Future Acquisitions For the Norwegian Defence Sector 2021–2028

April 2021

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1. Introduction

The Norwegian Long Term Defence Plan outlines the continuous development of the Norwegian Defence Sector with respect to organisation, infrastructure (garrisons and bases), personnel (numbers, composition and qualifications) and materiel (existing equipment and new acquisitions). The Government sets out the course towards a more capable and sustainable defence force better able to face future challenges and the changing security environment. The Ministry of Defence (MoD) conducts the National Investment plan for the defence sector divided into different timeframes from four to twenty years ahead. The National Investment Plan is annually evaluated and updated based on changing requirements, resources and progress within on-going acquisitions. The Investment Plan forms the basis for all procurements in the short-term (4 years), the medium-term (8 years) and the long-term perspectives (20 years).

The Government acknowledge the defence industries contribution to the Armed Forces' capabilities. The defence industry provides the Armed Forces with support from the provision and maintenance of military equipment to delivery of a wide range of support services.

A central feature in the annual updating of the Investment Plan is the preparation and publication of an unclassified overview of long-term requirements and objectives. This publication does not examine each planned project in detail but creates opportunities for in-depth discussions between the Defence Sector and industry. Hence, industry can get an early insight into potential investments. The aim is to maintain highly skilled companies that individually or in cooperation with others, are able to support the needs of the Defence Sector. Having a proven and highly skilled industry is also fundamental for being able to compete in the international defence market, a market that in many ways remains closed. Infrastructure projects are only described in the text through the document. Details in the tables will be included in a later edition.

The investment projects are subject to decisions and approval by the MoD and the Parliament.

The projects listed in this publication have not yet been approved for implementation, as they have status as planned projects. It is necessary to emphasise that any project not yet formally approved may subsequently be terminated or changed without any further explanation or liability.

Details related to a small number of classified and sensitive projects are being withheld.

Projects that are approved will not be addressed in this publication, but are listed in the charts presented in chapter 4. Information about major projects in this category

can be found, among other places, on the home page of the Norwegian Defence Materiel Agency (NDMA).

This publication is only available as an electronic document on the Defence Sector's website http://www.regjeringen.no, and will not be published in paper format. An English version is published due to the statutory objectives and principles of procurement regulations, regarding competition and equal treatment.

2. National Defence Industry Strategy

The Norwegian Ministry of Defence submitted a White Paper on a new National Defence Industry Strategy in March 2021.[1] An English short-version of the strategy will be released in the summer of 2021.

An increasingly complex security environment with rapid technological advancements creates challenges that require actions to protect our national security and prosperity. The Norwegian defence industry is strategically important for Norway and is vital for our national security interests. In order to provide operational support and capabilities for the Norwegian Armed Forces, we need a viable and predictable defence industry. The Norwegian defence industry is one of world's leading producers of niche products, and one of the core elements of the new industrial strategy is to improve the Norwegian defence industry to become even more competitive globally.

In order to have a competitive industry the National Defence Industry Strategy has prioritized eight technological areas, which provides the industry with a clear direction for future developments and national needs. The strategy highlights the importance of innovation, technology, national and international cooperation, and addresses the most important elements to maintain a future-proof Norwegian defence industry.

The eight prioritized technological areas are as following:

1. Command and control systems, information, decision support and combat systems
2. Systems integration
3. Autonomous systems and artificial intelligence
4. Missile technology
5. Underwater technology
6. Ammunitions, propulsion technologies and explosives
7. Material technology developed for military use
8. Life cycle support for military land, air and sea systems

The strategy puts forward a holistic approach on how incentives are included in the acquisition process of defence equipment. The incentives are adjusted to each phase of the life cycle, from research and development to procurement and sustainment. The strong cooperation between the defence sector, defence industry and academia has been essential in achieving innovation and exploitation of new technology. The defence sector must cooperate with relevant industry from other sectors that are in lead of their respective technological areas. Cooperating with leading actors in

[1] Meld. St. 17 2020 – 2021, «Samarbeid for sikkerhet – Nasjonal forsvarsindustriell strategi for et høyteknologisk og fremtidsrettet forsvar»

academia and the civilian industry and engagement in collaborative development brings new technology that will help modernize the Norwegian Armed Forces.

The Ministry of Defence will facilitate and strengthen international cooperation to ensure the Armed Forces' access to critical capacities and enhance global market access for the Norwegian industry. Bilateral and international cooperation is a crucial measure for success. The strategy further highlights the need to develop and reinforce the cooperation with small- and medium size businesses, which provide relevant technology, services and products. A stronger international procurement and industrial cooperation strengthens Norway’s contribution to support national and international ability to deliver technology, systems and expertise in demand.

Norway has adopted the United Nations Sustainable Development Goals. The defence sector is also committed to implement goals relevant for the defence sector. Promotion of transparency, accountability, integrity and fighting corruption are strongly emphasised. Several mitigating actions are successfully across the social, economic and environmental pillars of sustainable development.

3. Investments in the Norwegian Defence Sector

The Norwegian Defence Sector consists of the Norwegian Ministry of Defence (MoD) and its subordinate bodies; the Norwegian Armed Forces, the Norwegian Defence Estates Agency, the Norwegian Defence Materiel Agency and the Norwegian Defence Research Establishment. All new investment projects within the Defence Sector are approved by the MoD, and subordinate bodies execute the planning and procurements according to existing procedures. An important tool is the PRINSIX project model that describes phases, decision points and roles/responsibilities. This project model ensures a uniform execution of procurements. The MoD has established several investment domains to oversee and provide guidance through all the phases of procurements.

Projects are typically conceived in two ways. One is the top-down approach, which to a large extent deals with the major weapon systems resulting from strategic planning processes. The second way is the bottom-up approach, which deals with smaller requirements typically initiated by the services and users. At an early stage, the proposal is known as a Project Idea (PI), which is assessed by the portfolio manager, who presents recommendations to the investment committee, led by the Chief of Defense (CHOD). If the investment committee finds the PI to have merit, it is subsequently recommended to the MoD for approval and to be part of the Investment Plan. This is the first formal decision point.

In a conceptual study, alternative concepts are assessed with respect to how capability requirements can be resolved in conceptually different ways. The study also assesses different procurement solutions, and recommends one of these for further development. The outcome of a conceptual study is submitted in a document referred to as a Conceptual Solution. This document forms the basis for the Central Guidance document (CGD) which further develops the recommended solution from the conceptual study. Based on the CGD a decision will be made at the end of this phase whether to move on with the project or not. External quality control of the conceptual study is done in accordance with guidelines from the Royal Norwegian Ministry of Finance for projects exceeding 1000 million NOK.

Once the Conceptual Solution is approved, the project moves into the next phase which is the detailed planning process leading up to the approval of the acquisition of the materiel in question. During this phase, the project is referred to as a Planned Project. Important outcomes of this planning phase are scope, procurement strategy, timelines and contractual provisions.

Major materiel acquisitions with a scope exceeding 500 million NOK require approval from the Parliament. For digital projects the limit is 300 million NOK, and for infrastructure projects 200 million NOK. Projects with a lower scope are approved by the MoD.

4. Main Focus Areas

4.1 Acquisitions during the Period 2021–2028

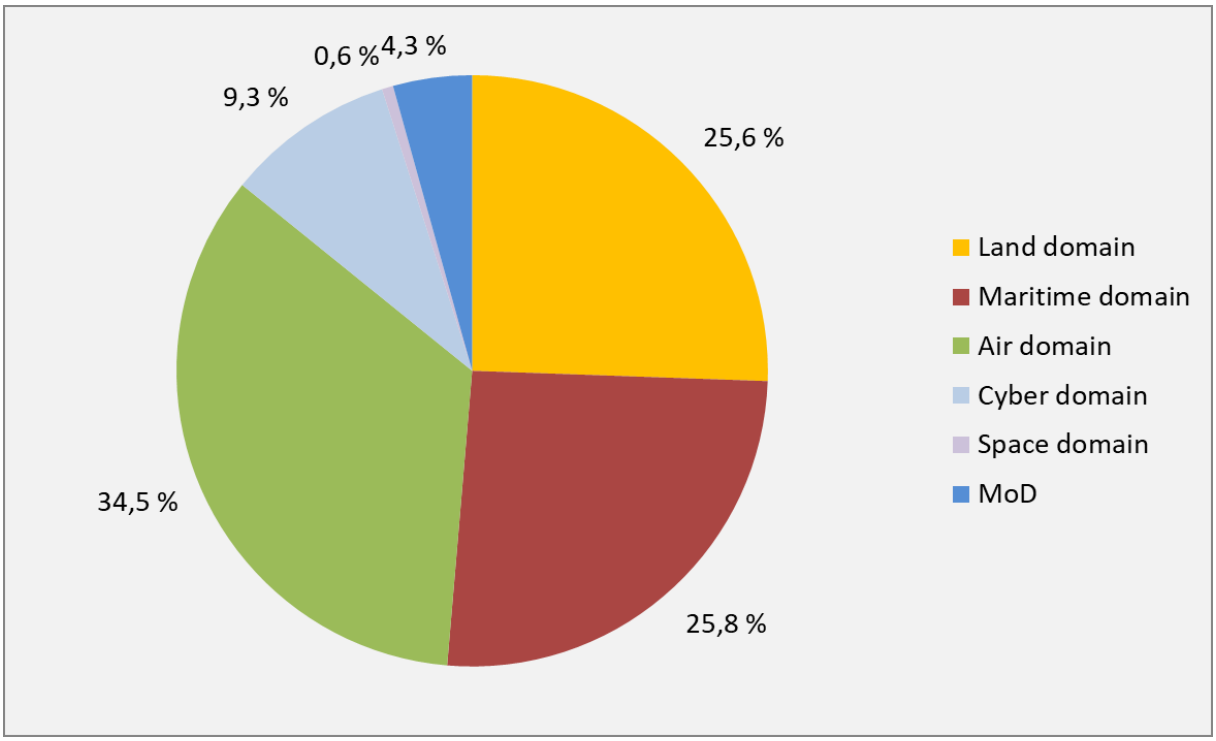

Figure 1- Acquisitions (% share) broken down by domain incl. MoD during the period 2021–2028. The MoD allocates funds for preliminary project work, R&D and other supporting activities.

The Investment Plan for the Defence Sector focus on ongoing projects to improve the Armed Forces` availability and endurance. The main purpose is to ensure that our capabilities are operational. Subsequently, vital and strategic capabilities that increase situational awareness and control are prioritized. The procurement of new F-35 fighter aircraft, submarines, Ground Based Air Defence, surveillance sensors, Finnmark Land Defence and Maritime Patrol Aircraft (MPA) are prioritized.

The Investment Plan also cover significant investments in intelligence, surveillance, survivability and combat power to strengthen Norway's and NATO's ability to prevent and deter use of force, and maintain situational awareness in the North Atlantic and the High North.

LAND DOMAIN

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Photo 1 / Norwegian Armed Forces

4.2 Land Domain

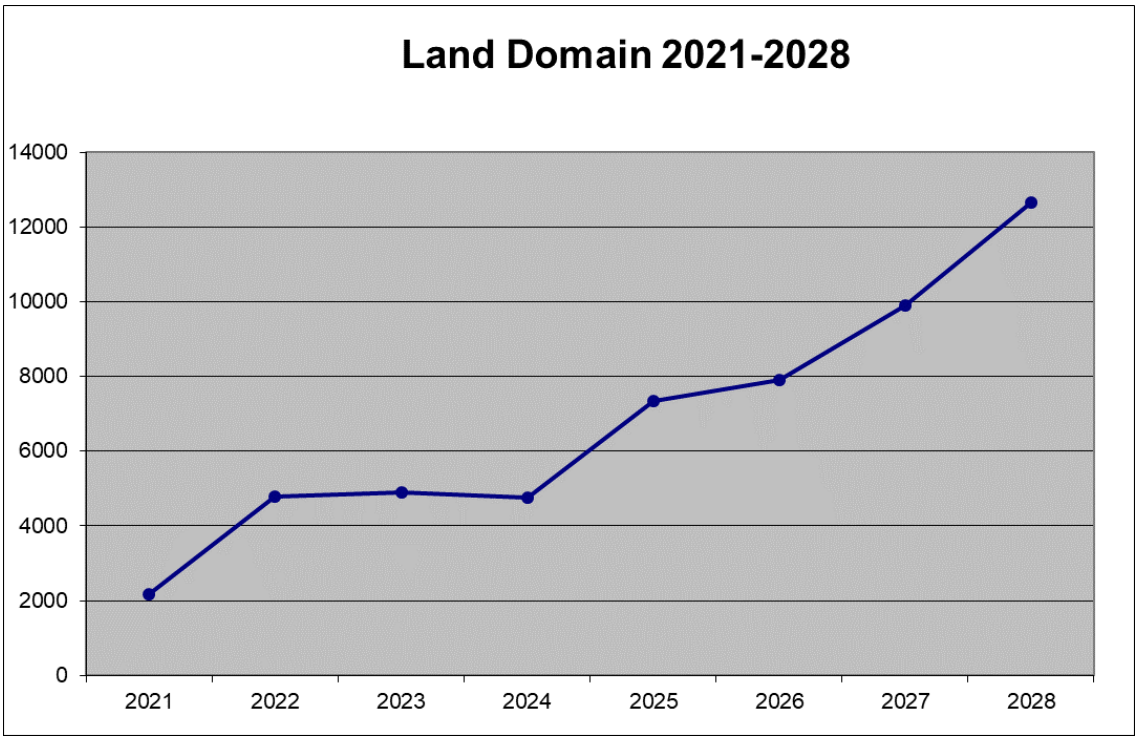

Figure 2- Annual investment plan (million NOK)

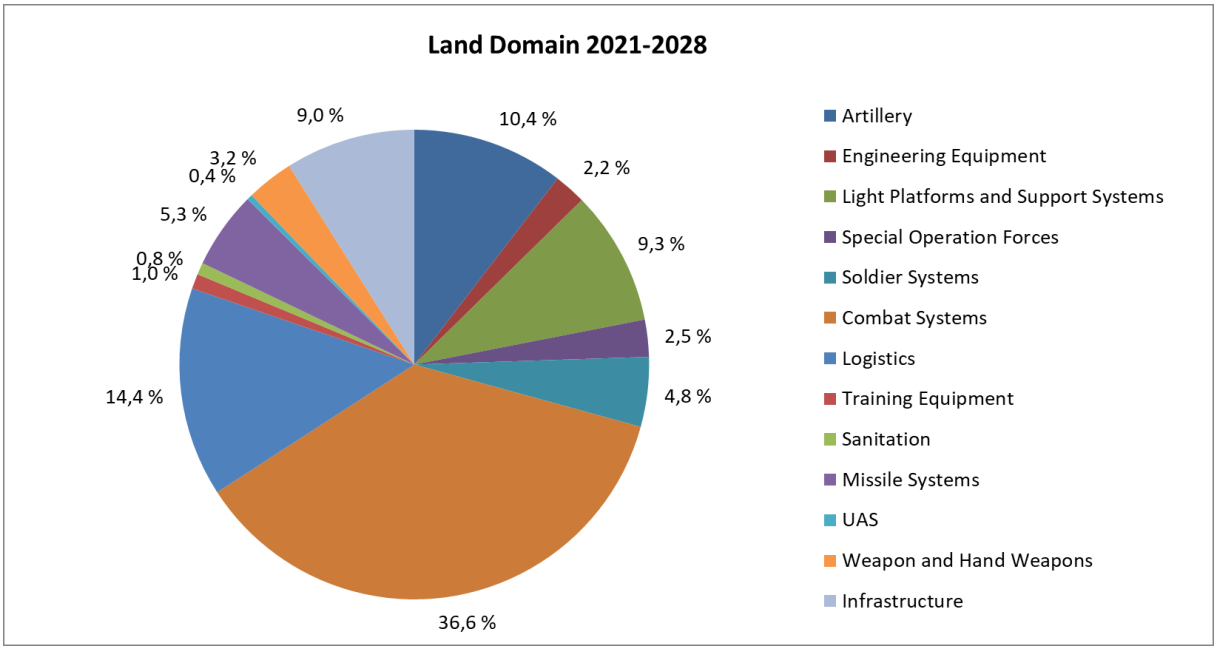

Figure 3- Acquisitions (% share) broken down by main category.

According to the Long Term Plan for the Armed Forces, large investments in modern materiel are planned for the Army. Various capabilities have been evaluated, each contributing to the necessary capacity of the land forces, and securing that available funds are used to provide the best possible operational capability. As with other acquisitions of key capabilities for the Armed Forces, the acquisitions of main systems for the Army will be time-consuming. The most important initiatives for the Army are to establish Finnmark Land Defence with adequate capabilities, strengthen the brigade system with further mechanization, and establish a satisfactory combat air defence.

A new 155 mm artillery system has been procured, while new artillery hunting radars are being procured. Acquisition of a new, modern tank capacity with associated infrastructure will start at the end of the short-term period. In order to maintain the tank capacity until new tanks are delivered from 2025, the service life of the existing Leopard 2 A4 will be extended. Additionally, it is planned to introduce a long-range precision fire system for the Army at the end of the period.

A number of support vehicles based on the Leopard and the M113 platforms are renewed to support the mechanized structure. Furthermore, command and control systems for the Army will be upgraded continuously throughout the period. All-terrain vehicles and trucks will be replaced, when existing vehicles reaches the end of their service life. Overall, this means that the main materiel in the Army, with the exception of a new tank capacity, has been significantly modernized or is in the process of being modernized. The strengthening of the Army in Finnmark is supported by the acquisition of Man-Portable Air-Defence System and combat engineer resources.

Modern equipment for the individual soldier, such as personal clothing and equipment, weapons, personal protection, optics and night capacity equipment will increase the ability to survive and conduct effective operations. Norwegian soldiers have modern and state-of-the-art equipment, and this will be maintained throughout the period with the supply of new equipment with associated necessary infrastructure such as barracks, offices, medical services, garrison security and garages.

Planned Projects

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	1043	Leopard 1 support vehicles	Service life extension and upgrade of existing Leopard 1 armoured recovery vehicle (ARV) and armoured engineer vehicle (AEV)	8 ARV and 8 AEV.	150-250 mill. kroner								
Material	Army	1095	Long range precision weapon system for the Army	Procurement of a long range weapon system with range exceeding existing army systems	To be defined.	1,5-2,5 bill. kroner								
Material	Special Forces	1105	SOF Long range weapon system	Procurement of a long range weapons system for SOF	Will not be disclosed in this publication	75-150 mill. kroner								
Material	Special Forces	1106	SOF Ammunition	Procurement of special ammunition for SOF	Will not be disclosed in this publication	250-400 mill. kroner								
Material	Special Forces	1514	SOF Land Mobility 2	Procurement of special vehicles for SOF	Will not be disclosed in this publication	200-350 mill. kroner								
Material	Special Forces	1529	SOF Equipment 2	Procurement of weapons of various calibres for use at different organisational levels	Will not be disclosed in this publication	150-250 mill. kroner								
Material	Special Forces	1535	SOF Land Mobility 3	Procurement of special vehicles for SOF	Will not be disclosed in this publication	350-500 mill. kroner								
Material	Special Forces	1543	SOF Land Systems Life extension of existing equipment	Life extension of existing equipment in SOF units	Will not be disclosed in this publication	125-175 mill. Kroner								
Material	Army	2504	Wheeled ambulances vehicles	Procurement of non-armoured wheeled ambulance vehicles	115 ea.	200-350 mill. kroner								
Material	Army	2512	Transportation materiel	Trucks and trailers, weapon stations, etc.	24 truck and trailers	250-450 mill. kroner								
Material	Army	2541	Supplementary procurements for various ROLE medical equipment	Technical upgrade of medical equipment procured earlier.	Upgrade ROLE 1- and ROLE 2-equipment mainly by use of options in existing contracts	150-250 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	2590	CBRN - equipment for the Armed Forces.	Improve the capability to detect hazardous substances.	Replace existing equipment in CBRN- and EOD-units.	75-150 mill. kroner								
Material	Army	2591	Command post equipment	Procure new command post equipment to ensure enhanced operational use, improved command and control, higher mobility etc.	Tactical mobile command post units, power supply, containers, tents, etc.	350-500 mill. kroner								
Material	Army	2592	Armoured recovery vehicles Class I	Procurement of armoured recovery vehicles Class I.	A number of new vehicles based on the M113 vehicle and life extension of existing equipment.	150-250 mill. kroner								
Material	Army	2593	Improved capability on Light Portable Excon	Upgrade and improve the capability of the Light Portable Excon (LPE) of the Tactical Training Centre at Camp Rena. An upgraded LPE will enable effective training also outside Camp Rena.	Antenna systems for Data Acquisition Network (DAN), facilities for LPE including infrastructure, power supply, communication network, etc.	50-100 mill. kroner								
Material	Army	2594	Electronic counter measures against RC IED	Vehicle mounted and personal ECM-jammers.	To be defined.	75-150 mill. kroner								
Material	Army	2596	New types of flat racks and special containers	Modernisation and procurement of flat racks and special containers.	Procurement of racks and containers for various logistics functions as petrol, oil, light vehicles etc.	75-125 mill. kroner								
Material	Army	2597	Workshop equipment for field maintenance	Upgrade and procurement of tools and workshop equipment for field maintenance in the Armed Forces.	To be defined.	150-300 mill. kroner								
Material	Army	4026	Sniper rifle 12.7mm	New sniper rifles	To be defined.	200-300 mill. kroner								
Material	Army	4042	New Types of Ammunition	The project is to keep abreast of the technological developments and evaluate new types of ammunition for use by the armed forces.	The scope of the project covers calibres up to 12.7 mm. However, other types of calibres like the M-72 Anti-tank Weapon may be included.	125-175 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	4043	Night vision equipment 2	The project is meant to increase the individual soldier's ability to operate in environment of darkness or very little light.	To be defined.	150-250 mill. kroner								
Material	Army	4046	Uniforms and personal protection for the soldier	Procurement of uniforms and personal protection for the soldier	To be defined.	250-500 mill. kroner								
Material	Army	5065	Area control	Procurement of a modern, state of the art deployable system for area control. The system must be based on NATO's concept Area Access Control (AAC).	To be defined.	450-650 mill. kroner								
Material	Army	5066	Training and simulation materiel	Training and simulation materiel for drivers of armoured vehicles. Equipment must have an open standard enabling new vehicle types to be implemented in the simulator.	Replacement of existing trainers.	400-600 mill. kroner								
Material	Army	5067	FAC material	Equipment for Forward Air Controllers	To be defined.	400-600 mill. kroner								
Material	Army	5090	Anti-armour weapons	Procurement of a new Anti-armour weapon system to replace an existing system	To be defined.	650-850 mill. kroner								
Material	Army	5091	Man-portable Air Defence System	The purpose of the project is to procure Man-Portable Air Defence for the Army.	To procure a number of MANPADs integrated with the Army Air Defence.	250-400 mill. kroner								
Material	Army	5092	Replacement of Mercedes Benz 240 GD all-terrain vehicle	Replace ageing Mercedes-Benz 240GD all-terrain vehicles procured during the 1980'ies.	Non-armoured and armoured vehicles with trailers for the Armed Forces. Number to be defined.	1,5-2,5 bill. kroner								
Material	Army	5096	Sensor systems for surveillance behind enemy lines	Sensor systems for use by units operating behind enemy lines.	To be defined.	500-700 mill. kroner								
Material	Army	5097	Replacement of Leguan	Replace existing Leguan bridges for the Leopard Bridge Layer armoured vehicle.	To be defined.	250-400 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	5098	Modernisation of Hydrema mine clearing equipment and procurement of a new MICLIC system.	Modernisation of Hydrema mechanical mine clearing equipment. Procurement of a new MICLIC system.	To be defined.	75-150 mill. kroner								
Material	Army	5230	Artillery ammunition (40/60/90 km)	Artillery ammunition for the 155 system	A balanced procurement taking into consideration economy, number of shells, fuses and propellant charges	2-3,5 bill. kroner								
Material	Army	5448	Transportation vehicle, M113 based	Procurement of M113 F4 armoured transportation vehicles. Alternatively reconstruction of existing inventory of vehicles.	Approx. 40 vehicles	200-350 mill. kroner								
Material	Army	5449	Ferry System	Procurement of materiel for crossing wet and dry gaps, bridges and ferries.	To be defined.	250-400 mill. kroner								
Material	Army	5456	Support vehicles M113 based	Procurement of M113 in various versions: Command and Control, Communications, Logistics, etc.	To be defined.	650-850 mill. kroner								
Material	Army	5805	Equipment for water and fuel handling	Procurement of equipment for supply of water and fuel.	To be defined.	200-350 mill. kroner								
Material	Army	7639	Strengthen the Army Air Defence	The purpose of the project is to strengthen the Army Air Defence.	To integrate MRAD and SHORAD and increase the number of weapon stations.	0,8-1,4 bill. kroner								
Material	Army	9360	Main Battle Tank capacity	Procurement of new Main Battle Tanks for the Army. Delivery is planned from 2025. Competition is ongoing between Krauss Maffei Wegman and Hyundai Rotem.	The Brigade is to be developed with four mechanised battalions. Number of MBTs to be defined.	10-15 bill. kroner								
Material	Army	MP105	Field reconnaissance	Procurement of materiel for battle field reconnaissance	To be defined.	400-600 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	MP106	Tactical support weapon system	Replacement of existing Javelin system	To be defined.	1,5-2,5 bill. kroner								
Material	Army	MP113	Light all-terrain vehicles summer/winter	Procurement of light all-terrain vehicles summer ("ATV") and winter (snow scooter)	To be defined.	150-250 mill. kroner								
Material	Army	MP117	Remote weapon stations	Procurement of remote weapon stations	To be defined.	250-400 mill. kroner								
Material	Army	MP402	Mine clearing equipment	Procurement of mine clearing equipment	To be defined.	150-250 mill. kroner								
Material	Joint	SUP LTP M-03	Resupply of military stocks	Resupply of various spare parts, components, ammunition etc.	To be defined.	7,5-10 bill. kroner								
Material	Army	SUP LTP M-05	Uniforms and personal protection for the soldier	Procurement of uniforms and personal protection for the soldier	To be defined.	25-75 mill. kroner								
Material	Joint	SUP LTP M-06	Spare parts	Procurement of spare parts for various equipment types	To be defined.	700-1200 mill. kroner								
Material	Army	SUP LTP M-07	Role 2 Basic Forward Hospitals	Procurement of materiel for field hospitals	To be defined.	20-40 mill. kroner								
Material	Joint	SUP LTP M-08	RSOM	Procurement of materiel for the Host Nation Support Battalion	To be defined.	75-150 mill. kroner								
Material	Army	SUP LTP M-10	ART K-10 (ammunition vehicle)	Procurement of additional ammunition resupply vehicles	To be defined.	400-600 mill. kroner								
Material	Army	SUP LTP M-11	ART K-9 (artillery)	Procurement of additional artillery pieces K9	To be defined.	175-350 mill. kroner								
Material	Army	SUP LTP M-12	Artillery hunting radar	Procurement of additional artillery hunting radars	To be defined.	400-600 mill. kroner								
Material	Army	SUP LTP M-13	ECM radars M113F4	Procurement of new electronic countermeasures radars	To be defined.	200-400 mill. kroner								
Material	Army	SUP LTP M-14	CV-9030	Procurement of additional CV90 for the mechanised battalions	To be defined.	2-3,5 bill. kroner								
Material	Army	SUP LTP M-15	Leopard support vehicles (ARV, AEV, ABL, ABV)	Procurement of additional Leopard support vehicles	To be defined.	1-2 bill. kroner								
Material	Army	SUP LTP M-16	Light recovery vehicle, M113	Procurement of light recovery vehicles based on the M113 platform	To be defined.	500-100 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Army	SUP LTP M-18	M113 fire control vehicle	Procurement of fire control vehicles based on the M113	To be defined.	25-50 mill. kroner								
Material	Army	SUP LTP M-19	M113F3 variants	Procurement of various M113 vehicles	To be defined	2-3 bill. kroner								
Material	Army	SUP LTP M-20	Transport vehicle M113F4	Procurement of M113 based transport vehicles	To be defined.	0,8-1,5 bill. kroner								
Material	Army	SUP LTP M-21	Misc. vehicles and weapons	Procurement of misc. vehicles and weapons	To be defined.	1,5-2,5 bill. kroner								

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Foto 1 Marius Vågenes Villanger / Sjøforsvaret

4.3 Maritime Domain

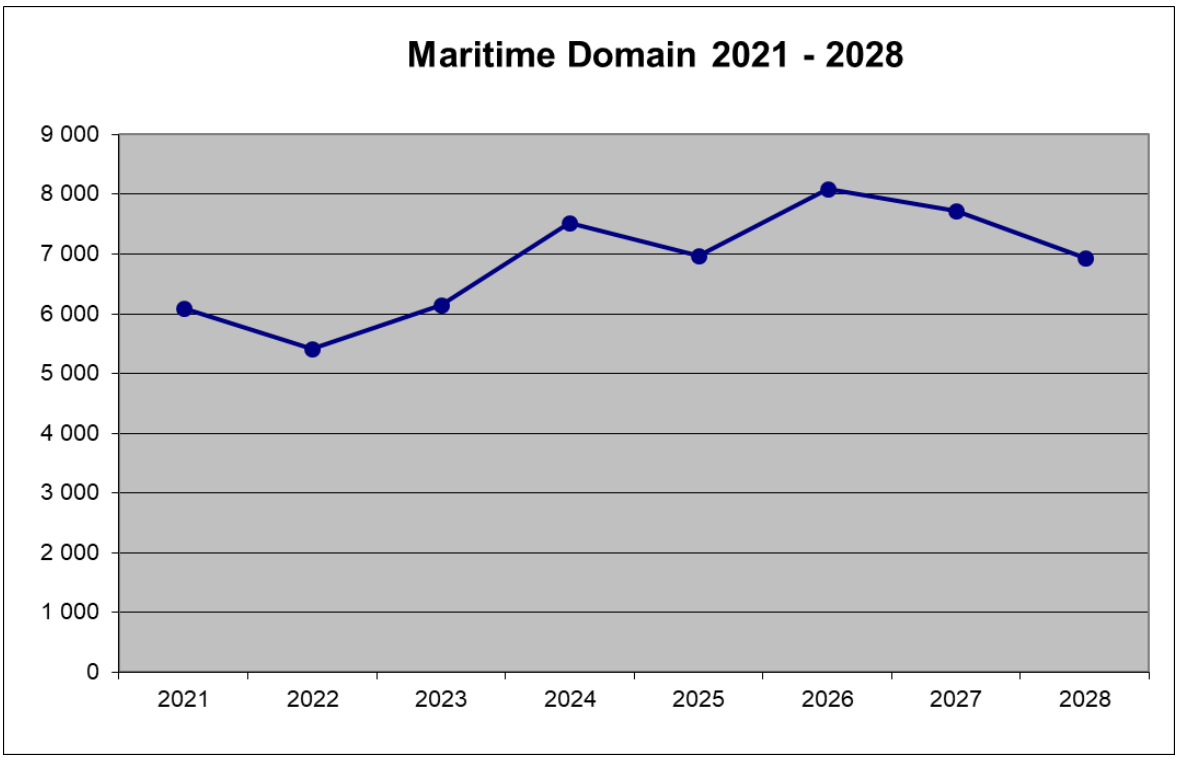

Figure 4 - Annual investment plan (million NOK)

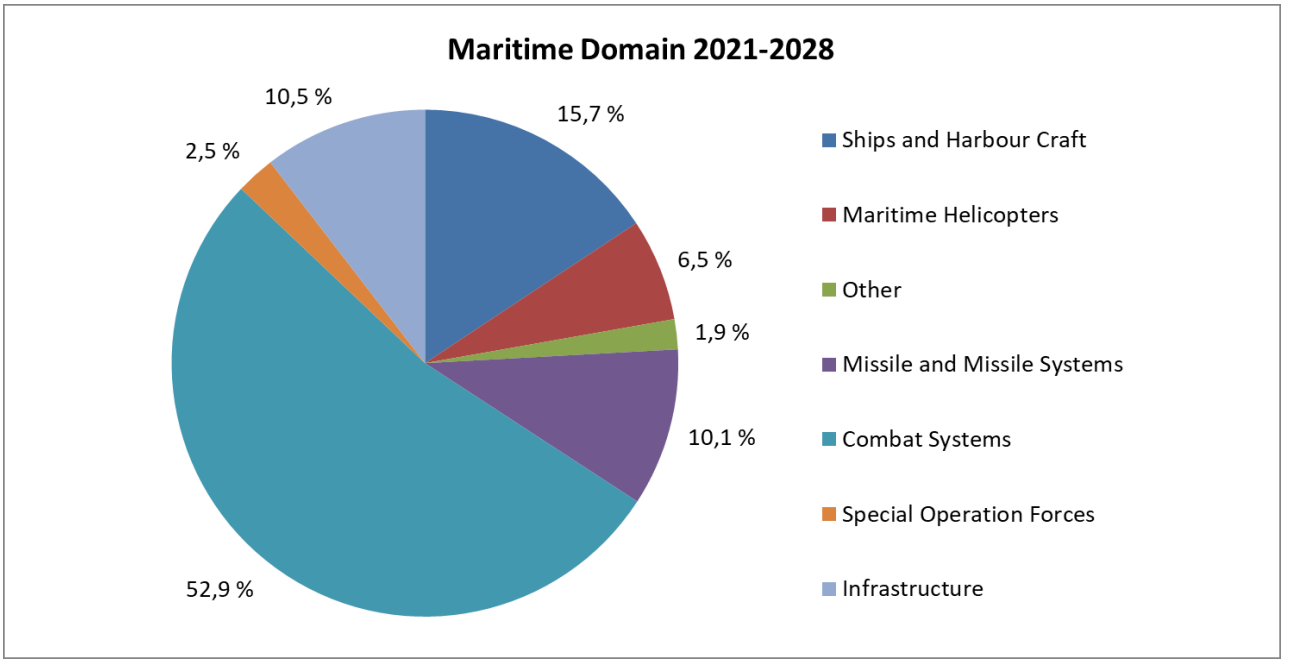

Figure 5- Acquisitions (% share) broken down by main category.

The main procurements for the naval forces will be the acquisition of new submarines including pier-, maintenance and test facilities. The first submarine is planned to be delivered in 2029, and the last one in 2035. In order to sustain the submarine capability, the existing Ula-class is subject to modernization in order to stay relevant in its remaining lifetime.

Coast guard vessels Svalbard and Harstad will receive necessary modernization and upgrades in order to extend remaining service time. The inshore vessels of the coastguard will be replaced in the middle of the medium-term period.

Towards the end of the medium-term period, the Fridtjof Nansen class frigates will undergo a technical update to ensure continuation of the vessels' operational capability. This work will includes a large number of systems on-board. Critical safety updates may be initiated earlier. Maritime helicopters will be updated (block 2 update) towards the end of the medium-term period.

A sufficient number of the Skjold-class corvettes will be continued until 2030, and will therefore undergo upgrades in the first part of the period.

A future maritime mine countermeasure capability will be established in the period, consisting of autonomous counter measure systems. As a part of this project two motherships for these systems will be procured. This system will replace existing minesweepers and -hunter vessels, which also will undergo a continuation programme to ensure a relevant capability until the new system is fully operational.

The Naval Strike Missile is an anti-ship missile produced by Kongsberg Defence & Aerospace, and represents the Navy's main weapon against surface vessels, planned to be replaced by a Future NSM from 2035, developed in cooperation with Germany.

The first project in a series of four related to upgrades and development of the Coastal Ranger capability will start early in the period. Activities will continue throughout the period. Special Forces capabilities will be upgraded and updated throughout the period.

Investments in necessary infrastructure to support vessels, maritime helicopters and personnel such as barracks, offices, port- and maintenance facilities will be carried out during the period.

A new naval surface structure will be analysed in due time before the plans for decommissioning the Skjold-class corvettes and Nansen-class frigates around 2030 are being executed.

Planned Projects

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Navy	1060	Maintain capacity and capability Skjold-class corvettes	Upgrade and update the Skjold-class corvettes in order to keep a sufficient number of vessels operational until 2030.	Upgrade and integration of basic platform systems to ensure a reliable and safe operation of the vessels.	300-450 mill. kroner								
Material	Navy	1083	Upgrade Skjold-class corvettes	Upgrade and update the Skjold-class corvettes in order to keep a sufficient number of vessels operational until 2030.	Upgrade and integration of command, control and information systems.	250-400 mill. kroner								
Material	Navy	1077	Re-Acquire NSM Block 1	Re-Acquire one ship load of NSM after the loss of HING	Re-Acquire 8 NSM missiles and 1 missile system administrator (MSA) due to the loss of HING	150-250 mill. kroner								
Material	Navy	1081	Future NSM	In cooperation with Germany develop a Future Naval Strike Missile, ready for delivery 2035	Through a common development, with Norwegian industry in lead, Germany and Norway will develop a Future Naval Strike Missile, planned development contract established by the end of 2023, and ready for delivery from 2035	3,5-6 bill. kroner								
Material	Navy	1082	NH90 Block 2 update	14 NH90 is the Norwegian maritime helicopter capability and will be serving as an integral part on both the frigates and the helicopter carrying coast guard vessels. In cooperation with other NH90 users, he 14 Norwegian NH90 helicopters will undergo et technical upgrade to meet future regulatory requirements and requirements for safe operations and cooperation with allies.	Upgrade of communications-, navigations- and sensor systems.	1,3-1,8 bill. kroner								
Material	Navy	1103	Extended interim solution Ula-class	Sustain a submarine capability with the existing Ula-class until new submarines are operational.	Necessary technical activities on an adequate number of hulls in order to keep the Ula-class relevant, until new submarines are operational.	1,5-2,5 bill. kroner								
Material	Special Forces	1528	SOF Equipment and force protection 3	Acquire equipment in order to sustain and develop special forces capabilities within their basis functions.	Replace organic capabilities and necessary force protection, in order to maintain national and international obligations SOF units are committed to.	100-200 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Special Forces	1536	SOF Naval mobility 3	Sustain, upgrade and replace maritime equipment in order to sustain and develop special forces capabilities within the maritime domain	Replace, update and upgrade of maritime SOF capabilities.	250-400 mill. kroner								
Material	Special Forces	1542	SOF Naval systems maintain capacity	Sustain, upgrade and replace maritime equipment in order to sustain and develop special forces capabilities within the maritime domain	Replace, update and upgrade of maritime SOF capabilities.	120-200 mill. kroner								
Material	Navy	6023	Continuation of NSM	Maintain the Nansen-class and Skjold-class ASUW-capability	Project scope is to conduct a main overhaul of the existing NSM inventory and a recommended supplementation of NSM to the Skjold-Class Corvettes	600-2000 mill. kroner								
Material	Navy	6096	Mid-life update (MLU) Nansen-class frigates	Nansen-class frigates represents a vital part of the Norwegian naval capability. The vessels are approaching a need of a mid-life update. The objective of the project is to identify and carry out necessary upgrades to ensure that the operational capability remains relevant.	Project scope is not yet detailed, but will include replacement of subsystems due to technical end life or sourcing issues (availability of spare parts, etc.) and upgrades necessary to upkeep operational capability as operational requirements evolves	8-10 bill. kroner								
Material	Navy	6359	Future Naval Mine Countermeasures system (NMCM)	Naval Mine Countermeasures (NMCM) is an essential part of a naval capability. RNoN current NMCM inventory is approaching technical end life and must be replaced. The objective of this project is then to develop and field an advanced NMCM capability in a timely manner and with capability meeting key future operational requirements as they develops.	Project scope is to develop, procure and field a new generation NMCM system with capabilities in line with key operational requirement. While a specific solution is not chosen, it is expected that the next generation Norwegian NMCM capability to an extent will be based on and utilize unmanned and autonomous systems. Further, the project will also include necessary infrastructure and support equipment in order to sustain the new capability in technical lifetime.	1,5-3 bill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Navy	6380	CRCDO Equipment upgrade 1	The purpose of this project is to upgrade the CRCDO equipment portfolio to ensure unit operational capability and to enable further development	Project scope is to procure a limited number of advanced handheld and small unit operated sensors, CIS equipment and material need for VBSS operations	300-450 mill. kroner								
Material	Navy	6381	CRCDO Fires	The purpose of this project is to replace CRCDO current Norwegian Shore Defence Hellfire System (NSDHS)	Project scope is to procure a necessary number of missiles, launcher- and fire control equipment to equip at least 4-6 missile groups within the CRCDO	300-450 mill. kroner								
Material	Navy	6395	Submarine signature measurement	Submarine capability is dependent on a firm grip of own signatures including in the electromagnetic area. To achieve this, signature measurements must conducted in regular intervals. Consequently, an efficient infrastructure for this is important.	Project scope is to upgrade existing signature measurement infrastructure.	15-30 mill. kroner								
Material	Navy	6608	Mid-life Update (MLU) NoCGV Svalbard	NoGCV Svalbard represents an important asset in the Norwegian Coast Guard. The vessel is in need of a mid-life update. The objective of the project is to identify and carry out necessary upgrades to ensure that the operational capability remains relevant.	Project scope is replacement of subsystems due to technical end life or sourcing issues (availability of spare parts, etc.) and upgrades necessary to upkeep operational capability as operational requirements evolves	175-350 mill. kroner								
Material	Navy	6618	Mid-life update (MLU) NoCGV Harstad	NoGCV Harstad represents an important asset in the Norwegian Coast Guard. The vessel is in need of a mid-life update. The objective of the project is to identify and carry out necessary upgrades to ensure that the operational capability remains relevant.	Project scope is not yet detailed, but will include replacement of subsystems due to technical end life or sourcing issues (availability of spare parts, etc.) and upgrades necessary to upkeep operational capability as operational requirements evolves	150-300 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Navy	6619	Replacement Coast Guard Patrol Crafts	The five vessels of the Nornen-class is an important part of the Norwegian Coast Guard capability. Nornen class is constructed with an integrated small patrol craft capability in order to increase operational tempo and increase reach. These patrol craft are reaching their technical end life and must be replaced in order to sustain Nornen class operational capability.	Project scope is to procure at least five Coast Guard Patrol Crafts meeting requirements to effectively operate as part of Nornen class CG vessels. Project will also include all necessary support equipment in order to sustain new crafts in technical lifetime	35-70 mill. kroner								
Material	Navy	6624	Continued inner coast guard capability after 2022	Purpose is to upgrade vessels for safe in order to ensure O&M after 2022.	Project scope is to undergo a technical update to ensure continuation of the vessels' operational capability.	250-500 mill. kroner								
Material	Navy	6692	Small craft integration Nansen-class frigates	Capability to conduct Maritime Interdiction Operations (MIO) is an inherent part of Nansen class capability. To ensure a key requirement is to carry and utilize small craft in an efficient and safe manner. Nansen class needs upgrading davits and cranes to provide this capability at a sufficient level	Project scope is to provide an updated, safe and efficient small craft capability on all five frigates of the Nansen class. This includes procurement and installation of new davit and crane systems including necessary hull modifications	100-200 mill. kroner								

AIR DOMAIN

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Photo 2 / Norwegian Armed Forces

4.4 Air Domain

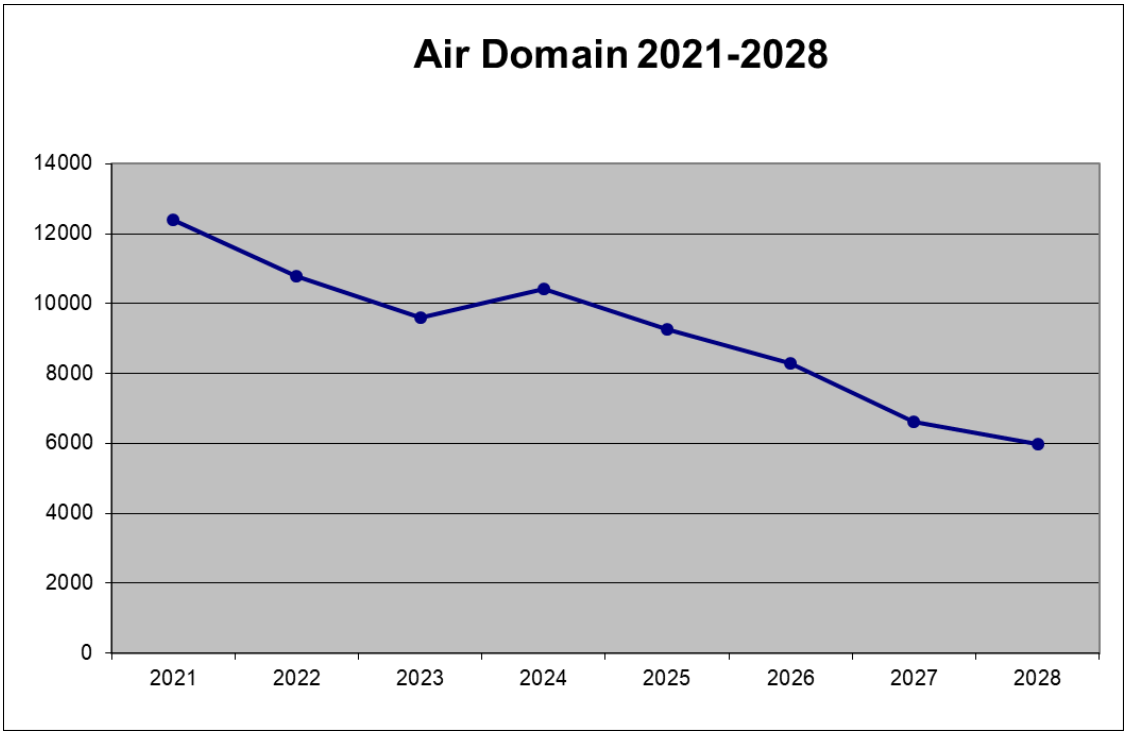

Figure 6 - Annual investment plan (million NOK)

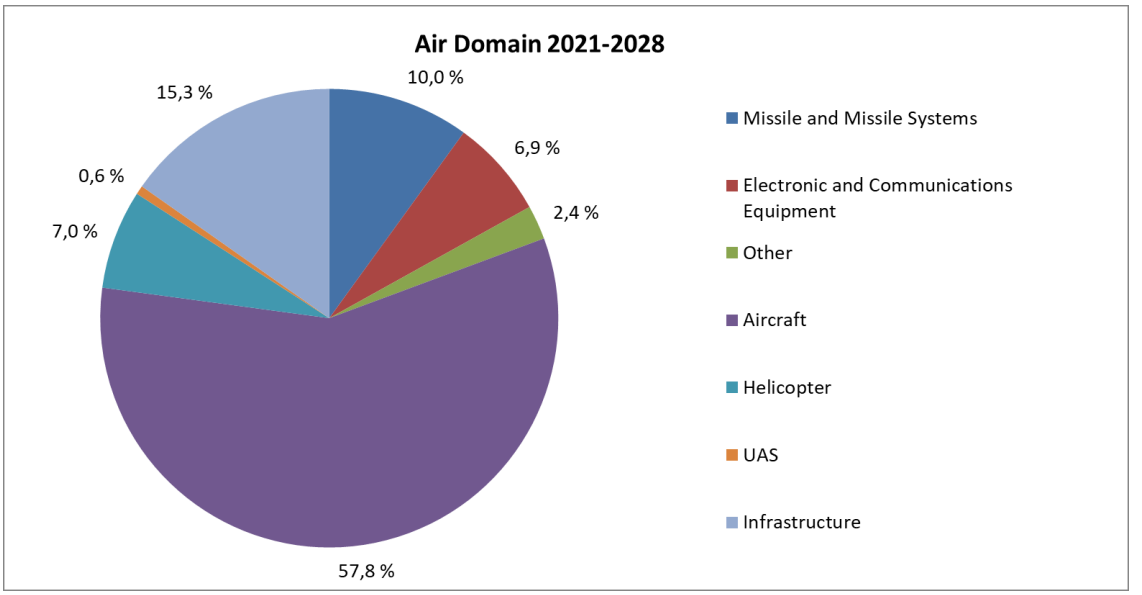

Figure 7- Acquisitions (% share) broken down by main category.

The new Long Term Defense Plan introduces measures to ensure the Norwegian Armed Forces will continue to strengthen their efforts in the air domain. The introduction of new weapon systems and the upgrade of existing systems will enhance the combat power in the long term.

The procurement of new aircraft systems including weapons and additional equipment will have priority for the Air Force during the years leading up to 2025. Extensive infrastructure are being established at Oerland and Evenes air bases, including logistic facilities, hangars, base defence and upgrade of operational structures. Upgrades of the F-35 aircraft will begin at the end of the period and beyond. P-8 Poseidon maritime patrol aircraft with associated logistics and maintenance facilities as well as infrastructure will replace the fleet of P-3 Orion. C-130J will be upgraded in the period. The Bell 412 transport helicopters are due to be replaced by a new helicopter capability better suited for the Special Forces, and to increase the transport capability for the Army.

To improve air defense capability, the NASAMS air defense system is currently being modernized to a digital solution and upgraded with IFF Mode 5 for both the Air Force and the Army, and it is planned to be upgraded with modern sensors. There are also plans to replacing the existing missile (AMRAAM AIM-120B) with a new medium-range missile with extended range. The upgrades will also enable NASAMS to exchange data with higher level of C2. Associated infrastructure will be upgraded and renewed. The implementation of the Army mobile air defense continues, and will be expanded. This will contribute to countering threats against bases, and protect allied reception areas and other vital infrastructure. In the long term, it will be assessed how long-range air defense system can be introduced.

The majority of the long-range air surveillance radars will be replaced with new sensors between 2025 and 2029. Other radars will be modernized, and replacement of IFF transponders will be prioritized early in the period.

There are major investments in personnel-related infrastructure and operational infrastructure at Oerland, Evenes and Rygge.

Planned projects

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Air Force	1107	New helicopter capability	The purpose of the project is to introduce new helicopter capability better suited for the Special Forces, and to increase the capacity for helicopter transport for the Army.	To procure a number of helicopters adapted to special operations and transport operations.	4,5-7,0 bill. kroner								
Material	Air Force	2080	Upgrade IFF to mode 5	The purpose of the project is to upgrade IFF equipment on the long-range air surveillance radars.	To procure IFF equipment upgraded to NATO standard Mode 5, including Mode S and ADS	100-175 mill. kroner								
Material	Air Force	2588	Air safety simulator	The purpose of the project is to replace the existing simulator for pilot sensory illusion during flying with a new simulator.	To procure new a sensory illusion simulator.	40-70 mill. kroner								
Material	Air Force	7167	Sindre II Life Extension	The purpose of the project is extend life of the equipment, in order to maintain the operational capability of long-range air surveillance.	To upgrade Sindre II in order to maintain capability.	0,8-1,4 bill. kroner								
Material	Air Force	7571	Surveillance Systems for the Base defence	The purpose of the project is to procure surveillance systems for the Base defence in order to improve the existing capacity.	To procure modern surveillance systems equipment.	15-30 mill. kroner								
Material	Air Force	7635	Upgrade EO-sensor in NASAMS II/III	The purpose of the project is to update EO sensors for NASAMS Air Defence System.	To procure updated EO sensors for NASAMS Air Defence System	75-150 mill. kroner								
Material	Air Force	7720	F-35 Upgrade	The purpose of the project is to increase the operational capability of the armed forces to perform offensive and defensive air operations. In order to achieve this goal upgrade of the F-35 Combat Fighter is needed.	Update/upgrade the F-35 Combat Fighter according to the vendors upgrade programme adjusted to national/NATO ambition level.	4,0-6,0 bill. kroner								
Material	Air Force	7820	MLU C-130J	The purpose of the project is to update and upgrade C-130J in order to maintain the operational capability.	To upgrade C-130J in line with the operational and technological development.	1,5-2,5 bill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Air Force	7821	Replacement MSAM	The purpose of the project is to increase the operational capability to protect vital assets and installations against modern air threats.	To procure a number of missiles with the right capability as a replacement for the current system.	2,0-4,0 bill. kroner								
Material	Air Force	SUP LTP M-26	Passive sensor systems for Air Surveillance	The purpose of the project is to procure passive sensors in support to air surveillance and electronic warfare.	To implement a nationwide network of passive sensors.	175-300 mill. kroner								
Material	Army	7637	UAV Tactical Level	The purpose of the project is to acquire a UAV capacity for use at the tactical level.	To procure UAVs with airborne sensor system and all-weather capacity.	275-450 mill. kroner								
Material	Army	7642	Counter UAS capability	The purpose of the project is to procure an initial CUAS capacity.	The procure CUAS system consisting of sensor, control station and effector, that can meet the threats posed by smaller unmanned aerial vehicles.	100-175 mill. kroner								
Material	Joint	7920	New control system for low-pressure chamber	The purpose of the project is to upgrade the control system for the low-pressure chamber to ensure continuation.	To procure a new control system, including computers, software, control electronics and operator station.	20-40 mill. kroner								

CYBER DOMAIN

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Photo 3 Cyber Defence

4.5 Cyber Domain

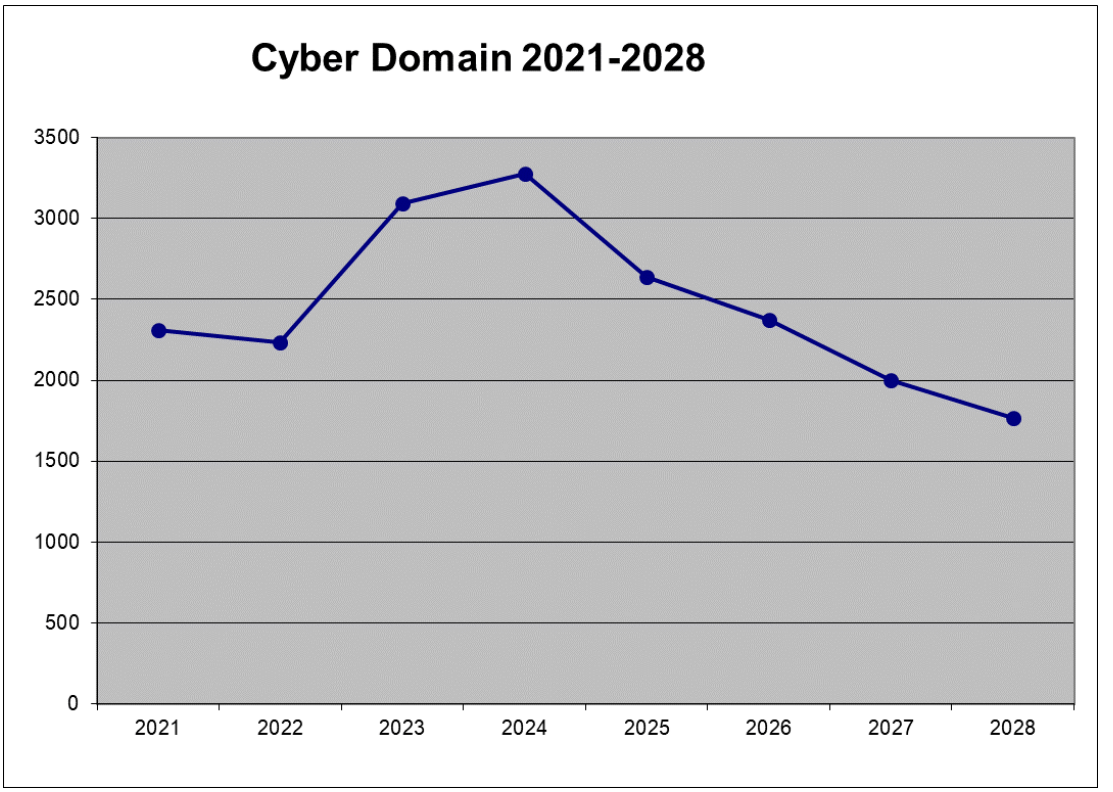


Figure 8 - Annual investment plan (million NOK)

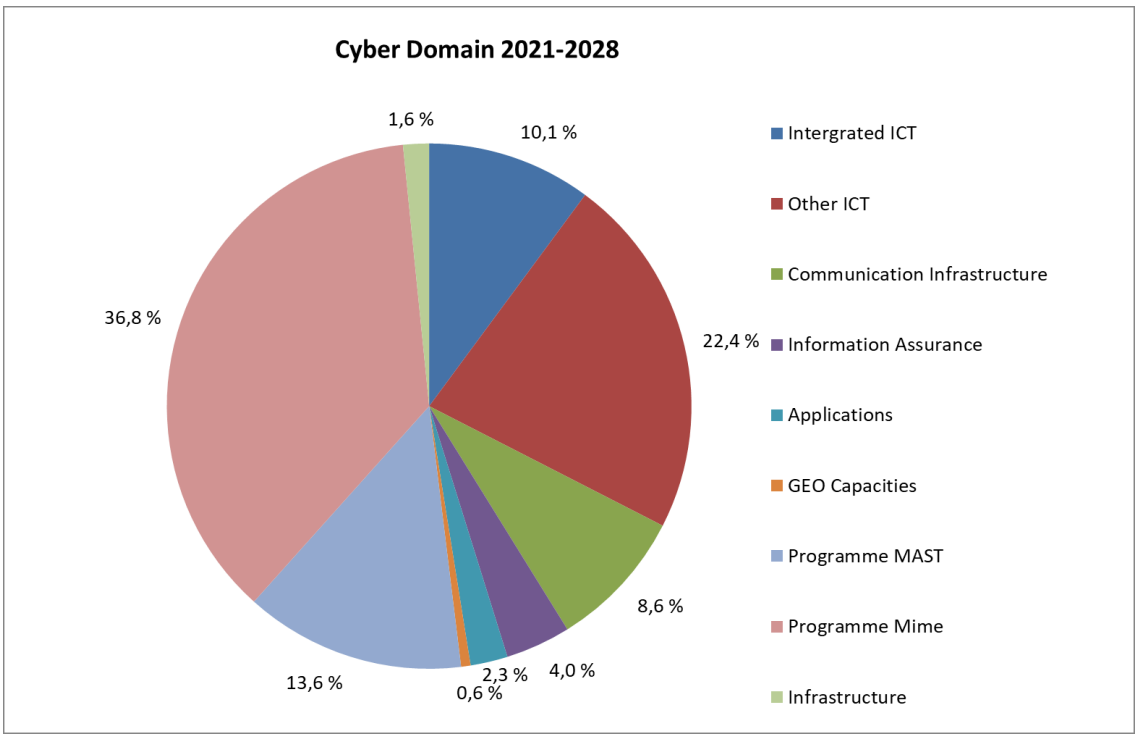


Figure 9- Acquisitions (% share) broken down by main category.

The Norwegian Armed Forces are dependent on the cyber domain to conduct operations and assigned tasks by possessing modern and updated ICT-solutions. Robust ICT-solutions, which effectively connects effectors, sensors and decision makers, is a decisive capability to provide for an effective military force with good operational ability. Modern and resilient ICT solutions further enables the Armed Forces to access a significant unrealised potential accessible in the Armed Forces' force structure. The Armed Forces operational capabilities are also dependent on efficient management, logistics and force production.

Streamlining and improvement of these elements are crucial and will be achieved by increased digitalisation, innovation efforts and utilisation of new and emerging technologies. To make this possible, the defence sector needs modern and flexible ICT solutions that facilitate digitalisation according to The Defence Sector ICT Strategy and the Armed Forces' digitalisation strategy.

The investments within the cyber domain will primarily focus on measures that will contribute in strengthening the Armed Forces ICT infrastructure. Current plans incorporates significant investments in the timeframe 2021 – 2028 for these purposes. These investments will modernise and develop new ICT solutions in areas such as combat-near ICT, military application of cloud services, compounded ICT, applications, communications infrastructure, geographical services, information security and other ICT.

The main investment effort within the cyber domain is conducted within the two programmes Mime (combat-near ICT) and MAST (Military application of cloud services). These programmes shall deliver operational effect through investment, business, and innovation measures coordinated and managed as a whole.

Program Mime will provide solutions for combat-near ICT in the timeframe 2020 – 2030, while program MAST will modernise the Armed Forces' secure ICT platforms with integrated services in the timeframe 2020 – 2028. A conceptual study for the Armed Forces' secure ICT platforms and integrated services will be carried out in the beginning of this timeframe.

Within the area of compounded ICT we will see a significant effort on providing ICT for the Special Forces. Significant funding will also be used on continuing the efforts on Joint Intelligence, Surveillance and Reconnaissance (JISR) capabilities and solutions for secure information exchange. The ICT infrastructure on several existing bases will be further developed and modernised.

Within the area of communication infrastructure, significant investments are planned in this period, both regarding the stationary infrastructure and static networks, in the

use of satellites and diverse radio transmitters. A conceptual study on resilient communications infrastructure will be carried out in the beginning of the timeframe.

A resilient, high capacity communications infrastructure with the ability to resist and withstand relevant threats is a prerequisite for other ICT systems and is thus highly prioritized.

Further, significant investments will be made in the other areas within the cyber domain: applications, geographical services, information security and assurance as well as other ICT.

Planned projects

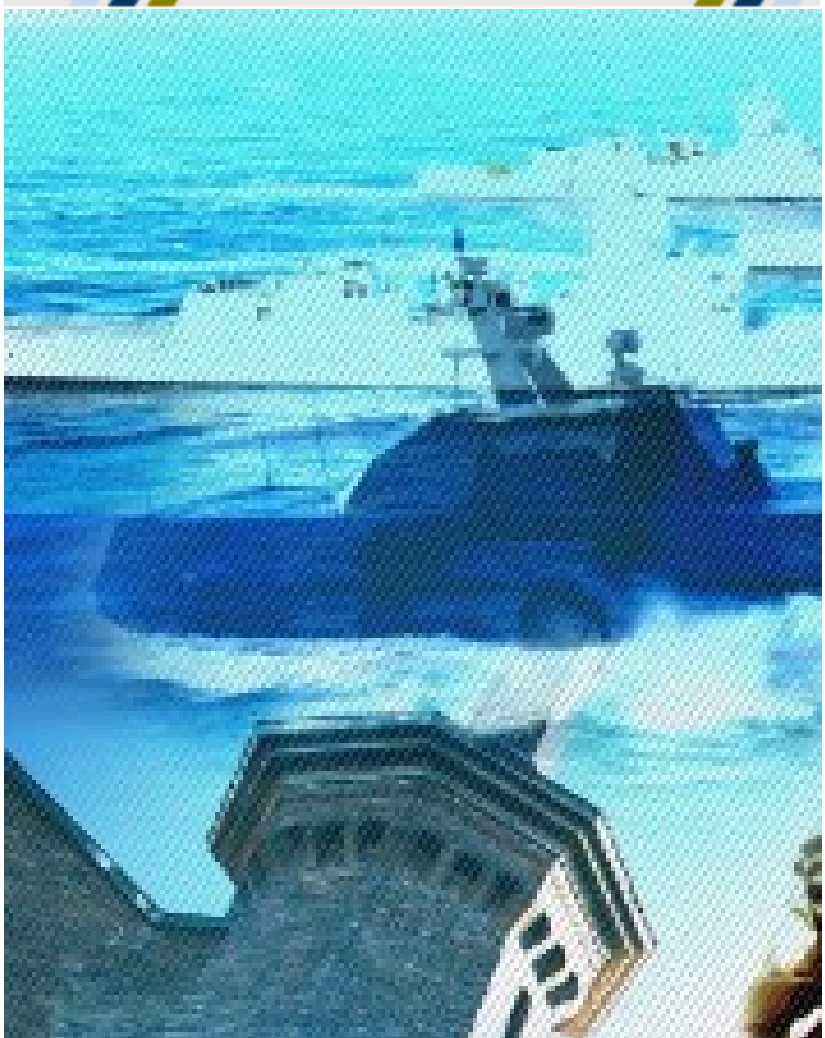
Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Projects in Mime														
Material	Cyber	8043	Tactical C2IS for the Land Domain	The purpose of investments in the tactical C2IS for the Land Domain is to ensure that the Norwegian Armed Forces maintain, modernize and improve the ability to efficient lead and exploit available force structures on the tactical level in the land domain. Investments in the future Tactical C2IS for the Land Domain focus on information and communication technology (ICT), where software and hardware components form a tactical information infrastructure of mobile and deployable networked force elements that enable efficient command and control.	Tactical C2IS for the Land Domain will cover force resources operating in the land domain, with main focus on the army forces.	3-4,5 bill. kroner								
Material	Cyber	8100	Comms for Warfighting Platforms	The project will contribute to increase the operational capabilities to existing and future platforms (air, land, sea) that operates in the northern territories, including sea north of Norway. The project will include upgrade and extensions of communication solutions, link infrastructure and extended use of satellite communication. Part of the project is related to the concept for tactical C2IS in the Land Domain.	Forces operating in the northern territories with main focus on the sea and air forces.	1,2-2 bill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Air Force	8029	K2IS Air - initial acquisition	The project is intended to ensure a consistent information system for Command and Control (C2) and support of national C2 air processes as well with NATOs future air command and control structure. The investment will further replace existing systems if needed.	Air Command and control elements.	150-250 mill. kroner								
Material	Cyber	8174	Decision Support Systems for the Medic Services	The project will support the need for decision support services for medic branch, including collaboration with civil sector.	Joint Medical Services and medic branch in all armed forces.	50-100 mill. kroner								
Material	Cyber	8176	Decision Support Systems for operational C2	The project is intended to further develop solutions and functionality for the planning- and decision support services in C2IS.	Tactical to operational level in all armed forces.	150-200 mill. kroner								
Material	Navy	1062	IP-capable communications carriers for maritime tactical area networks	Acquire communications carriers for establishment of Maritime tactical area networks, utilizing IP-services independent from access to land based infrastructure	Prioritised warships in the navy.	25-75 mill. kroner								
Projects in MAST														
Material	Cyber	1041	FSP next generation - Restricted and unclassified level	The project will establish a new ICT-platform on low grade classification level and complete the establishment of a secure ICT-platform on the unclassified level for the Armed Forces.	Defence sector, details to be disclosed.	175-300 mill. kroner								
Material	Cyber	1061	Modernisation of ERP-core system	Modernisation of the ERP-core system to a more flexible architecture with an improved user front-end, improved processing capabilities on large data sets, standardisation of services, utilisation of cloud services and facilitation of security certification.	Defence sector, details to be disclosed.	350-500 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Cyber	8171	NEXTGEN Norwegian Armed Forces Secure CIS Platform	The project will establish a new high security CIS platform.	Defence sector, details to be disclosed.	250-400 mill. kroner								
Material	Cyber	8179	Consolidation of CIS Support and Monitoring Centres	The project is intended to increase efficiency and consolidate CIS operations and streamline how cyber network defence and CIS can be aggregated and presented as a recognized cyber picture (RCP).	Primarily cyber defence.	300-450 mill. kroner								
Material	Cyber	8182	Secure and efficient management of Defence Information	Procure and implement a solution for secure and effective management and handling of defence information during the lifecycle of information including handling of law regulations.	Defence sector.	100-150 mill. kroner								
Material	Cyber	8052	Datacentre north	Secure services on the defence IT Production Platforms by establishing redundancy and securing the possibility for recovery services.	Under evaluation, details to be disclosed.	100-150 mill. kroner								
Material	Cyber	8053	Datacentre south/east	Secure services on the defence IT Production Platforms by establishing redundancy and securing the possibility for recovery services.	Under evaluation, details to be disclosed.	50-100 mill. kroner								
Material	Cyber	MP35	INI data centre solutions	Ensure access to necessary information for the Norwegian Armed Forces	Under evaluation, details to be disclosed.	450-700 mill. kroner								
Other projects														
Material	Air Force	1063	RF-simulator	Acquire a radio frequency simulator to support the development of software for electronic warfare for the Armed Forces	Electronic warfare centre.	125-175 mill. kroner								
Material	Special Forces	1534	SOF C4ISR 3	The project will acquire an updated communications system for the Special Forces. The project will Acquire systems that will maintain and further develop existing capabilities.	Norwegian Special Forces.	300-450 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Cyber	8021	Modernisation of Voice Services	Secure collaboration services on high grade information environments, ensuring increased utilization of operational processes.	Defence sector, primarily staff and management from tactical to operational level.	175-250 mill. kroner								
Material	Cyber	8041	Renewal of Stationary Maritime Radio Systems	The project is to modernise and renew the national core HF radio structure.	Cyber defence, common defence radio network (HF).	100-150 mill. kroner								
Material	Navy	8051	Upgrade of VLF-station NOVIK	VLF-station Novik is based on old technology, which is approaching end of life. The overall objective in the project is to ensure a modern and reliable VLF capability beyond year 2020 to support submarine communications.	Defence sector.	350-550 mill. kroner								
Material	Cyber	8178	Automated Data Analysis for Operations	The project is intended to procure solutions to support automatic analyse of big data and give operators on different levels context based information in support of missions.	Defence sector, details to be disclosed.	125-175 mill. kroner								
Material	Cyber	8180	Infrastructure for Secure Information Sharing - Level 2	The project is a follow up on the project 8154 Flexible solutions for secure information exchange and includes further development and extended use of automated sharing of information between information domains.	Norwegian Armed Forces Secure CIS Platform	200-350 mill. kroner								
Material	Cyber	8181	Network Enabling of JISR-information 2	The project builds on deliveries from P8156 and is to ensure that the operational processes for Joint Intelligence, Surveillance and Reconnaissance (JISR) is further supported. JISR is highly prioritized in NATO and nationally.	Defence sector, staff from tactical to operational level.	250-400 mill. kroner								

Investment Field	Business Area	P nr	Project Name	Background and Overall Objective	Scope	Cost estimate	2021	2022	2023	2024	2025	2026	2027	2028
Material	Cyber	8184	Encryption and Availability of Storage Media	The project will reduce risk-securing availability of classified information on mobile units with minimized risk of loss. The investment will procure crypto solutions to different hardware platforms.	Defence sector, details to be disclosed.	125-175 mill. kroner								
Material	Cyber	9278	Redesign of the Stationary Military Comms Infrastructure	The investment will modernize and increase resistance in the information communications infrastructure against cyber-attacks. In addition, establish need-based functionality for access to the communication infrastructure from external units.	Cyber defence, details to be disclosed.	400-600 mill. kroner								
Material	Cyber	MP14	Communications capabilities beyond 2025	Develop future communications infrastructure for the Norwegian Armed Forces.	Defence sector, details to be disclosed.	125-175 mill. kroner								
Material	Cyber	MP29	Infrastructure for secure information sharing step 3	Further, develop the infrastructure for secure information sharing.	Defence sector, details to be disclosed.	175-300 mill. kroner								
Material	Cyber	MP34	Next generation collaborative services	Further develop collaborative services for the Norwegian Armed Forces	Defence sector, details to be disclosed.	75-150 mill. kroner								
Material	Cyber	MP44	Further development decision support - management II	Further develop systems for management and decision support for the Norwegian Armed Forces	Defence sector, details to be disclosed.	100-150 mill. kroner								
Material	Cyber	SUP LTP M-01	Improved national situational picture	Improved situational picture across sectors to improve ability to make good and timely decisions	Defence sector, details to be disclosed.	150-250 mill. kroner								
Material	Air Force	SUP LTP M-28	Battle management Airbase (COC), ICT-hardware/software	Upgrade of hardware and software systems for battle management to national airbases	Air forces. Details to be disclosed.	200-350 mill. kroner								
Material	Air Force	SUP LTP M-40	C2IS Air	Continuation of holistic C2IS to support national C2 Air processes collaborating nationally and with NATOs future air command and control structure	Primarily Joint Headquarters and Air forces. Details to be disclosed.	450-650 mill. kroner								



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