



A Guide to Japan's Space Policy Formulation: Structures, Roles and Strategies of Ministries and Agencies for Space

A Working Paper
on Japan's Space Policy

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EXECUTIVE SUMMARY

The Japanese government's organizational structure and policy processes for outer space programs have evolved over time, and now the government has completed its restructuring. Fifty years ago, the Japanese government restricted national space activities to "peaceful purposes," which was interpreted as non-military activities. As a consequence, Japan's space programs, including the government's utilization of space systems, were rationalized on the basis of scientific purposes. Today, technological advancements and changes in both internal and external political circumstances led the government to accept and pursue a full-spectrum national space policy that includes military usage. The government codified these changes and created the first national law for space in 2008. The law established a Cabinet-level headquarters to develop and lead Japan's space policy. In addition, organizational reforms in 2012 affected ministries' and agencies' roles, responsibilities, and national space policy processes. This paper is a resource for researchers of Japan's space policy. It will allow them to easily and comprehensively understand how Japan's national space policy is being formulated. The first section of this paper aims at clarifying the Japanese government's current organizational structures, roles and strategies in space policy. The second section provides an overview of two national space policy pillars: national military space strategies and commercial space initiatives.

Keywords: Japan, national space policy, organizational structure, policy process, military space policy, commercial space initiative

LIST OF ABBREVIATIONS

ADInet	Association of Southeast Asian Nations Disaster Information Network
BMD	Ballistic missile defense
CAO	Cabinet Office
CNSP	Committee on National Space Policy
C4	Command, control, communication and computer
DBJ	Development Bank of Japan
DPPD	Defense Planning and Programming Division
GNSS	Global navigation satellite system
GSI	Geospatial Information Authority of Japan
ICoC	International Code of Conduct
ICT	Information, communication and technologies
IGS	Information gathering satellites
INCJ	Innovation Network Corporation of Japan
IoT	Internet of Things
ISR	Intelligence, surveillance and reconnaissance
ISS	International Space Station
JAXA	Japan Aerospace Exploration Agency
JCG	Japan Coast Guard
JGSDF	Japan Ground Self-Defense Force
JMA	Japan Meteorological Agency
JSpOC	Joint Space Operations Center
MAFF	Ministry of Agriculture, Forestry and Fisheries
METI	Ministry of Economy, Trade and Industry
MEXT	Ministry of Education, Culture, Sports, Science and Technology
MIC	Ministry of Internal Affairs and Communications
MLIT	Ministry of Land, Infrastructure, Transport and Tourism
MOD	Ministry of Defense
MOE	Ministry of the Environment
MOFA	Ministry of Foreign Affairs
MSAT	Multi-functional Transport Satellite
NEDO	New Energy and Industrial Technology Development Organization
NICT	National Institute of Information and Communications Technology
NPA	National Police Agency
NSC	National Security Council
NSPS	National Space Policy Secretariat of the Cabinet Office
NSS	National Security Strategy
PNT	Positioning, navigation and timing
R&D	Research and development
SDF	Self-Defense Force
SHNSP	Strategic Headquarters for National Space Policy
SSA	Space situational awareness
UNCOPUOS	United Nations Committee on the Peaceful Uses of Outer Space
QZSS	Quasi-Zenith Satellite System
2018 NDPG	National Defense Program Guidelines for FY 2019 and beyond
2018 MTDP	Medium-Term Defense Program FY2019-FY2023

ENGLISH-JAPANESE TRANSLATIONS
(PROVISIONAL TRANSLATIONS MARKED *)

<i>Government organs</i>	
Cabinet Office	内閣官房
Cabinet Intelligence and Research Office	内閣情報調査室
Cabinet Satellite Intelligence Center	内閣衛星情報センター
Committee on IGS Operation*	情報収集衛星運営委員会
Committee on IGS Promotion*	情報収集衛星推進委員会
Conference on Intelligence of the Cabinet*	内閣情報会議
JAXA	国立研究開発法人宇宙航空研究開発機構
MAFF	農林水産省
Fisheries Agency, Resources Enhancement Promotion Department	水産庁 増殖推進部
Fisheries Agency, Resource Management Division, Resource Management Department	水産庁 資源管理部 管理課
Statistics Department	統計部
METI	経済産業省
Comprehensive Strategy on Space Parts and Components' Technical Development*	宇宙用部品・コンポーネントに関する総合的な技術戦略
Industrial Structure Council, Manufacturing Industry Committee	産業構造審議会 製造産業分科会
Manufacturing Industries Bureau, Aerospace and Defense Industry Division, Space Industry Office	製造産業局 航空機武器宇宙産業課 宇宙産業室
Study Group on Enhancing Competitiveness of Space Products Using Civil Parts and Technologies*	民生部品・技術を活用した宇宙機器の競争力強化向上に関する研究会
Study Group on Space Parts and Components' Technology Development Strategy*	部品・コンポーネントに関する技術戦略に関する研究会
Working Group on Developing a Roadmap for Space Parts and Components*	部品・コンポーネントロードマップに関するワーキンググループ
MEXT	文部科学省
Council for Science and Technology	科学技術・学術審議会
Research and Development Bureau, Space Development and Utilization Division	研究開発局 宇宙開発利用課
Space Strategy of MEXT*	文部科学省における宇宙分野の推進方策について
Subcommittee on Research Planning and Evaluation*	研究計画・評価分科会
MIC	総務省
Global Strategy Bureau, Space	国際戦略局 宇宙通信政策課

Communications Policy Division	
Task Force on Studying Space Utilization beyond 2030*	宙を拓くタスクフォース
Task Force on Studying Utilization of Four-Dimensional Cyber City*	次元サイバーシティの活用に向けたタスクフォース
Working Group on Space Development and Utilization*	宇宙開発利用部会
Working Group on Vision for Space Utilization*	宇宙利用の将来像に関する懇話会
MLIT	国土交通省
Civil Aviation Bureau, Air Navigation Services Department, Air Navigation Services Planning Division	航空局 交通管制部 交通管制企画課
Director-General for Policy Planning, and the National Land Information Division under the National and Regional Policy Bureau	政策統括官付・国土政策局 国土情報課
GSI, Electronic Observation Point Division*	国土地理院 電子基準点課
GSI, Geodetic Observation Center	国土地理院 測地観測センター
GSI, Planning Department, Planning and Coordination Division	国土地理院 企画部 企画調整課
GSI, Satellite Geodetic Division*	国土地理院 衛星測地課
JCG, Guard and Rescue Department, Guard Information Division*	海上保安庁 警備救難部 警備情報課
JCG, Hydrographic and Oceanographic Department, Hydrographic and Oceanographic Division*	海上保安庁 海洋情報部 海洋情報課
JMA, Administration Department	気象庁 総務部
JMA, Meteorological Satellite Center	気象庁 気象衛星センター
JMA, Satellite Program Division of the Observation Department	気象庁 観測部 気象衛星課
Minister's Council of Transport Policy	交通政策審議会
Minister's Secretariat, Engineering Affairs Division	大臣官房 技術調査課
Policy Bureau, Technology Policy Division	総合政策局 技術政策課
MOD	防衛省
Bureau of Defense Buildup Planning, Defense Planning and Programming Division	整備計画局 防衛計画課
Bureau of Defense Policy, Strategic Planning Division	防衛政策局 戦略企画課
MOE	環境省
Global Environment Bureau, Policy Planning Division, Research and Information Office	地球環境局 総務課 研究調査室
Minister's Secretariat, Policy Division, Environmental Research and Technology Office	大臣官房 総合政策課 環境研究技術室
MOFA	外務省

Foreign Policy Bureau, Space and Cyber Policy Division	総合外交政策局 宇宙・サイバー政策室
Intelligence and Analysis Service, First Division	国際情報統括官組織 第一国際情報官室
NPA	警察庁
Info-Communications Bureau, Info-Communications Planning Division	情報通信局 情報通信企画課
<i>Some key words and policy documents</i>	
Annual plans of JAXA	年度計画
Basic Plan on Space Policy	宇宙基本計画
BMD Joint Task Force	BMD 統合任務部隊
Commander-in-chief of the Air Defense Command	航空総隊司令官
Entrusted investigation budget*	委託調査等
Implementation Plan of the Basic Plan on Space Policy	宇宙基本計画工程
Japan Revitalization Strategy 2016	日本再興戦略 2016
Joint Staff Office	統合幕僚監部
J-5	防衛計画部
Long-term Vision for a Space Transportation System*	宇宙輸送システム長期ビジョン
Manual for Procedures regarding International Frequency Allocation for Small Satellite Constellations*	小型衛星通信網の国際周波数調整手続きに関するマニュアル
Mid-to-long-term objectives of JAXA	中長期目標
Mid-to-long-term plan of JAXA	中長期計画
Minister of State for Special Mission (Space Policy)	内閣府特命担当大臣（宇宙政策）
S-AWARD	宇宙開発利用大賞
Space-based optical telescope for SSA*	宇宙設置型光学望遠鏡
Space Industry Vision for 2030 (Space Utilization Industry; Space Equipment Industry; Space System Overseas Development; Environment for New Space Businesses)	宇宙産業ビジョン 2030(宇宙産業利用; 宇宙機器産業; 海外展開; 新たな宇宙ビジネスを見据えた環境整備)
Space New Economy Creation Network	スペース・ニューエコノミー創造ネットワーク
SSA laser ranging device*	SSA レーザー測距装置
Task Force for Expanding Japan's Space System Overseas*	宇宙システム海外展開タスクフォース

1. INTRODUCTION

Fifty years ago, in 1969, a plenary session of Japan's House of Representatives enacted the Resolution on Principles of Japan's Space Development and Utilization, which has shaped Japan's space programs for "peaceful purposes."¹ A week later, the words "peaceful purposes" were interpreted to mean non-military and non-aggressive.² This principle of "peaceful purposes" is slightly different from how the international community generally understands it. In general, most countries read "peaceful purposes" as non-aggressive, which allows them to acquire military capabilities and conduct military missions. However, the Japanese government decided to include the non-military principle on top of the non-aggressive principle because of Article 9 of the Constitution of Japan that prohibits the possession of war potential. Since the decisions made in 1969, Japan's space programs were limited to scientific purposes. Space was considered neither an economic resource nor a military resource—the Self-Defense Forces (SDF), Japan's military forces, had limited access to space systems. The government's interpretations and perceptions of the space domain did not change until the Basic Space Law (Act No. 43, 2008) came into force.³

The Basic Space Law is the first domestic law that stipulates the government's role in space development. The law established a Cabinet-level council that determines Japan's national space policy. Relevant ministries and agencies are forming their own space objectives and programs to meet the goals addressed in the national space policy. The law also represents a clear transition from the previous science-focused space policy. Nowadays, priorities include the commercial sector and national security. Other countries are leveraging commercial sector capabilities to meet government demands. Japan is also accelerating its efforts to utilize more commercially available technologies and services to realize government objectives. With respect to national security, the government currently has a legal basis to develop and utilize space systems for national security reasons.⁴ The

¹ Plenary Session of the House of Representatives, 「我が国における宇宙の開発及び利用の基本に関する決議 (1969年5月9日衆議院本会議)」 “Wagakuni ni okeru utyuu no kaihatu oyobi riyou no kihon ni kannsuru ketsugi (1969nen 5gatsu 9nichi shuugiinhonkaigi) [Resolution Concerning Japan's Basic Development and Utilization of Space (Plenary Session of the House of Representatives, May 5, 1969),” Tokyo, May 9, 1969, http://www.jaxa.jp/library/space_law/chapter_1/1-1-1-4_j.html (accessed on Jan. 23., 2019).

² Tsugio Ishikara, Shuugiin kagakugijutusinkoutaisaku tokubetsuiinkai, [Special Committee on the Science and Technology Promotion Measures], 「参議院 科学技術振興対策 特別委員会 会議録第七号 (昭和44年5月15日)」 “Kagakugijutsu shinkotaisaku tokubetsu iinkai kaigirokudainagou(shouwa 44nen 5gatsu 15nichi) [Minutes of Special Committee on the Science and Technology Promotion Measures (May 15, 1969)],” Tokyo, May 15, 1969, <http://kokkai.ndl.go.jp/SENTAKU/sangiin/061/1685/06105151685007.pdf> (accessed Jan 23, 2019); Setsuko Aoki, “Current Status and Recent Developments in Japan's National Space Law and Its Relevance to Pacific Rim Space Law and Activities,” *J. of Space L.* 35, (2009):367. These interpretations, along with the application of the “peaceful” principle on space programs, are derived from an interpretation of Article 9 from the Constitution of Japan, a pacifist clause that prohibits Japan from possessing war-potential capabilities.

³ Based on *ippanka gensoku* (一般化原則, [governmental unified view]), the Self-Defense Forces (SDF) were allowed to use space systems for military missions only when those space systems were generally used by the public and commercially available. See Current Status and Recent Developments in Japan's National Space Law, *supra* note 2, 381; Uchu Kihonhou [Basic Space Law], Law No.43, May 28, 2008.

⁴ Interpretation of “peaceful purposes” was changed from “non-military” to “non-aggressive.” See Keiichi Anan, “Administrative reform of Japanese Space Policy Structures in 2012,” *Space Policy* 29 (2013): 213.

Basic Space Law thus allowed the government to legitimately pursue full-spectrum national space policy that encompasses civil, commercial, science and national security objectives.

This full-spectrum space policy, however, complicates understanding who, where and how Japan's space policies are being developed. Today, space policy analysts should not only look into the Japan Aerospace Exploration Agency (JAXA, the equivalent of the United States' National Aeronautics and Space Administration) programs to grasp Japan's motives in the space domain. Rather, analysts have to explore each ministry and agency's roles and programs (i.e., who and what) as well as their organizational structures and policy processes (i.e., how). Previous studies have examined the impact of the Basic Space Law and the 2012 organizational reform on Japan's space policy dynamism and how these changes affect the future of Japan's space policy development.⁵ However, there are no readable government documents or academic papers that focus closely on the policy processes of Japan's space policy development. Who are the key government players/organs in national space policy creation? How are Japan's space policies developed at each ministry or agency level? In these respects, this paper aims to identify and analyze the players/government organs that are developing Japanese space policies and how these policies are formulated. The study at hand comprises two sections. The first section analyzes the organizational structures and policy processes of 13 government organs. The second section examines Japan's current military space and space industry policies a decade since the Basic Space Law came into force.

⁵ For example, Kazuto Suzuki, "Transforming Japan's space policy-making," *Space Policy* 23 (2007); Setsuko Aoki, "Current Status and Recent Developments in Japan's National Space Law and Its Relevance to Pacific Rim Space Law and Activities," *J. Space L.* 35 (2009); Paul Kallender-Umezu, "Enacting Japan's Basic Law for space activities: Revolution or evolution?" *Space Policy* 29 (2013); Anan, *supra* note 4; and Kazuto Suzuki, "A brand new space policy or just papering over a political glitch? Japan's new space law in the making," *Space Policy* 24 (2008).

2. KEY GOVERNMENTAL ACTORS, POLICY DOCUMENTS AND POLICY MECHANISMS⁶

2.1. The Cabinet and the Cabinet Office (CAO)

It often puzzles researchers that although both the Cabinet and the CAO are headed by the prime minister, each organ has different roles and responsibilities.

The Cabinet is an executive branch of the Japanese government composed of the prime minister and ministers of state.⁷ Under the Cabinet, the Strategic Headquarters for National Space Policy (SHNSP) was established by the Basic Space Law. The SHNSP is tasked with building a comprehensive national space policy and controlling the budgets for governmental space programs.⁸ Before the Basic Space Law came into effect, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) was the dominant player in developing Japan's national space policy. Now, elevated from the ministerial to the Cabinet level, the SHNSP is authorized to plan and discuss comprehensive national space policy, including the scientific, economic or national security aspects of space. The SHNSP is chaired by the prime minister and all ministers participate. The SHNSP drafts Cabinet decisions on comprehensive national space policy. It can request documents, opinions or any other support from the government organs when necessary.

The CAO has two functions. On the one side, CAO acts as an administrative agency of the Cabinet, and it supports the Cabinet's national space policy creation (e.g., supporting the SHNSP). On the other side, CAO plans and operates its own space programs like other ministries. In 2012, the Committee on National Space Policy (CNSP) and its secretariat, the National Space Policy Secretariat of the Cabinet Office (NSPS) were created under the CAO.⁹ The CNSP is a prime minister's council in which the members are appointed by the prime minister (including experts from industry and academia). A chairperson is elected by member votes. Based on the prime minister's inquiry,¹⁰ the committee studies and drafts the so-called the Basic Plan on Space Policy (Basic Plan) and proposes the draft to the prime minister (who is also the head of SHNSP).¹¹ The CNSP works closely with government organizations to determine their annual budget requests for space programs (excluding classified programs) and gives advice on individual space programs. This 10-year Basic Plan maintains flexibility to respond to changes in the geopolitical environment by creating the Implementation Plan of the Basic Plan on Space Policy (Implementation Plan).¹² The Implementation Plan depicts each ministry and agency's responsibility in pursuing the objectives written in the Basic Plan, including

⁶ Asterisks are used to identify provisional translations provided by the author.

⁷ It also has Cabinet-level councils such as the National Security Council or Cybersecurity Strategic Headquarters.

⁸ Basic Space Law, *supra note 3*, at ch. 4.

⁹ Naikakufu secchihou [Act for Establishment of the Cabinet Office], Law No.89 of July 16, 1999 (as amended), art. 37, 40.

¹⁰ For example, see "Inquiry letter from the prime minister to CNSP," No. 20, July 26, 2012, <https://www8.cao.go.jp/space/committee/dai1/siryoku4.pdf> (accessed Jan. 25, 2019): 5.

¹¹ The Basic Plan addresses "Japan's space development and use, comprehensively and systematically ... and is considered to be the most fundamental plan of space exploitation." Cabinet Office, 「宇宙基本計画」 Uchu kihan keikaku [Basic Plan on Space Policy], Tokyo, April 1, 2016.

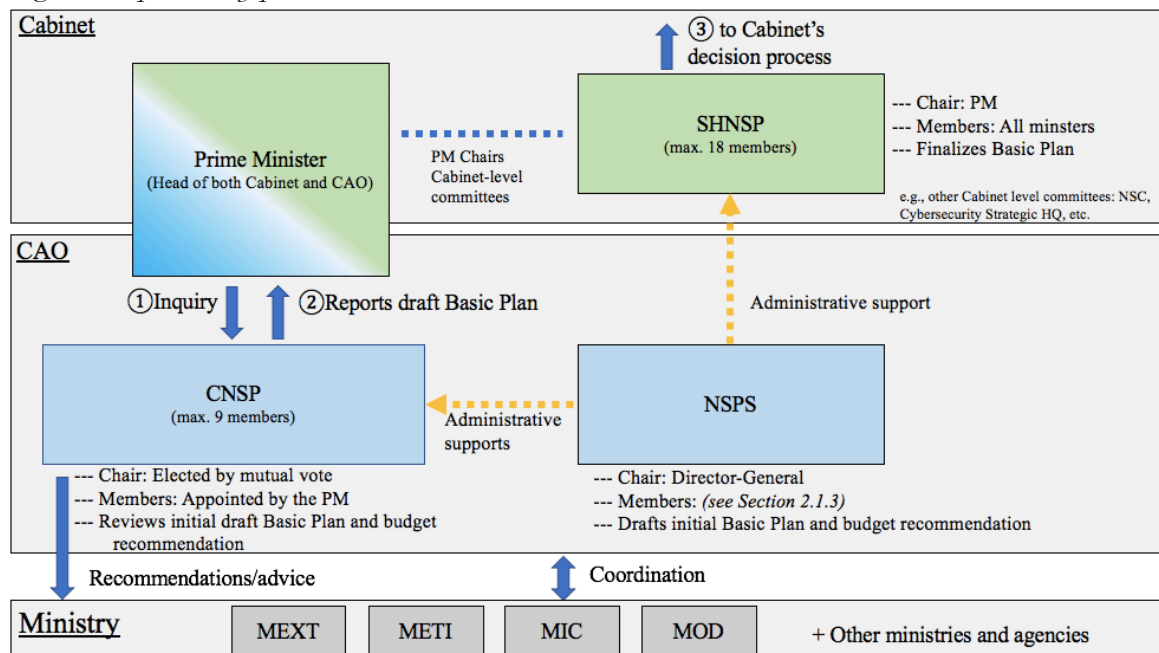
¹² Cabinet Office, 「宇宙基本計画工程表」 Uchu kihan keikaku kouteihyo (FY2018) [Implementation Plan of the Basic Plan on Space Policy, FY2018], Tokyo, Dec. 11, 2018.

timelines. It is annually reviewed by the CNSP and approved by the SHNSP. The NSPS is a secretariat to both the SHNSP and CNSP, which also supports planning and designing of the Basic Plan.

CAO has proposed a space project in the 2019 budget request for ¥28.5 billion (approximately \$258 million)¹³ to develop, operate and maintain the Quasi-Zenith Satellite System (QZSS, “Michibiki” series). The NSPS is responsible for planning the QZSS usage and ensuring that it is available for government and public users.¹⁴

Figure 1 below summarizes the policy processes of how national space policy is formulated in Japan. The point to note here is that the initial draft Basic Plan is actually formulated at the NSPS. Then the CNSP studies the draft and gives it to the prime minister. The prime minister will further discuss the draft at the SHNSP. If approved by the SHNSP, the draft will be sent to the Cabinet for the final decision.

Figure 1: *Space Policy processes – Cabinet and CAO*



Note: Developed by the author.

2.1.1. Members of the SHNSP

Members of the SHNSP are determined by the Basic Space Law. The prime minister is the chair of the SHNSP.¹⁵ Vice chair is co-seated by the Chief Cabinet Secretary and the

¹³ This is the annual budget request drafted by each ministry (generally by September) and requested from the Diet. The budget is approved in March, to be used from April. NSPS, 「平成 31 年度概算要求における宇宙開発利用関係予算について (省庁別集計)」 “Heisei 31 nendo gaisanyoukyu ni okeru uchu kaihatsumiyu kankei yosan ni tsuite: shouchou betsu shukei [Budget Request for FY2019 related Space Programs: Summary of Ministries and Agencies],” Tokyo, September 2018, <https://www8.cao.go.jp/space/committee/dai72/siryou1-1.pdf> (accessed Jan. 25, 2019). The exchange rate used in this paper is the 2018 annual average TTS Yen to U.S. dollar exchange rate of 110.43. See “Exchange Quotations – Yearly Averages,” *Mitsubishi UFJ Research & Consulting website*. http://www.murc-kawasesouba.jp/fx/year_average.php (accessed Jan. 25, 2019).

¹⁴ Act for Establishment of the Cabinet Office, *supra* note 9, at para. 7-7 of art. 4 & art. 40.

¹⁵ Basic Space Law, *supra* note 3, at art. 28.

Minister of State for Special Mission (Space Policy) (i.e., a minister-level special appointee appointed by the prime minister).¹⁶ All ministers are members of the SHNSP.¹⁷

To date, the minister-level space policy position has been filled by 12 politicians. None of these appointees had a previous career in space policy. For example, Takuya Hirai has served as Minister of State for Space Policy from 2018 (current as of April 2019). Before he became a member of ruling Liberal Democratic Party, he was the president of a regional television company, the president of a radio broadcast company, a board member at a regional news company and the president of a private high school. After he was elected to the House of Representatives, he held various high-ranking government positions, but none of them was space policy related. Other ministers for space policy similarly did not have a background in space (their careers have been in construction, stock brokerage, or international development).

2.1.2. Members of CNSP

Members of the CNPS are determined by Cabinet order.¹⁸ Cabinet Order 186 (2012) authorizes the prime minister to appoint members who are deemed eligible (such as non-governmental academic experts) to complete the CNSP's mandates. It also limits the maximum number of members to nine and imposes a two-year term restriction (but members can be reappointed).¹⁹

Below are the current members of the CNSP (as of January 2019). Parentheses next to the titles describes their specialty and number of terms served:

- Chair: Mr. Yoshiyuki Kasai, honorary chairman of the Central Japan Railway Company (industry; two terms)
- Deputy chair: Dr. Takafumi Matsui, professor emeritus, University of Tokyo; director, Planetary Exploration Research Center, Chiba Institute of Technology (scientist; two terms)
- Members:²⁰
 - Dr. Setsuko Aoki, professor, Keio University Law School (space law; two terms)
 - Dr. Noriko Endo, project professor, Graduate School of Media and Governance, Keio University (energy science; one term)
 - Mr. Ryoichi Okiri, former chief of staff (Joint Staff) and former chief of staff (GSDF) (veteran; 1 term)
 - Mr. Takashi Goto, president of Seibu Holdings (industry; one term)
 - Dr. Shinichi Nakasuka, professor of Graduate School of Engineering, University of Tokyo (space engineering; two terms)
 - Dr. Hiroshi Matsumoto, president of Riken, former president of Kyoto University. (scientist; two terms)
 - Ms. Naoko Yamazaki, former astronaut at JAXA (astronaut; two terms)

¹⁶ According to Article 29 of the Basic Space Law, the vice chair shall be co-chaired by the Chief Cabinet Secretary and Minister of State for Space Development (宇宙開発担当大臣).

¹⁷ Basic Space Law, *supra* note 3, at art. 30.

¹⁸ Act for Establishment of the Cabinet Office, *supra* note 9, at para. 4 of art. 38.

¹⁹ Uchu seisaku iinkai rei [Cabinet order on Committee on National Space Policy], Law No.186 of July 11, 2011, at art. 2.

²⁰ Dr. Hiroshi Yamakawa was a former member of the Committee but resigned after he was appointed president of JAXA in 2018.

2.1.3. Members of NSPS

Article 40 to the Act for Establishment of the Cabinet Office states that members of the NSPS are determined by Cabinet order; however, there is no publicly available Cabinet order that stipulates an organizational structure for the NSPS. Instead, the Cabinet Office shows NSPS's current members on its website. Nevertheless, according to a government official, most management positions at NSPS, such as director-general (the head of the NSPS), director and deputy director are predetermined by inter-ministry memorandums (not determined by Cabinet order, meaning this process is undisclosed to the public). Following the government's employment rotation rule, staff positions are filled with generalists who lack expertise in space.²¹ In addition, some temporary transfers come from the private sector or local government (e.g., JAXA, Mitsubishi Heavy Industries, NEC, SKY Perfect JSAT Group, PASCO, Fujitsu, Mitsui Sumitomo Insurance Group, local government of Hokkaido).

2.2. Cabinet Secretariat

The Cabinet Secretariat has the Cabinet Satellite Intelligence Center under the Cabinet Intelligence and Research Office, where it collects earth observation data using information gathering satellites (IGS).²² Satellite data gathered by the Center is critical information to prepare, prevent, protect, and recover from national security threats as well as natural disasters.²³ The Center currently operates two optical and two radar satellites.

Although activities of the Center are confidential, two committees under the Cabinet Secretariat direct the center: the Committee on IGS Promotion* discusses strategic objectives of IGSs developments; the Committee on IGS Operation* discusses operational plans of these satellites.²⁴ Both committees are chaired by the Deputy Chief Cabinet Secretary. The deputy reports to the Conference on Intelligence of the Cabinet*, a Cabinet-level meeting chaired by the Chief Cabinet Secretary.²⁵

The Cabinet Secretariat has one program addressed in the 2019 budget request amounting to ¥74.4 billion (about \$674 million).²⁶ Its goal is to deploy a total of ten IGSs, including four optical, four radar, and two communication (for data-relay) satellites. The approved budget will be used by JAXA to develop satellites.

²¹ Bureaucrats change positions and are transferred to different divisions biannually, irrespective of individual interest or experience, based on a job rotation system.

²² Naikakukanbo sosiki rei [Cabinet Order for Organizational Structure of the Cabinet Secretariat], Law No. 219 of July 31, 1957 (as amended), at para. 3 of art. 4.

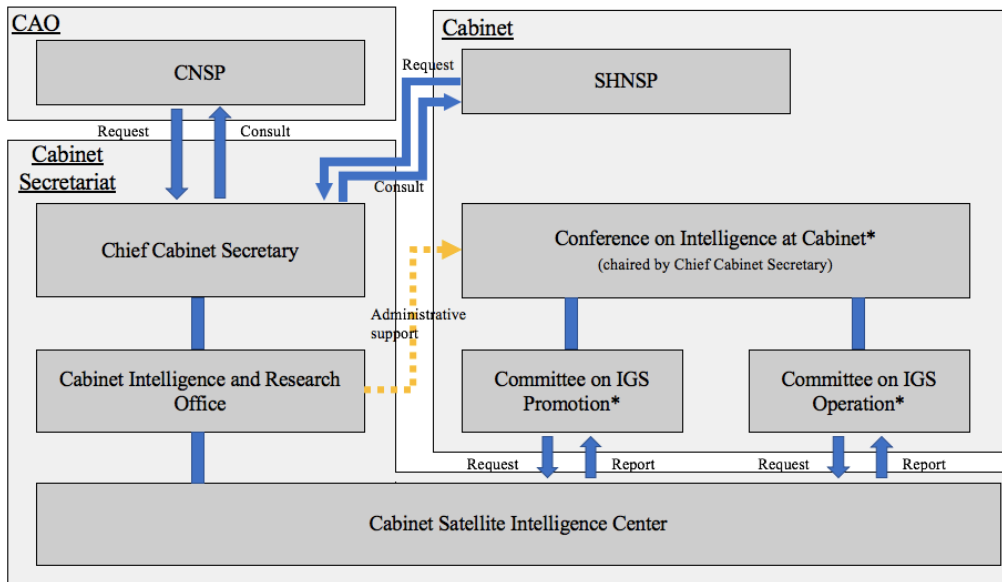
²³ Organizational Structure of the Cabinet Secretariat, *supra* note 22, at para. 3 of art. 4.

²⁴ Cabinet Secretariat, 「情報収集衛星の開発・運用体制」 “Joho shushu eisei no kaihatsu・unyou taisei [Organizational structure of the development and operation of IGS],” Tokyo, <https://www.cas.go.jp/jp/gaiyou/jimu/pdf/csice3.pdf> (accessed Jan. 25, 2019).

²⁵ Cabinet Decision, 「内閣情報会議の設置について」 “Naikaku johou kaigi no secchi ni tsuite [Cabinet Decision to establish the Conference on Intelligence of the Cabinet],” Oct. 27, 1998, <https://www.ombudsman.jp/data/kokkaiH20.pdf> (accessed Jan. 25, 2019).

²⁶ Budget Request for FY2019, *supra* note 13, Cabinet Secretariat.

Figure 2: *Space policy processes – Cabinet Secretariat*



Note: Developed by the author.

2.3. Ministry of Internal Affairs and Communications

The Ministry of Internal Affairs and Communications (MIC) is responsible for developing space systems related to utilization of telecommunication and electromagnetic waves.²⁷ The Space Communications Policy Division at the Global Strategy Bureau is responsible for creating policies and implementing MIC’s space-related projects.²⁸ This division oversees JAXA.²⁹

On Dec. 26, 2017, the Bureau established a private council³⁰ called the Working Group on Vision for Space Utilization*.³¹ MIC recognizes that space technology and its utilization will provide various approaches to tackle global issues such as environmental pollution, scarce natural resources, Japanese population decrease, or global human population increase. The Working Group is expected to study how effective utilization of space and innovation through space systems will enhance Japan’s ability to solve global issues as well as address short- and long-term objectives of space utilization and information, communication and technologies (ICTs).³² These studies are performed by two task groups: the Task Force on Studying

²⁷ Soumushou secchihou [Act for Establishment of the Ministry of Internal Affairs and Communications], Law No. 91 of July 16, 1999 (as amended), at para. 71 of art. 4.

²⁸ Soumushou soshiki rei [Cabinet Order for Organizational Structure of the Ministry of Internal Affairs and Communications], Law No. 246 of June 7, 2000 (as amended), at art. 10, 67.

²⁹ Organizational Structure of the MIC, *supra* note 28, at art. 13 & 71.

³⁰ A private council is a privately established meeting, working group, or study group that can be created by the minister’s order without any legal basis (cf., minister’s council). A private council is often established for specific purposes and periods.

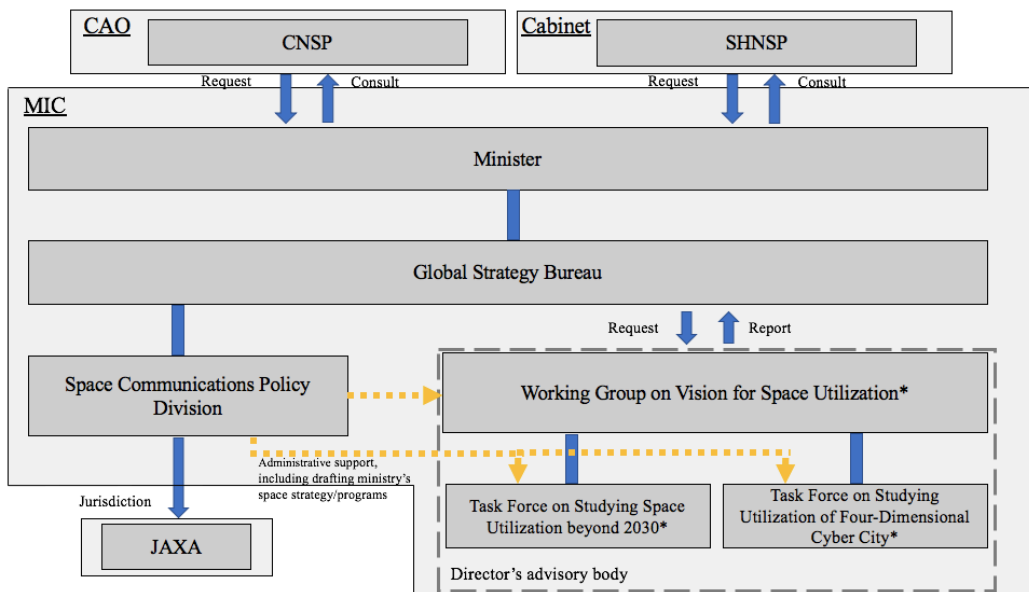
³¹ MIC, 「宇宙利用の将来像に関する懇話会」開催要綱 “Kaisaiyoukou: Uchuriyou no shoraizou ni kansuru kondankai kaisaiyoukou [Agenda for the Working group on Vision for Space Utilization],” Tokyo, http://www.soumu.go.jp/main_content/000534394.pdf (accessed Jan. 25, 2019).

³² Agenda on Vision for Space Utilization, *supra* note 31.

Utilization of Four-Dimensional Cyber City*³³ and the Task Force on Studying Space Utilization beyond 2030*.³⁴ The former focuses on realizing Industry 4.0 or the Internet of Things (IoT) by leveraging satellite data as raw data to support artificial intelligence. The latter focuses more on space systems utilization. The Task Force on Studying Space Utilization beyond 2030* has hosted three meetings to gather ideas from industry, academia and the public and is expected to release a final report in spring 2019.

MIC proposed eight projects in the 2019 budget request.³⁵ Projects include research and development (R&D) on communication systems, space weather, telecommunication systems robust to cyber-attacks and satellite communication technology for deep ocean resource exploration. The budget (¥7.4 billion; about \$67 million) will be allocated to National Institute of Information and Communications Technology (NICI) and private companies for implementation.

Figure 3: *Space policy processes – MIC*



Note: Developed by the author.

2.4. Ministry of Foreign Affairs

The Ministry of Foreign Affairs (MOFA) is involved in bi/multi-lateral negotiations and coordination. Under this mandate, MOFA has three fundamental objectives for space diplomacy: 1) support developing international regulatory regimes such as the European Union (EU)-led International Code of Conduct (ICoC) and United Nations Committee on the Peaceful Uses of Outer Space (UNCOPUOS)-led Long-term Sustainability of Outer Space

³³ MIC, Global Strategy Bureau, 「4次元サイバーシティの活用イメージと論点(案)」 “Yojigen saibashitexi no katsuyou ni muketa tasukufosu (an) [Task Force on Studying Utilization of Four-Dimensional Cyber City (draft)],” Tokyo, February 1, 2018, http://www.soumu.go.jp/main_content/000534386.pdf (accessed Jan. 25, 2019).

³⁴ MIC, 「宙を拓くタスクフォース開催要綱」 “Sora wo hiraku tasukufosu kaisaiyoukou [Task Force on Studying Space Utilization beyond 2030 (agenda)],” Tokyo, http://www.soumu.go.jp/main_content/000570784.pdf (accessed Jan. 25, 2019).

³⁵ Budget Request for FY2019, *supra* note 13, MIC.

Activities; 2) promote international space cooperation, including selling Japanese satellites and ground systems to developing countries and the Association of Southeast Asian Nations (ASEAN) Disaster Information Network (ADInet); and 3) ensure national security by building space situational awareness (SSA) capability, leveraging QZSS, and continually deploying four remote sensing satellites.³⁶ Implementation of these objectives is carried out by the Space and Cyber Policy Division of the Foreign Policy Bureau.³⁷ This division is responsible for drafting national security and foreign policies related to space (e.g., bilateral agreements with the United States, United Kingdom, EU, Australia, France, and Russia) and acts as a government representative when coordinating with international organizations (e.g., International Space Station (ISS), UNCOPUOUS).³⁸

A noteworthy meeting arranged by MOFA was the first Japan-U.S. Comprehensive Dialogue on Space held on March 11, 2013.³⁹ The dialogue reflects the results of the U.S.-Japan Security Consultative Committee (2+2) held in April 2012.⁴⁰ Since then, Japan and the United States have been studying and implementing cooperation in science to military space operations, including SSA, maritime domain awareness, and IGS operations.

MOFA has two space programs in the 2019 budget request (¥300 million; about \$2.7 million).⁴¹ This budget will not be allocated to the Space Policy Division because the operations of the division are not considered specific space programs that require funding. Rather, this budget amount will be allocated to the First Division of the Intelligence and Analysis Service to procure the equipment necessary to use satellite imagery and provide support for gathering, maintaining and analyzing satellite imagery for intragovernmental purposes.

It is not surprising for MOFA to not have either its own space strategy or an advisory group dedicated to study space matters because their fundamental role is to support other ministries' and agencies' space diplomacy.

³⁶ MOFA, Foreign Policy Bureau, "Japan's Space Diplomatic Policy," Tokyo, https://www.mofa.go.jp/policy/outer_space/pdfs/space_diplomatic_policy.pdf (accessed Jan. 25, 2019).

³⁷ According to the Rule for Organizational Structure of the MOFA, the Space Policy Division must be named the Space Policy Office, which is established under the National Security Policy Division. The author was unable to find out the reason of this mismatch. See Gaimusho soshiki kisoku [Rule for Organizational Structure of the Ministry of Foreign Affairs], Law No.1 of March 30, 2001 (as amended), at art. 12; See also, MOFA, "Establishment of a Space Policy Division," https://www.mofa.go.jp/policy/outer_space/pdfs/space_policy_division.pdf (accessed Jan. 25, 2019).

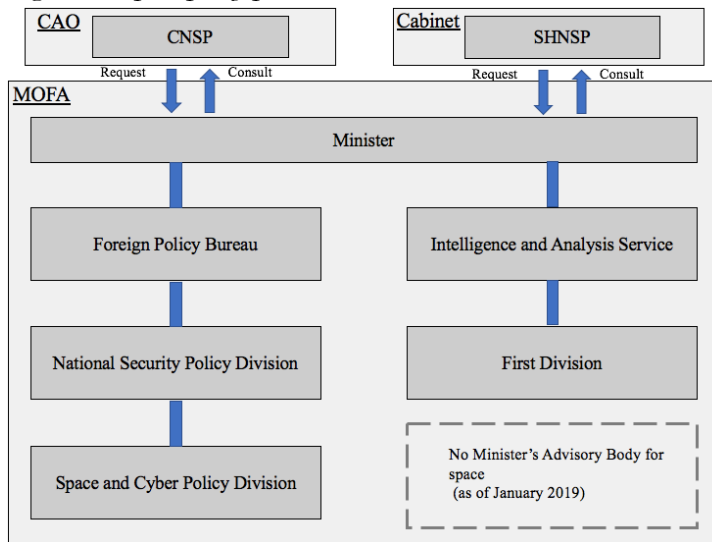
³⁸ Establishment of a Space Policy Division, *supra* note 37.; Rule for Organizational Structure of MOFA, *supra* note 37, at para. 8 of art. 12.

³⁹ The Dialogue is to start "a new initiative to enhance cooperation between two of the world's most advanced spacefaring nations from a broad, inclusive, and strategic perspective." See MOFA, "Joint Statement: The First Meeting of the Japan-U.S. Comprehensive Dialogue on Space," Tokyo, March 11, 2013, <https://www.mofa.go.jp/mofaj/files/000001829.pdf> (accessed Jan. 25, 2019).

⁴⁰ MOFA, "Fact Sheet: U.S.-Japan Cooperative Initiatives," "Japan-U.S. Summit Meeting, Tokyo, April 30, 2012," https://www.mofa.go.jp/region/n-america/us/pmv1204/pdfs/Fact_Sheet_en.pdf (accessed Jan. 25, 2019); MOFA, MOD, U.S. DoS and U.S. DoD, "Joint Statement of the Security Consultative Committee: Toward a More Robust Alliance and Greater Shared Responsibilities," Tokyo, Oct. 3, 2013, <https://www.mofa.go.jp/mofaj/files/000016028.pdf> (accessed Jan. 25, 2019).

⁴¹ Budget Request for FY2019, *supra* note 13, MOFA.

Figure 4: *Space policy processes – MOFA*



Note: Developed by the author.

2.5. Ministry of Education, Culture, Sports, Science and Technology

MEXT has the largest space budget (about 55 percent of the 2019 budget request reported by the NSPS).⁴² MEXT is one of the four competent ministries of JAXA. These ministries have the authority to plan and decide JAXA's strategies, programs and budget.⁴³ For example, MEXT has control over JAXA's space programs, including the safety and feasibility of each program; monitors JAXA activities; evaluates performance of R&D, and plans strategies regarding the ISS program.

Until it was abolished in July 2012, the Space Activities Commission (SAC) under MEXT played a leading role in national space policy creation.⁴⁴ The roles of SAC were passed to the CNSP,⁴⁵ and MEXT became one of the ministries responsible for implementing the scientific missions that are stipulated in the Basic Plan and the Implementation Plan.

Today, MEXT's initial space-related plans are created at the Space Development and Utilization Division of the Research and Development Bureau.⁴⁶ Yet similar to the NSPS, bureaucrats in this division often have little or no experience in space issues. These bureaucrats can create sound plans, but review by experts is often indispensable to assure the validity of the ministry's space strategies and programs. To incorporate experts' suggestions, the MEXT minister establishes councils, which are third-party study groups comprising experts appointed by the minister. They study, review and provide recommendations against initial plans created

⁴² Budget Request for FY2019, *supra* note 13, MEXT.

⁴³ Monbukagakusho secchiho [Act for the Establishment of the Ministry of Education, Culture, Sports, Science and Technology], Law No. 96 of July 17, 1999, at para. 27, 62, 63 of art. 4.

⁴⁴ SAC was originally created in 1960 as the Space Development Council under the Prime Minister's Office. The council was reorganized into the SAC in 1968. In 2000, the SAC was moved to MEXT, reflecting the government restructuring. In addition, the Council for Science and Technology Policy was another key government organ that developed comprehensive science and technology space policies until the establishment of the SHNSP. See Aoki, *supra* note 5, at 371-4.

⁴⁵ Monbukagakusho soshiki rei [Cabinet Order for Organizational Structure of the Ministry of Education, Culture, Sports, Science and Technology], Law No. 251 of June 7, 2000 (as amended), at art. 72.

⁴⁶ This division has jurisdiction over JAXA.

by the Division. The policy process follows a similar pattern: First, bureaucrats (cf., experts) in the Division create an initial draft of MEXT's space strategies and programs. Next, this draft is sent to a minister's council called the Council for Science and Technology. This council requests that the Subcommittee on Research Planning and Evaluation* and its working group, the Working Group on Space Development and Utilization*, consider the best space strategies for MEXT.⁴⁷ Hence, technically, the initial draft will be studied and discussed at this Working Group. The Working Group delivers reports to the minister, but it provides recommendations only. Actual strategies are drafted at the Division after verifying the recommendations suggested by the Working Group.

The Working Group actively convenes meetings to discuss MEXT's inputs to the CNSP. For example, when the Basic Plan was revised in 2013, MEXT provided a recommendation report issued by the Working Group in December 2012 called the Space Strategy of MEXT*.⁴⁸ The strategy focuses on scientific programs that MEXT should pursue to understand the space environment (i.e., space science; space exploration), increase accessibility to outer space (i.e., launch vehicle development; human resources), and promote space utilization. In addition, the Working Group discusses MEXT's strategies/recommendations on ISS utilization and deep space exploration.

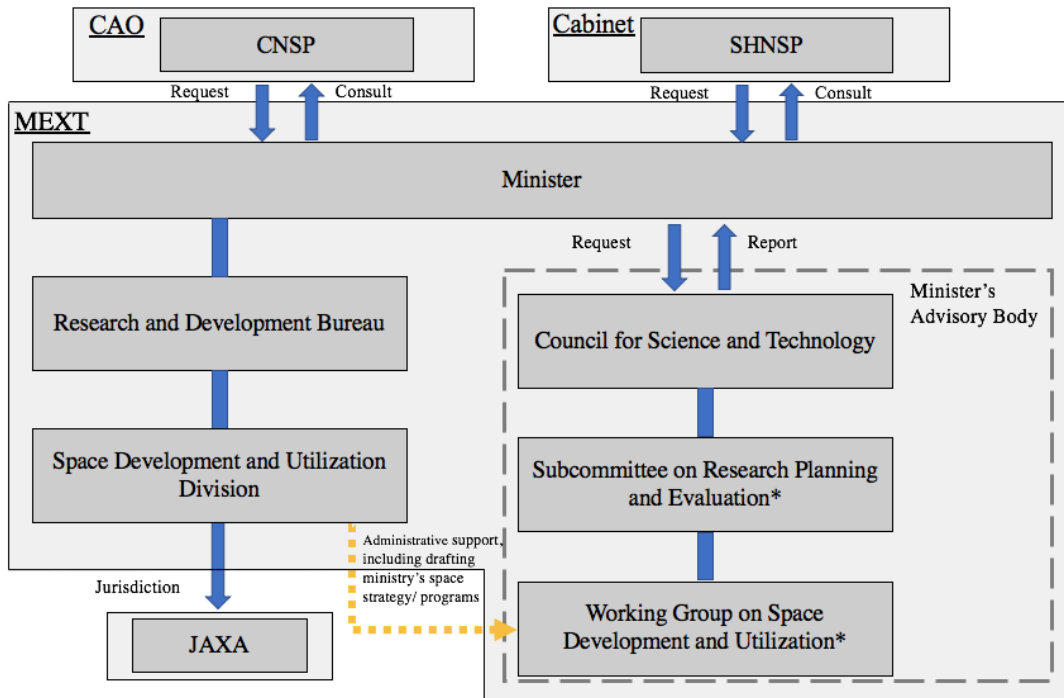
The 2019 budget request shows that MEXT plans to conduct 33 projects for ¥195.7 billion (about \$1.8 billion).⁴⁹ These projects include expenses for R&D on the following: rocket and launch systems (e.g., H3), earth observation satellites (e.g., ALOS-3, 4), optical communication satellites, space debris, the SSA system and moon lander (e.g., SLIM), a feasibility study on a Mars mission, deep space exploration (e.g., DESTINY), manned space activities (e.g., KIBO; JEM; HTV), space science and aerospace engineering. About 94 percent of the total budget will be allocated to JAXA.

⁴⁷ MEXT, Subcommittee on Research Planning and Evaluation, 「科学技術・学術審議会研究計画・評価分科会における部会・委員会の設置について」 “Kagakugijutsu gakujutsu shingikai kenkyukeikaku hyoukabunkakai ni okeru bukai iinkai no settini tsuite [Decision to establish working groups under the Subcommittee on Research Planning and Evaluation, at the Council for Science and Technology],” Tokyo, April 6, 2017, http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu2/gaiyou/1334939.htm (accessed Jan. 25, 2019). The Space Development and Utilization Division is a secretariat of the Working Group as well.

⁴⁸ MEXT, Working Group on Space Development and Utilization, 「文部科学省における宇宙分野の推進方策について」 “Monbukagakusho ni okeru uchu bunya no suishinhousaku ni tsuite [Space Strategy of MEXT],” Tokyo, December 2012, http://www.mext.go.jp/b_menu/shingi/gijyutu/gijyutu2/059/houkoku/_icsFiles/afieldfile/2012/12/19/1329049_001.pdf (accessed Jan. 25, 2019).

⁴⁹ Budget Request for FY2019, *supra* note 13, MEXT.

Figure 5: *Space policy processes – MEXT*



Note: Developed by the author.

2.6. Ministry of Agriculture, Forestry and Fisheries

The latest budget request shows that three governmental organs under the Ministry of Agriculture, Forestry and Fisheries (MAFF) have specific interests in using space systems. One is the Statistics Department, a department responsible for collecting and providing statistical data to support MAFF activities. It uses remote sensing satellite images to monitor the Earth's surface to create, for example, effective recovery plans from tsunamis and earthquake-struck areas (e.g., the Great East Japan Earthquake) or develop new methods to diagnose rice field conditions.⁵⁰

Another MAFF organ is the Fisheries Agency's Resource Management Division at the Resource Management Department. This division is planning to install a Video Management System (VMS) in domestic fishing vessels to monitor and identify if they enter the prohibited areas.⁵¹

Last, Resources Enhancement Promotion Department under the Fisheries Agency is developing a system using the earth observation satellite (GCOM-C "SHIKISAI") to monitor the harmful red tide in coastal area of Japan.⁵² MAFF requested ¥400 million (about \$3.6 million) in the 2019 budget request to support these space programs.⁵³

MAFF does not have either its own ministry-level space strategy or individual responsibility stipulated in the Basic Plan. According to the Implementation Plan (amended in

⁵⁰ See 2018 Budget Request: SNSP, 「宇宙政策委員会 第 66 回会合 議事次第」 “Uchuseisakuinkai dai66kaikaigou gijishidai [Meeting minutes of the sixty-six meeting, CNSP],” Tokyo, Jan. 25, 2018, <https://www8.cao.go.jp/space/committee/dai66/gijishidai.html> (accessed Jan. 25, 2019): appendix 1-5-10.

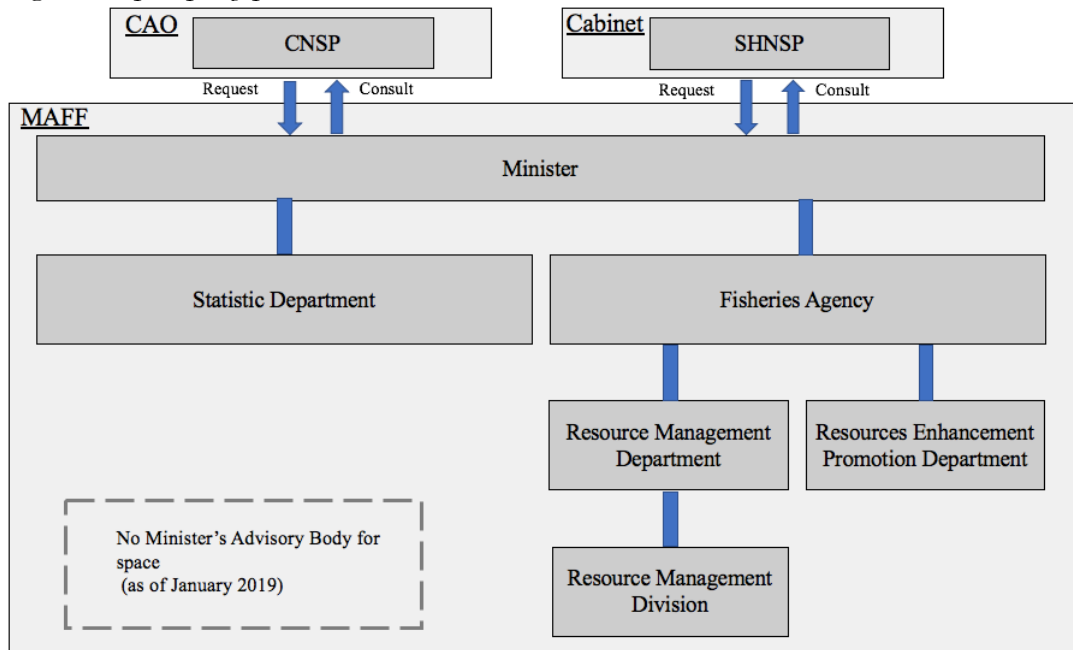
⁵¹ VMS requires precision location services that can be provided by the radio-navigation satellite systems.

⁵² Red tide water is considered a cause of a dysoxic underwater environment that reduces the number of fish.

⁵³ Budget Request for FY2019, *supra* note 13, MAFF.

2018), MAFF will work with other government organizations to promote and accomplish various intragovernmental space programs.⁵⁴

Figure 6: *Space policy processes – MAFF*



Note: Developed by the author.

2.7. Ministry of Economy, Trade and Industry

Promotion of the space industry is one of the vital roles of the Ministry of Economy, Trade and Industry (METI).⁵⁵ The Space Industry Office of the Aerospace and Defense Industry Division in the Manufacturing Industries Bureau is an administrative office for METI's space programs. It is also responsible for promoting the space industry, including imports/exports, production and distribution of domestic parts and components of launch vehicles and satellites.⁵⁶ METI has jurisdiction over the JAXA.

Based on a suggestion from the CNSP, the Space Industry Office established a private council using an entrusted investigation budget*⁵⁷ called the Study Group on Enhancing Competitiveness of Space Products Using Civil Parts and Technologies* in July 2014. It convened four meetings, then dissolved in 2015.⁵⁸ This ad-hoc working group was followed in 2015 by another private council established by an entrusted investigation budget*, the Study

⁵⁴ Implementation Plan, *supra* note 12.

⁵⁵ Keizaisangyoushou secchiho [Act for the Establishment of the Ministry Economy, Trade and Industry], Law No. 99 of July 16, 1999 (as amended), at para.38 of art. 4.

⁵⁶ Keizaisangyoushou soshiki kisoku [Rules for Organizational Structure of the Ministry Economy, Trade and Industry], Law No. 1 of 2001 (as amended), at art. 31.

⁵⁷ The entrusted investigation budget* is a budget approved by the Diet annually that is used to outsource some governmental tasks. In this case, the Space Industry Office used this budget to create/outsource study groups.

⁵⁸ Space Industry Office, METI, 「部品に関する技術戦略の策定に向けた検討の状況と今後の進め方について」 “Buhin ni kansuru gjjutsusenryaku no sakutei ni muketa kentou no joukyou to kongo no susumekata nit suite [Current status and future approaches to decide a technical strategy for space parts],” May 11, 2015. <https://www8.cao.go.jp/space/committee/27-kiban/kiban-dai3/siryou4-1.pdf> (accessed Jan. 25, 2019).

Group on Space Parts and Component Technology Development Strategy*, which held meetings in August 2015, October 2015 and March 2016. Meanwhile, the Working Group on Developing a Roadmap for Space Parts and Components* held meetings in October 2015 and February 2016.⁵⁹ Both the study and working group invited experts from universities, industry and government, and the results were released on March 31, 2016 by METI: a ten-year strategy on space called the Comprehensive Strategy on Space Parts and Components' Technical Development*.⁶⁰ The Cabinet, CAO, MIC, MEXT and Ministry of Defense (MOD) worked together to develop the strategy. This strategy addresses a fundamental problem of Japan's space industry: weak domestic demand for space-related parts and components makes Japan more dependent on importing products, which causes low domestic investment and production capacity. Thus, the key objective of this strategy is to increase both domestic and export demand. The following is the list of goals in the strategy:

- Increase competency of satellite production (sell minimum of two satellites per year, in total, to both domestic and international customers)
- Double the number of components (not just parts) exports (from ¥160 billion to ¥320 billion)
- Reduce the dependence rate on imports by advancing domestic technology (reduce the current level of imports from 40 percent to 30 percent).⁶¹

A minister's committee called the Manufacturing Industry Committee under the Industrial Structure Council also discusses space industrial policy, but it seems to be less significant than private councils established by the entrusted investigation budget because space-related issues are seldom discussed in this committee.

METI proposed five projects in the 2019 budget request.⁶² These include promoting open access to government satellite information, preparing platforms to process and utilize big data, continuing R&D on space solar technology and hyper spectrum sensors to find oil resources, and supporting demonstration of unmanned aerial vehicles carrying cargo. A ¥3 billion budget (about \$27 million) will be allocated to the New Energy and Industrial Technology Development Organization (NEDO), a governmental organization focusing on R&D as well as deployment of industrial, energy and environmental technologies, and private companies.

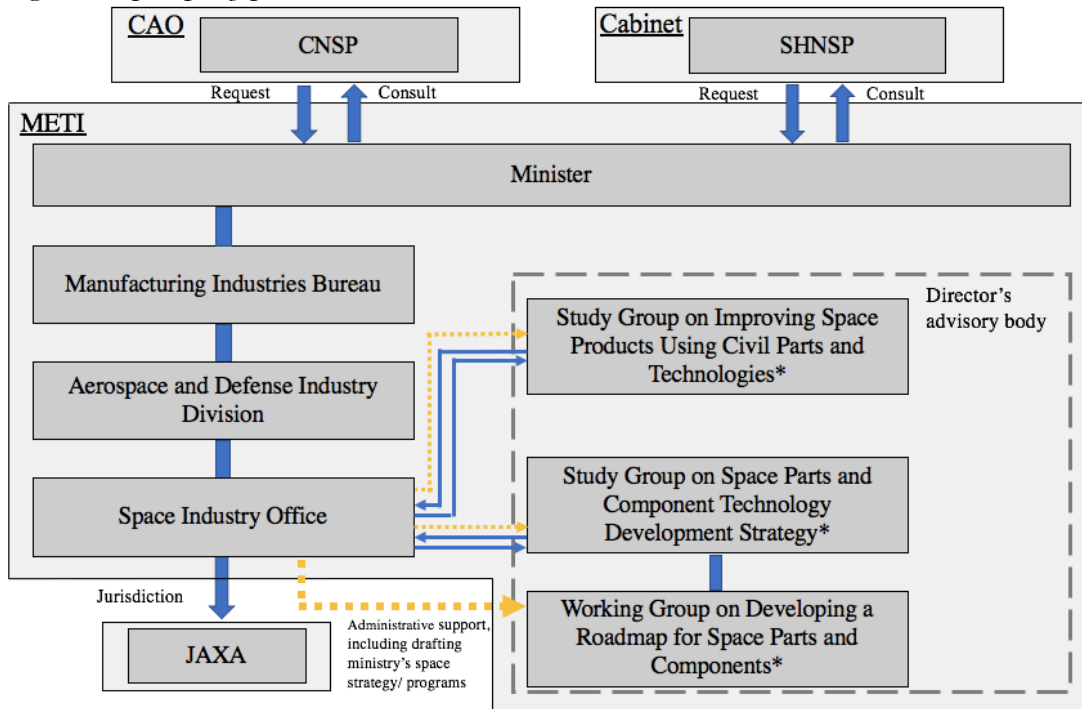
⁵⁹ 「宇宙用部品・コンポーネントに関する総合的な技術戦略（案）」“Uchuyoubuhin・konponent ni kansuru sougoutekina gijutsu senryaku(an) [Comprehensive Strategy on Space Parts and Components' Technical Development],” Tokyo, March 31, 2015, <https://www8.cao.go.jp/space/committee/27-kiban/kiban-dai15/siryou2-1.pdf> (accessed Jan. 25, 2019): 2. Both the Study Group and the Working Group were dissolved after releasing final reports.

⁶⁰ Comprehensive Strategy on Space Parts and Components, *supra* note 59.

⁶¹ These recommendations are generalized and embedded in the Implementation Plans.

⁶² Budget Request for FY2019, *supra* note 13, METI.

Figure 7: *Space policy processes – METI*



Note: Developed by the author.

2.8. Ministry of Land, Infrastructure, Transport and Tourism

Many of the Ministry of Land, Infrastructure, Transport and Tourism's (MLIT) programs rely on space systems. MLIT is responsible for developing space technologies that will improve topography, aviation safety and security, and all other kinds of transportation and meteorological services. Responsibilities are distributed among different divisions. The space technology for topography and management of national land/terrain is developed and managed by the Engineering Affairs Division under the Minister's Secretariat.⁶³ Space technology for aviation safety and security is carried out by the Air Navigation Services Planning Division at Air Navigation Services Department under the Civil Aviation Bureau.⁶⁴ Meteorology-related space technology developments are performed by the Administration Department of the Japan Meteorological Agency (JMA).⁶⁵ And the Technology Policy Division under the Policy Bureau leads various space technology programs besides the programs implemented by above-mentioned divisions.⁶⁶

The 2019 budget request of ¥6.7 billion (about \$60.7 million) was reported to CNSP to implement six programs by eight divisions under the MLIT.⁶⁷ (1) The first division, the Technology Policy Division of the Policy Bureau is proposing to conduct demonstrations of

⁶³ Kokudokoutsuushou soshiki rei [Cabinet Order for Organizational Structure of the Ministry of Land, Infrastructure, Transport and Tourism], Law No. 255 of June 7, 2000 (as amended), at para 5 of art.30. Many programs at this division are closely related to the Ministry of Construction's programs, which is now merged into MLIT.

⁶⁴ Cabinet Order for Organizational Structure of the MLIT, *supra* note 63, at para.6 of art.178.

⁶⁵ Cabinet Order for Organizational Structure of the MLIT, *supra* note 63, at para.18 of art.227.

⁶⁶ Cabinet Order for Organizational Structure of the MLIT, *supra* note 63, at para. 3 of art. 46.; This division succeeds programs implemented by the Ministry of Transportation.

⁶⁷ Budget Request for FY2019, *supra* note 13, MLIT.

new mobility services (e.g., a mobility system that integrates different public transportation systems, such as subway, bus or bicycle, thereby providing seamless services to improve people's movement) leveraging the QZSS.⁶⁸ (2) The second, the Director-General for Policy Planning and (3) the third, National Land Information Division under the National and Regional Policy Bureau co-proposed to the CNSP that they will conduct demonstrations of new services that aim at developing pedestrian-friendly systems (especially targeting the elderly, people with disabilities, and foreigners) by introducing seamless ICT solutions.⁶⁹

(4) The fourth division, the Air Navigation Services Planning Division at Air Navigation Services Department under the Civil Aviation Bureau uses a Multi-functional Transport Satellite (MSAT) to provide satellite navigation services for air traffic. The division is currently developing a new system that is compatible with the QZSS because MSAT will conclude its operations during the first quarter of 2022.⁷⁰

(5) The Satellite Program Division of the Observation Department under JMA is dedicated to monitoring the earth's environment using the geostationary meteorological satellites ("Himawari" series) so as to provide, for example, information to predict a typhoon's course.⁷¹ Also, many of the operations are implemented by one of JMA's auxiliary organs, the Meteorological Satellite Center. This center is responsible for receiving meteorological information from meteorological satellites, including weather, terrestrial phenomena and hydrometeors.⁷²

Two divisions under the Japan Coast Guard (JCG) have also proposed space programs. One was put forward by (6) the Hydrographic and Oceanographic Division* under the Hydrographic and Oceanographic Department and aims at developing a maritime domain awareness system. Another proposal came from (7) the Guard Information Division* under the Guard and Rescue Department for increasing the capacity of maritime surveillance by leveraging satellite data.⁷³

(8) The Planning and Coordination Division of the Planning Department under the Geospatial Information Authority of Japan (GSI) surveys and analyzes electronic observation points using the global navigation satellite system's (GNSS) data.⁷⁴ Operations are managed at the Geodetic Observation Center, which comprises two divisions. The Satellite Geodetic Division* collects, analyzes, administers and provides geodetical data garnered from earth observation satellites, and the Electronic Observation Point Division* surveys and analyzes observation points using GNSS data.⁷⁵

⁶⁸ MLIT, 「国土交通省 準天頂衛星システムの利活用の促進に向けた平成 31 年度概算要求」 “Kokudo kotsu sho Juntengo eisei shisutemu no rikatsuyou no sokushin ni muketa heisei 31 nendo gaisanyoukyuu [MLIT's plans on utilizing QZSS: budget request for FY2019],” Tokyo, https://www8.cao.go.jp/space/qzs/tfdai2/shiryou1_6.pdf (accessed Jan. 25, 2019).

⁶⁹ Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-14.

⁷⁰ Cabinet Order for Organizational Structure of the MLIT, *supra* note 63, at para. 15 of art. 10.; Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-16.

⁷¹ Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-15.

⁷² Cabinet Order for Organizational Structure of the MLIT, *supra* note 63, at art. 236.

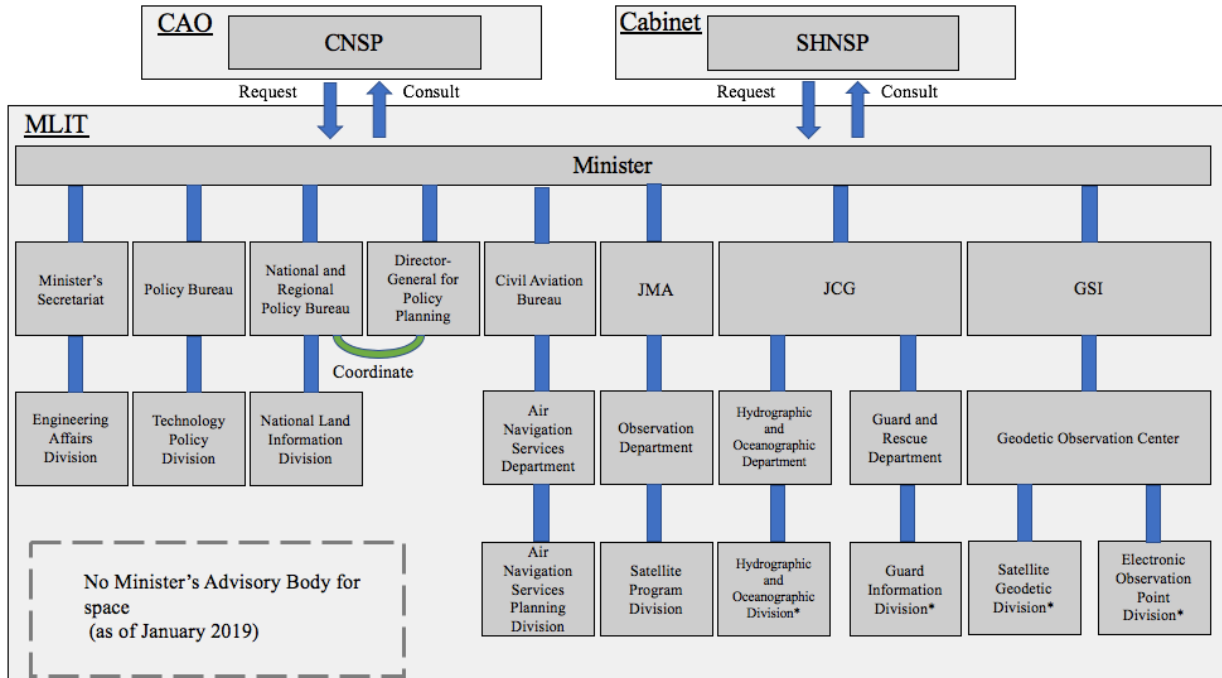
⁷³ Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-16.

⁷⁴ GSI is an organization attached to the MLIT that implements actual surveying and mapping of Japan. Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-10.

⁷⁵ Kokudochiriinn soshiki rei [Cabinet Order for Organizational Structure of the Geospatial Information Authority of Japan], Law No. 20 of 2001 (as amended), at art. 61.

MLIT does not have a ministry-level space strategy, but the Basic Plan requests MLIT to develop, operate and sustain weather satellite systems to support seamless weather forecasting, typhoon tracking and volcano monitoring services.⁷⁶ In addition, MLIT does not have space-specific working groups established by the minister. Yet several working groups under the minister’s Council of Transport Policy have suggested effective utilization of space systems (e.g., maritime communication, robust maritime operation using VHF Data Exchange System, satellite-based AIS) to improve MLIT’s activities.⁷⁷

Figure 8: *Space policy processes – MLIT*



Note: Developed by the author.

2.9. Ministry of the Environment

As the name implies, the Ministry of the Environment (MOE) conducts research and technological development that help preserve the Earth’s environment. MOE has two space programs addressed in the 2019 budget request (¥3.9 billion: about \$35 million).⁷⁸

The Research and Information Office of the Policy Planning Division at the Global Environment Bureau develops and operates together with JAXA greenhouse gas-observing satellites (GOSAT, also known as “IBUKI” series) for continual monitoring of greenhouse gases. The Environmental Research and Technology Office of the Policy Division at the

⁷⁶ Basic Plan, *supra* note 11, 17.

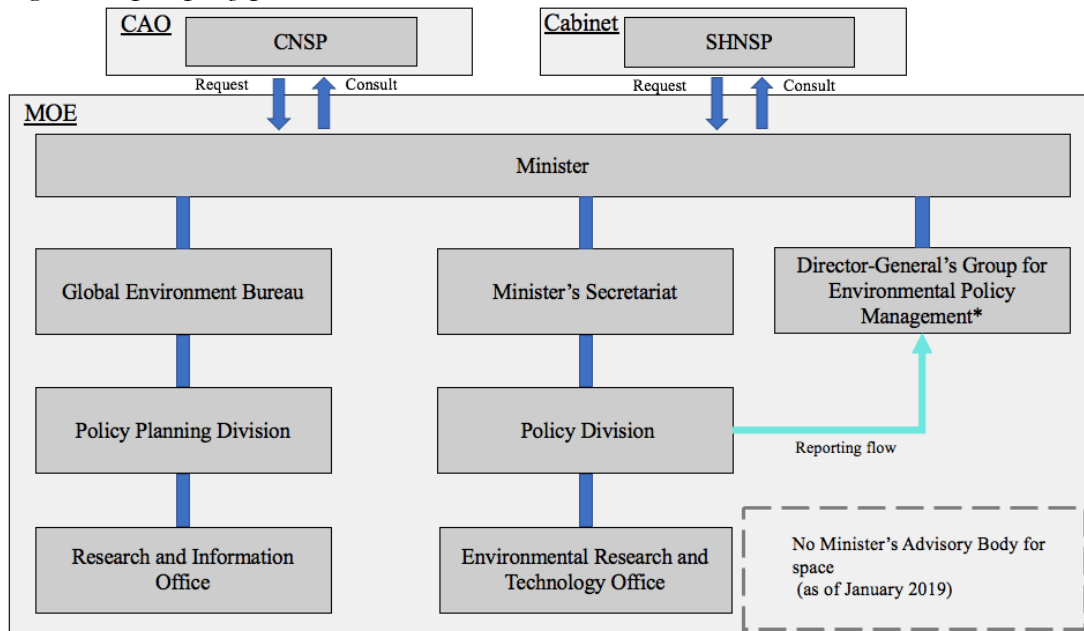
⁷⁷ For more information, see subcommittees of the Council of Transport Policy: MLIT, 「審議会・委員会等」 “Shingikai・iinkai tou [Councils, committees and other groups],” Tokyo, <http://www.mlit.go.jp/policy/shingikai/index.html> (accessed Jan. 25, 2019).

⁷⁸ Budget Request for FY2019, *supra* note 13, MOE.

Minister's Secretariat⁷⁹ is developing a system to process, store and provide observation data from IBUKI to public users.⁸⁰

Similar to MAFF, MOE has neither its own ministry-level space strategy nor individual responsibility stipulated in the Basic Plan. MOE works with other government organizations to promote and accomplish various intragovernmental space programs stipulated in the Implementation Plan.⁸¹

Figure 9: *Space policy processes – MOE*



Note: Developed by the author.

2.10. Ministry of Defense

Space systems play a significant role in building and achieving Japanese military objectives and national security goals. The MOD and SDF are leveraging space systems to provide early warning; intelligence, surveillance and reconnaissance (ISR); positioning, navigation and timing (PNT); and command, control, communication and computer (C4) capabilities to various military operations. Today, all SDF branches depend on satellite systems for these purposes.

MOD's space programs can be understood by following two different policy processes. One policy process mainly involves the development of SSA, ISR or C4 capabilities, the plans for which are reported to the CNSP (i.e., CAO). The Strategic Planning Division at the Bureau of Defense Policy (BDP) plans and reports space programs to the CNSP. This division is

⁷⁹ Although the law stipulates the Policy Division is to report to the Minister's Secretariat, actual outputs/reports are delivered to the Director-General's Group for Environmental Policy Management* (総合環境政策統括官グループ) due to a 2017 organizational reform. See 「平成 29 年度環境省組織改革のポイント」 “Heisei29nendo kankyoushou soshikikaikaku no pointo [Key points of an organizational reform of the MOE in FY2017],” Tokyo, <https://www.env.go.jp/press/y030-22/ref04.pdf> (accessed Jan. 25, 2019).

⁸⁰ Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-16.

⁸¹ Implementation Plan, *supra* note 12; the MOE has some unique programs that rely on satellite systems such as research on mallard migration routes.

responsible for conducting SSA system development as well as researching space-based SSA system capabilities to reduce the risk of space debris. Improvement of the X-band communication satellites systems and its ground equipment and purchasing and analyzing commercial satellite imagery are also the division's duty. The Strategic Planning Division works closely with the Defense Planning and Programming Division under the Bureau of Defense Buildup Planning to create MOD's space programs because this bureau has the authority to create budget requests.⁸² The 2019 budget request reported to the CNSP was ¥34.5 billion (about \$312 million).⁸³

The other policy process within MOD focuses on sustaining and improving ballistic missile defense (BMD) systems. According to a government official, the Defense Policy Division under the BDP gathers policies/plans related to BMD systems from each force (i.e., Air Staff Office, Maritime Staff Office and Ground Staff Office). The Defense Planning and Programming Division (DPPD) considers the budgeting of these plans. However, these actual policy and budget flows are not specifically written in the law. The Act of Establishment for the MOD stipulates that the Joint Staff Office (JSO) is in charge of planning BMD strategy, BMD operation and budget requests related to BMD.⁸⁴ It is the Defense Plans and Policy Department (J-5) where future acquisition planning and budget requests should be created.⁸⁵ Thus, if we looked at the Act only, each force should report to the JSO and not to the BDP or DPPD.⁸⁶

In the case of a missile threat, the minister of MOD is authorized to direct a special force based on the prime minister's approval, and the minister is authorized to issue a cease and desist order against the missiles.⁸⁷ Under this legal basis, in the case of missile threat, the minister issues an action order to the SDF to organize a BMD Joint Task Force.⁸⁸ The commander-in-chief of the Air Defense Command often will be in charge of directing the task force, which may include SM-3 armed Aegis warships, PAC-3 Air Defense Missile Groups, and Aircraft Control and Warning Wings.⁸⁹

⁸² Boueishou soshiki rei [Cabinet Order for Organizational Structure of the Ministry of Defense], Law No. 178, June 30, 1954 (as amended), at art. 27.

⁸³ Budget Request for FY2019, *supra* note 13, MOD.

⁸⁴ Moueishou secchihou [Act for Establishment of the Ministry of Defense], Law No.164 of June 9, 1954 (as amended), at art 22; Cabinet Order for Organizational Structure of the MOD, *supra* note 82, at art. 65.

⁸⁵ Cabinet Order for Organizational Structure of the MOD, *supra* note 82, at para.4 of art. 60 & 63.

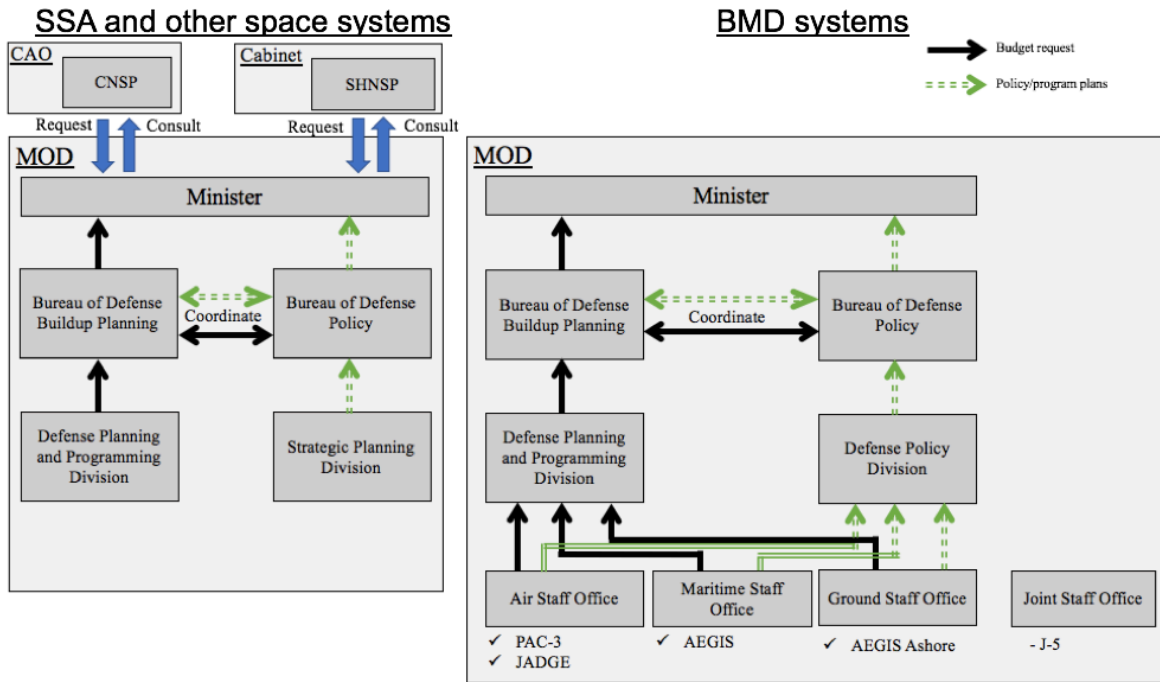
⁸⁶ The deviation between actual practices and stipulated processes appears to be a product of intra-MOD politics.

⁸⁷ Self-Defense Forces Law, Law No. 165 of June 9, 1954 (as amended, at art. 22 & para. 3 of art. 82; See sample actual order: MOD, 「弾道ミサイル等に対する破壊措置等の実施に関する自衛隊行動命令について」 “Dandou misairoutou nitaishuru hakaisochitou no jisshi ni kansuru jieitaikoudoumeirei ni tsuite [Action order of SDF regarding cease and desist order against ballistic missiles],” Tokyo, Feb. 3, 2016, http://www.mod.go.jp/j/press/news/2016/02/03b_1.html (accessed Jan. 26, 2019).

⁸⁸ MOD minister issues an Action Order to the SDF* (自衛隊行動命令). This creates an ad hoc task force, the BMD Joint Task Force, which generally lasts less than a month.

⁸⁹ There is no legal basis that stipulates the Commander-in-Chief of the Air Defense Command act as head of the BMD Joint Task Force, yet, due to practical reasons, the Commander-in-Chief of the Air Defense Command has been leading this ad hoc force.

Figure 10: *Space policy processes – MOD*



Note: Developed by the author.

2.11. National Police Agency

The National Police Agency (NPA) is also an active user of space systems. The NPA purchases satellite imagery from commercial companies to support police activities and uses commercial communication satellite services to transmit accident images and real-time video of natural disasters.⁹⁰ The Info-Communications Planning Division under the Info-Communications Bureau plans and acquires ICT-related equipment including satellite imagery to conduct effective police activities. Its sub-unit, the Communication Operation Office, requested ¥900 million (about \$8.2 million) in the 2019 budget request to analyze satellite imagery for police activities.⁹¹

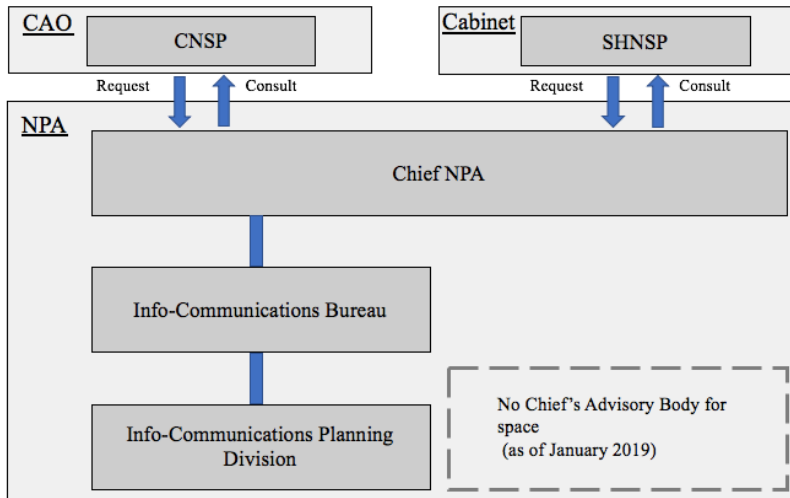
The NPA does not have its own agency-level plans for space utilization, but according to the Implementation Plan, the NPA is responsible for promoting the use of commercial remote sensing and communication satellites.⁹²

⁹⁰ NPA, 「警察の情報通信」 “Keisatsu no jouhou tsuushin [NPA’s ICT],” Tokyo, <https://www.npa.go.jp/joutuu/001.htm> (accessed Jan. 26, 2019).

⁹¹ NPA, 「組織・制度の概要案内 - 詳細情報」 “Soshiki・seido no gaiyou annai – shousai jouhou [Detailed information on organizational structure and its system],” Tokyo, <http://search.e-gov.go.jp/servlet/Organization?class=1050&objcd=100120&dispgrp=0080> (accessed Jan. 26, 2019). Budget Request for FY2019, *supra* note 12, NPA. For reference, see Meeting minutes of the sixty-six, *supra* note 50, appendix 1-5-4.

⁹² Implementation Plan, *supra* note 12.

Figure 11: *Space Policy Processes – NPA*



Note: Developed by the author.

2.12. Japan Aerospace Exploration Agency

JAXA traditionally focused on scientific missions.⁹³ Today, in line with the Basic Space Law, JAXA has expanded its role from scientific missions to include industrial promotion and national security.⁹⁴

JAXA has three essential documents that address its strategies and action plans designed to accomplish the Basic Plan and Implementation Plan. Top in the hierarchy is the mid-to-long-term objectives. It sets up JAXA’s overarching strategies for the next five years as determined by the competent ministries (MEXT, METI, MIC and CAO). Then, based on the objectives, JAXA creates the mid-to-long-term plan to achieve the targets set by the competent ministries. More detailed goals are updated and described in the annual plans. JAXA and its competent ministries modify strategies and plans to reflect changes in national policy. One of the major changes to JAXA’s strategies, a revision of the third period of JAXA’s mid-to-long-term objectives, was made in 2015.⁹⁵ Amendments to the objectives (March 18, 2015) created a new section titled *Ensuring National Security and Helping Make Society a Safe and Secure One*, which emphasizes developing satellite systems to help attain national security goals and increasing resiliency and responsiveness of space systems.⁹⁶

⁹³ Setsuko Aoki, 「日本の宇宙政策における宇宙基本法の位置づけ」 “Nippon no uchuseisaku ni okeru uchukihonhou no ichiduke [Significance of the Basic Space Law for Japanese space policy],” Keio University, November 15, 2008: 12-13. Although it is not written in any legal documents, the operating expenses of JAXA is paid only by MEXT.

⁹⁴ JAXA acts as a central agency to implement, with its technology, all governmental space activities, including national security. See JAXA, 「独立行政法人宇宙航空研究開発機構が達成すべき業務運営に関する目標(中期目標)」 “Dokuritsugyoseihoujin uchukoukuukennkyuukaihatsukikou ga tassei subeki gyoumuunnei ni kansuru mokuhyou (chuukimokuhyou) [JAXA’s Mid to Long-Term Objectives],” Tokyo, amended on March 18, 2015, http://www.jaxa.jp/about/plan/pdf/goal03_20150318.pdf (accessed Jan. 26, 2019): 1.

⁹⁵ JAXA, 「JAXA 第 3 期中期目標新旧比較」 “Jakusa dai3ki chukimokuhyou sinkyuuhikaku [Comparison between the latest and old JAXA’s third-term Mid to Long-Term Objectives],” Tokyo, March 18, 2015, http://www.jaxa.jp/about/plan/pdf/goal03_20150318changes.pdf (accessed Jan. 27, 2019).

⁹⁶ See generally, JAXA’s Mid to Long-Term Objectives, *supra* note 94, at 1-3.

Currently, JAXA is in its fourth period of the mid-to-long-term objectives. Newly elected president Dr. Hiroshi Yamakawa believes that the space domain is “now facing fierce competition.”⁹⁷ Therefore, JAXA is cooperating with new counterparts that used to be considered beyond JAXA’s scope, such as “institutions that engage in national security.”⁹⁸

⁹⁷ Hiroshi Yamakawa, “President’s Message,” *JAXA website*, <http://stage.tksc.jaxa.jp/geoffice/en/activity/message.html> (accessed Jan. 30, 2019).

⁹⁸ Hiroshi Yamakawa, “JAXA President Monthly Press Conference April 2018,” *JAXA website*, April 13, 2018, <http://global.jaxa.jp/about/president/presslec/201804.html> (accessed Jan. 30, 2019).

3. JAPAN'S SPACE POLICY OBJECTIVE

The last Basic Plan, released on April 1, 2016, forges Japan's current national space policy. It is constituted by three goals: (1) ensure the security of outer space and national security through the use of space; (2) promote the utilization of space in the civil sector; (3) strengthen and maintain the competitiveness of the space industry as well as the science and technology foundation. As described earlier, a particular feature of the Basic Plan is that, since 2015, Japan's national space policy explicitly incorporates national security as well as industrial promotion. To understand the magnitude of these policy changes, this section focuses on summarizing key strategic programs and working groups related to national security space policy and commercial space policy and assesses the current status of the government's national security space policies and commercial space strategies.

3.1. National Security Space Policy of Japan

3.1.1. Defense Policies (as of January 2019)

Japan's military space policy is formulated based on three national policies. The National Security Council (NSC) of Japan issues these policies. At the top of the hierarchy is the National Security Strategy (NSS) of 2013.⁹⁹ The NSS aims to set comprehensive national security goals including energy, economic and military policies. Under this fundamental strategy, there is a long-term (about 10-year) defense strategy called the National Defense Program Guidelines for FY 2019 and beyond (2018 NDPG), which was amended on Dec. 18, 2018.¹⁰⁰ The NDPG aims at defining the level of defense capability that Japan shall have to achieve the goals of NSS. More short-term goals (five years) are included in the Medium-Term Defense Program FY2019-FY2023 (2018 MTDP), which was also enacted on Dec. 18, 2018 to address major government acquisition plans and amount of equipment as well as estimated acquisition cost for the next five years.¹⁰¹ In addition to national policies, an annual budget bill limits the amount of procurement and may become an obstacle to accomplishing the MTDP targets.

3.1.2. The 2018 NDPG and its Significance for National Security Space Strategies

The 2018 NDPG expresses Prime Minister Abe's views on national security that the security environment around Japan is becoming more severe and uncertain. He believes that, especially since 2010, Japan has encountered security threats that it has never faced before. Due to technological advancements, Japan has to recognize how the space and cyber domains have become critical for securing a nation. An increase in natural disasters is another source of national concern. To approach these national security concerns, Koichi Isobe, a retired JGSDF lieutenant general, pointed out that the 2018 NDPG embeds three principles: seamless

⁹⁹ Government of Japan, National Security Council, "National Security Strategy (Provisional Translation)," Tokyo, December 17, 2013, http://www.mod.go.jp/j/approach/agenda/guideline/pdf/security_strategy_e.pdf (accessed January 30, 2019).

¹⁰⁰ Government of Japan, National Security Council, "National Defense Program Guidelines for FY2019 and beyond (Provisional Translation)," Tokyo, Dec. 18, 2018, http://www.mod.go.jp/j/approach/agenda/guideline/2019/pdf/20181218_e.pdf (accessed Jan. 30, 2019).

¹⁰¹ Government of Japan, National Security Council, "Medium-Term Defense Program (FY2019-FY2023)," Tokyo, Dec. 18, 2018, http://www.mod.go.jp/j/approach/agenda/guideline/2019/pdf/chuki_seibi31-35.pdf (accessed Jan. 30, 2019).

responses; a spatial perspective (i.e., not only traditional domains, but also a more cross-domain approach); and a whole-of-government approach.¹⁰² Now the question to ask is, how is this new NDPG significant to Japan’s national security space strategies?

Over the last five years, Japan’s national security space strategy has seen considerable developments. It has transitioned from a “Dynamic Joint Defense Force” concept to a new concept called the “Multi-domain Defense Force.”¹⁰³ As the world is becoming more dependent on the space domain to enhance our living standards and for achieving national security purposes, the 2018 NDPG states that Japan should also follow this new trend by transforming the traditional perception of national security. In other words, Japan should remove the traditional strategic boundaries of land, air and sea and prioritize building more broad and cross-domain defense policies leveraging the space and cyber domains.¹⁰⁴

To achieve this Multi-Domain Defense Force capability, the 2018 NDPG puts great emphasis on the space domain as a vital security interest of Japan. Space systems, in conjunction with cyberspace and the electromagnetic spectrum, are considered indispensable enablers that “organically fuse capabilities in all domains.”¹⁰⁵ The degree of interest in the space domain may be measured by counting the number of times the word “space” is used in the document. The number of times the word “space” appeared in the NDPG 2018 was almost four times greater than it was in the 2013 NDPG and seven times more than in the NDPG 2010 (see Figure 12).

Figure 12: *Number of times the word “space” appeared in the NDPGs (Japanese version)*

Year of release	word count: “space”
2018	36
2013	10
2010	5
2004	0
1995	0*
1976	0

* Installation of missile defense systems were studied since around this year.

Note: Developed by the author.

The following are some of the other key space-related points and policies addressed in the 2018 NDPG:

- An insecure space domain is a risk to commercial space activities and to the safety of the state and its citizens. (Sec. 1 - Part II)
- The lack of international norms and rules in space activities is a global issue. (Sec. 1 - Part II)
- Achieving superiority in the space domain is necessary to respond to a complex security environment. (Part III)

¹⁰² Koichi Isobe, “Operational Aspects of the NDPG” (presentation, Japan’s New National Defense Program Guidelines: Alliance Strategies for the Third Post-Cold War Era, Carnegie Endowment for International Peace, Washington D.C., Jan. 11, 2019).

¹⁰³ 2018 NDPG, *supra* note 100, at 4.

¹⁰⁴ 2018 NDPG, *supra* note 100, at 2.

¹⁰⁵ 2018 NDPG, *supra* note 100, at 11; 2018 NDGP also emphasizes the cyber domain and electromagnetic spectrum as new domains that needed to be incorporated into national security strategies.

- Strengthening missile defense capabilities is necessary. (Part III)
- Not only an intra-governmental approach but also involvement of local governments and private entities are important (Art. 1 – Sec. 1 - Part III)
- To have seamless military operations, Japan will increase the frequency of ISR activities as well as the coverage of ISR. (Para. b – Art. 2 – Sec. 2 – Part III)
- Strengthening international cooperation, especially with the United States, to improve ISR and missile defense capabilities using the space and cyber domains is important. (Art.1 – Sec. 2 - Part III)
- Promoting international cooperation to build SSA capability is necessary. (art. 2 – sec. 3 - part III)
- The SDF should acquire the capability and capacity to disrupt opponents’ C4. (Art. 2 – Sec. 1 - Part V)
- JASDF will possess a unit that “specializes in space domain missions” (宇宙領域専門部隊) (Art. 2 – Sec. 1 - Part V)

For more than a decade, the agency with legitimate responsibility for coordinating Japan’s space systems was unclear. The 2018 NDPG clarifies the issue by establishing a special space unit under the JASDF and giving it joint operation capabilities leveraging space systems including SSA; mission assurance; and disruption of opponent’s command, control, communications and information.¹⁰⁶ The size of this specialized unit, which an annex to the 2018 NDPG calls “Space Domain Mission Units,” will be one squadron.¹⁰⁷

The new NDPG also offers more concrete approaches for obtaining SSA capabilities.¹⁰⁸ It emphasizes developing SSA capability through international cooperation. For example, Japan will share SSA information with the United States’ Joint Space Operations Center (JSpOC) to cover the shortcomings of American SSA systems (e.g., the Asian region).¹⁰⁹ Moreover, the Space Domain Mission Units will acquire a space-based optical telescope for SSA* as well as a SSA laser ranging device*.¹¹⁰ SSA capabilities are expected to be used to monitor any malevolent attempts or actions that may hamper Japan’s military missions.¹¹¹ Japan will develop capabilities to deny or eliminate such hostile actions in space if necessary.¹¹²

In addition, the 2018 MTDP implies the intention to establish in the future new SDF commands (the SDF Command Control Communication Computers Systems Command and SDF Intelligence Security Command) dedicated to operating space, cyber and electromagnetic domains.¹¹³ This change would affect the both function and existence of the Space Domain Mission Units.

¹⁰⁶ 2018 NDPG, *supra* note 100, at 27.

¹⁰⁷ 2018 NDPG, *supra* note 100, at 33.

¹⁰⁸ 2013 NDPG merely mentioned that the SDF will work to stabilize outer space and satellites by “enhancing the survivability of satellites through such initiatives as space situational awareness.” See Government of Japan, National Security Council, “National Defense Program Guidelines for FY2014 and beyond (Provisional Translation),” Tokyo, Dec. 17, 2013, http://www.mod.go.jp/j/approach/agenda/guideline/2014/pdf/20131217_e2.pdf (accessed Jan. 30, 2019): 20.

¹⁰⁹ U.S. Strategic Command, “USSTRATCOM Hosts Fourth SSA Experiment with International Partners,” *U.S. Strategic Command website*, Oct 5, 2017, <https://www.stratcom.mil/Media/News/News-Article-View/Article/1340856/usstratcom-hosts-fourth-ssa-experiment-with-international-partners/> (accessed Feb. 7, 2019).

¹¹⁰ 2018 MTDP, *supra* note 101, at 6.

¹¹¹ 2018 NDPG, *supra* note 100, at 12.

¹¹² 2018 NDPG, *supra* note 100, at 12.

¹¹³ 2018 MTDP, *supra* note 101, at 3; SDF Command is a joint operation unit, typically led by a colonel or major general, created to effectively operate joint missions.

3.1.3. Comparison between previous NDGPs

Establishment of the Space Domain Mission Units and clear acquisition plans for SSA are not a sudden outcome. Rather, these were developed in phases. The first time MOD mentioned the utilization of space assets for national security purposes was in the 2010 NDGP. The 2010 NDGP was created to reflect emerging global challenges such as the increasing proliferation of weapon of mass destruction, ballistic missiles, terrorism, and piracy. To tackle these challenges, emphasis was placed on ground, sea and air-based ballistic missile defense capabilities (not the space-based equipment addressed in the 2018 NDGP). The space domain and space assets were merely considered tools for “strengthening information gathering and communications functions.”¹¹⁴

These perceptions of the space domain have changed, however, in the 2013 NDGP. The 2013 NDGP recognizes the increasing dependence on space assets and the importance of protecting the space environment: “Securing the stable use of outer space ... is becoming a significant security challenge for the international community including Japan.”¹¹⁵ Therefore, the survivability of satellites using capacities such as SSA became a vital policy objective. The 2013 NDGP and its MTDP conclude that the government should promote R&D on SSA capability.¹¹⁶ The 2013 NDGP also emphasizes the importance of acquiring “persistent ISR capabilities to prevent any acts that could impede efficient action by the SDF.”¹¹⁷

In sum, the 2018 NDGP objectives in space built on previous NDGPs. The 2010 NDGP focused on establishing missile defense capacities and effective utilization of space-based ISR systems. The 2013 NDGP emphasized securing and protecting space assets by monitoring the space environment. Today, actual installation of SSA systems under the JASDF has been decided.

3.2. Commercial Space Initiatives

In November 2016, Japan finally prepared laws to regulate and promote commercial space activities by enacting the Act on Launching Artificial Satellites and Managing Satellites (Satellite Act, No. 76, 2016) and the Act on Securing Proper Handling of Satellite Remote Sensing Records (Remote Sensing Records Act, Act No.77, 2016).¹¹⁸ Having these laws makes it much easier for commercial space companies and ventures to, for example, obtain launch licenses. Besides the regulatory environment, the small size of the domestic space market is a source of Japan’s space industry’s problems. According to the Cabinet Office, the size of

¹¹⁴ Government of Japan, National Security Council, “National Defense Program Guidelines for FY2011 and beyond (Provisional Translation),” Tokyo, Dec. 17, 2010, http://www.mod.go.jp/e/d_act/d_policy/pdf/guidelinesFY2011.pdf (accessed Jan. 30, 2019): 5.

¹¹⁵ Government of Japan, National Security Council, “National Defense Program Guidelines for FY2014 and beyond (Provisional Translation),” Tokyo, Dec. 17, 2013, http://www.mod.go.jp/j/approach/agenda/guideline/2014/pdf/20131217_e2.pdf (accessed Jan. 30, 2019): 2.

¹¹⁶ Government of Japan, National Security Council, “Medium-Term Defense Program (FY2014-FY2018),” Tokyo, Dec. 17, 2013, http://www.mod.go.jp/j/approach/agenda/guideline/2014/pdf/Defense_Program.pdf (accessed Jan. 30, 2019): 12.

¹¹⁷ 2013 NDGP, *supra* note 115, at 14 & 18.

¹¹⁸ It was promulgated in 2016 and came into effect in 2018. Jinkoueiseitou no uchiage oyobi jinkoueisei no kanri ni kansuru houritsu [Act on Launching Artificial Satellites and Managing Satellites], Law No. 76 of Nov. 16, 2016, and Eisei rimotosensingu kiroku no tekiseina toriatsukai no kakuho ni kansuru houritsu [Act on Securing Proper Handling of Satellite Remote Sensing Records], Law No.77 of Nov. 16, 2016.

Japan's space economy is about ¥1.2 trillion (about \$10.9 billion) annually, including both government and commercial demands.¹¹⁹ This is about one third of the U.S. government's space budget (i.e., not including non-government space revenues).¹²⁰ The following sections summarize the Japanese government's initiatives to expand Japan's space market, improve competitiveness of the industry and stimulate the space economy.

3.2.1. Policy-level Initiatives

3.2.1.1. Space Industry Vision for 2030

Based on a direction suggested in the Japan Revitalization Strategy 2016, which describes Japan's overall industrial policy,¹²¹ the CNSP released the Space Industry Vision for 2030 on May 29, 2017.¹²² This Vision addresses four pillars to invigorate the space industry: the Space Utilization; Space Equipment Industry; Space System Overseas Development; and Environment for New Space Businesses. A target of these objectives is to double Japan's current space economy by the early 2030s.¹²³ See Figure 13 for a summary of these four objectives. Overseeing ministries include CAO, MIC, MEXT and METI.

¹¹⁹ Hidegazu Takakura, MEXT, 「宇宙産業ビジョン2030: 第4次産業革命下の宇宙利用創造」 “Uchusangyoubijon2030: daiyonji sangyokakumeika no uchu riyou souzou [Space Industry Vision for 2030: Space utilization and development under the fourth industrial revolution],” Tokyo, Oct. 13, 2017, https://www.s-net.space/results/doc/fukui_20171013-1.pdf (accessed Jan. 30, 2019).

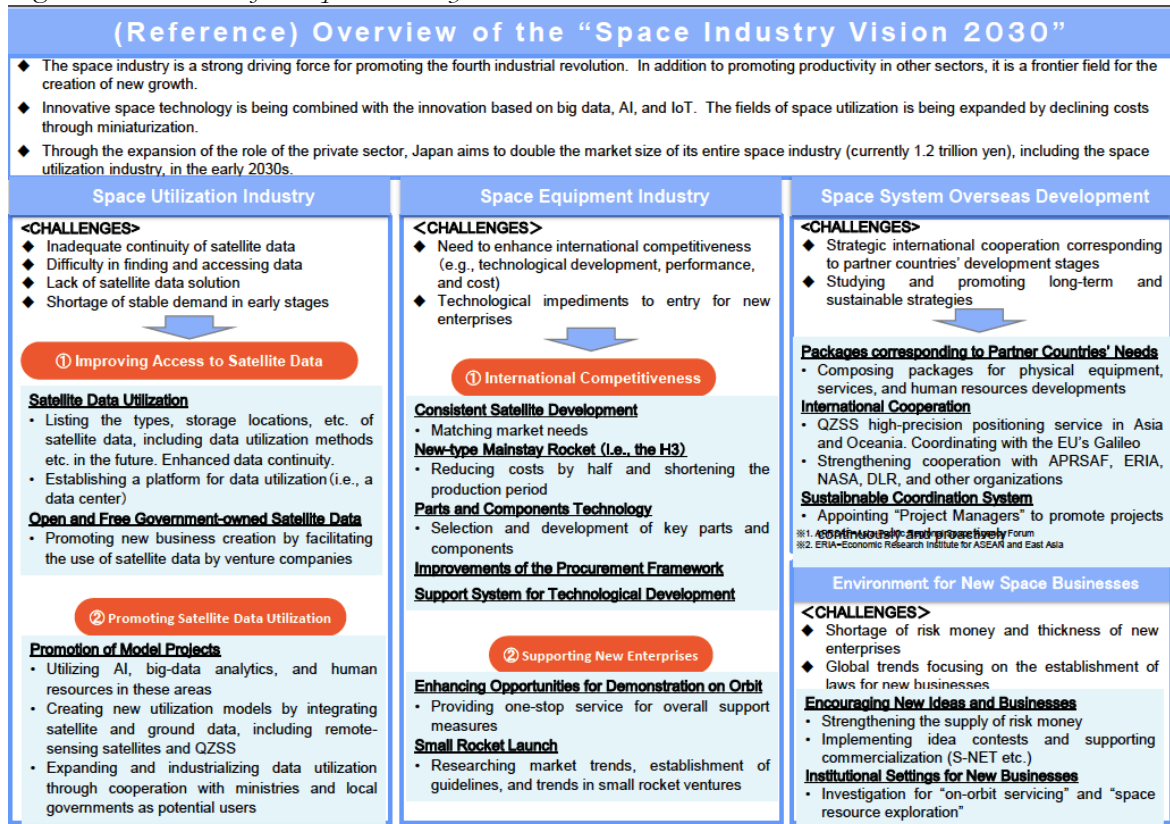
¹²⁰ According to the report from the Euroconsult, the U.S. government's expenditure on space programs in 2016 was approximately \$35 billion. See “Government Spending in Space Programs Reaches \$62 Billion in 2016,” *Euroconsult* website, http://www.euroconsult-ec.com/30_May_2017 (accessed on September 19, 2018).

¹²¹ Government of Japan, Cabinet, “Japan Revitalization Strategy 2016 (Provisional),” Tokyo, June 2, 2016, https://www.kantei.go.jp/jp/singi/keizaisaisei/pdf/2016_zentaihombun.pdf (accessed Jan. 30, 2019):76.

¹²² CNSP, “Space Industry Vision 2030,” Tokyo, May 29, 2017, <https://www8.cao.go.jp/space/vision/mbrlistsitu.pdf> (accessed Jan. 30, 2019).

¹²³ Space Industry Vision 2030, *supra* note 122, at 8.

Figure 13: Overview of the Space Industry Vision 2030



Note: Reprint from a presentation prepared by Masanori Tsuruda, Director, Space Industry Office, METI, September 6, 2017. https://www.eu-japan.eu/sites/default/files/imce/1._meti_tsuruda_1.pdf.

3.2.1.2. Long-term Vision for a Space Transportation System*

In April 2014, the CNSP released the government’s policy on a space transportation system (STS) called the Long-term Visions on the Space Transportation System*. ¹²⁴ It assumes, by 2040 and beyond, that countries will be using reusable vehicles, conducting crewed deep space exploration and crewed sub-orbital tourism, starting in-orbit satellite servicing, operating crewed point-to-point sub-orbital transportation, deploying space solar power systems, and exploiting Moon resources. To prepare for this “new normal,” the government recognizes that possessing and sustaining reliable, agile and economically sound STS is critically important to continue Japan’s space programs. The Vision suggests approaches to realize a world in which STS becomes a kind of infrastructure like railroads or airplanes. ¹²⁵ The overseeing government organ is the CAO.

¹²⁴ CNSP, 「宇宙輸送システム長期ビジョン」 “Uchu yusou sisutemu chouki bijon [Long-term Visions on the Space Transportation System],” Tokyo, April 3, 2014, <https://www8.cao.go.jp/space/committee/kettei/vision.pdf> (accessed Jan. 30, 2019).

¹²⁵ Long-term Visions on the Space Transportation System, supra note 124, at 3.

3.2.1.3. Manual for Procedures regarding International Frequency Allocation for Small Satellite Constellations*

MIC created a Manual for Procedures to coordinate international frequency allocation for small satellite constellations on March 31, 2016.¹²⁶ This manual was created especially for new entrepreneurs entering the small satellite business and ventures seeking frequency allocation. It offers an overview of the international frequency coordination mechanism, necessary knowledge, required procedures and license requirements.

3.2.1.4. Task Force for Expanding Japan's Space System Overseas*

The Task Force for Expanding Japan's Space System Overseas* was created on Aug. 20, 2015 as a result of a decision addressed in the Basic Plan (2015 version), which recommends promotion of foreign space systems sales and expansion of the space market.¹²⁷ Goals are to increase the export of space systems, which includes top-level sales, collaborative research, space market studies, education of space professionals and contribution to the United Nations' Sustainable Development Goals (SDGs).¹²⁸

Suggestions and opinions are gathered from both the government and public, including commercial companies and universities, and discussed at the Promotion Meeting* led by the NSPS. Small working groups were created to provide information on foreign needs and best practices to support the Promotion Meeting. This meeting reports to the High Official Meeting*. The Minister of State for Space Policy leads this High Official Meeting. Participants comprise relevant ministries' deputy ministers and agency chiefs, representatives from industry and space experts. The High Official Meeting decides target areas (i.e., cross-domain objectives, country/regional-basis objectives and projects) that Japan's space industry should focus on. For example, the first High Official Meeting prioritized Thailand, Qatar, UAE, Turkey, Brazil and Mexico as target countries to explore potential exports of Japan's space systems.¹²⁹ Overseeing ministries include the Cabinet Secretariat, CAO, MIC, MOFA, MEXT, MAFF, METI, MLIT, MOE, and MOD.

3.2.1.5. Comprehensive Strategy on Space Parts and Component Technical Development*

As explained in the METI section above, this strategy targets enhancing the competitiveness of parts and components used for space systems. This approach is expected

¹²⁶ MIC, 「小型衛星通信網の国際周波数調整手続きに関するマニュアル」 “Kogataeiseitsuushinmou no kousaishuuhasuu chousei tetsuduki ni kansuru manyuaru [Manual for Procedures regarding International Frequency Allocation for Small-sat Constellations],” Tokyo, March 31, 2016, <https://www.tele.soumu.go.jp/resource/j/freq/process/freqint/001.pdf> (accessed Jan. 30, 2019).

¹²⁷ Cabinet Office, 「宇宙システム海外展開タスクフォースの開催について」 “Uchu sisutem kaigaitenkai tasukufosu no kaisai ni tsuite” [Decision to establish a Task Force for Expanding Japan's Space System Overseas],” Tokyo, August 20, 2015, <https://www8.cao.go.jp/space/committee/27-kiban/kiban-dai9/siryou3.pdf> (accessed Jan. 30, 2019).

¹²⁸ Cabinet Office, 「宇宙システム海外展開タスクフォースについて」 “Uchu sisutem kaigaitenkai tasukufosu ni tsuite [About the Task Force for Expanding Japan's Space System Overseas],” Tokyo, September 2015, <https://www8.cao.go.jp/space/committee/27-kiban/kiban-dai9/siryou4.pdf> (accessed Jan. 30, 2019).

¹²⁹ CNSP, 「宇宙システム海外展開タスクフォース作業部会リスト」 “Uchu sisutem kaigaitenkai tasukufosu sagyoubukai risuto [A list of working groups for the Task Force for Expanding Japan's Space System Overseas],” Tokyo, September 2015, <https://www8.cao.go.jp/space/committee/dai42/siryou11.pdf> (accessed on Jan. 30, 2019).

to create a virtuous cycle: improved parts and components will drive up the space industry's sales; expand the space industry market; and increase investments in R&D and production capacity of space parts and components.¹³⁰ Overseeing ministries include Cabinet Secretariat, CAO, MIC, MEXT, METI, and MOD.

3.2.2. Program-level Initiative – Initiatives for Venture Companies

On March 20, 2018, the Japanese government revealed an initiative to stimulate Japan's space industry. In particular, venture companies are to be provided a set of programs (as a package).¹³¹ The following summarizes some of the key programs designed to support the initiative.

3.2.2.1. Platform for the Space Community

The Space New Economy Creation Network (S-NET) is an internet-based platform established by the NSPS on March 22, 2016. It aims at inviting any company, community or public citizen interested in space-related business and allows them to find best practices and connect people with ideas.¹³² S-NET also provides space-related workshops at various locations in Japan. S-NET's services and promotions have not generated as many projects as expected because so far it has only provided opportunities to share information. To take a step forward, CAO and METI made agreements with Japan Space Systems, a non-profit organization aimed at promoting the utilization of space systems and its commercialization, and the Remote Sensing Technology Center of Japan, an organization aimed at researching and developing remote sensing technologies and raising awareness of remote sensing utilization. These agreements have enhanced S-NET's capacity to provide seamless services, from networking to implementation support.¹³³ For example, participants in S-NET can ask for advice on both business and technical issues through a website for those who are working on space business called Japan Space Systems' Space Business Court.¹³⁴

3.2.2.2. Space Business Plan Contest

In 2017, NSPS, NEDO and JAXA launched a business idea contest called the S-Booster.¹³⁵ One objective of this contest is to invite not only business ideas from venture

¹³⁰ Cabinet Secretariat, CAO, MIC, MEXT, METI and MOD, 「宇宙用部品・コンポーネントに関する 総合的な技術戦略要旨」 “Uchuyoubuhin・konponent ni kansuru sougoutekina gijutsu senryaku(youshi) [Summary of Comprehensive Strategy on Space Parts and Components' Technical Development],” Tokyo, March 31, 2016, http://www.meti.go.jp/policy/mono_info_service/mono/space_industry/pdf/buhinsenryaku.pdf (accessed Jan. 30, 2019).

¹³¹ CAO, MIC, MOFA, MEXT, METI, 「宇宙ベンチャー育成のための新たな支援パッケージ」 “Uchu benchaikusei no tameno aratana sien pakkeji [New support package designed to grow space ventures],” Tokyo, March 20, 2018, <https://www8.cao.go.jp/space/policy/pdf/package.pdf> (accessed Jan. 30, 2019).

¹³² 「S-NET とは」 “S-NET toha [What is S-NET],” *Japan Space Forum website*, <http://www.uchuriyo.space/about> (accessed Jan. 30, 2019).

¹³³ METI, “METI to Enhance the “Space New Economy Creation Network (S-NET)” Program to be More Sustainable, Autonomous, Practical,” Tokyo, July 13, 2018, http://www.meti.go.jp/english/press/2018/0713_002.html (accessed Jan. 30, 2019).

¹³⁴ “About Space Business Court,” *Japan Space System website*, <https://www.bizcourt.space/en/about/> (accessed Jan. 30, 2019).

¹³⁵ CAO, “Space Business Idea Contest ‘S-Booster’,” *Cabinet Office website*, <https://www8.cao.go.jp/space/english/s-net/s-booster/index.html> (accessed Jan. 30, 2019).

companies but also ideas from students, individuals and non-space industries that could generate new and innovative space business ideas. Applicants can choose to enter a business plan contest or a future concept plan contest. The business plan contest seeks ideas that are commercially viable within three years. The future concept plan contest seeks ideas that could be in operation within 10 years.

3.2.2.3. Business Matching Platform

On Feb. 13, 2017, CAO and METI (co-sponsored by JAXA and NEDO) agreed to create S-Matching, an internet-based platform aimed at connecting innovative space-related technologies and ideas with potential investors.¹³⁶

3.2.2.4. Scheme for Risk Money

Risk money will be prepared by the government's financial institutions, the Innovation Network Corporation of Japan (INCJ) and the Development Bank of Japan (DBJ). Space venture companies and entrepreneurs now have opportunities to access about a total of ¥100 billion (about \$905 million) for the next five years (likely 2018 to 2023).¹³⁷

3.2.2.5. Space Awards

CAO established S-AWARD in 2013 to promote space system utilization as well as to increase the awareness of space systems among the general public. In 2018, 10 S-AWARDS (the Prime Minister Award; Minister of State for Space Policy Award; MIC, MOFA, MEXT, MAFF, METI, MLIT, MOE Minister Awards; and President of JAXA Award) were given to private companies, universities and researchers.¹³⁸ Winners obtain financial and technical consultation support from the government.

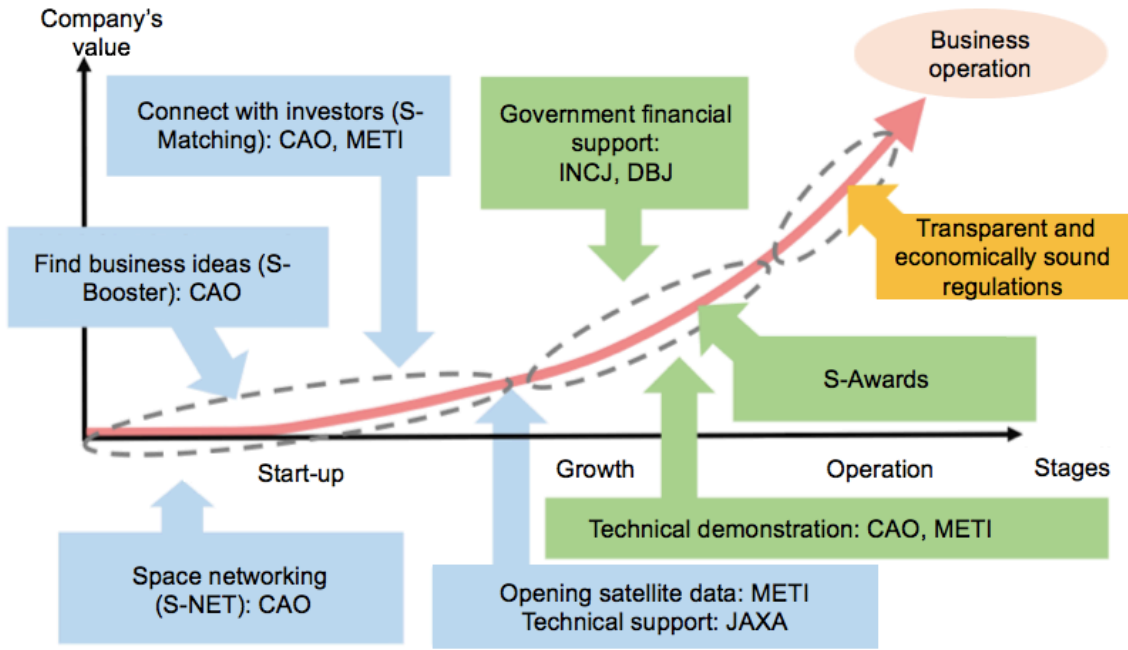
Figure 14 illustrates how the government's initiatives for space-related venture companies are constructed. By preparing a seamless initiative, the government is hoping to see more new and innovative space businesses emerge.

¹³⁶ METI, "Outer Space Entrepreneurs: Business Matching Platform, 'S-Matching,' Launched for Encouraging Investment in Space Industry," *METI website*, May 31, 2018, http://www.meti.go.jp/english/press/2018/0531_004.html (accessed January 30, 2019).

¹³⁷ New support package designed to grow space ventures, *supra* note 131.

¹³⁸ 「第3回宇宙開発利用大賞」 "Daisankai uchu kaihatsu riyou taishou [The Third S-Award]," Tokyo, *Japan Space Forum website*, <http://www.uchuriyo.space/taishou/> (accessed January 30, 2019).

Figure 14: Summary of the Government's approach to expand the space industry



Note: Reprint from the CAO's publication. Translated by the author.

4. CONCLUSION

Successful developments in space-related legislation and governmental reform and the creation of new military policy focused on the space domain represent the completion of Japan's comprehensive national space policy. Japan's current space policy encompasses all dimensions of national interest (i.e., science, civil, commercial and military).

As this study has clarified, the Japanese government has sorted out the organizational structure and policy processes to effectively plan, create, manage and revise national space policies. CNSP and SNSP seem to be working well leading intra-governmental coordination as well as inviting experts' opinions from the private sector. Ministries and agencies have created ad hoc or permanent councils, working groups, and/or study groups to support and develop the Basic Plan and the Implementation Plan. As of January 2019, the CNSP has convened more than 200 meetings including working group meetings over the past six years. To reflect and adopt comprehensive Japanese space policies, the government also reframed its defense strategies (the NDGP and MTDP) and created a seamless scheme to promote the space industry.

Yet what comes next is unknown. Prime Minister Abe used the word "outer space" twice in his policy speech on Jan. 28, 2019. It was his first time in a policy speech to emphasize the necessity of maintaining an advantage in the space domain and to call outer space a "competitive" domain.¹³⁹ Despite his great passion for leveraging the space domain in the national interest, there is only handful of academic research specifically focused on Japan's space policy. This paper should help space policy researchers understand what the Japanese government's current space policy mechanisms look like and invite more researchers to study Japanese space policy.

¹³⁹ Shinzo Abe, "Policy Speech by Prime Minister Shinzo Abe to the 198th Session of the Diet," Tokyo, January 28, 2019, http://japan.kantei.go.jp/98_abe/statement/201801/_00003.html (accessed February 27, 2019).

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