further enhances internal inspections by the inspection and audit department, and through deliberations in the Defense Procurement Council, consisting of external experts, and defense inspection conducted by the Inspector General's Office of Legal Complaints. Moreover, ATLA has also improved its education department and strives to enhance compliance awareness by providing thorough education pertaining to compliance for ATLA personnel.

4 Promoting Initiative towards Streamlining of Foreign Military Sales (FMS) Procurement

FMS is a form of U.S. security assistance authorized by the Arms Export Control Act (AECA) etc. that may enable the U.S. allies and others to purchase defense equipment and services from the U.S. government and is not intended for making economic profits. The characteristics of FMS include: (1) pricing is an estimate, (2) payments are made in advance in principle and balanced out in effect after fulfillment, and (3) the delivery date is an estimate. This program allows Japan to procure equipment with a high level of confidentiality that cannot be generally purchased through Direct Commercial Sales and highly capable equipment which can only be manufactured by the United States. Therefore, FMS is critical to strengthen Japan's defense capabilities.

Meanwhile, there are FMS-related challenges, such as ensuring cost transparency and late case closures. As the FMS procurement amount is rising, the MOD has been actively working to make improvements in these challenges. Specific efforts for streamlining FMS procurement include promoting equipment acquisition by aligning the timing of procurement and specification with the U.S. Forces' equipment to reduce cost, and strengthening cooperation with the U.S. government through close Japan-U.S. consultations to attempt improving cost transparency while reducing costs and enhancing execution management.

Section 4 Strengthening Defense Industrial Base

Strong industrial base is essential for ensuring the production and a high operation rate of high-performance equipment. For this purpose, the MOD established the Strategy on Defense Production and Technological Bases in June 2014 to maintain and strengthen the base. For the future, the ministry will make the defense industrial base more resilient, enabling to effectively adapt to a changing security environment based on the NDPG,[1] etc.

1 Current Situation of Japan's Defense Industrial Base

The term "defense industrial base" refers to the human, physical, and technological bases that are essential for the production, operation, sustainment, and maintenance of defense equipment required for the MOD/SDF's activities. In Japan, most of the base is covered by companies (the defense industry) that manufacture defense equipment and associated items. Therefore, a broad range of companies[2] that possess special and advanced skills and facilities are involved in the defense production and technological bases. Meanwhile, the degree of defense demand dependence (the ratio of defense-related sales that account for all company sales) is approximately 3% on average, indicating that defense business is not the primary business in many companies.[3] Furthermore, unit costs and maintenance/sustainment costs tend to increase due to low-volume, high mix production and the sophistication and complication of defense equipment. For this reason, Japan's defense industrial base faces some issues, such as difficulties in maintaining and passing on skills and techniques, and withdrawal of some companies from defense businesses because work quantity is decreasing due to a decrease of procurement volume.

In addition, as the realignment of the Western defense industries and international joint development are making progress, Japan formulated the Three Principles on Transfer of Defense Equipment and Technology in April 2014. However, improvement of international competitiveness has

1 See Part II, Chapter 3, Section 1, Footnote 1
2 For example, it is said that approximately 1,100, 1,300 and 8,300 companies are involved in the manufacture of fighter aircraft tanks and destroyers, respectively.
3 According to the survey of defense demand dependence conducted on 46 defense-related companies based on their sales performance in FY2015. Although relatively small in scale, some companies possess important technologies for supporting the defense industry with over 50% of the defense demand dependence, in which case the scale of defense demand has a significant impact on the management of these companies.

become a challenge for Japan's defense industry, because it has developed based on the production of defense equipment only for the SDF.

See Fig. IV-2-4-1 (Changes in Maintenance and Upgrade Expenditures for Equipment, etc.)
Section 5-1 (The Three Principles on Transfer of Defense Equipment and Technology)

2 The Strategy on Defense Production and Technological Bases

1 Context of Formulation of the Strategy on Defense Production and Technological Bases, etc.

For the purpose of maintaining and strengthening Japan's defense production and technological bases, which is an important and essential element supporting Japan's defense capability, the "Strategy on Defense Production and Technological Bases" was formulated in June 2014. The Strategy responded to the National Security Strategy and the 2013 NDPG, replacing "Kokusankahoshin (guideline for domestic development/production)."[4]

See Reference 5 (National Security Strategy [Outline])

2 Overview of Defense Production and Technological Bases

(1) Significance of Formulation of the Strategy on Defense Production and Technological Bases

"The Strategy on Defense Production and Technological Bases" has made the following three points clear: (1) the context of the formulation of the strategy on defense production and technological bases and where this strategy stands; (2) characteristics of defense production and technological bases; and (3) changes in the environment surrounding defense production and technological bases.

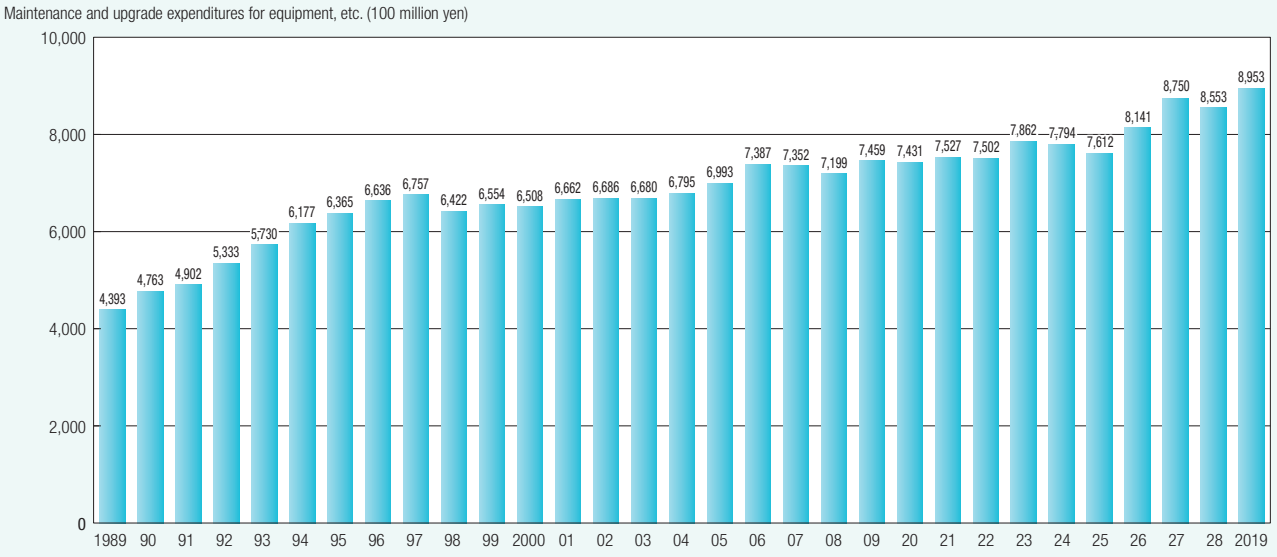
(2) Goals and Significance of Maintaining and Strengthening Defense Production and Technological Bases

Through the maintaining and strengthening of defense production and technological bases, the MOD intends to (1) ensure sovereignty of security, (2) potentially contribute to increasing deterrence capability, and maintaining and improving bargaining power, and (3) contribute to the sophistication of the domestic industry in Japan driven by cutting-edge technology.

(3) Basic Viewpoints for Promoting Measures

For the promotion of measures, the MOD takes into account the following basic viewpoints: (1) establishing long-term partnership between the private and public sectors; (2) strengthening international competitiveness; and (3) ensuring consistency with effective and efficient acquisition

Fig. IV-2-4-1 Changes in Maintenance and Upgrade Expenditures for Equipment, etc.



Note:1 "Maintenance and upgrade expenditures for equipment" refers to the budget for repair costs for equipment, consumable goods costs, and service costs with each service of the SDF (referring to the amount calculated by excluding repair costs for the extension of vessel life and modernization of aircraft from the repair costs of each SDF unit).
2 As for FY2019, expenditure for the 3-Year Emergency Countermeasures for Disaster Prevention/Mitigation and National Resilience are included.
3 The amounts represent contractual figures.

4 The basic guideline for production and development of defense equipment, the development guideline for defense industry, and the stimulation guideline for R&D (Directive July 16, 1970)

of defense equipment.

(4) Defense Equipment Procurement Methods

With regard to defense equipment procurement, currently multiple methods, such as domestic development, international joint development and production, licensed domestic production, utilization of commercially produced goods, and imports, are adopted. These methods directly affect the defense production and technological bases. According to the characteristics of defense equipment, the MOD appropriately selects acquisition methods, including international joint development and production, which have become more agile and flexible due to the Three Principles on Transfer of Defense Equipment and Technology.

(5) Measures for Maintaining and Strengthening Defense Production and Technological Bases

In order to maintain and strengthen defense production and technological bases, the MOD will promote the following measures with a focus on variation and efficiency, while considering Japan's severe financial condition: (1) improvement in the contract system; (2) initiatives in research and development; (3) promotion of defense equipment and technology cooperation; (4) initiatives for defense industrial organizations including the building of robust production and technological bases through understanding actual situations of the supply chain; (5) strengthening of the MOD's functions through the establishment of ATLA, etc.; and (6) collaboration with other relevant ministries and government agencies.

(6) Courses of Actions for Each Defense Equipment Sectors

With regard to the main defense equipment sectors (such as land equipment, supplies, etc., ships, aircraft, explosives, guided weapons, communications electronics and command control systems, unmanned equipment, space systems and cyber), the MOD will analyze the current situation of defense production and technological bases. At the same time, based on the priority matters for developing the SDF's structure indicated in the 2013 NDPG, the MOD will present the future direction of the maintenance and strengthening of defense production and technological bases and the acquisition plan for each defense equipment sectors, and thereby, seek to increase predictability for companies.

3 Initiatives Based on the 2018 NDPG

1 Past Initiatives

Based on the Strategy on Defense Production and Technological Bases, the MOD has implemented various measures contributing to the maintenance and strengthening of the defense industrial base, such as improving the contract system, including the Long-term Contract Act, and the establishment of ATLA, which integrated the organizations involved in the defense equipment procurement.

In addition, the following new measures are also taken in ATLA: (1) formulation of Defense Technology Strategy, etc. for ensuring the technological superiority, and implementation of the "Innovative Science & Technology Initiative for Security" (see Section 2); (2) formulation of the Acquisition Strategic Plan for promoting project management, and improvement of contract systems (see Section 3); (3) grasping the supply chain in the defense industry and responses to risks in order to maintain and strengthen the defense industrial base (see Paragraph 2 below); and (4) participation of Japanese companies in the international F-35 program and defense equipment and technology cooperation involving joint research and development with other countries (see Section 5).

2 Future Initiatives

In order to strengthen Japan's defense industrial base, which is essential to the production, operation, sustainment and maintenance of defense equipment, the MOD will work on the following initiatives based on the NDPG, etc., while considering the orientation of the defense production and technology strategy.

(1) Reforming the Existing Contract System towards Creating a Competitive Environment among Companies

Japan's defense industry has a poor competitive environment as there are many defense equipment items that only one company can produce. Furthermore, there is not much incentive for cost reduction because equipment prices are calculated using the cost accounting system.[5] To address this issue, the MOD will review the existing contract system towards creation of incentives and a competitive environment among companies by actively evaluating initiatives and results contributing to strengthening of the competitiveness of the defense industry and cost reduction, and appropriately reflecting the evaluation in companies' profits through

5 A method to calculate prices by adding the profit obtained by multiplying the cost necessary for production with a profit margin set based on the average profit margin of the manufacturing industry.

contracts.

(2) Strengthening Risk Management of Supply Chain for Defense Equipment

The procurement of defense equipment involves not only prime companies that directly contract with the MOD but also supplier companies in a broad range of fields and sizes, which contract with the prime companies. The chains of these companies (supply chains) are the basis of Japan's defense industry. However, these supply chains are confronted with risks, such as supply disruption due to withdrawing or bankruptcy of some manufacturing companies. In order to deal with the risks, the MOD is taking measures in order to maintain and strengthen the supply chains.

In the supply chain survey conducted by the end of 2017[6], as part of the efforts mentioned above, key suppliers holding irreplaceable technologies were identified. Additionally, vulnerabilities became apparent, such as a concentration of orders to a certain supplier and the current condition that a number of companies, mainly small and medium-sized enterprises (SMEs), are highly dependent on defense demand.

Based on the survey results, the MOD is currently working to (1) create a database by using the results of the supply chain survey, (2) build a regular monitoring system for early identification of risks, such as supply disruption, and (3) promote spin-off to strengthen the business structure of SMEs.

For the future, the MOD will accurately deal with the vulnerabilities in the supply chain and strengthen them through initiatives such as (1) an in-depth supply chain survey with a focus on specific defense equipment, (2) a study of using other ministries' support measures to cope with advancement of technology and business succession in order to manage supply disruption and other risks, and (3) a study of measures to improve production efficiency of SMEs.

(3) Further Participation of Japan's Defense Industry in Sustainment and Maintenance of Imported Equipment, etc.

Participating in the sustainment and maintenance business of imported equipment is productive for the strengthening of Japan's industrial base. For this purpose, it is important to pursue participation in the sustainment and maintenance of F-35A, Osprey, and other imported equipment and benefits for domestic companies through further promotion of international joint R&D of high-capability equipment with the United States, etc.[7]

(4) Promoting Appropriate Overseas Transfer of Defense Equipment under the Three Principles on Transfer of Defense Equipment and Technology

The government as a whole will work on necessary improvement in implementation or related rules for promoting appropriate overseas transfer of defense equipment. At the same time, the MOD will strengthen intellectual property management, technology control and information security to prevent leakages of important technologies regarding defense equipment.

a. Initiatives for Necessary Operational Improvement

The MOD, in cooperation with relevant ministries and agencies, will work on necessary improvement in implementation or related rules based on the Three Principles on Transfer of Defense Equipment and Technology, which are the operational standards for the Foreign Exchange and Foreign Trade Act. As a result, the MOD will enhance predictability for the defense industry and will promote appropriate and smooth equipment transfer.

Specifically, the ministry thinks it is necessary to improve the implementation of relevant systems and procedures, which include rationalization of the handling of basic marketing information necessary for early business talks at international trade shows, etc.[8] in order to ensure the smooth provision of such information.

b. Preventing Leakage of Advantageous Technologies

(a) Intellectual Property Management

Through the revision of contract provisions regarding intellectual properties and other means, the MOD accurately grasps the intellectual properties generated through R&D, etc. to promote the clarification of belongings and prevention of leakages of advantageous technologies to abroad. The ministry also presents options regarding the opening or closing of intellectual properties based on the characteristics of the technology and promotes appropriate management for each option.

(b) Technology Control

The MOD will strengthen technology control systems and functions to ensure prompt and proper assessment of technical sensitivity based on the importance and superiority of the technologies, which is needed in the examination of the propriety of overseas transfer of defense equipment

6 By the end of FY2017, the MOD conducted a supply chain survey up to the secondary subcontractors of 30 major defense equipment items.

7 SM-3 block IIA, jointly developed by Japan and the United States, is subject to FMS procurement, but Japanese companies have received contracts for manufacturing about half of the components, including those procured by the United States.

8 In October 2018, the Q&A section of the Ministry of Economy, Trade and Industry website made it clear that information on the performance of goods and other matters that is used in early stage business talks and that does not include "specific information necessary for design, manufacture or use," such as design information and production technique, is not subject to regulation under the Foreign Exchange Act. At the request of companies, the MOD is currently confirming the range of information included in data created by a company that may be disclosed to the public and handled as publicly known technology available to an unspecified large number of people.

VOICE Defense Industry Supporting Development of Defense Capabilities

President Shigenori Yamamoto, TERAUCHI MANUFACTURING Co., Ltd.

TERAUCHI MANUFACTURING Co., Ltd. was founded in 1913, and used to manufacture nuts and bolts for airframes and aircraft engines as a designated factory of the old Japanese Army and Navy until the end of World War II. After the war, our major products shifted to nuts and bolts for automobiles. Around the time of the establishment of the Japan Defense Agency, we resumed manufacturing of nuts and bolts for aircraft for the Air Self Defense Force as its designated supplier. In 2002, the company withdrew from the general industry and has specialized in aerospace and gas turbine fields to this day.

Nuts and bolts for aircraft have their roots in the United States Air Force standards, which specify material, shape, production method, and other requirements in detail. After the heat treatment process, a screw thread is formed by thread rolling while rotating the screw on a rolling machine. This method makes the metal structure denser than machining and thereby increases its strength.

Our products are used for a wide variety of defense aircraft and incorporated into engines, landing gears, airframe structure, and other parts. Each of them plays a very important role.

The fundamental principle of our company is "We will contribute to world peace and social development through manufacturing." We are proud to be able to protect the lives of crew members and contribute to the peace of Japan and the world through our work under the absolute requirement: Flight Safety.

Threading a screw on a rolling machine

Before (left) and after (right) thread rolling

and technology. In order to prevent leakages of sensitive technologies, the MOD, in cooperation with relevant ministries and agencies, promotes studies of reverse engineering countermeasure technologies, such as black box constitution.

(c) Strengthening Information Security

For Japan's defense industry to participate in international businesses, it is necessary to respond to increasing threats of cyber attacks. With the aim of strengthening information security measures, the MOD will review the information security standard applicable to contractors handling the MOD's information to be protected.[9]

In order to further encourage companies to consider entry into defense procurement business and facilitate their business with defense-related companies in Japan and abroad, it is important to improve the predictability of the necessary security measures for the companies. For this purpose, the MOD will develop an information security guidebook that comprehensively defines security measures that will normally be required for concluding a contract, which involves the handling of information to be secured, with the MOD in advance.

(5) Other Initiatives to Achieve Efficiency and Strength

Other than the above-mentioned initiatives, the MOD/SDF will undertake measures such as making the equipment manufacturing process efficient and thorough cost reduction and will strive to make Japan's defense industry base efficient and resilient while foreseeing possible realignment and consolidation of businesses that may occur as a result of these measures.

9 Information subject to "Sensitive" or "Official Use Only" in the MOD and information created using such information.