



Puolustusministeriö  
Försvarsministeriet  
Ministry of Defence



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# Securing the Finnish Defence Technological and Industrial Base

Government Resolution

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## SUMMARY

Finland independently provides for its national defence and security. It defines its security policy interests and takes the appropriate measures to secure them.

Finland is not part of a military alliance. Finland's defence solution is based on a defence system encompassing the entire territory of the nation, and on general conscription. International defence cooperation supports national defence.

Finland places particular importance on military security of supply. Being situated on the eastern border of the EU, far away from the hub of the internal market, Finland relies on imports shipped via Baltic sea lines of communications. Finland secures the functioning of critical defence systems in many different ways. The domestic defence industry plays a key role in the comprehensive defence solution by maintaining many critical weapon systems. The industry's operations span from normal circumstances to wartime conditions. Defence industry is in many ways integrated into the Finnish defence system.

As a small country Finland is highly dependent on the access to and availability of defence materiel in the global market. Despite high-level technological expertise and skills, Finland's own defence industrial capacity is focused on certain specific areas and, therefore, many key systems need to be procured from abroad. Nevertheless, Finland must sustain the necessary industrial and technological competence in maintaining and tailoring critical systems so that their independent use can be guaranteed in all conditions. In most cases the Finnish defence industry retains the required competence.

In order to maintain a sufficient defence industrial and technological base, Finland must engage in close international cooperation. This cooperation is carried out between authorities in Finland and internationally as well as with the international defence industry. The rapid development of defence technology dictates that competencies must be continuously sustained; this is made possible through active cooperation with foreign defence industry.

Finland must have the capacity to act as a reliable partner in international defence cooperation and to participate in selected international military tasks. Likewise, the industry's role of a reliable, value adding partner can only be based on its own competency and technological prowess. Excellence in tech-

nology research and development is crucial for building knowledge and maintaining industrial production and innovation capability in Finland. Research and development creates the basis for a competitive industry, which must also be supported by promotion of exports. Also international technology cooperation needs national research. International cooperation is based on extensive contractual arrangements between governments.

The critical capability areas of Finland's defence are:

- 1) Command, Control, Communications, Computers (C4)
- 2) Intelligence, Surveillance, Target Acquisition and Reconnaissance (ISTAR)
- 3) Engagement
- 4) Protection.

Particularly important technology and engineering areas regarding critical capabilities are:

- 1) Technologies and engineering related to C4 and ISTAR
- 2) Material technology and structural engineering
- 3) Technologies and engineering for multi-technology systems
- 4) Bio and chemical technologies and engineering.

For these technologies and systems, it is necessary to ensure that Finland has the engineering know-how for life-cycle management, production, research and development, planning and design as well as the capabilities to integrate, maintain and repair systems, also in times of crisis.

# 1 Introduction

This document defines the technological and industrial capacity and competency for establishing and maintaining critical defence capabilities. The analysis takes account of the importance of the Finnish industry in guaranteeing security of supply and systems' life-cycle and continuity management. The views presented in this document build on existing guidelines<sup>1)</sup> regarding Finland's defence industry<sup>2)</sup> and describe their significance in the transformed European environment.

Finland will uphold its technological know-how related to a broad spectrum of key military capabilities, sufficient security of supply and defence industry<sup>3)</sup>. Investments in defence materiel are of critical importance for the defence of Finland. Building new capabilities almost always require long-term commitments, requiring life-cycle maintenance and support. The replacement of the Navy's ageing battle vessel capability and replacing the capability of Hornet aircraft are particularly important projects in the near future. Special attention must be paid to the technological and industrial base which the required military security of supply entails.

Finland's geostrategic position, military non-alignment and its status as a purchaser of military equipment creates the framework in which military defence is organised. Yet another part of the equation entails Finland's role as an international actor seeking close cooperation.

For critical areas of material capability, extremely high demands are placed on non-dependence, security of supply and continuity management. This document illustrates how the abovementioned critical areas are secured while acknowledging legal constraints in defence acquisitions, improving the coherence and predictability of the defence administration's practices on materiel, procurement and research.

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1 Particularly the Government Resolution on Security of Supply (2013) and the Materiel Policy Strategy of the Ministry of Defence (2011).

2 In this document defence industry means the industry whose production and technological innovations support Finland's national defence.

3 The Strategic Programme of Prime Minister Juha Sipilä's Government (pp 37-38).

## 2 The principles of Finland's defence policy

The primary purpose of Finland's defence capability is to establish a deterrence against the use of military force, as well as the threat thereof, and to repel attacks on Finland. This entails the capability of the Defence Forces to raise defence readiness proactively and the appropriate capability to meet its tasks.

Finland's defence solution is based on a defence system encompassing the entire territory of the nation, and on general conscription. This defence solution is supported by critical defence capabilities. As a militarily non-aligned country Finland sustains all capability areas in its defence system. However, defence capability development is increasingly dependent on international defence cooperation.

Finland carries out its preparedness through the principle of comprehensive security, which means that society's vital functions are secured in concert with different authorities, the business community, organisations and citizens. This cooperation will particularly focus on improving security of supply and infrastructure, and on strengthening critical competencies. The partnership model in use in Finland is part of wartime capability and life-cycle management, contributing to a cost-effective defence system.

In order to guarantee military readiness, the most important troops and materiel must be modern, sufficient in strength, viable, and readily available to the Defence Forces.

International defence cooperation is an integral element of Finland's defence solution. It aims to safeguard sufficient resources for the maintenance, development and operation of capabilities.

### Threat and preparedness

Repelling military aggression and the threat thereof demands such military capabilities which raise the threshold of using force against Finland and make any military action impracticable. Capabilities associated with territorial surveillance and the protection of territorial integrity are emphasised in normal conditions.

In military preparedness crisis resilience is of key importance. Preparedness for emergency conditions must be secured in times of peace; this entails inter alia contingency planning, technical and structural preparations for exceptional conditions, training and exercises as well as earmarking the required premises and critical resources for defence purposes. It is essential to maintain the capability for crisis management during disruptions.

### 3 Finland and military security of supply

In Finnish legislation security of supply is defined by the Act on the Measures Necessary to Secure Security of Supply. There is no uniform international definition for the term. In Finland security of supply means those activities that are indispensable for safeguarding the population's living conditions, critical production and services as well as infrastructure critical to the economy and national defence in emergency conditions and during serious disruptions<sup>4</sup>. Finland's security of supply solution is based on the principle of wide-ranging cooperation between authorities and business community. This stems from Finland's geographical position as well as its great dependency on imported goods and technical systems.

Military security of supply stands for guaranteeing the maintenance and supply of indispensable defence resources and associated technical systems in emergency conditions and comparable disruptions<sup>5</sup>. Military security of supply also guarantees the functioning of the Defence Forces' critical systems during disruptions and disturbances.

Finland's security environment, including the basic security and defence policy guidelines, has a fundamental impact on Finland's military security of supply. Finland is geographically positioned on the periphery of the European Union, far away from the industrial clusters of Europe, in a northern climate and for the most part dependent on sea transports<sup>6</sup>. This means in practice that it is extremely difficult to receive assistance during a crisis and, as regards security of supply, Finland is more vulnerable than the countries in Central Europe.

In accordance with its security and defence policy guidelines, Finland intensifies international cooperation with different actors (the Nordic countries, the EU, NATO and bilateral partners) in order to improve its own security and that of its partners. The mutual assistance clause in the Treaty on European Union is a part of this setting<sup>7</sup>. However, this clause does not entail any col-

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4 The Act on the Measures Necessary to Secure Security of Supply (1390/1992), Section 1.

5 MOD, Material Policy Strategy (2011), p 6.

6 Approximately 80% of Finland's imports involve sea transports (as are nearly 90% of exports).

7 TEU Article 42(7): *If a Member State is the victim of armed aggression on its territory, the other Member States shall have towards it an obligation of aid and assistance by all the means in their power, in accordance with Article 51 of the United Nations Charter. This shall not prejudice the specific character of the security and defence policy of certain Member States.* Each Member State can decide what 'all the means in their power' means in practice.

lective defence arrangements comparable to those in Article 5 of the North Atlantic Treaty. This being the case, Finland continues to place extremely high demands on military security of supply.

### The means of safeguarding military security of supply

Finland uses national, international, political and legislative means as well as instruments of procurement and innovation to safeguard its military security or supply. International cooperation, industrial participation in acquisitions, requirements included in procurements, as well as focusing on research and development, especially in critical areas, are the most important means to ensure military security of supply.

European countries use various bilateral and multilateral agreements to augment their cooperation. Through such arrangements, Finland strengthens its capability to manage, operate and – when necessary – modify critical defence systems. Contractual arrangements at different levels and taking advantage of user communities<sup>8)</sup> when there are several countries using the same material, for example, are useful instruments in international cooperation.

Military security of supply<sup>9)</sup> in EU cooperation is developed as part of the opening defence market. Finland participates in the Framework Arrangement<sup>10)</sup> of the European Defence Agency (EDA) to promote security of supply in the European defence market. Consequently, EDA has prepared a Code of Conduct<sup>11)</sup> to support industry's involvement. In addition, a specific roadmap for security of supply is presently being prepared at the EU level, in cooperation with the Commission, EDA and the Member States.

Finland aims to participate in and promote all international arrangements improving military security of supply. The goal is to advance these arrangements, where feasible to the level of international treaties. So far, progress on the above-mentioned arrangements has been modest. For this reason comprehensive national arrangements are still required to guarantee the capacity of and the freedom of action for the Defence Forces in all situations.

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8 Especially the 'weapon system partnerships' operating under the auspices of the NATO Support and Procurement Agency (NSPA).

9 Compared to Finland, in the EU context the term security of supply is often more narrowly interpreted. Rather than being a comprehensive approach, it solely focuses on dependable supply, and securing it.

10 The EDA's Framework Arrangement for Security of Supply between subscribing Member States (sMS) in Circumstances of Operational Urgency (2014).

11 EDA Code of Conduct on Prioritisation (2014).



## 4 The defence industry's role in comprehensive defence and the security of supply

Defence industry supplies military equipment and systems as well as associated support and maintenance services or other comparable services to the armed forces and/or security authorities. While defence industrial production in the EU is mostly concentrated in six Member States (France, Germany, Italy, Spain, Sweden and the UK), companies manufacturing equipment and systems are located all over Europe. The United States is the principal defence industrial actor at the global level.

Owing to its limited defence industrial base, Finland must turn to foreign suppliers, especially in major weapon system acquisitions. The United States and the major European defence manufacturers<sup>12)</sup> are the primary suppliers for a purchaser such as Finland. When Finland procures materiel from abroad it must ensure that it also acquires sufficient long-term expertise in order to operate and, if necessary, modify the system in all conditions. Finland must be a competent purchaser who, among other things, possesses sufficient expertise in the technology of the procured weapon system.

Efforts have been made to open the European defence market to competition by harmonising defence procurement legislation through the EU Defence and Security Procurement Directive which entered into force in 2009. A well-functioning defence market operating on the principles of transparency, equal treatment and non-discrimination is a valuable resource to all European defence contractors. When the market functions as intended, it provides an opportunity for the Finnish industry to specialise in new sectors and cooperate with other companies, and to be included as a subcontractor in major foreign programmes.

So far, however, the goals of the Directive have not fully materialised and the defence market, especially in large manufacturing countries, has remained national. The prospects for Finnish companies to enter into the international market as part of the large international conglomerates' supply chains have been quite limited.

As defence materiel is becoming increasingly technical and complex, it is also more challenging to maintain the equipment and associated systems and components. Systems and equipment more and more contain proprietary source code and technical solutions to which, due to security constraints, only the manufac-

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12 Letter of Intent -maat (LoI) Letter of Intent (LoI) countries

turer or the manufacturing country has access. This increases dependency on the international defence industry for maintaining the most advanced weapon systems such as aircraft, missile systems and communications systems.

Due to the increasing sophistication of weapon systems it is no longer possible to possess full autonomy in system support and maintenance. One must therefore determine the critical requirements for security of supply, and develop the required international agreements/memoranda of understanding (MoU) for collaborative activities. When the Finnish defence industry participates, for example, in the maintenance activities of an international user group, this tends to increase interdependency, which provides more security for the maintenance of Finnish defence equipment.

It is important to participate in international joint programmes to develop new technological capabilities. In this cooperation Finland can offer its niche capabilities thus improving its competitiveness and export prospects.

### The Finnish industry and partnerships

From the perspective of military defence the critical technology must also be readily available in emergency conditions. Access to technology and the capability to cost-effectively integrate new technology and technical solutions into the defence system demands Finnish industrial expertise and adequate production capacity.

A well-functioning and competitive Finnish defence industry, supported by international networking and exports, provides the basis for developing national defence and maintaining military security of supply. It is of utmost importance to guarantee the uninterrupted maintenance of critical technical systems, and the production of critical defence consumables/spares.

Traditionally, Finland's defence industrial production has largely targeted the domestic market and, in practice, nearly all defence suppliers are SME businesses. Nevertheless, in recent years exports have represented a significant share of the industry's revenue<sup>13</sup>). This development of the activities of the Finnish industry has, for its part, also impacted the way military security of supply is managed in Finland.

The industry based in Finland participates in the maintenance of security of supply as part of the organisation of the National Emergency Supply Agency. Among other things, industrial pools consisting of enterprises generate situational awareness on security of supply and support the continuity management and crisis preparedness of businesses. From the perspective of the Defence

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13 In some years even up to 50%, annual variation is, however, large.

Forces' operations, the preparedness of critical enterprises is steered through partnerships and defence logistics contracts, among other things.

The ability of the Finnish defence industry to integrate, maintain, further develop, supply, repair and decommission key defence materiel plays an important role in securing the material capability. The supply and maintenance activities of the Defence Forces' materiel are largely the responsibility of the industry, and they are carried out in close cooperation with the Defence Forces. All things considered, support for the Defence Forces' key systems must be available in Finland. Pursuant to the Act on the Monitoring of Foreigners' Corporate Acquisitions in Finland, the ownership or authority of foreigners in defence business undertakings can be restricted, should an important national interest so require<sup>14</sup>).

Cooperation between Finnish and foreign defence companies facilitates sufficient competency from the standpoint of military security of supply as well as developing and retaining the required production capacity. These are especially highlighted in times of crisis. It must be noted that the ability to survive international competition is increasingly also a prerequisite for the vitality of the Finnish industry and, consequently, the precondition for security of supply. Cooperation and the discovery of new cooperative venues with foreign partners is often realised through industrial participation.

From the viewpoint of military security of supply, sufficient technological and industrial competency and production capacity must already be safeguarded in normal conditions; for the most part this must be embedded in the industry. It is a question of long-term activity in which continuity and the gradual strengthening of competency play important roles. The increasingly technological defence systems continually place new competency demands on the capability to maintain and modify critical systems. The Finnish industry must be able to operate as a part of a wider value chain to be able to remain in step with the aforementioned progress. The interests of military security of supply must be systematically taken into consideration in Finnish research and innovation policy and in the allocation of resources.

The Defence Forces' own capabilities are augmented through partnerships. For this purpose, contracts for activities in emergency conditions and for production allocations are drafted as baseline documents for the businesses. The partnerships play an important role in safeguarding military security of supply.

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14 The Act on the Monitoring of Foreign Corporate Acquisitions in Finland (172/2012)

The most intensive form of partnership is a strategic partnership. It entails a long-term relationship between the Defence Forces and an enterprise, based on mutual trust, open communication and mutually agreed development targets. An integral part of the partnership involves preparedness during normal conditions between the parties, and the development of practices for the different stages of readiness, wartime included. The strategic partners of the Defence Forces logistics are incorporated into the logistics system through contractual arrangements for normal and emergency conditions.

Other partnerships concern businesses whose activities also support the Defence Forces' key activities in emergency conditions; this demands long-term commitment to the partnership. The Defence Forces sign contracts through which parts of the production and service capacity of the companies in question are earmarked and reserved for the Defence Forces' purposes.

## 5 Critical technologies

The goals for developing the defence system determine the necessary skill requirements. The strategic competency areas govern the core spectrum of defence research, planning, construction, maintenance and operation. Competency is the foundation for the comprehension of phenomena associated with warfare and military technology as well as the development of activities and the application of technologies. High-quality national research is a prerequisite for the development of know-how.

Finnish technology expertise plays an important role on the entirety of the defence system and on military security of supply. Critical capabilities areas include command, control and net-centric capabilities, intelligence, surveillance, target acquisition and reconnaissance capabilities, engagement and protection. As regards these technologies, it is necessary to ensure that Finland has the required technology and engineering know-how for the systems' life-cycle management, production, research and development, planning and design as well as the capabilities to integrate, maintain and repair the systems, also in times of crisis.

In general, the term technology stands for such technical information or assistance needed for the development, production, use or maintenance of equipment, systems, software or services. Critical technologies encompass such technologies which are particularly important for the defence system's capabilities or, because of national security, must be classified. The most important technology areas include information and communication technology (ICT), material technology and structural engineering, bio and chemical technologies

and engineering as well as the technologies for multi- technology systems and systems engineering.

The technical systems used in national defence are normally based on multi-technology solutions. Such multi-technology systems are at times critical for national defence. Such critical systems are technical systems which have an important impact on the performance of the defence capability. These include, for example, the most capable weapon systems and platforms, certain elements of the C4 system as well as parts of the ISTAR system.

The following technologies and associated systems are critical for the national defence<sup>15)</sup>:

- 1) C4ISTAR technologies, including:
  - Software technologies as well as information processing applications, demanding software engineering, as well as secure software engineering and information assurance
  - Communications technology, especially radiocommunications and telecommunications network technologies
  - Information assurance and cryptology technologies, technologies for operations in the cyber domain
  - Electronic warfare systems technologies and other technologies associated with using the electromagnetic spectrum
  - Sensor systems technologies and signal processing and data/information fusion.
  
- 2) Material technologies and structural engineering, including:
  - Material technologies for stealth, ballistic protection and signature management
  - Special materials technologies and associated repair capabilities
  - Military energetic material technologies and engineering
  - Material technologies and structural engineering especially designed for Arctic or Baltic Sea conditions
  - Structural mechanics and associated modelling and simulation capability.

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15 The technology areas are described in more detail in the Defence Forces Technology Strategy.

- 3) Technologies for multi-technology systems and systems engineering including:
  - Technologies for multi-technology systems and systems engineering including concept and requirement engineering, life-cycle management, planning, integration as well as test and evaluation
  - Technologies used in autonomous systems or in systems having autonomous features.
  
- 4) Bio and chemical technologies and engineering including:
  - CBRN protection, reconnaissance and analytics technologies
  - Energetics material technologies, especially technologies and engineering for the safety and production of gunpowder, explosives and ordnance.

## 6 Defence materiel and procurement policy

### Materiel policy

The goal of defence materiel policy is to systematically maintain and develop military capacity by procuring appropriate and internationally interoperable materiel and services for the Defence Forces. In addition, materiel policy also safeguards capabilities, the cost-effectiveness of materiel and life-cycle management in emergency conditions. The primary objective of materiel policy is to guarantee military security of supply in all conditions.

Materiel is an indispensable element of a credible defence. The defence establishment must be networked with its domestic and international partners. As a point of departure the materiel to be procured must be NATO-interoperable, and its suitability for the tasks of the Defence Forces must be validated. The Finnish defence and security industry is an integral element of the defence of Finland and security of supply, and international defence industrial cooperation.

### Procurement policy

Defence acquisitions are carried out pursuant to the Act on Public Defence and Security Contracts (1531/2011). The Act implements the EU Defence and Security Procurement Directive (2009/81/EC). Alongside the abovementioned Act, defence acquisitions are steered by the general defence materiel procurement principles.

All acquisitions must be made as economically as possible, taking into account the life-cycle costs and the essential security interests of the state. The basic principles used in procurement are transparency, equal treatment and non-discrimination. For the most part, procurements for defence materiel and services are subject to competitive tendering pursuant to the EU Defence and Security Procurements Directive (2009/81/EC). On a case-by-case basis Finland's essential security interests may, however, dictate that the aforementioned principles be set aside. This especially relates to situations in which the materiel or service to be procured involves key national security interests such as the protection of classified information, critical technologies, strategic capabilities or the security of supply.

The procurements must guarantee security of supply for the entire life-cycle of the systems. The key materiel for the national defence must be sufficiently and readily available, and it must also be possible to integrate, maintain and re-supply the systems supporting the Defence Forces' critical capabilities in emergency conditions. The maintenance and security-of-supply requirements for the materiel to be procured shall be determined early on through a life-cycle management analysis so as to identify the competency requirements for the Finnish industry.

Article 346 of the Treaty on the functioning of the European Union (TFEU) represents an exception to the Treaty on European Union. It gives the right for a Member State to derogate from EU regulations for the protection of the essential interests of its security. It is permissible to invoke this exception when it is not possible to carry out the acquisition under the principles of transparency and non-discrimination given in the EU Defence and Security Procurements Directive. Where an exception to the Treaty is to be invoked, it must be interpreted in a restrictive way and on a case-by-case basis in accordance with established EU case law.

Industrial participation continues to be an instrument of acquisition policy. The obligation for industrial participation can be imposed when the conditions in 346 (1)(a) TFEU or Article 346 (1)(b) TFEU are met in defence equipment procurement that is of vital importance for the country's defence and security. Imposing such a requirement is done on a case-by-case consideration; the guiding principle is to secure and safeguard the essential defence and security interests of Finland, for example, by aiming to guarantee the availability of critical technology in all conditions. Industrial participation is governed by the Rules on Industrial Participation in Defence Equipment Procurement in Finland, approved by the Ministry of Employment and the Economy<sup>16</sup>.

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16 The new Rules entered into force on 1 January 2012.

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