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Japan's future defense equipment policy

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EXECUTIVE SUMMARY

2016 is a presidential election year in the United States. U.S. foreign policy and national security policy are being discussed during the presidential election campaign, and one candidate has strongly argued in favor of reconsidering U.S. alliances, perhaps making it a major issue of his. On the other hand, the United States has serious national security concerns around the world, not only current threats from global terrorism, but also high-end threats that will come in the near future. Currently, U.S. policymakers and government officials are attempting to maintain military superiority by introducing cutting edge technologies through strategies such as the Third Offset Strategy.

On the other side of the Pacific, Japan finds itself in the most severe security environment that it has experienced since the end of the World War II. To keep peace and stability in the Asia-Pacific region, Japan has started to drastically reform its national security policies in recent years to take a more proactive role in peace and stability in the world. Japan has also expanded its defense budget since 2013 after it saw consistent cuts over the prior decade. However, it may be difficult for Japan to strengthen its defense capabilities to overcome its increasingly difficult security environment and follow the United States' new Third Offset Strategy during this period in time when Japan's national strength is thought to be in relative decline.

What are Japan's future national security policies for dealing with these challenges? One of the most significant challenges for Japan's Ministry of Defense (MOD) is the acquisition of defense equipment because it has structural problems in terms of limited budget and long lead time. Japan has altered its defense equipment policies to relax its self-imposed ban on arms exports and established a new MOD acquisition agency that has consolidated numerous acquisition-related branches in MOD. However, it is hard to say whether this specific course of action is comprehensive enough to ensure Japan's national security interests are fully met.

This paper explores specific ways to utilize Japan's new defense equipment policies in order to maximize Japan's national interests and contribute to the peace and stability of the Asia-Pacific region.

In the process, this paper describes Japan's future defense equipment policy through studying the security policies of the United States and Japan while focusing on their nature. This paper tries to find whether or not Japan completely understands U.S. security policy. As a result of research, this paper recognizes that there are some misunderstandings in Japan's government and defense industry about what the driver of the defense acquisition system is in the international community. These misunderstandings might cause long-standing challenges for Japan's government and defense industry for many decades. Under this assumption, this paper introduces the implications for acquisition reform and specific defense equipment policies while identifying three major activities: the development of equipment, logistics support for allies, and capability building.

In terms of the acquisition reforms, this paper makes the case that Japan has to deal with further acquisition reforms by understanding the nature of acquisition reforms around the world. In brief, MOD has to establish:

- A knowledge management system that can utilize all knowledge that the acquisition workforce has accumulated as explicit and tacit knowledge.
- A future oriented decision-making system that focuses on strategic and future perspectives without an excessive bureaucratic process.
- An autonomous improvement culture where the entire workforce can improve itself by having people with different jobs work interactively.

Then this paper points out some specific defense equipment policies that Japan should follow in order to contribute to the peace and stability of the region in cooperation with allies and partners. Specific future equipment policies that Japan can use as tools for national security are:

- The development of competitive equipment that can perform even in the future strategic environment that utilizes cutting edge technologies, such as those envisioned in the Third Offset Strategy. Specifically, MOD should promote international arms development and exports by utilizing various advantages that the Japanese defense industry offers while establishing a mutually interactive communication system. In addition, MOD should remove barriers that prevent innovative new actors from entering into the defense industry.
- The enhancement of logistics support to allies and partners along with industry's Maintenance, Repair, and Overhaul (MRO) business while preparing "portfolios" that describe a support menu that the Japan Self-Defense Force (JSDF) and industry can support.
- The expansion of capacity building assistance to the Southeast Asian countries while focusing on non-traditional military activities such as Humanitarian Assistance and Disaster Relief (HADR). In addition, MOD has to cooperate with other organizations in the international aid community through information sharing and collaboration.

This paper also tries to make estimations about the future of Japan's defense industry including the expansion of arms sales and other outcomes of policies suggested. In brief, this paper estimates that Japanese defense industry can expand its arms sales by about 40 percent by 2020 compared to 2014. This estimate will be realized when Japan's government can achieve its expected economic growth. This is because Japan's defense industry depends highly on domestic demand. The promotion of arms exports in cooperation with government and industry is as important as domestic demand. This paper estimates that the increase of Japan's arms exports can push up the total amount of arms sales by 10 percent, if Japan's government is able to promote selling Japanese equipment, such as submarines and an aircraft.

Moreover, this paper points out that some new industries in Japan will enter the defense field by utilizing their advanced IT, component technology, and dual-use technology. There can be tremendous possibilities when Japan's huge technical and industrial firms join the world defense market.

Japan's defense equipment policy reforms have so far only resolved about half of the numerous problems that have accumulated through many decades. This paper recognizes there are some common factors across these challenges that originate from Japanese culture and history that are difficult to solve.

However, it is still possible to influence the vector of reforms positively so that all challenges can be turned into chances. This paper make the case that it will be a "game changer" for Japan when MOD materializes Japanese-style innovation while integrating various ideas around the country and making bottom-up improvement continuously.

CHAPTER 1

Introduction

2016 is the year of the next U.S. presidential election. President Barack Obama is leaving his office and a new president will take office next year. U.S. foreign policy and national security policy are being discussed during the presidential election campaign, and one candidate has strongly argued in favor of reconsidering U.S. alliances, perhaps making it a major issue. On the other hand, the United States has serious national security concerns around the world, not only current threats from global terrorism, but also high-end threats that will come in the near future from resurgent Russia and rising China. Moreover, future threats are expanding beyond the traditional ground, sea, and air domains to new domains such as a cyberspace and space.

Currently, U.S. policymakers and government officials have attempted to maintain military superiority by introducing cutting edge technologies such as the Third Offset Strategy." The Third Offset Strategy and its related policies are not yet based on concrete polices written down on paper. Therefore, U.S. allies and partners wonder what the new U.S. strategy truly entails.

On the other side of the Pacific, Japan find itself in the most severe security environment that it has never experienced since the end of the World War II. The region of Northeast Asia is home to host of actors, such as countries with large-scale military forces and those possessing nuclear weapons. Moreover, the Asia-Pacific has witnessed the rise of other security issues such as the expansion of global terrorism, maritime security, and natural disasters. To keep peace and stability in the Asia- Pacific region, Japan has started to drastically reform its national defense policies to take a more proactive role in keeping peace and stability in the world in recent years. Japan has also expanded its defense budget since 2013 after it saw consistent cut over a decade. However, there are still some politicians and defense experts in the United States who argue that Japan should increase its contribution to maintaining peace and stability in the world to a level commensurate with its economic strength. It may be difficult for Japan to strengthen its defense capabilities to overcome its harsh security environment and follow the United States' new Third Offset Strategy while Japan's national strength is thought to be in relative decline.

What are Japan's future national security policies for dealing with these challenges? One of the most significant challenges for Japan's Ministry of Defense (MOD) is the acquisition of defense equipment because it has a structural problem in terms of limited budget and long lead time. About 80 percent of the defense budget is consumed by labor costs and payments on previous contracts.[1] Moreover, one third of the cost for equipment will be spent on the sustainment, particularly maintenance and spare parts. Furthermore, the need to balance between capable equipment and preserving Japan's defense industrial base sometimes encourages inefficient acquisition and results in the development of Japan-specific indigenous, high-cost, and long lead-time equipment that is referred to critically as the "Galapagos' syndrome."[2] Therefore, MOD is currently trying to improve its acquisition system to acquire capable weapons more efficiently and effectively. Japan has altered its defense equipment policies to relaxing its self-banned arms export and establishes a new MOD acquisition agency that consolidated numerous acquisition-related branches in MOD. However, it is hard to say whether this specific course of actions is comprehensive enough to ensure Japan's national security interests.

1. *"Defense Programs and Budget of Japan"*, March 2016, Ministry of Defense, p.47
2. "Galapagos Syndrome" is a Japanese origin term which refers to an isolated technology and products from the world, in same way that the Galapagos Island did over centuries when their species evolved their own separate paths.

This paper explores specific ways to utilize Japan's new defense equipment policies in order to maximize Japan's national interests and contribute to the peace and stability of the Asia-Pacific region. To this end, this paper firstly looks at current U.S. security policies with a focus on the Third Offset Strategy and explains Japan's security reforms in recent years. It then turns to acquisition reform efforts of the United States and Japan and finally suggests specific policies for Japan to undertake in the future.

CHAPTER 2

A study of the United States' national security policy

This paper will first lay out current U.S. national security policies, particularly those related to acquiring cutting-edge military technologies for war fighters, and then summarize the implications for Japan as an ally.

So why should Japan focus on America's national security policy? Japan's National Security Strategy states that the Japan-U.S. alliance is the cornerstone of Japan's security.[3] The United States also sees the U.S.-Japan alliance as the cornerstone of Asia-Pacific security.[4] It's obvious that the U.S.-Japan alliance contributes not only to Japan's security, but to the stability of the Asia-Pacific region. To strengthen the alliance, Japan has to grapple with strengthening joint Japan-U.S. security and defense cooperation in a wide range of areas and ensuring a stable presence of the U.S. forces.[5]

The U.S. Department of Defense (DOD) is pushing ahead with policies that can preserve military advantage through various cutting-edge technologies, recognizing that the U.S. must prepare for future "high-end" warfare. These policies have gained widespread attention in recent year are known collectively as the Third Offset Strategy.

Defeating current and "high end" future threats

The United States continues to face serious challenges to its national security despite attempting to move beyond its large ground wars in Iraq and Afghanistan. President Barack Obama noted that violent extremism, evolving terrorist threats, escalating challenges to cybersecurity, aggression by Russia, accelerating impacts of climate change, and outbreak of infectious diseases have all given the rise to anxieties about global security.[6]

Meanwhile, the defense establishment in DOD, think tanks, and Congress have been concerned about the erosion of United States' future military advantage. The existing great military powers such as Russia and China have modernized their military forces and are developing anti-access/area denial (A2/AD) capabilities around their region to prevent the U.S. from deploying military forces into the region. A2/AD capabilities have not simply created regional tension because of their defensive capabilities, but they have also given cover to military activities intended to upset the status-quo, such as the invasion of Crimea and an increased presence in the South China Sea (SCS) and the East China Sea (ECS). Nevertheless, Russia and China have declared these activities are for defensive purpose. As a result, American allies are concerned about the credibility of the alliance with the U.S. and whether the U.S. could deploy its military forces during conflict in an A2/AD environment.[7]

The U.S. military also faces eroding military advantages. Globalization of economy and the spread of the Internet has significantly increased the proliferation of cutting-edge technologies. In recent years, many researchers have addressed this issue. Ben FitzGerald and Kelley Sayler of the Center for New American Security have

3. *"National Security Strategy"* of Japan, December 2013, p.20

4. Defense Secretary Ashton Carter, *"Meeting Asia's Complex Security Challenges"*, June 2016, The IISS Shangri-La Dialogue

5. *"National Security Strategy"* of Japan, p.22

6. *"National Security Strategy"* of the U.S., February 2015

7. Satoru Mori, *"America-no-Asia-Senryaku-to-Chugoku"*(The U.S.'s Asia Strategy and China)(In Japanese),Chuo-kohron, May 2016, p.62

pointed out that DOD is increasingly an importer of technological advances taking place around the world, from information technology and 3-D manufacturing to autonomous vehicles and synthetic biology.[8] DOD is also concerned that other nations may try to close the gap in areas that the United States has enjoyed an advantage in for decades, including precision-guided munitions, stealth, cyber, and space.[9]

Budgetary constraints are also a big challenge for the U.S. military. The defense budget's growth is restricted under the Budgetary Control Act of 2011 (BCA) and the Bipartisan Budget Act of 2015. At the same time, military spending around the world is increasing.[10] Since the BCA's enactment, the Obama administration has reduced its future budget projections each year, including reductions in modernization funding. Moreover, the budget caps have been revised three times by Congress, and this turmoil has become the source of uncertainty and instability for defense acquisition programs. Furthermore, many major acquisition programs have faced delay or cancelation due to cost overruns and poor performance.[11]

Under these constraints, the U.S. military needs a breakthrough in its defense policies to defeat current and future threats.

The Third Offset Strategy and technological innovation

The Offset Strategy is a strategy to defeat or deter potential adversaries through advanced military technology and warfare that is beyond an adversary's ability to match or counter.[12] DOD has pushed forward with the third offset strategy (TOS) since former Secretary of Defense Chuck Hagel addressed it in a speech in November 2014.[13] Hagel simultaneously announced the establishment of the Defense Innovation Initiative to explore and develop new operational concepts, including new approaches to war fighting, and how DOD can balance its investments between platforms and payloads.[14]

The main elements of TOS are threefold: concepts, technologies, and frameworks. DOD is examining each effort through various organizations and perspectives, but the concrete definition of TOS has not yet been formulated.

In terms of the concepts, DOD announced the Joint Operation Access Concept (JOAC) in January 2012. This concept is meant to counter an adversary's A2/AD capability by leveraging across domains, and describes specific capabilities required.[15] DOD also elaborated upon the Air-Sea Battle concept (ASB) as a way for the services to address A2/AD challenges. Enhanced ASB concepts are also expected to stabilize relationships between the U.S. and its allies by enhancing regional credibility to intervene in potential conflicts.[16]

While cutting edge technologies were key components of previous offset strategies, and TOS is no different given its focus on human-machine collaboration and combat networks.[17] TOS does not, however, rely on specific technologies, like the atomic bomb of the first offset and precision guided munitions of the second offset, although clear definition of TOS is still lacking.

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8. Ben FitzGerald and Kelley Sayler, *"Creative Disruption–Technology, Strategy and the Future of the Global Defense Industry"*, CNAS, June 2014, p.6
9. Carter, *"Meeting Asia's Complex Security Challenges"*
10. SIPRI indicates increases in military spending across multiple regions, including Eastern Europe (more than 7 percent) and Asia and Oceania (more than 5 percent) from 2014 to 2015.
11. Todd Harrison, *"Defense Modernization Plans thorough the 2020–Addressing the Bow Wave"*, January 2016, CSIS, pp.2-5
12. Robert Martinage, *"Toward A New Offset Strategy"*, October 2014, Center For Strategy and Budgetary Assessments, p.2
13. Chuck Hagel, *"Regan National Defense Forum Keynote"*, November 14 2014
14. Secretary of Defense Chuck Hagel, Keynote speech of the Regan National Defense Forum, November, 2014
15. *"Joint Operation Access Concept (JOAC) version 1.0"*, January 2012,Department of Defense, p.14, pp.33-34
16. "Air-Sea Battle", May 2013, Air-Sea Battle office, p.1
17. SYDNEY J. FREEDBERG JR "People, Not Tech: DepSecDef Work On 3rd Offset, JICSPOC," Breaking Defense, February 2, 2016, http://breakingdefense.com/2016/02/its-not-about-technology-bob-work-on-the-3rd-offset-strategy, accessed on February 18,2016

Deputy Secretary of Defense Robert Work, who leads TOS efforts, has stressed that multiple technologies, like human-machine collaboration and combat teaming, is critical to TOS.[18] Currently, a large number of machines are operated autonomously and connected to each other through the Internet of Things (IoT). The development of these technologies had mainly been led by commercial companies in Silicon Valley and other innovation hubs.

There are consecutive innovations in these technical fields that TOS is focusing on such as autonomous operation, human machine teaming, swarm control and robotics. These consecutive innovations are brought by utilizing broad ideas around the world through the Internet. The innovation isn't an invention of new technology, but combination of technologies and unconventional ideas. Recently, everyone can achieve innovations, and there is no exception in military fields. In other word, TOS has to introduce these consecutive innovations into military technologies to keep technical superiority thorough the future.

TOS not only relies on new technologies but also new legal and organizational frameworks that encourage more innovation in the military. DOD has established various programs that study future warfare and technology investment. The Long Range Research and Development Planning Program (LRRDPP) studies strategies to achieve future military superiority by combining concepts and technology, including matured, emerging and dual-use technologies. DOD has also established the Defense Science Board (DSB), which advises on defense innovations proposals, and the Defense Innovation Unit Experimental (DIUx), which bridges DOD and innovative information technology (IT) companies of various innovation hubs around the country. Moreover, DOD is pushing ahead with acquisition reforms that encourage the incorporation of cutting-edge technologies and innovative ideas into the military by streamlining the complicated acquisitions process and removing barriers to entry for small venture capital business.

At the same time, DOD is moving ahead with reforms to the personnel system. The resultant "Force of Future" initiative has set new DOD recruitment and retention criteria for skilled personnel in the organization.

All of those DOD efforts seems to be part of TOS and still being revised and updated through experimental operations.

The challenges of the Third Offset Strategy and implications for allies

TOS has the tremendous potential to achieve military superiority through the implementation of future consecutive innovations. But some defense experts have pointed out numerous challenges to the strategy's viability, not to mention issues related to future interoperability with allies. This paper will now try to identify those key challenges and implications for allies.

First, TOS will encounter challenges related to the sheer complexity of advanced technologies the resources needed to deliver them. This is already the case in the field of software developments. For example, the F-35 fighter jet has struggled with development of flight software and a shortage of skilled software engineers,[19] and it's unclear how many additional software engineers will be needed for the large number of programs being considered under TOS. Moreover, cultural conflicts between traditional weapon developer/operator and advanced IT community are concerned.[20]

Second, some experts are skeptical about the effectiveness of TOS. Michael O'Hanlon of the Brookings Institution has noted that TOS is highly dependent on having a technical edge, an edge that may be vulnerable to low-end countermeasures such as electronic jamming or deception.[21] Moreover, the technological superiority of TOS will only be temporary because the interval between jumps in innovation will shorten. Therefore, TOS might induce an arms race between the U.S. potential adversaries. There also remain more glaring geographical disadvantages to overcoming adversaries' A2/AD environment despite autonomous or remotely piloted weapons.

Third, it would be difficult for DOD to put a large number of cutting-edge technology programs into effect under current budgetary conditions. What's more, unit costs are likely to increase as the United States struggles

18. ibid

19. Interview to defense industry.

20. Ben FitzGerald and Loren DeJonge Shulman, *"12 Month in 8 Month Left –An update on Secretary Carter's Innovation Agenda"*, April 2016, CNAS, p.8

21. Interview

to recruit and marshal resources, consequently stretching out development lead-times. America's potential adversaries have relatively cheap sources of labor and strong government leadership that can organize all national resources to achieve weapon development. Could the United States overcome this technological and leadership challenge?

American allies also face numerous challenges to keep up with the U.S., especially if they wish to maintain interoperability while overcoming the capability gap. Some U.S. defense experts point out that the U.S. and allies have to help each other to overcome these challenges, which the U.S. could inhibit if it utilizes its allies' industrial bases through cooperative development. This would also help spread budgetary and programmatic risk. Moreover, cooperation with various countries that have their own cultural backbone makes diversity of the weapon system. For instance, the current Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) systems are excessively relying on the computer network, therefore it have vulnerability from cyber-attack or electric warfare. Diversity of the C4ISR system and mutual compensation across allies could overcome this vulnerability.

Japan is one of the United States' most industrialized allies, and it has geographic advantages that great enhance the effectiveness of American military deployments. In a later section, this paper describes specific efforts for Japan to incorporate elements of TOS and strengthen the U.S.-Japan alliance will also indispensably contribute to the peace and stability of the Asia-Pacific region.

CHAPTER 3

Japan's new national security policies

Japan has followed consistent, peaceful national security policy since the end of World War II. In addition, Japan has maintained its security and contributed to peace and stability in the Asia-Pacific region by enhancing its alliance with the United States.[22] Recently, the security environment around Japan has become more unstable than ever before, and Japanese policymakers have considered instituting a new national security strategy. In December 2013, Japan completed its first-ever National Security Strategy (NSS) in which it set forth a security policy of "Proactive Contribution to Peace." Then, in April 2014, Japan reviewed its policy guidelines for overseas transfers of defense equipment and technology. And in September 2015, Japan enacted legislation that enabled it to exercise the right of collective self-defense.

This paper will now describe trends in Japan's national security policy after the Cold War and note particular characteristics of the Japanese policymaking system. Then, it will focus on recent dramatic reforms, especially as they relate to defense equipment policies.

The characteristics of Japan's policymaking system and its influence on national security policy

Japan's political system is characterized as a parliamentary democracy system that is supported by high-skilled career bureaucrats.

In this system, the government mainly submits draft bills to the Diet. This characteristic is a result of the fact that Japan's ruling party play the role of supporting the running of the government administration.[23] And bureaucrats play an important role in Japan's legislative process.[24] In contrast, U.S. policy formulation takes place not only on Capitol Hill but in other areas of government and academia. U.S. legislators have large policy staffs to formulate legislation. The contrast between the two systems is stark since over 70 percent of legislation introduced in Japan's Diet have been submitted by government.[25]

This system has been criticized, however, because a small number of bureaucrats dominate the political decision-making. This debate had led to political reforms beginning in the mid-1990 that have focused on the way policy is made.[26] The changes were meant to encourage robust debate between the two large parties in parliament. But Japan's policymaking process was designed over decades of single-party dominance, which made it highly dependent on the sophisticated bureaucratic system, and as a result the reforms have weakened the policymaking system in each political party.[27] Recently, Japanese policymaker thought that bringing in experts from outside the bureaucracy would open Japan's policymaking process by giving outside experts a greater voice.[28] Ironically, this system has led to a convergence of Japan's security policy, because of reliance on a small group of national security experts, regardless of which major political party is considering new policies.

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22. National Security Strategy December 17, 2013
23. Jun Makita, Kakukoku-Rippoukikan-no-Bunseki (Analysis of the legislative bodies)(In Japanese), The National Graduate Institute for Policy Studies (GRIPS), June 2009, p.6
24. Ibid, p.11
25. The statistics of recent 4 years Diet session that made by Cabinet Legislation Bureau shows that 76.4perent of legislations have been submitted by the government.
26. Sheila A Smith "Japan's New Politics and the U.S.-Japan Alliance", Council on Foreign Relations, July 2014
27. Ibid.
28. Ibid.

In short, Japan's policymaking process has two pillars. The first is top down and strategic decision-making of the ruling party supported by external experts. The second is bottom up specific policy planning by career bureaucrats. This process makes Japan's policymaking slow but more stable than in the United States.[29]

The National Security Strategy (NSS) was enacted by the cabinet in December 2013, and was based on recommendations from external experts. It contains specific policies such as "Japan's Strategic Approaches to National Security" that are clarified by specific courses of action. This means that the NSS is not only a national strategy but also a guide for government offices. Consequently, the Ministry of Defense (MOD) and the Ministry of Foreign Affairs (MOFA) are planning and executing specific policies based on the NSS and accompanying policy documents such as the Defense Program Guide Line (DPGL) and the Mid Term Defense Program (MTDP).

These political directives are based on the current agenda of Japanese government officials. In other words, Japan's current security policies are based on the various agenda that Japanese defense experts and academia have continuously expounded. In contrast, the U.S. Congress orders numerous policy changes to DOD through the annual National Defense Authorization Act (NDAA), which gives the U.S. policymaking system a stronger governance compare with the Japanese policymaking system.

The reform of security policies based on the U.S.-Japan alliance

Japan's national security policies are based on the constitution and the Basic Policy for National Defense as established in March 1957. The Basic Policy for National Defense was a short document that consisted of four sentences. The first outlined the support activities of the United Nations and cooperation with the international community; the second one emphasized the development of domestic common ground priorities for national security; third promised only a minimum build-up of defense capabilities for self-defense; and final one clause committed action based on the U.S.-Japan alliance until the United Nations can take over the function of protecting Japan from invasion.[30] The Cabinet abided this policy during the Cold War era, but it was never revised until the establishment of a new National Security Strategy in December 2013, when Japan elaborated on its policy of "Proactive Contribution to Peace."

The second Shinzo Abe administration started reforming Japan's security policy when he took back power in 2012. He first established the National Security Council (NSC) and the National Security Secretariat (NSS) in November 2013, which deliberate the country's fundamental national security policies. The NSC then approved the first ever National Security Strategy in December 2013. The National Security Strategy stated that Japan would continue to adhere to the country's longstanding policy to proactively secure peace, stability, and prosperity of the international community as a "Proactive Contributor to Peace," based on the principle if international cooperation.[31]

Thus, long-term issues related to Japan's national security have been revised under the National Security Strategy. Specifically, the Three Principles on Transfer of Defense Equipment and Technology of April 2014, and the Legislation for Peace and Security, which contains develops the right of collective self-defense, of September 2015, were historical changes to Japan's security policy.

Reforms to the U.S-Japan alliance were also discussed. The U.S.-Japan alliance has been the backbone of Japan's national security policy since both governments agreed the Security Treaty between the United States and Japan in 1951. The treaty was revised as the Treaty of Mutual Cooperation and Security between the United States and Japan in 1960. The treaty aims to defend Japan and its territory from invasion by other countries.

However, some U.S. defense expert point out that U.S. forces in Japan also act as a "bottle cap," preventing the militarization of Japan.[32] Moreover, the treaty has been criticism as fostering an asymmetric relationship between the people of both countries because the treaty ascribes the U.S. responsibility for Japan's defense while Japan has no responsibility to defend the United States.

29. In 2016, Japan's Diet session has enacted 88 percent of draft legislation. In contrast, in the U.S. congress, the rate has been changing between 2 percent to 6 percent since 2000.

30. "The Basic Policy on National Defense", May1957

31. National Security Strategy, p.4

32. Daisaku Sakaguchi, *"The Realignment of U.S. Forces in Japan and its Impact on the Interdependent Relationship between Japan and the U.S."*, NIDS Security Reports, November 2008, p.36

There is no doubt that the U.S.-Japan alliance is one of the most important frameworks for keeping peace and stability in the Asia-Pacific region. The argument that Japan should share a larger proportion of the alliance burdens has been emerged abruptly during the 2016 presidential primary election in the United States. Japanese policymakers and government authorities, though, have dealt with this issue since the end of the Cold War, and Japan has changed its national security policies gradually to strengthen Japan's role in the alliance. In April 2015, Japan and the U.S. agreed to revise The Guidelines for Japan-U.S. Defense Guideline (Guideline), which replaced 1997 Guidelines, updated the general framework and policy direction for the roles and missions of the two countries, and created a strategic vision for a more robust alliance and greater shared responsibilities by modernizing the alliance and enhancing its deterrence and response capabilities in all phases during both peacetime and contingencies.[33] The Guideline makes significant changes to the alliance, such as seamless bilateral responses and the global nature of the alliance.

As a result of the revisions, Japan can now support American military activities seamlessly beyond previous geographical constraints.[34] Practical operations based on the Guideline were legalized in October 2015 after intense debate in the Diet.

Reform of Japan's defense equipment policy

Several past studies point out why and how Japan's defense equipment policy has been reformed. Heigo Sato, writing for the Center for Strategic and International Studies, explains the details behind the establishment of the Three Principles on Transfer of Defense Equipment and Technology and the Strategy on Defense Production and Technological Base,[35] which have become the new directives for Japan's equipment policy. His research focuses on the background of those policy changes, and suggestions for Japan's government. So this paper tries to focus on current policy reforms that include establishment of a new acquisition agency and subsequent reforms.

Japan made a historic change to its defense equipment policy after the release of the Proactive Contribution to Peace Policy. The Three Principles on Transfer of Defense Equipment and Technology, formulated by the Cabinet in April 2014, lifts the self-imposed ban on arms exports in place since 1976. Under the original three principles of arms trade, the Japanese government placed self-imposed restrictions on the trade and transfer of ammunition, the transfer of defense technologies, investment in defense industries overseas, and military-related construction.[36] This change opened up opportunities for Japanese government and industries to sell Japanese products to other country and join international arms development programs that previously been off-limits.

Japan also established the Strategy on Defense Production and Technological Bases in June 2014. Japan strived to strengthen its defense production and technological bases through licensed production and indigenous production, research and development of major defense equipment, and through government-industry cooperation as outlined in the basic guide for production and development of defense equipment of 1970.[37]

Until now, Japan has mainly utilized defense equipment from the United States, which has helped foster interoperability. Japan also developed some indigenous weaponry. These weapons are only used by the JSDF, which makes them very expensive, resulting in what is called the "Galápagos syndrome." The Strategy on Defense Production and Technological Bases says that defense production and technological bases must adapt to the changing security environment, and pointed to its promotion of long-term government-industry partnerships, international competitiveness, and effective and efficient acquisition.[38] Sato's research pointed out that the new principles and strategy are a framework, but they do not function as a guide to specific policy decisions.[39]

Meanwhile, the Abe administration led government-wide reforms aimed at increasing cross-agency coordination and consolidation of organizations. In August 2013, the MOD decided to attempt to unify civilian and military

33. Defense of Japan 2015
34. Takashi Kawakami, "Anzenhosho-Kanrenhouan-to-Nichibeidomei (The Security Legislations and the U.S.-Japan Alliance)(In-Japanese)", Kaigai-Jijo, Oct. 2015
35. Heigo Sato, Japan's Arms Export and Defense Production Policy, CSIS, April 2015
36. Masataka Morimoto, *Bukiyushutu Sangensoku* (in Japanese) Shinzansha, January 2012
37. Strategy on Defense Production and Technological Bases June 2014 Ministry of Defense, Japan
38. Ibid., p.2-p.6
39. Sato, p.11

workforces by establishing a new acquisition agency that would create a more effective and efficient acquisition force. The Acquisition, Logistics and Technology Agency (ATLA) was established in October 2015, and it integrated logistics, procurement and technology divisions from across the MOD.

Moreover, the Cabinet Secretariat was placed in a strong position to lead cross-ministry coordination, especially on national security issues. The government approved the Space Basic Plan and the Science and Technology Basic Plan, which described the use of new technologies for national security purpose for the first time. Furthermore, the government enacted the Development Cooperation Charter in February 2015, which allows Japan to support foreign military forces–through the Official Development Assistance (ODA) framework–when they conduct non-military activities, such as supporting public welfare or delivering disaster relief.[40]

Thus, Japan's policymakers' reforms are starting to utilize the whole of national resources for national security. But how should Japan maximize its national interest by using these new frameworks and legislations?

40. Cabinet decision on the Development Cooperation Charter, February 2015, p.11

CHAPTER 4

Acquisition reforms

There have been continuous efforts to reform defense acquisition processes since the emergence of modern military forces and the focal point for those reforms has been adaptability. In recent years, more reforms have been needed to induce innovations more quickly and continuously in order to maintain military superiority into the future.

This chapter studies numerous acquisition reforms in the United States and Japan and considers how Japan should prepare for the future strategic environment. It will analyze the differences and similarities in reform between the two countries and attempt to outline an acquisition reform path for Japan. In the end, however, Japan should deliver its reforms utilizing its cultural strength and overcoming identified weaknesses.

Acquisition reforms in the United States

From the 1960s through present day, acquisition reforms in the United States have evolved and evolutions will likely continue long into the future.[41] Numerous acquisition reform studies show that the United States has reacted to specific challenges to its military power, but that the system has enabled technological superiority since the end of World War II. However, America's advantage has been undermined by the proliferation of technology and rapid growth of military capability now emerging in other regions, particularly in China. With this proliferation in mind, recent acquisition reforms like Better Buying Power 3.0 have focused on the "shift toward innovation and technological excellence"[42] in order to preserve America's advantage against potential threats.

The project management method of acquisition was developed in DOD during the Cold War era, and its fundamental methodology is reflected in the DOD 5000 series of documents beginning in 1971. This methodology is also reflected in the Project Management Body of Knowledge (PMBOK) and utilized by numerous private companies and academic institutions around the world. In the 1980s, DOD's acquisition system was criticized for allowing "fraud, waste, and abuse." In response, two major acquisition reforms were conducted under the Packard Commission and the Goldwater–Nichols Act (GNA), which established current defense acquisition processes that aim to develop joint operation capabilities. GNA also established a "three-tiered acquisition management chain of command within each service consisting of a service acquisition executive, program officer, and program manager."[43]

Acquisition reforms in the 1990s focused more directly on streamlining the acquisition process and acquiring commercial products, as well as improving the education and effectiveness of the acquisition workforce.[44] The U.S. Congress pushed forward reduction and education of the acquisition workforce by enacting the Defense Acquisition Workforce Improvement Act. As a result, the acquisition workforce was reduced by 20 percent.

A Revolution in Military Affairs (RMA) became a priority in the early 21st century because of the rapid emergence the information technologies. Secretary of Defense Donald Rumsfeld pushed his initiative to reform DDD's

41. Michael E O'Hanlon, *Pentagon acquisition policy: Three-quarters right, one-quarter broken*, Brookings, June 2015, p.12.

42. Honorable Frank Kendall, "Better Buying Power 3.0" Interim Release, Department of Defense, Washington, DC, September 19, 2014.

43. Fox, *Defense Acquisition Reform, 1960-2009 An Elusive Goal*, 135

44. Andrew Hunter, Greg Sanders, Rhys McCormick, *Measuring the Outcomes of Acquisition Reform by Major DoD Components*, CSIS, September 2015, p.6

acquisition system to promote RMA in the U.S. military. Rumsfeld also pushed to establish the Joint Capabilities Integration and Development System (JCIDS), which forced DOD to require that arms meet joint operation specifications.

During the Obama administration, cost overruns and delayed weapons systems development has been a significant concern. The Weapon Systems Acquisition Reform Act of 2009 was passed to enhance acquisition project management and an improved cost estimation process.

The Better Buying Power (BBP) initiative is the DOD's latest effort to improve its acquisition process. The first version of BBP was announced by Under Secretary of Defense (AT&L) Ashton Carter in 2010. The goal of BBP was to maximize efficiency and find savings within the contracting portion of DOD's budget. The initiative emphasized cost savings and improved productivity. The second version of BBP was announced in 2012 and was more focused on controlling costs throughout the product lifetime, as well as improving the professionalism of the acquisition workforce. The latest initiative, BBP 3.0, was announced in April 2015, and it aims to shift toward innovation and technical excellence.

At the same time, DOD faces not just challenges to developing and acquiring cutting-edge military technologies, but also to overcoming huge budgetary trends, as demonstrated by the acquisition "bow wave" created by the modernization of legacy assets from the Cold War era.

Under BBP initiatives, DOD is attempting to improve its acquisition system by simplifying its procurement process to induce small businesses and venture capital firms into the marker, as well as emphasizing fixed price contracts, which incentives industries to minimize production costs. Meanwhile, Congress also recognizes the problems of acquisition based on its own view and is backing up DOD's acquisition reforms in the annual National Defense Authorization Act (NDAA), legislating specific acquisition reform measures.

In particular, the Senate and the House of Representatives are advocating reforms to GNA to establish new structures that can better introduce various cutting edge technologies to the military. GNA reforms also make the service acquisition executives the decision authority for non-joint weapon programs transferred to or started under service control.[45]

These DOD efforts are directly related to their contemporary security environment, technologies, and industrial bases. The situation will change in the future, therefore the U.S. acquisition system must also adapt to the future environment.

Japan's acquisition reforms

In contrast to American reforms, Japan's efforts are mainly driven by domestic issues. Most of Japan's defense production and technological base was lost at the end of World War II. The newly established Japan Self Defense Force (JSDF) was dependent upon U.S. deliveries and leases of defense equipment, but Japan strived to strengthen its defense production and technological bases through licensed production, indigenous production, and research and development of major defense equipment through government-industry cooperation based on the Basic Guideline for Production and Development of Defense Equipment of 1970.[46]

This Guideline advocated enhancing Japan's defense industry and technology bases through indigenous development or licensed production.[47] Japan also instituted a self-imposed ban on arms exports after the Three Principals of Arms Export in 1976.[48] Under these policies, Japanese industries produced arms only for domestic customers (JSDF); as a result, it rigidified Japan's acquisition process and industrial structure.[49] This rigid structure was preserved over the next three decades because Japan had a relatively large market, and Japan's

45. *McCain Would Let Services Out of 'Penalty Box'*, Defense News, May 2015, http://www.defensenews.com/story/breaking-news/2015/05/22/mccain-pentagon-weapons-reforms-budget-ndaa/27773133/, accessed on Oct 20th 2016

46. *Strategy on Defense Production and Technological Bases*, June 2014, Ministry of Defense, Japan, p.1

47. The Guideline for Domestic Development/Production,1970

48. See chapter 3.

49. Satoshi Morimoto, Why Three Principals of Arms Export was revised (In Japanese), Kairyu-sha, March 2014, p.57

government paid expensive license fees to the American arms industry to preserve Japan's technological and industrial base. As a result, MOD's acquisition system focused more on managing contracts with Japanese industries.

The first big reform, enacted in 1999, was a response to corruption allegations that industry had inflated their contract prices. The Japan Defense Agency (JDA) enhanced its audit system and reorganized its procurement agency to better protect against corruption. Simultaneously, JDA started to study other acquisition reforms such as life cycle cost management and incentive contracts as exemplified in American reforms. Nevertheless, the next round of reform was again driven by official corruption. In 2006, a government-wide debate over the defense acquisition system occurred because of major corruption involving the Vice Defense Minister at the time and a company over arms imports. The Comprehensive Acquisition Reform Committee (CARC) and The Ministry of Defense Reform Initiative (MODRI) started their study under the LDP administration initiatives intended to induce drastic reforms both of the acquisition process and the MOD's organization. CARC concluded its short-term measure to address the corruption was reforming MOD's arms import process. CARC also suggested enhancing life-cycle management of major defense equipment and increased outsourcing.[50]

Though CARC and MODRI continued to study drastic reforms, the first ever change of government in Japan's political history in 2009 affected these studies. The new Democratic Party of Japan (DPJ) focused on reducing government expenditures and ordered a reevaluation of some ongoing projects after questioning their effectiveness and efficiency. This "budget screening process" ended after DPJ's three year-old rule in 2012 when LDP took control of government. However, as a result of more strictly overseeing budget compilation and execution, the effort of acquisition reform became more focused on drastic reforms that had been shelved during DPJ administration.

Defense policy reforms accelerated under strong leadership during the second Abe administration.[51] MODRI concluded its study into establishing a new acquisition agency, named ATLA. MODRI also reorganized MOD in order to make uniformed Self-Defense Force officers part of the Internal Bureau (IB) by limiting input from the Civilian Control. The Abe administration also enacted the Defense Production and Technological Base Strategy in 2014, which was intended to improve the contract system, establish a vision of Research and Development, and maintain the contractor supply chain. In addition, MOD implemented several measures to help incorporate cutting edge dual-use technologies into defense, particularly by establishing a framework to correct technical information inside ATLA and creating a brand-new defense funding initiative for academic studies under the initiatives.

ATLA has enhanced program management for major defense equipment with its increased number of program management officers and new program management guidelines that are based on PMBOK, or American program management procedure. The organization reforms under MODRI have improved MOD's improve bureaucratic and stove piped system by integrating organizations that were previously functionally divided.

In this way, Japan's acquisition reform has rapidly progressed since 2012. However, the long interim period eroded Japan's defense industrial base.[52] In fact, a number of companies retreated from defense production during that time. MOD, under a new strategy and new organization, is now conducting the biggest acquisition reform ever seen in Japan.

Comparing Japanese and American defense acquisition systems

The biggest difference between Japanese and American defense acquisition methods is that Japan elects to buy off-the-shelf equipment (mainly imported) or to develop equipment indigenously (or internationally). These differing frameworks have resulted in distinctive legislation and organization adapted to specific acquisition processes. As a result, bureaucratic stove-pipe structures inside the acquisition community have emerged. In addition, there are other structural impediments between requirement-setting and the procurement or the development stages in Japan's system.

50. Houkokusho(Report),(in Japanese), March 2008, Ministry of Defense

51. See chapter 3.

52. Takahiro Yoshshida, *Boueisoubicho-to Soubiseisaku-no Kaisetsu*(in Japanese),Naigai Shuppan, March,2016, p13

Figure 1. Acquisition structure of the United States and Japan

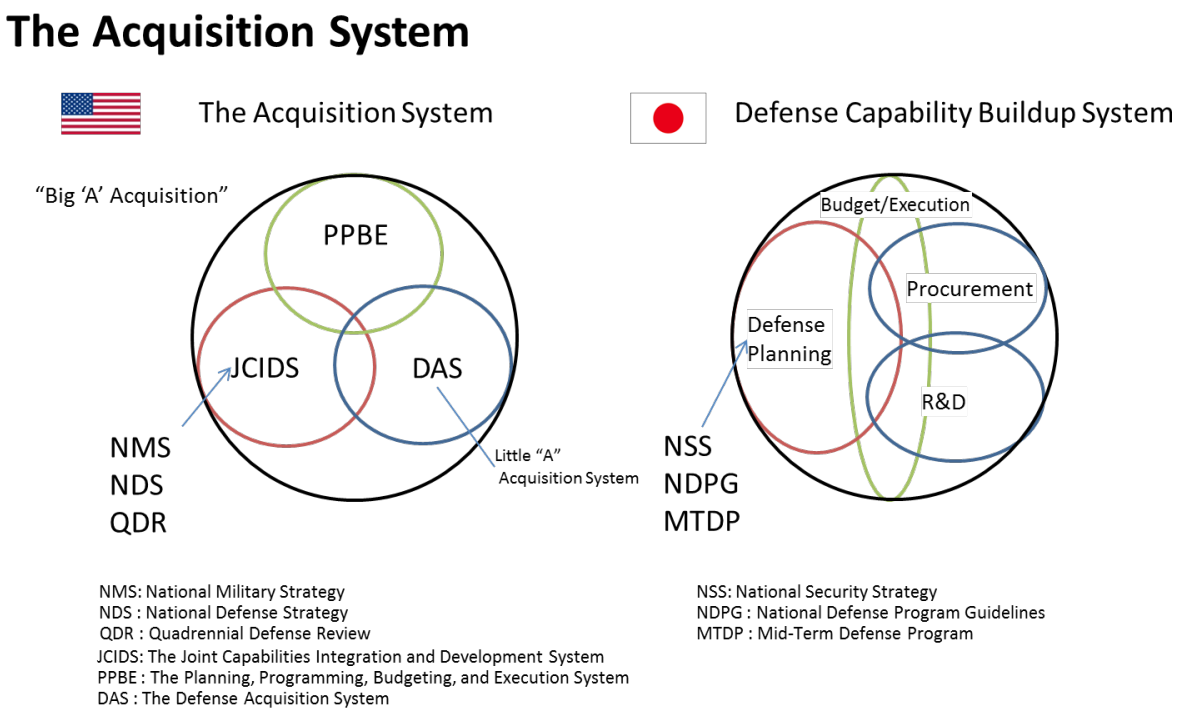
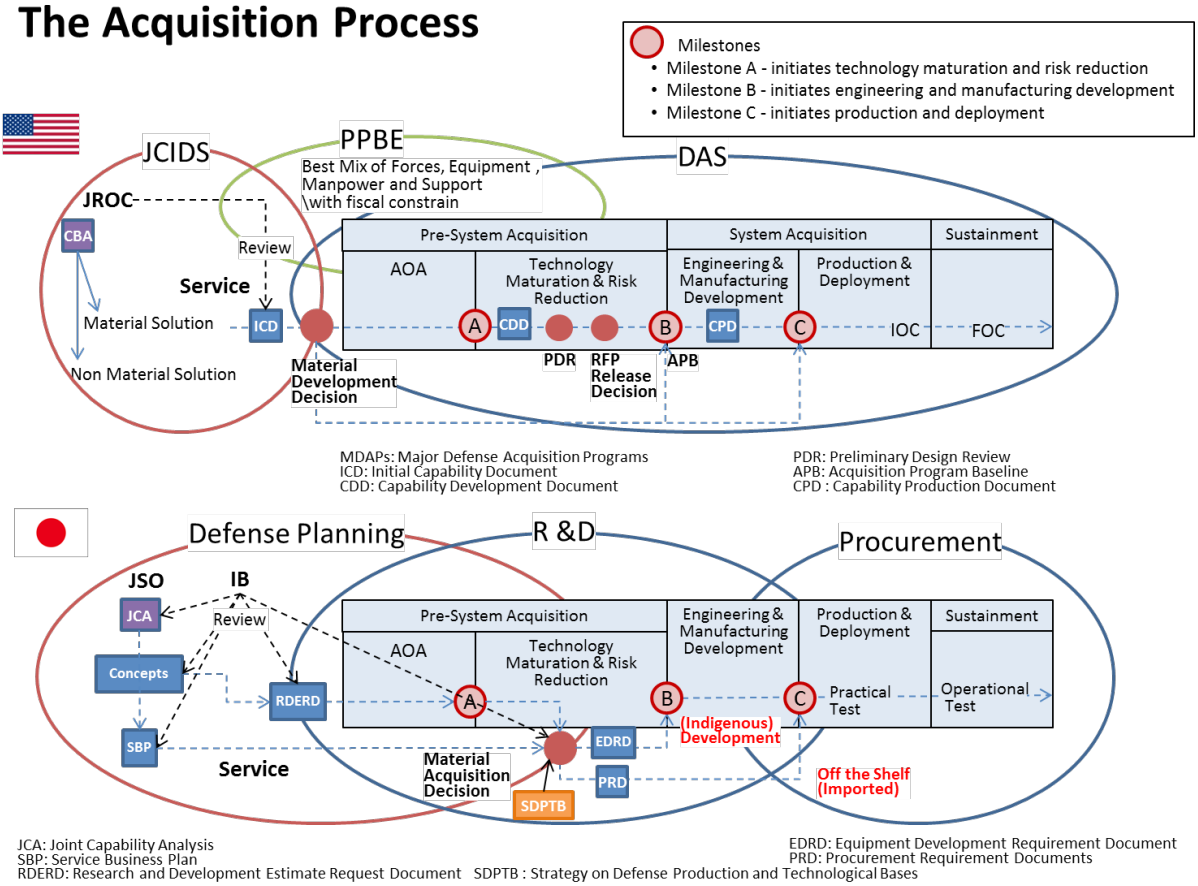


Figure 2. The acquisition processes of the United States and Japan



To compare the differences between acquisition systems, terms need to be defined. In the United States, the acquisition system includes the entire process of acquiring and managing equipment through its lifetime, including conceptualization, initiation, development, production, deployment, logistics support, and disposal.[53] For MOD, these acquisition activities are defined differently; in fact, a definition for all acquisition activities does not exist. Therefore, this paper defines all MOD's acquiring activities as "acquisition" that are now defined as the Defense Planning, the Procurement, the Supply and Management, and the Research and Development.[54]

Differences between the frameworks are noticeable in terms of interaction among process. The American acquisition system comprises three systems known as the Planning, Programming, Budgeting, and Execution System (PPBE), the Joint Capabilities Integration and Development System (JCIDS) and the Defense Acquisition System (DAS). PPBE provides prioritization and budget allocation to each project. JCIDS defines equipment requirements under the Joint operational perspective. DAS streamlines acquisition processes.[55] It's hard to compare the two structures because MOD does not entail an integrated acquisition structure. However, it should be noted that the defense planning function does play a large role in the MOD's acquisition system and should be simplified similar to DOD structure. In Japan's system, the defense planning, such an annual budgets or a deployment plan for major equipment, and the definition of requirements are decided inside the Defense Planning Division of the Service's Staff Office, and are authorized by the Defense Minister through the IB. Specific equipment requirements are generated based on capability gaps that are identified through capability analysis with the view point of the joint operation, which is conducted by IB and Joint Staff Office (JSO). In short, the Defense Planning and the specific requirements that are part of an "upstream stage of the acquisition" are conducted inside the closed loop of the massive defense planning community comprised of IB and the Defense Planning Department of each Staff Office. From there, the processes are divided between the Procurement and the Research and Development (R&D) stages, which depends on whether the equipment can be procured from the market or if it needs domestic (or international) development.

The comparison of acquisition processes is more complicated due to Japan's specific "buy or develop" decision making system. Focusing on the milestone decision stages of each system, however, Figure 2 shows each acquisition systems' processes. DOD's acquisition system uses "milestones" to oversee and manage acquisition programs, and DOD requires that a program meet specific statutory and regulatory requirements at each milestone before the program can proceed to the next.[56] And while MOD has a similar milestone decision system, if MOD decides to develop new equipment, it needs to consider the long lead that could result from research and development process versus of procuring off-the-shelf equipment. Moreover, because this decision is highly political, it is difficult to review. Some argue that MOD hesitates to review its requirements to avoid the criticism that it should buy more affordable and capable equipment from overseas industries rather than preserving the Japanese industrial base.[57] Furthermore, the strong influence of the decision-making of the defense planners has given the IB a strong oversight function. This is sometimes criticized as "civilian's control" that means civilian personnel in the IB control all uniform personnel's decision-making of the services Staff Office. The official report of MODRI pointed out that the friction between civilian and uniformed personnel inhibits interaction and effectiveness in the acquisitions system.[58]

The acquisition system in the United States is also frequently criticized. New policies and statutes frequently require new documentation requirements. And while these are usually legitimate reactions to observed problems, the consequence is that an extensive and burdensome process has emerged in which program offices and other DOD organizations spend an enormous amount of time and effort preparing and reviewing documentation.[59] It also appears that long-term reform in the U.S. can result in structural fatigue, such as a bureaucratization of the system. Moreover, some critics note that the government shutdown in 2013 has seriously affected DOD's civilian workforce morale.

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53. *Glossary of Defense Acquisition Acronyms and Terms*, DAU homepage accessed on 19 May 2016, https://dap.dau.mil/glossary/pages/1381.aspx
54. Act for Establishment of the Ministry of Defense
55. Moshe Schwartz, *Defense Acquisitions: How DOD Acquires Weapon System and Recent Efforts to Reform the Process*, Congressional Research Service, May,2014
56. Ibid.
57. Interview from Defense Industries
58. *Houkokusho* :Final report(in Japanese), Ministry of Defense Reform Initiative Commission, July,2010
59. *ACQUISITION REFORM*, United States Government Accountability Office, February 2015, p.29.

In an historical context, there are significant differences between the acquisition systems in the United States and Japan. Table 1 shows the defense acquisition reforms in both countries. The United States has conducted defense reforms over almost half a century, and the main theme of the reforms has changed each decade. In contrast, Japan's reforms have just started as a result CARC initiative at the end of 1990s when Japan set up its fundamental guideline for domestic development and production. Moreover, Japan's reforms are follow American reforms, such as the enhancement of project management, optimization of acquisition process, and increasing use of COTS. Japan's reforms do differ, however, in their reaction to corruption.

Table 1. Comparison of defense acquisition reforms between the U.S. and Japan

	United States		**Japan**	
1960-70's	DOD Directive 5000 series (1971)	The program management	The Guideline for Domestic Development/ Production (1970)	To enhance Japan's defense industry and technical bases through indigenous development or licensed production
1980's	The Packard commission (1986)	Efforts targeting perceived waste, fraud, and abuse. The creation of USD(A). Aimed to increase COTS.		
	Goldwater Nichols Act (1986)	Defense Acquistion Board (DAB), Three tiered acquistion management chain of command.		
1990's	Streamlining and Move to Commercial Contracts	Focus on streamlining overly rigid military specifications and Process. Education and effectiveness of the acquisition workforce.	Defense Procurement Reform Initiative (1999) Defense Procurement System Study Group (1999)	To enhance audit system to defense industries. Aimed to increase COTS. Reoganization of Procurement Agency.
2000's	Rumsfeld's Doctrine - RMA and DOD Transformation	Focus on transformational technologies	The Comprehensive Acquisition Reform Committee (2007)	To reform the import process. To enchance the Life Cycle Cost Management. To increase the outsourcing.
	Weapon System Acquisition Reform Act (WSARA) (2009)	To limit cost overruns before they spiral out of control.	Budget Screening Process (2009)	Re-evaluation of ongoing projects of government.

	United States		Japan	
2010's	Better Buying Power (2010)	Do more without more. To improve cost and productivity.	Ministry of Defense Reform Initiative (2010-2015)	Establishment of ATLA. Reorganization of the Internal Bureau.
	Better Buying Power 2.0 (2012)	Controlling costs through the product lifetime. Improving the professionalism.	Defense Production and Technological Base Strategy (2014)	Improvement of the contract system. Establishment of a vision for Research and Development. Maintain robust suppyly chain.
	Better Buying Power 3.0 (2015)	Shift toward innovation and technical excellence.		

The future of Japan's acquisition reforms

Acquisition reform is one of the most important aspects of Japan's need to build up essential capability during a harsh security situation and under tight fiscal constraints. As described above, Japan's acquisition reforms are halfway through its progress, and are following U.S. reforms. Japan's defense equipment policy is at a critical juncture, and specific achievements are not apparent on the horizon. Japan also lacks sufficient policy guidelines that support the national interest.

This paper suggests that there are three appropriate recommendations for Japan's acquisition reforms. The first is an interactive knowledge management system. Typical Japanese organizations tend to optimize business processes inside small groups. This optimization, known as "Kaizen" activities, are well known in successful Japanese companies like Toyota. However this activity needs to be integrated into an organization's strategy under strong leadership. In the case of Japan's pre-World War II military, highly optimized small functional groups justified their role and were deciding its own goal.[60] It can be said that Japanese workforce has a good culture to self-improve its activities if the management can establish frameworks which introduce sharing information and interactive organizations. The key factor in implementing this self-improvement is the knowledge management system enable by IT, which is utilized in numerous leading companies in the world. This knowledge management method was originally developed in Japanese companies and it has evolved in the United States as well.[61]

The acquisition workforces have accumulated their own unique knowledge-sets: these include rules, regulations, and cost information. This in addition to tacit knowledge: tendencies of business, pitfalls in development, and political backgrounds of projects.[62] The Japanese style of knowledge management can be compatible with these two important sets of information.[63] The structural reforms under the MODRI initiative are aimed at integrating all acquisition workforces into a unified agency and excluding its stove-piped bureaucracy. However, the policies that govern the principles and the strategy have not yet been elaborated.[64] In addition, as described in chapter 3, the challenge of Japan's decision making system is the integration between the strategy and policy. Therefore, Japanese-style knowledge management system must begin to integrate bottom-up knowledge from the workforce and distribute strategy in a top-down manner from management. The unified interactive communication framework that is managed by the new program management office in ATLA can provide cross-organization interaction and knowledge management.

The second recommendation is a future-oriented decision making system. As noted in this paper, Japan's reforms have always been passive, and they often followed after similar American reforms. Future defense reforms must take into account Japan's harsh security environment. The United States is also struggling with its reforms under uncertain conditions, making an understanding of American and allied reforms through dialogues even

60. Ryoichi Tobe, *Shippai-no Honshitsu*(in Japanese),Chu-ko bunko, August 1991.

61. Umemoto Katsuhiro, *Knowledge Management*(in Japanese),Joh-ho-no Kagaku-to Gijyutu, July,2012 p.279

62. Hochi Tohru, A director of ATLA, Speech at Japan-U.S. Defense Industry Conference, May,2016.

63. Umemoto, p.279

64. Heigo Sato, *Japan's Arms Export and Defense Production Policy*, CSIS, April 2015, P.12

more important. Moreover, MOD should clearly divide its organization's roles to focus on strategic and future perspectives. For instance, oversight role of IB should be separated into the defense planning role and requirement role, because IB's role is now spread too thin and bottlenecks acquisition decision making. Requirement-setting for major equipment has to be overseen by JSO to meet joint mission capability. Furthermore, equipment development plans must be able to adapt easily to rapidly changing situations. Interaction and transparency are crucial factors in this process. The requirement side and the development side must clearly understand benefits, costs, and risk under this framework. Like "The North Wind and the Sun," the understanding of the benefit of the change is more important than forcing the change.

The third is the autonomously improving culture. Like the American acquisition workforce, Japan's acquisition workforce has been forced to adapt to numerous rules, improving efficiency, reductions to its size, and accusations of corruption and favoritism. As emphasized in recent reforms in the United States improving the morale of its workforce is one of the most important policies for the acquisitions agencies. The personnel system should provide attractive career paths and appropriate personnel evaluation systems that can appropriately reward workforce efforts.

CHAPTER 5

Japan's future defense equipment policy

This paper has described the necessity of Japan's future acquisition reform to address various security challenges that Japan is facing. In this chapter, this paper tries to figure out some specific measures to solve these security challenges, while studying points of current discussion in the United States. To maximize the achievement of its national interests, Japan should not only reform its systems and organizations, but also deepen discussion about how to use them to address specific cases through collaboration between industry, academia and government under strong political leadership.

This paper focuses on three specific areas: entering the international arms market, logistics support for allies, and capacity-building for nations in the Asia-Pacific region.

5.1 ENTERING THE INTERNATIONAL ARMS MARKET

Weapon systems are becoming more sophisticated, making acquisition costs higher and development terms longer. It is hard for most countries to develop high-end weapons systems like fighter jets by themselves, except for a few countries such as United States and Russia.[65] Therefore, Japan has relaxed its self-imposed policy banning arms exports in order to join international cooperative development projects. The Japanese defense industry has been able to sell its products to foreign customers under the new policy. On the other hand, competition in the world arms trade market has intensified since some new competitors have emerged.[66]

What is the most effective way for MOD and Japanese defense industry to utilize it's strengthen to compete in this intensified market environment?

The characteristics of Japan's defense technology and industrial bases

Some defense and economic experts point out that Japan has tremendous capabilities in its defense technology and industrial bases, that are not sufficiently utilized.[67] Japan's situation, which has been criticized as the "Galapagos' Syndrome." has both possibilities and vulnerabilities. Many experts expected Australia's recent submarine tender for which Japan competed with other countries would be Japan's first big deal under its new arms export policy. However, Japan failed to win the competition despite the fact that Japan's government pursued with deal through the combined efforts of many stakeholders including politicians, the Self Defense Forces (SDF), and industry. The disappointing outcome shocked Japan's defense experts and government officials who believed that Japan's proposal was the best in terms of performance and cost. It has forced Japan to reconsider its strategy to export its products.

65. China is also said that has tremendous weapon development capability, but some experts pointed out that China is still relying on Russian technology in the specific areas such as an aircraft engines and avionics.

66. Daniel Yoon, Doug Berenson, "Dynamics of International Military Modernization 2016", AVASCENT WHITEPAPER, May 2016

67. Jonathan Caverley who is an Associate in Political Science Massachusetts Institute of Technology pointed out at the event of the Wilson Center in 31st May 2016.

Thus, this paper studies the characteristics of the Japanese defense industry by considering the advantages and disadvantages of the Japanese defense industry.

One of the most significant characteristics of the Japanese defense industry is that the companies in the defense sector are primarily large infrastructure companies such as a heavy industry companies or electronics companies in which defense business is small share of their overall business. Most companies that are part of the Japanese defense industry earn less than 10 percent of their revenue from defense contracts.[68] Moreover, Japanese industry, broadly speaking, has low mobility in its labor market due to the common practice of lifetime employment known in Japanese as "Shushin-Koyo". Therefore, most Japanese companies tend to hire skilled workers continuously from inside their enterprise regardless its business situation. This characteristic has contributed to making the Japanese workforce skill-oriented and craftsmanship is regarded as one of the most important elements of Japanese industry. However, the lifetime employment system it is sometimes criticized as inefficient and resulting in the hiring excess personnel. Nevertheless, this is another product of the "Galapagos Syndrome" that contributes to Japan's strength in the field of the production techniques.

Japanese industry is also known to be a leader in elemental technologies such as materials, optical technology, as well as robotics and remote sensing technology. Japanese industry has been banned from developing specific cutting-edge technologies that can utilize weapons like developing aircraft ever since the end of the World War II. Therefore, Japan lost its technologies to develop aircrafts, and forced it to concentrate its resource to other fields such as the automotive industry. It can be said that Japanese industry did not have a strong weapons system development capability, but rather had a strong capability to develop specific individual cutting-edge technologies that were not integrated into weapons systems. This seems to be a disadvantage for Japanese industry as it seeks to become more involved in the international arms market. However, currently, technologies that were not utilized in weapon systems are becoming the key to innovation due to rapid developments in information technology. These technologies, known as "dual use technology," should be an advantage for the Japanese defense industry which consists of a broad range of enterprises and engineers.

Japan's geographic conditions have also contributed to the characteristics of Japanese industry. Japan has few natural resources, but does have a lot of natural disasters and is surrounded by the deep seas. These geographic conditions have motivated Japan to develop specific technologies such as energy-saving technologies, unmanned maritime vehicles, or remote sensing technologies.

Japan is also known to possess a different culture background than other Western developed countries such as religion that has a core belief that is a god in everything around us. This is considered to be one of the reasons for Japanese craftsmanship. Moreover, pop-culture technology, like video games and animation, are seen as part of a product of Japan's unique industrial background. For instance, robotics in Japan is slightly different from that the United States and other developed countries. Japanese roboticists tend to see their robots as a semi-human, while Western roboticists tend to see them as a part of a system. These different approaches might help create diversity in the development of weapons systems.

On the other hand, the Japanese defense industry is expected to have weak growth in the near-term because it has depended almost exclusively on Japan's limited domestic market for many decades.[69]

Therefore, some analysts have pointed out that Japanese defense manufacturers will likely not pursue global competitiveness for its defense products or development of cutting-edge defense related technologies.[70] In fact, many companies in the Japanese defense industry hesitate to expand their business around the world.

MOD and Japanese defense industry have no choice but to enter the competitive global arms market to resolve various challenges that Japan and rest of the world are facing. Therefore, this paper proposes specific business models that MOD and Japanese defense industry can pursue, while studying current situation calmly and realistically.

68. Daniel Yoon, Doug Berenson, p.11.
69. *"Aerospace & Defense in Japan"*, Marketline Industry Profile, July 2015, p.7.
70. Daniel Yoon, Doug Berenson, p.12

Plausible business models for the Japanese defense industry

As noted before, the Japanese defense industry has many advantages it can utilize as it enters the international arms market. It also has several critical disadvantages such as lack of experience with selling arms to foreign countries. It is not realistic for the Japanese defense industry to compete with the capable and massive defense industries in the United States and Europe who have extensive experience exporting and from actual war fighting. Therefore, this paper tries to figure out some realistic options that Japan can consider for competing in the international arms market. The business models are separated into three different types that are intended to adapt to the characteristics of the weapon systems and markets.

Figure 3. Business Models for Weapons System Development

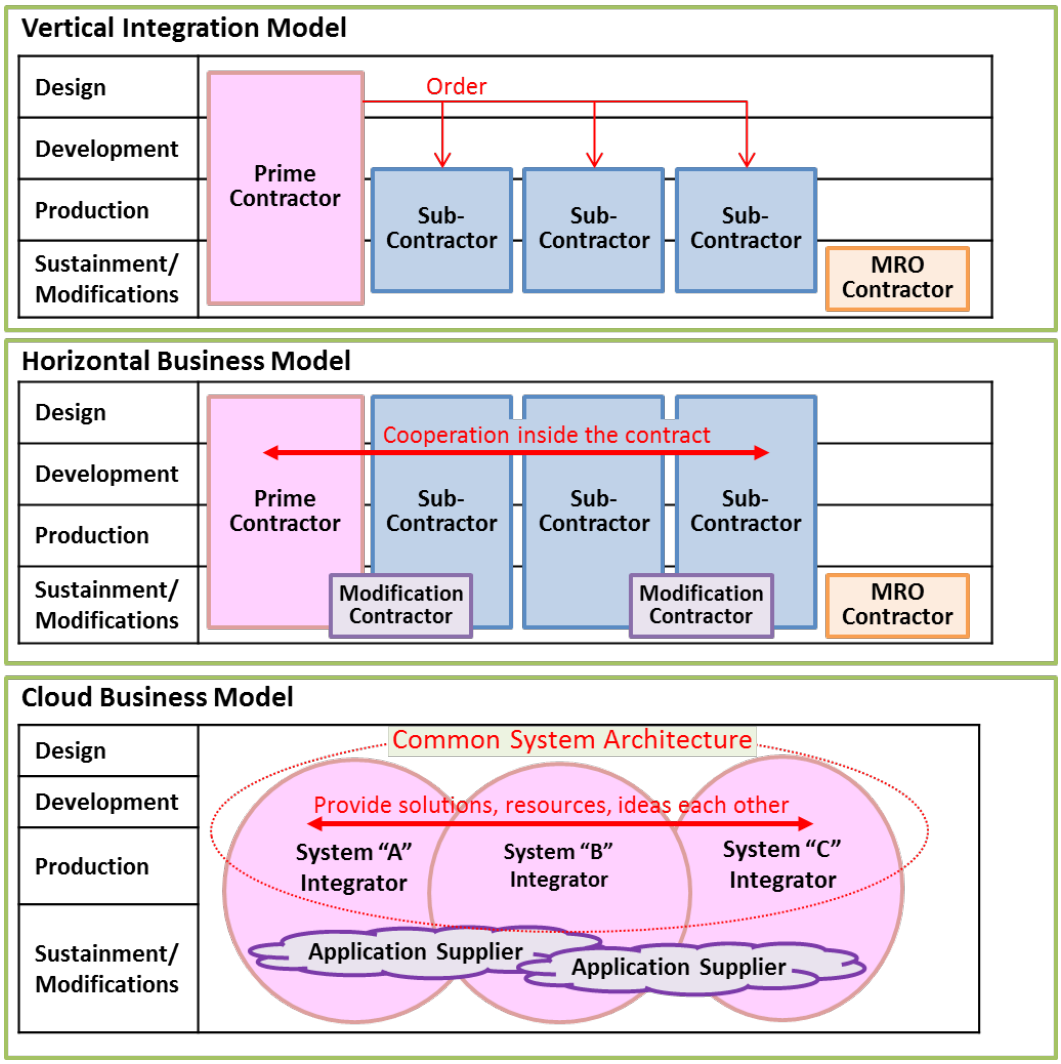

Figure 3 above shows three types of the business model.

The first model is the "Vertical Integration Model" which is well known as a traditional weapons development model. A prime contractor has a leading role for design, development, production, and sustainment. The contractor then communicates with the government and sub-contractors that take part in the production. Within this model, Japanese industry will take part as sub-contractor of major international weapon development programs, such as the Joint Strike Fighter (JSF) or the ballistic missile defense system (BMD) by utilizing its advantages in production technique and element technologies. There are also some opportunities for Japanese industry to play a role of the prime contractor in specific niche fields where major defense industries do not have enough capability, such as conventionally powered submarines, flying boats, or ground equipment that are specific to Japan's geographic situation.

The second model is the "Horizontal Business Model" which has been demonstrated in the production of the smartphone. In this model, sub-contractors have a relatively large role from an early stage of design and development compared with the Vertical Integration Model. This model can be utilized based on relatively matured technologies and common technical architecture. In particular, this model will become increasingly common in developing Third Offset Strategy (TOS) capabilities.[71] This model also has advantages in terms of the human resources such as program engineers. However, this model presents some concerns such as the difficulty of applying it to the development of traditional weapon systems like aircraft.[72] Nevertheless, it is natural that the mainstream of the weapons system development will move toward this model because more and more equipment is relying on computer programs, such as in the case of the JSF.

The third model is the "Cloud Business Model" which originates from this paper. As shown in the Figure 3, there are no sub-contractors in this model and all contractors are clarified as a "System Integrator" and an "Application Supplier" such as in the case of the software development of the smartphone. This model will be needed for the development of systems that are highly dependent on software such as situation awareness systems in space and cyber or command and control (C2) systems, especially with the increase of multi and cross-domain warfare. This model can help various actors realize unprecedented and unconventional solutions. Moreover, this model also provides solutions for addressing the challenge of lack of resources by using cloud-sourcing. There are tremendous possibilities for the Japanese IT industry to enter the development programs in this area. In particular, there are many competitive video games and IT start-up companies in Japan. They have much potential to contribute to the development of systems that will be used in future cross-domain warfare.

Developing compete defense equipment

There are still numerous challenges for the Japanese defense industry if they focus on the specific business models. This paper identifies some specific ways to develop competitive defense equipment in future. The essential areas where MOD and the Japanese defense industry should improve are the understanding of current and future situations, the sharing of knowledge and interaction across countries and foreign partners, and the creating a framework that permits innovative all actors across the country to tackle innovative challenges.

It is impossible to precisely predict of future in this complicated world, but it may be possible to understand what is driving it. The bottom line is that it is necessary to collect vast amounts of information into a unified organization and system. MOD has established ATLA and it can play a role to integrate all information that is collected by the government and civilian companies. They can also share information between information agencies such as the Defense Intelligence Headquarter (DIH). Moreover, a top-down branch like Defense Science Board (DSB) in the United States that can propose innovative technologies and warfare to leadership directly by using integrated information without bureaucratic paperwork.

Interaction and knowledge management have been a longstanding topic for military organizations between requirement side and development side in the acquisition field. As noted before, there were a lot of failures in U.S. defense acquisition in recent years. Some U.S. defense experts suggest that mutual understanding between the warfighter and developer is becoming more important for current weapons system development which requires high level integration as "system of systems.[73] Interaction and knowledge management initiatives that DOD currently utilizes are applicable for MOD, especially in the field of advanced research and development (R&D). DOD is the biggest technology investor around the world and also the biggest military organization, therefore common understanding of research interests is important. DOD has a unique method for collaboration on technology challenges by using the ecosystem of technical groups known as Communities of Interest (COIs).[74] COIs collect, coordinate and align the technical capabilities, requirements, gaps, opportunities and priorities

71. Congressman Mac Thornberry encouraged the DOD to use a more open system architecture to introduce cutting-edge technologies into the military when he spoke about his committee's 2017 NDAA draft

72. Jared Serbu, "Pentagon endorses House's revised approach to open architecture in weapon systems", Federal News Radio, May 11, 2016, http://federalnewsradio.com/defense/2016/05/pentagon-endorses-houses-revised-approach-open-architecture-weapons-systems/, accessed on June 24,2016

73. Todd Harrison and Andrew Hunter pointed out in their paper about development of the Long Range Strike Bomber (LRS-B) program that the key elements of the successful development.

74. International S&T Engagement Strategy, Department of Defense, July 2014, p.1

for their respective technology portfolio areas across DOD's research and engineering enterprises.[75] DOD also has set up workspace for COIs on websites called "Tech Space." Mutual interactive activities across organizations like COIs can be applicable for MOD's technical communities.

Japanese work culture is often regarded as conservative. MOD's technical communities also tend to avoid innovative R&E activities. This trend is increasing under current budgetary constraints because innovative R&D can easily be criticized as a waste of the budget. However, without these investments Japan will not enjoy future advantages. Global weapons development is going further with TOS led by DOD. MOD has recognized the problem and decided to formulate a medium-to-long-term roadmap for R&D called the "Research and Development Vision" and established its own funding program called the "Innovative Science & Technology Initiative." However, they are limited in terms of scope and budget compare to the DOD. Fortunately, Japan still has a huge national R&D budget although MOD has less than 3 percent of whole government R&D budget.[76] Moreover, the total national R&D investment of Japan, which includes academia and industry, makes up 14percent of the world's total R&D investment. Furthermore, Japan has magnificent potential in non-traditional industries such as IT or the video game industry that could be utilized in future military capabilities. This means that MOD can utilize tremendous resources across the country when it can remove the barriers that are preventing newcomers from entering into defense-related R&D. Therefore, sharing interest and knowledge and utilizing R&D resources across the country could be a game changer for Japan.

5.2 LOGISTICS SUPPORTS FOR ALLIES AND PARTNERS

Logistic supports is an essential activity for military forces although it tends to be underestimated. In the past, military forces needed to have self-sufficient capabilities.

However, most military forces today are increasingly relying private companies for logistics because military forces need extensive amount of supplies and its sophisticated equipment need precise maintenance.

Mutual logistics support of military forces is becoming one of the most important activities among alliance because that helps supplement capabilities and capacities for each other both during peace time and wartime.

Japan has enacted its new security legislation that allows JSDF to provide various logistic supports to allies and partners. The Three Principles on Transfer of Defense Equipment and Technology in 2014 expands the logistics activities of the Japanese defense industry and allows them to contract with foreign military forces.

JSDF's logistics support under the new legislation

There are three main points to expand logistics support for allies and partners in Japan's new security legislation that were enacted in October 2015.

The first is expansion of the provision of supplies and services to the U.S. armed forces. This support involves expanding various operations, such as missile defense operations, counter-piracy operations, activities to collect information by ships or aircraft, and others. The ammunition could be provided from JSDF to foreign militaries under this amendment.[77]

The second is logistics support activities in situations that will have an important influence on Japan's peace and security in the so called "gray zone situations." These logistics activities include supply, transportation, repair and maintenance, medical activities, communications, airport and seaport service, and base services. Japan is now able to support foreign military forces that are engaging in activities that are contributing to the achievement of the objectives of the U.N. Charter.[78]

The third is activities in wartime. Japan has already enacted laws about supporting U.S. military forces in armed attack situations. JSDF can conduct logistics support missions through wartime operations because Japan is now

75. Alan Shaffer, *"Communities of Interest"*, Defense AT&L, March 2015,p.34
76. Yoshida, p.26
77. Defense of Japan 2015 p.142
78. Defense of Japan 2015 p.143

able to exercise its right of collective self-defense as a result of this legislation. It is also notable that JSDF can provide logistics support to other allies and partners other than the United States.[79] In this way, it is notable that Japan can now support an expanded number of countries due to this legislation. In particular, mutual logistics support with Australia who shares universal values with Japan – such as respect for freedom and human rights, and democracy – and the United States is an area where Japan has tremendous potential to provide a foundation for integrated trilateral logistics.[80]

Civilian activities

It is well-known that the largest part of equipment lifecycle costs is its sustainment costs. In the case of fighter jets, sustainment costs are estimated to be about 50 percent of its lifetime costs.[81] One of the reasons for the expensive sustainment costs is that the users of the equipment have to rely on the Original Manufacturing Maker (OEM) for maintenance and supplies. Therefore, Maintenance, Repair and Overhaul (MRO) companies that can provide sustainment services affordably are expanding their business, especially in the commercial aircraft market. OEMs are also expanding their MRO business because of their high profitability and expected long-term demand.

Recently, private service contractors have taken over various functions from military forces in the field of logistics support because of budget constraints and the personnel reduction.

The Japanese defense industry has so far contracted mainly with MOD with few exceptions. There are a few companies that have contracts with U.S. forces in Japan to provide sustainment services. However, Japan's three principles on arms trade that took effect in 1976 have long been an obstacle because it restricted the Japanese defense industry from contracting with U.S. military services who also require maintenance services outside Japan. The Three Principles on Transfer of Defense Equipment and Technology that took effect in 2014 removed this obstacle. Since then, Japanese companies have expanded their services outside Japan.[82] Consequently, the Japanese defense industry is expanding services as a regional Maintenance, Repair, Overhaul and Upgrade (MRO&U) Capability for the F-35 in the Asia Pacific Region. This will contribute to strengthening the Japan-U.S. alliance and deepening equipment cooperation in the region.

However, there are severe competitions around the region. The U.S. Air Force (USAF) in Japan was contracted maintenance service of its fighter jet with South Korean company.

Challenge and future activities

There are only a few cases where JSDF and the Japanese defense industry have expanded their activities even though the new legislation and rules have been enacted and the options of logistics support have been expanded. Therefore, this paper suggests three measures to utilize logistics activities as a tool for national security including the understanding of logistics supports, the appropriate resource allocation for logistics capabilities, and unified efforts by government and industries.

Firstly, the framework for logistics support is too complicated to understand, even for government officials. This is because the new security legislation is interpreted differently by political parties who are cautious about expanding JSDF activities outside Japan. It will be more difficult to understand the framework for foreign allies and partners. To promote this understanding, MOD should prepare portfolios that explain specific support menus that include specific operations, support activities, and restrictions. Moreover, these portfolios must be shared across the government and should be updated through exercises and war games. The portfolios that reflect broad knowledge must be a tool for mutual understanding between allies and partners.

Secondly, there is some skepticism about JSDF's ability to allocate their resources to supply missions. JSDF is now dispatching numerous vessels and aircraft to deal with military activities around Japan. Moreover, continuous

79. Defense of Japan 2015 p.146

80. Andrew Shearer, *"Australia-Japan-UNITED STATES Maritime Cooperation"*, April 2016, CSIS, p.34

81. FY2014 Life cycle cost annual report ATLA

82. NIPPI is a maintenance company who are offering the "On-site Maintenance," that dispatch engineers to the UNITED STATES military bases and they have expanded their service outside Japan under the new three principles.

international cooperation activities such as a counter-piracy operation in waters off the coast of Somalia and in the Gulf Aden has resulted in a shortage of vessels and operational people. JSDF also has limited equipment assets and people for logistics missions. Furthermore, defense budget investments tend to prioritize principal military arms known as "frontal combat-equipment," despite the importance of logistics capabilities that have been understood. However, there are some inefficient activities that can be improved. For example, each service has different regulations, depots, and contracts to maintenance even common equipment such as H-60 series helicopters or C-130 aircraft. To enhance logistics forces of JSDF, JMOD should unify it rules, regulations, and equipment for logistics forces under the strong leadership and the principle of joint operations.

Lastly, unified efforts by the government and industry are said to be the key to resolving the capacity and capabilities challenges. As noted before, Japanese industry has a skilled workforce whose labor productivity has been under-utilized. JSDF is in a similar situation because it does not have an early retirement program like the U.S. military. These gaps between demand and supply in the workforce could be utilized if a new labor system can be established. The Japanese defense industry can expand is role in the MRO business by hiring skilled mechanics who retire from JSDF under its own early retirement system. Having the government provide incentives for companies who are hiring reserve JSDF persons such as tax breaks or the advantage in securing government contracts could also be effective. In addition, there are some requests from industry to improve regulations. Nippon Keidanren (Japan Business Federation) has made a proposal for Japan's defense equipment policy. The Keidanren has suggested that Japan's government should mitigate risks of companies that export defense equipment to contribute to Japan's national interest.[83] It is also important for MOD establish a system like the FMS system which provides a stable supply chain for importers and shares risks between MOD and Japanese industry.

5.3 CAPACITY BUILDING FOR ASIA-PACIFIC COUNTRIES

Capacity building assistance is increasing its importance under the recognition that capable military forces that operate under the principle of rule and order can help the peace and stability of the region.

This paper now focuses on capacity building activities through the transfer of defense equipment and technology. Recently, the United States has expanded its capacity building assistance through Foreign Military Sales (FMS) and other initiatives to respond to requirements from developing countries. However, the assistance from the United States does not meet the requirements from those countries. Meanwhile, other actors such as China are expanding their geopolitical influence in the Asia Pacific region by using its financial assistance. Japan should expand its capacity building assistance and cooperate with the United States to contribute peace and stability in the region.

U.S. capacity building assistance in Asia-Pacific Region

In the security field, it is important to have dialogue and exchanges with other countries to promote practical and concrete cooperation for building regional order and to establish a common norms standard. In recent years, the importance of capacity building assistance has received increased attention. Capacity building assistance is an initiative based on the concept of seeking to actively create stability within the region and improve the global security environment by enhancing the ability of countries eligible for support through continuous human resources development and technical support in security and defense in peacetime.[84]

President Barack Obama has put increased emphasis on U.S. interests in the Asia Pacific since 2009 through a policy known as the "rebalance to Asia." One element of the policy has been increasing the capabilities of security forces of in the region that are believed to support U.S. interests.[85] Moreover, the United States is increasing its defense cooperation and capacity building efforts with Southeast Asian nations. The cooperation is expanding to the socialist countries like Vietnam because these countries are demanding the assistance from the United States due to rising tensions in the region including the South China Sea. Recently, the United

83. "Boueisangyo-seisaku-no-jikko-ni-muketa-teigen"(in Japanese)(The proposals for improvement of defense industries), September 2015, Keidanren, p.2

84. DEFENSE OF JAPAN, p.276

85. Roger Cliff, *"US-JAPAN COOPERATION ON CAPACITY-BUILDING IN SOUTHEAST ASIA"*, February 2016, Atlantic Council, p.1

States established a new framework called the "Maritime Security Initiatives (MSI)" that is an effort to increase the maritime capabilities of Southeast Asian nations. MSI focuses on enhancing regional maritime domain awareness and moving towards establishing a common operational picture (COP).[86] The first case of the MSI was the installation of the Philippine's maritime surveillance radar. It is a significant case in which the United States conducted capacity building through its equipment. U.S. support is also expanding exercises, training and other engagements will increase contributions from allies and partners.[87] As a result of its capacity building assistance, the United States has been able to increase influence in the region.

Additionally, it has also been beneficial in terms of business. It is well-known that the United States is supplying 45% of weapons in the international arms market.[88] Once these military forces in the region buy U.S. weapons, the U.S. defense industry will be supplying spare parts and maintenance services through their lifetime. Moreover, modern U.S.-made equipment requires training and regulation that meets U.S. standards. The United States is expanding its influence around the world through this defense equipment and technology cooperation.

However, there are concerns among Southeast Asian countries that major powers like the United States and China are competing for influence through support to allies and partners. At the same time, some countries are complaining that assistance from the United States has many restrictions and takes a long time for approval. Meanwhile, the other actors such as Israel, South Korea, and China are expanding their arms sales to countries where the United States doesn't sell weapons.

Japan's activities for Southeast Asian countries

There is no doubt that security and stability in the Asia-Pacific region is directly affecting Japan's national security. Particularly, the security of Southeast Asia region is important for Japan because it occupies a strategic position for maritime traffic that Japan relies on for maritime transport of many supplies needed for economic activities and the livelihood of the Japanese people. Therefore, Japan has been grappling with how to conduct capacity building assistance through diplomatic initiatives, including the use of Official Development Assistance (ODA) in this region. Countries in Southeast Asia will want Japan to play a greater role in the regional security.[89]

In terms of defense equipment and technology cooperation, dialogues have just begun in 2015 between Japan and some major countries in the region such as the Philippines, Thailand, Indonesia, and Malaysia.[90] Recently, Japan and the Philippines agreed that Japan will provide five secondhand TC-90 turboprop trainer aircraft that had been used in JMSDF.[91] Moreover, Japan agreed with Vietnam to provide some secondhand law enforcement boats.[92] This capacity building assistance is expected to contribute to maritime security around these countries. In the case of the Philippines, it is notable that JSDF has also provided training and maintenance support to the Philippines armed forces. Furthermore, Japan's government has amended its ODA charter in February 2015 to enable Japan's ODA to include support activities and sale of equipment for the armed forces when they use it for non-military purposes such as public welfare or disaster-relief.[93]

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86. Prashanth Pmeswaran, "America's New Maritime Security Initiative for Southeast Asia", THE DIPLOMAT, April 2016, http://thediplomat.com/2016/04/americas-new-maritime-security-initiative-for-southeast-asia/, accessed on April 8 2016

87. Ibid.

88. Yoon and Berenson, p.3.

89. Roger Cliff, *"JAPAN'S SECURITY ROLE AND CAPABILITY IN THE 2020S"*, November 2015,Atlantic Council,p.23

90. *"Sougou-shutoku-kaikaku-ni-kakaru-shosesaku"*(In Japanese)(The specific measures of CARC),February 2016,ATLA,p26

91. *"Japan to Provide Military Aircraft to Philippines"*, Defense News, http://www.defensenews.com/story/defense/air-space/2016/05/03/japan-provide-military-aircraft-philippines/83873558/, accessed on May 3 2016

92. Mina Pollmann, *"Amid South China Sea Tensions, Japan Strengthen Ties With Philippines, Vietnam"*, December 2015, http://thediplomat.com/2015/12/amid-south-china-sea-tensions-japan-strengthes-ties-with-philippines-vietnam/, accessed on December 4 2015

93. "Cabinet decision on the Development Cooperation Charter", February 2015, P.10.

However, Japan's activities have further room for expansion. In 2016, Atlantic Council Senior Fellow Roger Cliff pointed out Japan's capacity building support is still limited in terms of its scale.[94] The capacity building assistance is more effective when it combines equipment support and services such as maintenance or training. MOD should dispatch more JSDF personnel to support these countries overcoming, despite the shortage of its workforce, to promote capability building assistance through defense equipment and technology cooperation.

Challenges and further activities

As noted above, capacity building assistance by using the framework for defense equipment and technology cooperation has both possibilities and challenges. This paper now identifies three major challenges and potential solutions.

First, Japan has less experience with supporting foreign countries through providing equipment and technology. Therefore, MOD does not understand the requirements of Southeast Asian countries. To deal with these challenges, preparing a support "portfolio" may be effective. Moreover, cooperation with the Ministry of Foreign Affairs (MOFA) or a Japanese general- trading company that has plenty of experience providing products and services in the region may be effective. Creating a knowledge management framework between those organizations and companies who are involved in international cooperation may be a key to the solution.

Second, the shortage of human resources makes it difficult to allocate people to capacity building missions. Cooperation between international cooperation communities is also effective for solving human resource challenges. Moreover, retired JSDF personnel can be utilized for capacity building assistance because they are still young and highly skilled with the equipment that would be provided to the supported countries. Furthermore, dispatching people to other countries helps mutual understanding and increases a sense of unity.

Third there are some concerns from foreign countries and the people in Japan. Some foreign countries, especially China and South Korea, claim that Japan should not expand its activity outside Japan because that makes regional countries fearful and reminds them about Japan's past invasions. However, China and South Korea sell weapons around the region. That means the regional security environment will not improve if Japan alone stops transferring its equipment. The domestic argument in Japan that it should not be a "merchant of death" by exporting weapons to foreign countries is almost same as argument that some foreign countries make about Japan. Japan should let these arguments prevent it from conducting overseas activities. However, such arguments put psychological pressure on persons who are involved in the activities of both JSDF and defense industry. Therefore, MOD should start its activities, from non-traditional military activities such as humanitarian assistance and disaster relief (HADR) or counter-terrorism, while also maintaining transparency.[95]

5.4 FUTURE OF THE JAPANESE DEFENSE INDUSTRY

There is a big question about how much the Japanese defense industry can expand its arms sales around the world. This paper tries to estimate the future of the Japanese defense industry by using some statistics and assumptions.

Japan's defense budget and its impact on the Japanese defense industry

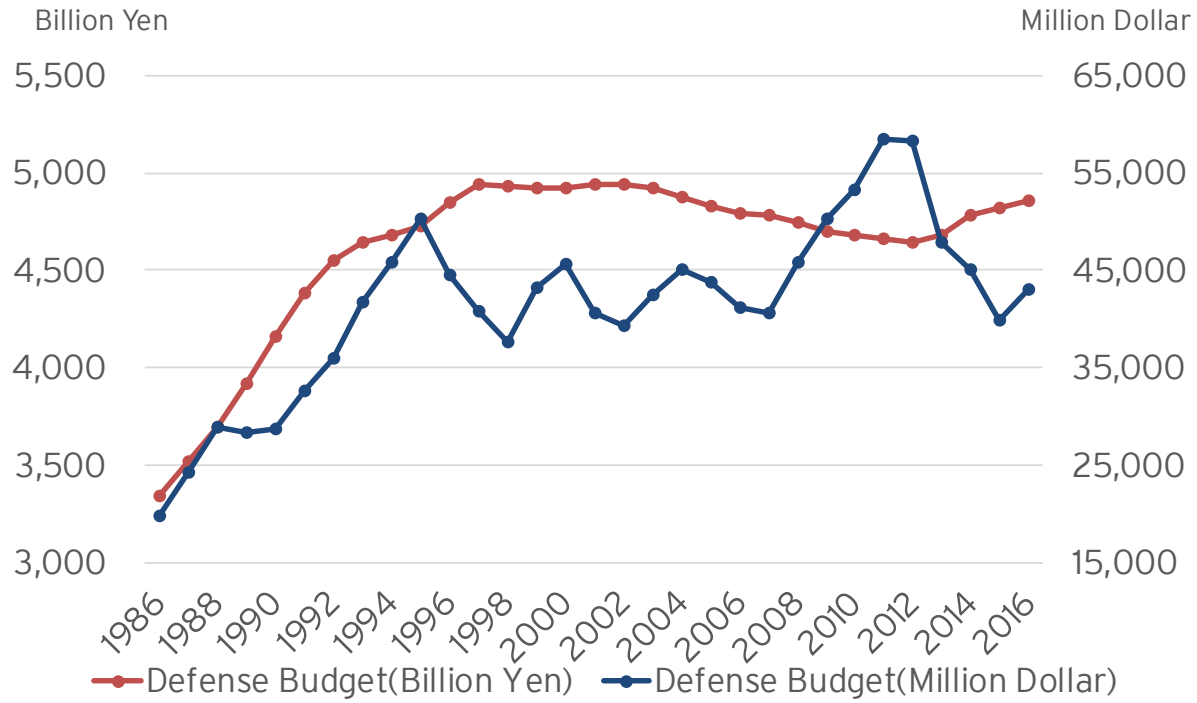
Figure 4 shows changes in defense-related expenditures over three decades. The changes of Japan's defense budget in this period is characterized by three significant trends: an increasing trend until the late 1990s, a gradual decreasing trend from early 2000s, and the resurgence which was led by Prime Minister Abe who came back to the administration in 2012.

On the other hand, the graph shows that the trend of Japan's defense budget has other characteristics when it is converted into U.S. dollars. This comparison is important because the Ministry of Defense (MOD) has purchased plenty of U.S.-made weapon systems. Ironically, "Abenomics," Prime Minister Abe's strong economic policy which includes monetary easing that makes the Yen cheaper, is pushing down the defense budget in U.S. dollar terms.

94. Roger Cliff, *"US-JAPAN COOPERATION ON CAPACITY-BUILDING IN SOUTHEAST ASIA"*, February 2016, Atlantic Council, p.1

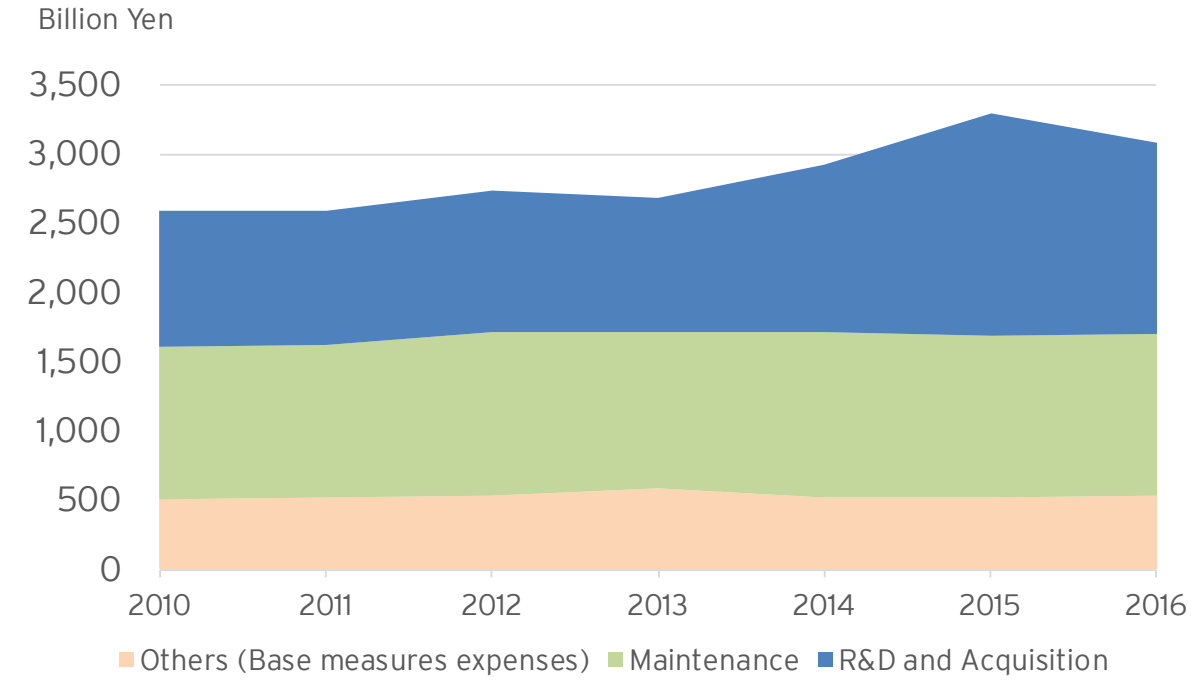
95. Kei Koga who is an Assistant Professor of Nanyang Technological University, pointed out in his paper that Japan should enhance HA/DR support capabilities with United States by using the soft power of the Japan-US alliance.

Figure 4. Changes in Japan's Defense-Related Expenditures



Source: Ministry of Internal Affairs and Communication, Statistics Bureau Data

Figure 5. Changes in Japan's Contract-Based Material Expenses



Source: *"Defense Programs and Budget of Japan"*, March 2016, MOD

Another point is that the ratio of defense related expenditures to the gross domestic product (GDP) was constantly around one present during this period.[96] This trend means that the Japan's defense budget had not been directly responding to its security environment, but had been pursuing the implicit restriction that Japan's defense budget shouldn't exceed one percent of GDP.

There is no doubt that the security environment surrounding Japan will become more contentious in near future, and most Asian countries have been increasing their defense budget in recent years. This paper makes the assumption that Japan's government will expand its defense budget modestly and constantly despite its budgetary constraints resulting from developments such as the postponement of raising the consumption tax rate or the continuously increasing cost of social security due to Japan's rapidly aging society.

Moreover, Japan's defense budget has structural problems as well Figure 5 shows the changes in material expenses over the last seven years. These expenses are calculated in contract base figures and are divided into three potions: equipment, maintenance, and others. These statistics show that the equipment budget is less than half of the whole budget because mandatory expenses such as maintenance and base expenses occupy a large part of the budget.

It can be said that the second Abe administration has been expanding its equipment purchase since FY2014 when they re-started its budget compilation process. The national defense program guideline (NDPG) which was released in late 2013 calls for the building of Dynamic Joint Defense Force (DJDF) as the cornerstone of Japan's peace and security.[97] Then MOD pushed forward the acquisition of capable defense equipment that is essential for building the DJDF.

Meanwhile, this MOD policy has led to the largest FMS contract that Japan has ever had because MOD is acquiring highly capable weapon systems that are currently produced by the United States. These systems include the F-35A fighter jet, the E-2D early warning aircraft, the V-22 multi-role aircraft, and the Aegis system equipped on the Aegis destroyers that are needed because of Japan's harsh security environment. But as a result, it makes narrowing down the range of production of Japanese defense industry and shrinking Japan's domestic defense market difficult.

Outlook for the Japanese defense industry

The Japanese defense industry is highly dependent on domestic demand and this trend will continue through the future. In particular, most major defense industries that are able to product aircrafts or vessels as a prime contractor are not relying heavily on the sales of their defense division. In statistics, their arms sales occupies only about 10 percent of their total sales.[98] These major defense industries tend to hesitate to become proactively involved in arms exports which requires additional capital investment.[99]

It is difficult for the Japanese defense industry to expand its arms sales in the world and to compete with major Western defense complexes that have broad networks for market research, R&D, and maintenance services around the world. Keidanren, the Japan Business Federation, has pointed out this issue and suggests the need of government's active support to expand their arms sales.[100]

However, increasing arms exports is inevitable for the Japanese defense industry, while the budgetary constraints and increase of imports are undermining their vulnerable market.

MOD released its Strategy on Defense Production and Technological Base in 2014, where it points out courses of action for each defense system while describing their characteristics and strengthens.[101] In particular, MOD stresses that there are a lot of opportunities in the field of aircraft development and joining international programs such as development, production, and maintenance.[102]

96. Defense of Japan, p.374
97. Defense of Japan, p.156
98. Yoshida, p.14
99. Interviews with defense industry
100. Keidanren, p.2
101. Strategy on Defense Production and Technological Base, p.19-p26
102. ibid

MOD also points out that some systems and component technologies such as submarines, flying boats, materials, and sensor technology are competitive in the world arms market and their export should be promoted.[103]

Indeed, these policies will not increase Japanese arms sales beyond the current level because even if Japanese industry joins some international programs, it does not increase arms sales. Moreover, MOD has limitations on its scope of commitment within Japan Self Defense Force (JSDF) equipment. Joining international production and sustainment programs such as the F-35A will only recover some markets where Japanese industry has licensed production or maintenance.

The case of the Australian submarine procurement project has revealed some difficulties for Japan's government and industry to compete with their rivals around the world. And it will depend on how much leadership Japan's government will take for promoting Japanese arms exports.

This paper estimates two trial calculations of arms sales based on whether the Japanese government's efforts to promote arms sales succeed or not. Figure 6 shows some examples of Japan's indigenous equipment that have potential to be exported.

Figure 6. Japan's indigenous defense equipment

Soryu-class submarine (2,900 t class)

Rescue amphibian US-2

Transport aircraft C-2
Source; JGSDF, JMSDF and ATLA homepage

Type-03 middle-range surface-to-air missile

Possibilities in new fields

There are some new fields where Japanese industry can enter the international defense market, although they will not contribute to sales immediately. This paper points out three fields that have possibility that were described earlier: R&D, logistics support and capability building.

Japanese defense industry has some experience joining cooperative R&D programs with the United States such as the Fighter Support experiment program (FS-X, the project developed JASDF's multirole fighter jet named F-2) and the Ballistic Missile Defense (BMD) system. As noted before, the United States is exploring some cutting edge technologies to compete with potential adversaries. Space and cyber surveillance systems and the unmanned combat system that utilize artificial intelligence (AI) and robotics are potential areas of joint R&D. However, the United States will restrict participation in these programs because they require tight security. At the same time, they will also need enormous investments and risk sharing with partners. Nevertheless, the market share will remain within Japan's expenditure, but these programs create opportunities to enter the international

103. ibid

defense market for new actors who have never joined defense programs. The expansion of the defense industry, to include IT and other companies, is expected. This will provide clues to Japanese industry about how to expand business.

Logistics support activities are supported by various Maintenance, Repair, and Overhaul (MRO) companies and their sales will also increase when JSDF expands logistics support for allies and partners.

However, the sales of MRO businesses won't increase dramatically because their business as regional maintenance bases for the F-35A and the V-22 mainly rely on JSDF demand. On the other hand, some industries are operating maintenance businesses with US military forces in Japan. One aircraft engine manufacturer has started to increase its MRO business. These businesses will contribute to expanding Japan's arms sales because they have high profitability and the possibility of long term stable contract.

Capability building support is not very profitable when Japan provides its second hand equipment to other countries. But this will give Japanese industry chances to contract with foreign countries for training and maintenance support for the equipment that are provided from MOD. Moreover, Japanese industry can benefit from Japan's Overseas Development Assistance (ODA) because Japan's government reviewed the ODA charter and it can be utilized to purchase defense equipment. These sales are relatively small amounts, but it can create new demand for infrastructure and may deepen relationships between Japan and supported countries.

Future of Japanese defense industry

Figure 7 shows changing sales of five major Japanese defense companies. Their sales appear to have increased in recent years in conjunction with the increased defense budget. This paper estimates arms sales in 2020 in comparison with recent statistics from 2014. Figure 8 shows the estimation. In this figure, Japanese defense industries are categorized into seven business areas and total arms sales for each area. This paper estimates that Japan's arms sales will increase from 15 percent at present to 40 percent by 2020.

First and foremost, domestic demand is the biggest factor for Japan's defense industry and is estimated to expand from 13 percent to 25 percent based on recent statistics. The Abe administration has decided on an annual inflation target of 2 percent. If this goal is achieved as a result of "Abenomics," it will push up defense expenditures by about 13 percent in 2020. Moreover, the Abe administration is boosting JSDF's capability by increasing its defense budget to respond to Japan's severe national security situation. Thus, this paper estimates that Abe's political actions to raise the defense budget by 1 percent per year will increase the defense budget by 13 percent in 2020. However, Abenomics seems to be losing its momentum amidst world economic turmoil. Therefore, this paper also has made another assumption that the growth of defense expenditures will only increase by about half of the expected amount.

Up until recently, Japan's defense acquisition has relied on FMS contracts with the United States and this has made Japan's arms sales smaller. Some policies that this paper has suggested will help Japanese defense industry join more international development programs and regain their market within Japan's defense expenditure. Moreover, this paper also estimates that the increase of Japan's arms exports can push up total amount of arms sales by 10 percent, if Japan's government will be able to promote selling Japanese equipment, such as submarines and aircraft.

Other policies that this paper has suggested will not contribute to pushing up arms sales dramatically. The MRO business for US Forces Japan (USFJ) and Southeast Asian countries will increase the total amount of arms sales less than 1 percent.

The revenue gained by joining joint Research & Engineering (R&E) programs will also have limited benefits in terms of wages.

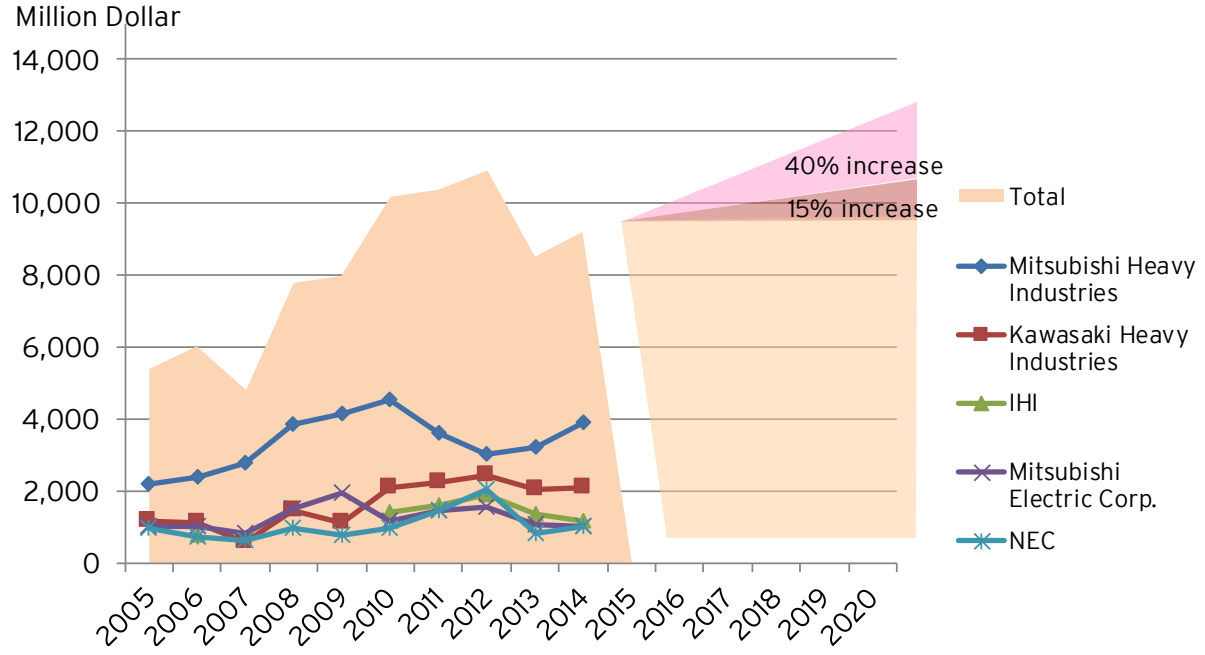
The market share of Japanese industry will be limited by MOD's investment. This means that the Research and Development (R&D) market will still rely on Japan's budget.

This paper stresses that these activities not only contribute to short term business, but also long term business. It points out that some new industries in Japan will join into the defense field by utilizing their advanced IT, component technology, and dual-use technology. There are tremendous possibilities when Japan's huge technical

and industrial firms enter into the world defense market. Moreover, most of Japanese industry has companies with a skilled workforce and a technology base that have not yet been utilized in their defense division. It will also help if Japanese people consider their national security seriously and commit themselves to the "real world." Many Japanese people have been isolated for many years as a citizens of a "peaceful minded country".

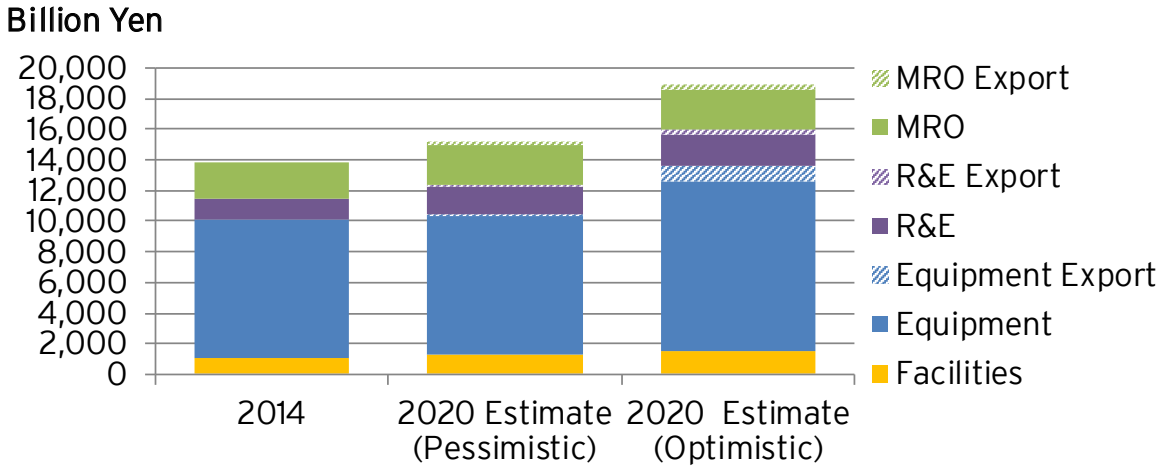
The future of the Japanese defense industry will depend upon whether or not newcomers join the defense industry. The short term sales are still relying on government's budget and leadership, but future possibilities will depend on the will of industry itself to expand their activities to survive.

Figure 7. Changes of sales of major five Japanese defense industries



Source: Source: SIPRI Arms Industry Database, retrieved December 2015 and estimation by author

Figure 8. Estimation of Japanese arms sales



Source: Estimation by author

CHAPTER 6
Conclusion

This paper has described Japan's future defense equipment policy through studying the security policies of the United States and Japan while focusing on their nature. This paper tried to focus on finding whether or not Japan completely understands U.S. security policy. Then the paper introduced the implications for acquisition reform and specific defense equipment policies while identifying three major activities; the development of equipment, the logistic support for allies and the capability building.

In terms of the acquisition reforms, this paper has made the case that Japan has to deal with further acquisition reforms by understanding the nature of acquisition reforms around the world. In brief, MOD has to establish:

- A knowledge management system that can utilize all knowledge that the acquisition workforce has accumulated as explicit and tacit knowledge.
- A future oriented decision-making system that focuses on strategic and future perspectives without an excessive bureaucratic process.
- An autonomous improvement culture where the entire workforce can improve itself by having people with different jobs work interactively.

Specific future equipment policies that Japan can use as tools for national security are:

- The development of competitive equipment in the international arms market by utilizing various advantages that the Japanese defense industry has while establishing a mutually interactive communication system. In addition, MOD should remove barriers that prevent innovative new actors from entering into the defense industry.
- The enhancement of logistics support to allies and partners along with industry's MRO business while preparing "portfolios" that describe a support menu that JSDF and industries can support.
- The expansion of capacity building assistance to the Southeast Asian countries while focusing on non-traditional military activities such as HADR. In addition, MOD has to cooperate with other organizations in the international cooperation community through information sharing and collaboration.

In addition, this paper tries to make estimations about the future of Japan's defense industry, including the expansion of arms sales and other outcomes of policies suggested in this paper. In brief, this paper estimates that Japanese defense industry can expand its arms sales by about 40 percent by 2020, compared with 2014. This estimate will be realized when Japan's government can achieve its expected economic growth. This is because Japan's defense industry depends highly on domestic demand. The promotion of arms exports in cooperation with government and industry is as important as domestic demand. This paper estimates that the increase of Japan's arms exports can push up the total amount of arms sales by 10 percent, if Japan's government is able to promote selling Japanese equipment, such as submarines and an aircraft.

As noted above, there are a lot of challenges that Japan faces. However, this paper found there are some common factors across these challenges. These are:

- Organizations are optimized into each small group and their knowledge is never shared across their organizations.

- There is a lack of understanding about what is driving policy or strategy of the United States and other nations.
- Most of the workforce, both in government and industry, seem themselves as being extremely busy with their current mission. Therefore, they cannot have future-oriented perspectives or expectations.

These are very basic problems that originate from Japanese culture and history and it is a difficult problem to solve. However, it may improve gradually when people change their mindset by adjusting the vector of their effort from the present to the future, or to a "bird's-eye" viewpoint.

Japan's defense equipment policy reforms have so far only resolved about half of the numerous problems that have accumulated through many decades. It is still possible to influence the vector of reforms positively so that all challenges can be turned into chances.

It will be a "game changer" for Japan when MOD materializes Japanese-style innovation while integrating various ideas around the country and making continual bottom-up improvements.

ABOUT THE AUTHOR

Colonel Hiroyuki Sugai is a maintenance officer in the Japan Air Self Defense Force with over 19 years of service. He is a skilled and experienced logistics officer, especially in the field of maintenance, acquisition, and research and development. Recently, he served as supervisor of the Defense Policies and Program Division's Air Staff Office in the Japanese Ministry of Defense where he participated in defense reorganization programs, such as the establishment of the new Japanese acquisition agency.

In 1996, Sugai was assigned as a maintenance flight commander of the 3rd Air Wing at Misawa Air Force Base. He was later assigned to the logistics planning section of the Air Material Command and the Air Staff Office in Tokyo. In 2009, he served as a staff member of the Defense Policies and Program Division's Air Staff Office, where he organized changes to the structure of the Japan Air Self Defense Force. From 2012 to 2013, he served as maintenance squadron commander of the 8th Air Wing at Tsuiki Air Force Base where he oversaw maintenance of F-15 and F-2 fighter jets.

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