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Japan in Asia's Space Race: Directions and Implications

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SUMMARY

This policy brief evaluates the trends in Japan's space policy directions, and assesses their implications for regional and global security in three parts. First, it focuses on the role of public and private players pivotal to the country's space directions, and the context in which they have operated. Second, it sets out the main institutional and legal changes they have helped bring about. Finally, third, it lays out some implications that bear upon other space powers like China and the United States.

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INTRODUCTION

Asia is home to some of the most ambitious space powers in the world. It would be naïve to pretend that it is not also home to a space race.¹ While India and China continue to command attention for their civilian and military endeavors in space, Japan remains a relatively overlooked player in most narratives. After a long and painstaking technological, legal, and institutional journey, Japan today is poised as a credible and determined military space player. To use the jargon in the space domain, Japan is “normal.” This means that the country is in a technological and institutional position to move toward the use of space for military purposes in order to support, enable, or conduct defensive, and potentially even offensive actions.²

Japan’s strength in space does not come from a top-down strategy that has emerged out of the blue, with the government in the lead in the postwar period. The Japanese government is certainly important in the history and politics of Japan’s space industry, if only because it has always loomed large in studies of technology, power, and security.³ Its interests in fusing a technology-conscious industrial policy with national security are not likely to go away, and recent shifts in Japan’s space policy-making structure testify to this fact. But the government has wielded a light touch in the space domain. The private makers of Japan’s space technologies deserve far more serious attention, and their ups and downs in the space industry are critical to Japan’s space saga. They have been able to align their economic interests with the country’s rising geopolitical uncertainties; and their role has been pivotal in shifting the tenor of Japan’s space policy from merely market considerations to also military ones, in the interest of Japan’s national security.

THE PLAYERS AND THE CONTEXT

Inattention to Japan’s military space prowess is a mixed blessing for Japan’s space-related players. For Japan’s public actors—ever sensitive to the country’s pacifist perch in Asia and a contested culture of anti-

militarism at home—inattentiveness to Japan’s space industry relative to, say, China’s, has turned out to be politically useful.⁴ It has helped shield the military potential of dual-use space technologies from robust scrutiny by both external and internal audiences. This is not just because of the official government mantra of commercialization that brought private players into the space technology game early on. It is rather because the Japanese government has been a small player in indigenizing space technologies, both from a budgetary and institutional policy-making standpoint.

To briefly expand: Japan’s official space budget averages less than a paltry \$4 billion per year. This means that for a country now possessed of the full cutting-edge toolkit of space assets on both the rocket and satellite frontiers Japan has been stunningly cost-effective from an economic standpoint, a hard-to-beat model for any other space aspirant.

Japan’s official national space policymaking structure has also remained scattered. The research, development, and testing of specific dual-use space technologies was spread over a bewildering morass of official and quasi-official government institutions over most of the postwar period. The institutional spread made it hard to see any center of gravity to Japan’s strategic space developments.⁵ However, this apparent weakness also turned out to have an important virtue: For a period of fifty plus years, it made it difficult to pinpoint and censure the legitimate civilian space technology developments that could be used also for national security purposes. The spread thus made it convenient for the government to deflect the very hint of any such military directions in the national portfolio. In fact, the official mantra of Japanese government agencies has always largely been about the commercialization of space ventures and about breaking into global markets such as those in space launch vehicles (SLVs), all of which draws attention to the private makers of Japan’s space technologies.⁶

For Japan’s private players the inattention to and negative perceptions of the Japanese space industry are a profit and loss problem in the commercial sphere. Even as they continue to forge ahead with the development of the country’s space assets, they have not quite achieved the economic breakthroughs their space technologies deserve in global markets dominated by more

1 James Clay Moltz, *Asia’s Space Race: National Motivations, Regional Rivalries, and International Risks* (New York: Columbia University Press, 2012); and Kate Wilkinson, “Japan’s Evolving Space Program: An Interview with Saadia Pekkanen,” National Bureau of Asian Research, September 9, 2011, <http://www.nbr.org/research/activity.aspx?id=173>.

2 See generally Saadia M. Pekkanen and Paul Kallender-Umezu, *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford, CA: Stanford University Press, 2010).

3 Richard Samuels, “Rich Nation, Strong Army”: *National Security and the Technology Transformation of Japan* (Ithaca, NY: Cornell University Press, 1996), 154–97.

4 Thomas U. Berger, “From Sword to Chrysanthemum: Japan’s Culture of Anti-Militarism,” *International Security* 17 (4): 119–50; and Andrew L. Oros, *Normalizing Japan: Politics, Identity, and the Evolution of Security Practice* (Stanford, CA: Stanford University Press, 2008).

5 Pekkanen and Kallender-Umezu, *In Defense of Japan*, 55–71.

6 Saadia M. Pekkanen, *Picking Winners? From Technology Catch-up to the Space Race in Japan* (Stanford, CA: Stanford University Press, 2003), 162–85.

established Western competitors. The Japanese players include some pioneering industrial and defense heavyweights such as Mitsubishi Heavy Industries (MHI) and Ishikawajima-Harima Heavy Industries (now IHI Corporation) on the rocket side, and Mitsubishi Electric (Melco) and NEC on the satellite side.⁷ These private actors have long been pivotal to Japan's space saga, not just in terms of technological acquisition, upgrading, and development. More significant for their economic livelihood over the long term, they have been instrumental in shaping the institutional and legal changes discussed in the next section.

Prospects in Commercial and Military Space

To understand the incentives motivating Japanese corporations toward military space necessitates a brief assessment of their commercial prospects. After decades of efforts, these prospects are still shaky in the highly competitive global markets for both the Japanese SLV and satellite makers. MHI, for example, is still mostly captive to government payloads, with the H-IIA and now the H-IIB that allows for heavier capacity with dual manifest missions.⁸ MHI received its first, and to date only, overseas order from Korea in 2009 for a satellite launch, carried out aboard the H-IIA in 2012. Even now MHI remains hopeful that it can parlay this singular commercial venture to go after other launch contracts around the world. But MHI launch costs for the H-IIA are still almost prohibitive in comparison to cheaper launch service providers, leaving the company's future commercial prospects in doubt.⁹

Melco too is attempting to make inroads on the global satellite side.¹⁰ Its first commercial venture in-

involved launching a Japanese commercial communications satellite in 2007, followed by its first overseas order to build a communications satellite for a joint Singapore-Taiwanese telecom venture in 2008. It has followed up on its promise to attract foreign customers, with the latest order from Turkey to build two communications satellites in 2011.

The difficulties Japan faces lie in the revenue stream and projected demand in global commercial infrastructure and support industries. Total revenues for space infrastructure came to about \$106 billion in 2011.¹¹ But within that, the commercial launch industry comes to under \$2 billion, with Russia capturing 56 percent of that market and Europe 22 percent. Similarly, commercial satellite manufacturing in 2011 came to only around \$4 billion, putting it at roughly half of the revenue coming in from government-related sources. Forecasts also have had a dampening effect on all interested commercial players. One forecast out to 2020 in the commercial space transportation sector suggests that there is only likely to be an average of about 50 satellites and 30 launches per year.¹²

Where, then, is business to be found? Even in this era of declining budgets, governments remain substantial investors and players in space activities, including military space programs.¹³ In all, government space expenditures account for roughly \$73 billion of total global space activity, with some of the stronger government space expenditures in recent years occurring in countries outside the United States. Of course, the United States still accounts for 65 percent of total known global government space spending, but government appropriations are on the increase in other countries. The U.S. Department of Defense, for example, comprised more than half the total U.S. government agencies' space budgets of about \$47 billion in 2011. In Japan, military space also found a favorable resonance as the general space budget inched upward in 2011, with increases noted for the fleet of reconnaissance satellites under the Prime Minister's Cabinet Office,

7 Pekkanen and Kallender-Umezu, *In Defense of Japan*, 71–94.

8 MHI, "MHI Receives Order for Launch Services of Korea Multipurpose Satellite-3: First Satellite Launch Order Placed by Overseas Customer to MHI," News No. 1270, January 12, 2009, <http://www.mhi.co.jp/en/news/story/0901121270.html>; MHI, "MHI to Begin Launch Service Business Using H-IIB Rockets, Capable of Accommodating Large-Size Satellites: Aggressive Exploration of Global Markets in Sights," press release, September 27, 2011, <http://www.mhi.co.jp/en/news/story/1209271577.html>; and MHI and JAXA, "Launch of H-IIA Launch Vehicle No. 21," March 21, 2012, http://www.mhi.co.jp/en/notice/notice_120321_1.html.

9 Jun Onoda, "Launch Clients Sought for H-2A: Rocket Faces Strong Intl Competition, Dearth of Non-Govt Business," *Yomiuri Shinbun*, May 18, 2012, <http://www.yomiuri.co.jp/dy/business/T120517004963.htm>.

10 Melco, "Mitsubishi Electric Successfully Launches Superbird-7—The First Japan-Made Commercial Communications Satellite," News No. 2439, August 15, 2008, http://www.mitsubishielectric.com/news/news_releases/2008/mel0712.pdf; Melco, "Mitsubishi Electric Receives Order for ST-2 Satellite From Singtel-Chunghwa Joint Venture," News No. 2448, December 2, 2008, http://www.mitsubishielectric.com/news/news_releases/2008/mel0721.pdf; Melco, "Mitsubishi Electric to Deliver Two Communication Satellites to Turkey," News No. 2584, March 8, 2011, <http://www.mitsubishielectric.com/news/2011/pdf/0308.pdf>; Melco, "Mitsubishi

Electric to Supply PLS Components for Orbital Sciences Corporation for NASA International Space Station Re-supply Programs," News No. 2484, October 22, 2009, http://www.mitsubishielectric.com/news/news_releases/2009/mel0758.pdf; and Peter B. de Selding, "Melco Expansion Aimed at Doubling Satellite Revenue," *Space News*, June 6, 2011.

11 Unless otherwise indicated, the data and estimates in the remainder of this section are from the Space Foundation, *The Space Report 2012* (Colorado Springs, CO: Space Foundation, 2012), 32–33, 43–44.

12 U.S. Federal Aviation Administration Office of Commercial Space Transportation (FAA/AST) and the Commercial Space Transportation Advisory Committee (COMSTAC), *2012 Commercial Space Transportation Forecasts* (Washington, DC: FAA/AST, May 2012), 2.

13 Titus Ledbetter III, "U.S. Military Space Spending to Decline 22 Percent in 2013," *Space News*, February 13, 2012.

the development of ballistic-missile early-warning sensor technology sought by the Ministry of Defense, and the ASNARO high-resolution observation satellite program sponsored by the Ministry of Economy, Trade, and Industry (METI).¹⁴

Given that strong international commercial competition is not likely to abate, Japan's private players also have a practical business incentive to lobby for what are often far more lucrative military space projects, either by themselves or with their like-minded corporate allies abroad. It is these concentrated private-sector actors who have the most to gain or lose economically in making space policy shifts from the market to the military a concrete reality for Japan. In many ways the institutional and legal structure has begun to answer to their needs. This, in turn, has important implications for the future of Japan's space directions and for the country's relationships with rivals and allies.

THE INSTITUTIONAL AND LEGAL CHANGES

Until 2008, when Japan's first-ever Basic Space Law began to elevate space policymaking to some sort of a coherent national level, there was little finger pointing to be done at any military direction in the country's space development. The Basic Space Law changed that, and, as expected, is now reverberating outwards to permeate other aspects of Japan's space security postures.¹⁵ By formally overturning a 1960s-era strict peaceful purposes resolution, the new law allowed Japan to move toward the military uses of space like all other aspiring space powers, and to do so with the concrete needs of its private-sector space players in mind. But the Basic Space Law—itself a signal of government intent only after basic space technologies were functionally in place—was only a stepping-stone toward greater coherence at the national level.¹⁶ In July 2012, the Japanese government elevated and institutionalized space policymaking directly under the Prime Minister in the Cabinet Office.¹⁷

The new Space Strategy Office (SSO) abolished the Space Activities Commission, which had been responsible under the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) for overseeing the single most visible civilian space agency around, the Japan Aerospace Exploration Agency

(JAXA).¹⁸ The legislation that created the SSO not only radically elevated the bureaucratic importance of some ministries (METI) over others (MEXT), meaning potentially a greater official focus on commercial and military programs in the aerospace industry under METI's jurisdiction. It also gave the SSO, headed by the Prime Minister, control over the nation's entire space budget and policy directions. It further removed restrictions on JAXA to develop space assets only for peaceful purposes, leaving it able to pursue military space programs in the interest of national security.

These trends in the space industry have been complemented with the loosening of restrictions that have long been of concern to Japanese defense contractors. At the end of December 2011, Japan lifted its ban on exports of weapons, first introduced in 1967.¹⁹ These principles, implemented by METI, had been designed to restrict exports to countries in the Communist bloc, those under arms exports embargo through United Nations Security Council resolutions, and those involved in or likely to be involved in international conflicts.²⁰ In 1976, the government expanded the scope to other areas not included in the original Three Principles. The formal easing of the principles all around is likely to further spur the possibilities of exporting, investing, and participating in, among other things, space-related dual-use technologies, with countries like, but not necessarily limited to, the United States, with which Japanese contractors already enjoy specially negotiated exemptions dating back to the early 1980s.²¹

Even as the government cautioned that this blanket easing was in line with Japan's fundamental pacifist identity, it was clear that this move also served the economic interests of Japan's powerful space and defense contractors. It answered, among other things, to long-standing lobbying pressures exerted by Japanese industry, collectively and singly. The Society of Japanese Aerospace Companies, which represents Japan's space and aerospace community, had long agitated to develop a range of reconnaissance and early-warning satellites for missile defense.²² Unlike most of the

18 Paul Kallender-Umezu, "Japan Passes Law Permitting Military Space Development," *Defense News*, June 22, 2011, <http://www.defensenews.com/article/20120622/DEFREG03/306220001/Japan-Passes-Law-Permitting-Military-Space-Development>.

19 Masami Ito, "Government Goes Ahead with Easing Arms Export Ban," *Japan Times*, December 28, 2011.

20 MOFA, "Japan's Policies on the Control of Arms Exports," <http://www.mofa.go.jp/policy/un/disarmament/policy/index.html>.

21 MOFA, "Exchange of Notes Concerning the Transfer of Arms and Military Technologies to the United States of America," June 23, 2006, <http://www.mofa.go.jp/announce/announce/2006/6/0623-2.html>.

22 Paul Kallender-Umezu, "Japan Moves to Relax Restrictions on Military Space Developments," March 6, 2012, <http://japanspacepolicy.com>.

14 Paul Kallender-Umezu, "Japan Space Budget Up 3%: Focus on Milspace Supported," January 14, 2011, <http://japanspacepolicy.com/2012/03/04/japan-space-budget-up-3-focus-on-milspace-supported/>.

15 Pekkanen and Kallender-Umezu, *In Defense of Japan*, 245–47.

16 Interview, Tokyo, June 28, 2012.

17 News Briefs, *Space News*, July 23, 2012, 8.

postwar era where corporations studiously avoided association with defense production, giants like Japan's premier liquid-fuel SLV maker and operator MHI openly trumpeted the importance of this latest move in enabling the Japanese defense production and technology base.²³ Such actions by Japan's public and private actors in the name of peace-loving national security today have an undeniable sheen of legitimacy for two very simple reasons: rising military concern over geopolitical uncertainties in the Asian region, and sliding domestic tolerance for belligerent behavior by Asian powers like China, the DPRK, and the ROK.²⁴

SPACE-RELEVANT DIRECTIONS AND IMPLICATIONS

What Japanese public and private players have set in motion from the market to the military in space policy is unlikely to be reversed anytime soon. The Japanese government has now officially and openly insinuated itself as a stakeholder in Japan's military space saga, and done so in a way that is only likely to reinforce its role in the future in open partnership with Japanese defense contractors. This means overall that Japan today is also fuelling Asia's space race. It is unlikely to pull back, for the same reasons as other space powers such as China and the United States, namely heavy dependence on space and cyberspace in the economic, financial, diplomatic, and military domains.²⁵ Some implications follow:

- Spurred on by perceived technological and economic vulnerabilities, geopolitical uncertainties, and corporate interests, Japan will continue to indigenize space-based capabilities

com/2012/03/06/japan-moves-to-relax-restrictions-on-military-space-development/.

23 MHI, "Bulletin Board Notice re Easing of Arms Export Guidelines," notice, December 28, 2011, available online at http://www.mhi.co.jp/en/notice/notice_111228.html.

24 "A Slightly More Muscular Japan," *Economist*, April 14, 2012; Voice of America, "Japanese React with Fear, Anger Over China Islands Dispute," October 11, 2012, http://www.voanews.com/content/japanese_react_with_fear_anger_over_china_islands_dispute/1524988.html; "Nationalism Over the Senkakus," *Japan Times*, August 25, 2012; Frank Ching, "Nationalists Making Waves in Japan-China Ties," *Japan Times*, September 6, 2012; Jun Hongo, "Experts Counsel Calm Diplomacy Over South Korea Isle Row," *Japan Times*, September 6, 2012; Debito Arudou, "Revisionists Marching Japan Back to a Dangerous Place," *Japan Times*, October 2, 2012; and Hironari Sasada, "Youth and Nationalism in Japan," *SAIS Review* 26 (2006): 109–22.

25 See, for example, the practical remarks by General Norty Schwartz, "Space, Cyberspace, and National Security," Air Force Association, Orlando, Florida, February 18, 2010, <http://www.af.mil/shared/media/document/AFD-100219-034.pdf>.

ties in commercial and military space. Acting in open public-private partnerships to ensure the country stays abreast of a full spectrum of cutting-edge space technologies as it has historically done, Japan will aim to solidify its independent access to and operations in outer space.

- Japan will heed U.S. depictions of space as congested, contested, and competitive, and continue to closely monitor China's militarized space policies, actions, and programs.²⁶ In collaboration with interested global actors, it will also seek the creation of an international code of conduct to govern the policies and conduct of all countries in outer space.²⁷
- Japan will reinforce space-based cooperation with the U.S., particularly related to BMD, lunar and planetary expeditions, and especially cyberspace.²⁸ It will continue to move forward with its own positioning, navigation, and timing system in the form of the Quasi-Zenith Satellite System, which should be complementary and augmentative to the U.S.'s Global Positioning System.²⁹
- The Japanese government will take stronger measures, both alone and in cooperation with interested allies like the United States, to deter and defend against the destruction, degradation, disruption, or even denial of its vital space and cyberspace capabilities.³⁰

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26 U.S. Department of Defense and Office of the Director of National Intelligence, *National Security Space Strategy (Unclassified Summary)*, January 2011, http://www.defense.gov/home/features/2011/0111_nsss/docs/NationalSecuritySpaceStrategyUnclassifiedSummary_Jan2011.pdf; Clara Moskowitz, "US and China: Space Race or Cosmic Cooperation?" September 27, 2011, <http://www.space.com/13100-china-space-program-nasa-space-race.html>; Xinhua, "China's PLA Eyes Future in Space, Air: Air Force Commander," November 1, 2011, http://news.xinhuanet.com/english/2009-11/01/content_12369608.htm.

27 Saadia M. Pekkanen, "Asia in the Governance of Outer Space," *Asia Pacific Memo* No. 154, May 12, 2012, <http://www.asiapacificmemo.ca/asia-in-the-governance-of-outer-space>.

28 Paul Kallender-Umezu, "Japan Takes Action Against Complex Cyber Threats," *Defense News*, October 9, 2012.

29 Pekkanen and Kallender-Umezu, *In Defense of Japan*, 197–201.

30 "Noda, Obama to Make Joint Call for New Order in Asia-Pacific Region," *Japan Times*, April 24, 2012; Ayako Mie, "Japan Woefully Vulnerable to Cyber-Attack," *Japan Times*, October 27, 2012; and Paul Kallender-Umezu, "Japan Takes Action Against Complex Cyber Threats," *Defense News*, October 9, 2012, <http://www.defensenews.com/article/20121009/C4ISR01/310090010/Japan-Takes-Action-Against-Complex-Cyber-Threats>.

