presentations, publications, etc. From the perspective of smooth implementation of research projects, program officers, who are in charge of managing research progress, are assigned in the same manner as competitive research funding programs being conducted by other government ministries and agencies. The program officers provide support including checking research progress and processing budget execution procedures.

Active utilization of advanced civilian technology through such programs is not only essential for securing the lives and peaceful livelihood of the Japanese people into the future, but is also beneficial for the development of Japan’s science, technology and innovation in non-defense areas as well, similar to how investment in innovative technology by the Defense Advanced Research Projects Agency (DARPA) of the United States facilitated advances in science and technology as a whole including civilian technology, such as the development of the Internet and GPS. From this perspective, the MOD intends to promote relevant measures.

**Section 2 The Current Status of Defense Production and Technological Bases, and the Strategy on Defense Production and Technological Bases**

Excellent defense production and technological bases are indispensable in inventing superior defense equipment in an effective and efficient manner, while ensuring technological superiority, based on the Defense Technology Strategy. For this reason, the MOD established the Strategy on Defense Production and Technological Bases in 2014 to maintain and strengthen the bases.

### 1 The Current Status of Japan’s Defense Production and Technological Bases

The term “defense production and technological bases” refers to the human, physical and technological bases for development, production, operation, sustainment and maintenance, remodeling, and refurbishment of defense equipment required for the MOD/SDF’s activities. In Japan, most of those bases are covered by companies (the defense industry) that manufacture defense equipment and associated items. Therefore, a broad range of companies, which own specialized and advanced skills and facilities are involved in the defense production and technological bases. In addition, volume efficiency of defense production is unlikely to be expected due to its market being limited to the demand from the MOD. The degree of defense demand dependence (the ratio of defense-related sales that accounts for the entire company sales) is approximately 3% on average, indicating that the defense business does not comprise the main business in many companies.

On the other hand, per unit cost and maintenance/sustainment costs are increasing due to the advances in recent defense equipment, while simultaneously imports of foreign-made equipment, such as U.S.-made aircraft, are also.

![Fig. III-4-2-1](current-status-of-the-procurement-unit-price-of-defense-equipment.png)

**Status of Procurement: Unit Price** Increase in procurement unit price due to high performance

**Type-74 Tank:** Approximately 0.39 billion yen (contracted in FY1989) ➔ (3.2 times increase)
**Type-10 Tank:** Approximately 1.26 billion yen (contracted in FY2016)

**Oyashio class:** Approximately 52.0 billion yen ➔ (1.23 times increase)
**Soryu class:** Approximately 63.6 billion yen (contracted in FY2016)

**E-2C:** Approximately 9.94 billion yen (contracted in FY1990) ➔ (2.61 times increase)
**E-2D:** Approximately 25.97 billion yen (contracted in FY2016)

---

1. For example, it is said that there are approximately 1,100 fighter aircraft-related companies, approximately 1,300 tank-related companies, and approximately 8,300 destroyer-related companies.
2. According to the survey on defense demand dependence conducted with 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.
In addition, while research and development expenditure is increasing, the ratio of research and development expenditure to defense-related expenditure has leveled off.

Furthermore, Japan’s defense production and technological bases also face challenges in retaining and passing on skills and techniques, and there have been emerging issues, for example, with some companies pulling out of the defense business. There has also been exposure to changes in the international environment such as the realignment of the Western defense industries and advances in international joint development and production projects. Amidst these situations, there are new changes emerging in the political framework, such as the transfer of defense equipment and technology based on the Three Principles on Transfer of Defense Equipment and Technology (see Section 4), which was approved by the Cabinet in April 2014.
Measures for Maintaining and Strengthening Defense Production and Technological Bases

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

In light of the current situation, for the purpose of maintaining and strengthening Japan’s defense production and technological bases, which is important and an essential element supporting Japan’s defense capability, the “Strategy on Defense Production and Technological Bases” was adopted in June 2014. The Strategy responded to the National Security Strategy and the National Defense Program Guidelines (NDPG), replacing “Kokusankahoshin (guideline for domestic development/production).”

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

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

(3) Basic Stance for Promoting Measures

For the promotion of measures, it is necessary to take 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 of defense equipment.

(4) Methods of Defense Equipment Procurement

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 defense production and technological bases. According to the characteristics of defense equipment, it is necessary to select the acquisition method appropriately, including international joint development and production, which

---

3 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)
became 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 carry out the maintenance and strengthening of 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 of the contract system; (2) efforts regarding research and development; (3) promotion of defense equipment and technology cooperation; (4) initiatives regarding defense industrial organizations including the building of a robust production and technology platform through understanding actual conditions of supply chain; (5) strengthening of the MOD’s structure through the establishment of ATLA, etc.; and (6) collaborative measures with other relevant ministries.

(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 baselines. At the same time, it will also take the following actions. Based on the priority matters for developing the SDF’s structure indicated in 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 in Line with the Strategy on Defense Production and Technological Bases

(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 defense production and technological bases, such as the improvement of contract system including the Long-term Contract Act, and the establishment of ATLA, which was formed by integrating the organizations involved in the procurement of defense equipment.

In addition, the following new measures are also taken in ATLA.
• Formulation of the Acquisition Strategic Plan for promoting project management and improvement of contract systems (see Section 3).
• 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 4).
• Grasping the supply chain in the defense industry and responses to risks in order to maintain and strengthen defense production and technological bases.
• Adopting a new procurement method for acquiring an escort ship (new destroyer) to ensure future technologies and price competitiveness while maintaining defense production and technological bases, as well as using advanced design and construction technology.

(2) Future Initiatives
With the understanding that defense production and technological bases are an important and indispensable foundation supporting Japan’s defense capabilities, ATLA plays the main role in promoting measures for defense equipment and technology while cooperating with relevant ministries, government agencies, and private companies, etc. These measures include swift application of quickly progressing advanced civilian technologies, promotion of defense equipment and technological cooperation as a package including maintenance, etc., early detection of risks pertaining to supply chains, and promotion of the matching of small and medium sized enterprises with the MOD/SDF.

The Defense Industry that Supports the Improvement of Defense Capability

Kazuichi Ando, Adviser, Marketing Department-Industrial Products, Industrial Rubber Products Division, Meiji Rubber & Chemical Co., Ltd.

Meiji Rubber & Chemical Co., Ltd. was established in 1900 and became the first navy-designated factory in Japan in the following year. We at that time produced rubber lining for propeller thrust axis of submarines, battery containers, and tires for fighter aircraft, as well as other products. Since World War II, we have mainly produced civilian goods. Today our products cover a wide range of areas such as rubber products for printing machines and elevating machines, rolling mills for paper/iron manufacturing, and resin products including bottle containers/pallets.

With regard to products for the government (products for the MOD), we produce anti-vibration rubbers for ships and rubber parts for tanks. In particular, we are proud of the history of our engagement in the production of rubber parts for tanks, which are suspension parts for successive tanks (type-61, 74, 90 and 10). These parts are track rollers that are equivalent to tires for automobiles, crawler belts that are usually called crawler or track belt, rubber pads that are mounted to a track shoe composing crawler belts to protect paved road while driving on it, and anti-vibration rubbers for engine mount in the car.

Rubber products require repeated trial and error as well as conducting evaluations of prototype to design compounded rubber most suitable for specific terms of use, whereby they are developed to be a product with specification that meets the optimum condition. We take pride in the long-held recipe of compounded rubber, which has been developed since its establishment, and sees it as the company’s asset. Lastly, Meiji Rubber & Chemical has built a production system that positions defense-related products as the most important product management products. Going forward, we will continue to take responsibility and pride in producing defense equipment, maintain the production bases, and strive to enhance the technical capability of the company.

Deburring work for track rollers after rubber bonding, and finished products