence in order to increase national expertise and capacity (Ministry of Defence, Ministry of Trade, Industry and Fisheries);
- Channelling increased funding to facilitate fast industrialisation of the most promising new technologies, to be sent to Ukraine as products and rapidly made operational, under a project at the Norwegian Defence Research Establishment (FFI) (Ministry of Defence);
- Revising and updating Norway's national defence industrial strategy (Ministry of Defence);
- Assessing the need to establish a new industry-oriented funding scheme for innovation projects that finances the development and testing of technologies and new solutions of benefit to the Norwegian Armed Forces and the defence industry (Ministry of Trade, Industry and Fisheries, Ministry of Defence).
- Further developing the national R&D funding scheme for the defence sector (Ministry of Defence);
- Considering the use of government investment funds to invest in companies that develop and industrialise defence-related technologies (Ministry of Trade, Industry and Fisheries, Ministry of Defence);

For small innovation companies in particular, public financial support for R&D helps to trigger private investment funding that is crucial for the industrialisation of new technology.



## 3.6 Expertise



In order to increase production capacity, the defence industry will need to hire more people with expertise in existing technologies as well as recruit people with expertise in new technologies.

In order to increase production capacity, the defence industry will need to hire more people with expertise in existing technologies as well as recruit people with expertise in new technologies. A number of companies in the Norwegian defence industry have reported that they need more personnel. A wide range of personnel is needed, from skilled workers to research directors with doctoral degrees. However, the defence industry has to compete with employers in other sectors for candidates with qualifications in science, technology, engineering and mathematics.

The initial intense phase of scaling up defence production capacity will require industry-wide prioritisation and better utilisation of existing expertise. In the long term, production can be made more efficient through automation. As production processes become more efficient, individual employees will gain greater access to sensitive information, and the need for security clearance is expected to

increase significantly. In order to further develop the defence industry, there will also be a need to recruit more PhD-level employees who are eligible for security clearance.

To date, companies in the defence industry have been successful in recruiting and retaining personnel. Some of the larger suppliers of defence materiel cooperate extensively with educational institutions, including vocational colleges, research institutes and universities and university colleges.

The Government has provided incentives to strengthen higher vocational education as well as continuing and further education programmes in order to expand the pool of skilled workers. The Government plans to present a white paper on higher vocational education by the end of 2025 that will include measures to address challenges associated with the need for more skilled personnel. The Govern-

ment has also increased funding for new student places to at higher vocational education institutions, with a particular emphasis on technology subjects.

KDA and Nammo are affiliated with the higher vocational colleges Fagskolen in Viken and Fagskolen Innlandet, respectively. This collaboration has played a key role in providing education in fields critical to the defence industry and could be further expanded to increase the pool of skilled workers with higher vocational education available to KDA, Nammo and potentially other companies in the defence industry.

Universities and university colleges are responsible for adapting their study programme portfolios to meet student demand and labour market needs. In the white paper *Outlook on the skills needs in Norway* (Meld. St. 14 (2022–2023)) the Government states that these institutions are to give priority to health care,

IT and areas of importance to the green transition. The Ministry of Education and Research is following up these priorities in its dialogue with subordinate agencies. It is important that educational institutions maintain close contact with relevant employer and employee organisations – in this case, in the defence industry – to adapt their study programmes to meet labour market needs. The Norwegian Directorate for Higher Education and Skills provides information about labour market needs and offers advice to companies and organisations that are in need of labour.

Personnel sought by the defence industry have similar qualifications to those needed by the Norwegian Armed Forces and the rest of society. Any opportunities to make use of the skills and expertise of reservists and former Armed Forces personnel should be fully exploited.

### → The Government will give priority to:

- Ensuring that the Ministry of Defence is represented on the Skills Policy Council in order to align national competence-building measures more closely with the defence industry's need for skilled labour (Ministry of Defence, Ministry of Education and Research);
- Encouraging the defence industry to make use of former Norwegian Armed Forces personnel to meet the demand for skilled labour (Ministry of Defence, Ministry of Education and Research);
- Facilitating participation by relevant companies in defence-oriented accelerator activities, such as NATO's DIANA (Ministry of Defence);
- Entering into dialogue with county and municipal authorities, regional skills forums, and relevant companies to explore the steps needed to educate and recruit more personnel with the necessary expertise (Ministry of Defence);
- Determining how the Norwegian Directorate for Higher Education and Skills can help identify skills needs in the Norwegian Armed Forces and defence industry in the period up to 2036 (Ministry of Defence, Ministry of Education and Research).
- Exploring how to employ the Industrial PhD Scheme and the Public Sector PhD Scheme to address the specific needs of the Norwegian defence industry and the Norwegian Armed Forces (Ministry of Defence, Ministry of Education and Research, Ministry of Trade, Industry and Fisheries);



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