Part Ⅱ

Measures Implemented to Promote Science and Technology

Part II describes the measures taken to promote science and technology in FY 2016 in accordance with the 5th Science and Technology Basic Plan (January 22, 2016 Cabinet Decision), (Science and Technology Basic Plan; hereinafter: the Basic Plan).

Chapter 1 Development of Science and Technology

Section 1 The Science and Technology Basic Plan

Science and technology policy in Japan is promoted comprehensively and in a planned manner according to the Science and Technology Basic Plan. The government renews and implements the 5-year Basic Plan pursuant to the Science and Technology Basic Law (Law No. 130, 1995).

The government has developed the 1st (FY1996 to FY2000), the 2nd (FY2001-FY2005), the 3rd (FY2006-FY2010) and the 4th (FY2011-FY2015) Basic Plans and promoted science and technology policy according to the plans.

Towards formulating the next Basic Plan, which was to start in FY 2016, the Prime Minister solicited advice from the Council for Science, Technology and Innovation (CSTI) by issuing the Consultation Request #5, Regarding the Science and Technology Basic Plan. CSTI established the Expert Panel on Basic Policy and conducted studies and examinations for one year. In December 2015, CSTI responded to the Consultation #5. On January 22, 2016, a Cabinet Decision was made to implement the 5th Basic Plan.

The 5th Basic Plan presents recognition of the current situation of Japan and the world: This is a "period of great change" when the socioeconomic structure changes day by day due to the development of Information and Communication Technology (ICT) and other technologies. The importance of promoting science, technology and innovation (STI) has been growing due to increases in the number of domestic and international issues, and in the complexity of those issues.

The basic plans of the previous 20 years have had achievements and issues. The achievements include steady improvements in the R&D environment, and notable award-winning R&D such as iPS cell technologies and blue LEDs. Issues include the weakening of "basic strengths" in science and technology and the stagnation of government investment in science and technology.

In this context the 5th Basic Plan envisions goals Japan should: 1) achieve sustainable growth and self-sustaining regional development; 2) ensure safety and security for the nation and citizens and a high quality, prosperous way of life; 3) address global challenges and contribue to global development; and 4) promote sustainable creation of intellectual assets. To realize these visions, with focus on the ability to forecast the future (foresight and strategical strength) and the ability to adequately adapt to any changes (diversification and flexibility), the Plan sets the following 4 policy pillars:

i) Acting to create new value for the development of future industry and social transformation

Society 5.0[1] is to be strongly promoted to make a large change and to lead the era of revolution through a series of undertakings that realize a "super smart society" in which new values and services are created one after another ahead of the world and through the strengthening of R&D that achieves

1 Society 5.0 refers to a new economic society following a hunter-gatherer society, agrarian society, industrial society and, information society. This will be a human-centered society characterized by the sophisticated integration of cyberspace with physical space ("the real world") and successful combination of economic development and solution of social problems to enable a comfortable, vigorous and high-quality life.

independent innovation.

ii) Addressing economic and social challenges

To take appropriate pre-emptive action addressing the various issues that have emerged domestically and globally, the national government will select important policy issues and promote STI towards addressing national and global issues before they become problems.

iii) Reinforcing the "fundamentals" for science, technology, and innovation

Basic capabilities in STI will be dramatically strengthened to address possible future changes flexibly and adequately, through the fostering of young human resources, the promotion of their active role-taking, and the reform and strengthening of universities.

iv) Building a systemic virtuous cycle of human resource, knowledge, and funding for innovation

Making the most of domestic and international human resources, knowledge and funds, we will foster and take advantage of "new value." To this end, we will develop an innovation creation system by circulating human resources, knowledge and funds beyond any barriers by fostering strong, deep collaboration among private businesses, universities and public research institutions and by strengthening startups establishments.

The plan states that strategic international development combined with science and technology diplomacy is indispensable for Japan to promote the four pillars.

It is also announced that Japan will constantly be working to improve the quality of its policies by determining key indicators and numerical targets to determine the progress and outcomes of the 5th Basic Plan through their achievement levels.

The governmental R&D investment target has not been achieved since the 2nd Basic Plan. R&D investment by the government has stagnated during the past decade. The 5th Basic Plan sets a target of at least 4% for public- and private-sector R&D investment as a share of GDP and a target of 1% for governmental R&D investment as a share of GDP. The latter is thought to be achievable with the Plan to Advance Economic and Fiscal Revitalization included in the Basic Policy on Economic and Fiscal Management and Reform 2015 approved by the Cabinet in June 2015. Assuming that the nominal GDP growth rate during the 5th Plan averages 3.3%, the investment in governmental R&D during that plan will total 26 trillion yen.

Section 2 Council for Science, Technology and Innovation

CSTI in the Cabinet Office is positioned as a council that advances key policies toward vigorously promoting Japan's science and technology policies under the leadership of the Prime Minister. CSTI consists of the Prime Minister as the chairperson, related Cabinet members, expert members and others, all of whom have the mission of overseeing the nation's science and technology efforts and offering comprehensive and fundamental policy plans and general coordination (Table 2-1-1).

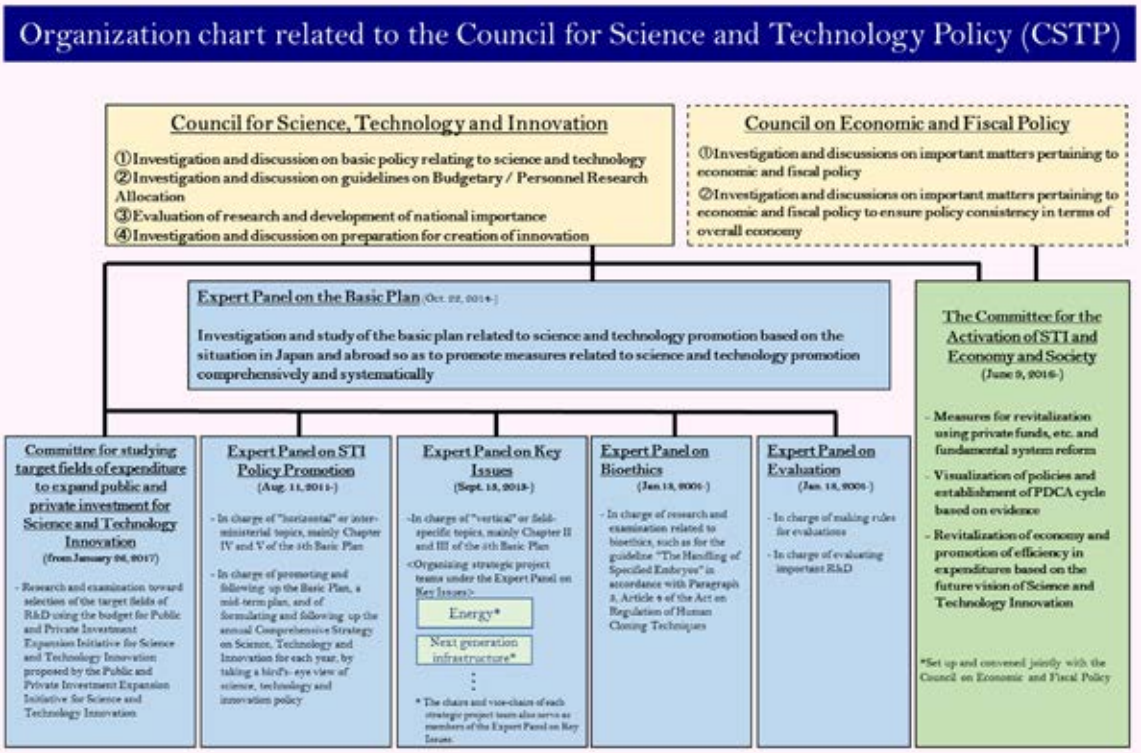
In FY 2016, CSTI has established the Expert Panel on Science, Technology and Innovation Policy Promotion and other six expert panels that deliberate on technical aspects of key issues (Figure 2-1-2).

■ Table 2-1-1 / List of CSTI members

Cabinet members	Shinzo Abe	Prime Minister
	Yoshihide Suga	Chief Cabinet Secretary
	Yosuke Tsuruho	Minister of State for Science and Technology Policy
	Sanae Takaichi	Minister of Internal Affairs and Communications
	Taro Aso	Minister of Finance
	Hirokazu Matsuno	Minister of Education, Culture, Sports, Science and Technology
	Hiroshige Seko	Minister of Economy, Trade and Industry
Experts	Yuko Harayama (full-time)	Former Professor, Graduate School of Engineering, Tohoku University
	Kazuo Kyuma (full-time)	Former Senior Corporate Adviser, Mitsubishi Electric Corp.
	Takahiro Ueyama i (full-time)	Former Professor and Vice-President, The National Graduate Institute for Policy Studies (GRIPS)
	Takeshi Uchiyamada (part-time)	Chairman of the Board, Toyota Motor Corp.
	Motoko Kotani (part-time)	Director, Advanced Institute for Materials Research (AIMR); Prof., Graduate School of Science, Tohoku University
	Masakazu Tokura (part-time)	Representative Director & President, Sumitomo Chemical Co., Ltd.
	Kazuhito Hashimoto (part-time)	President, National Institute for Materials Science (NIMS) and Special Assistant to the President and Professor, the University of Tokyo
	Takashi Onishi (part-time)	President of the Science Council of Japan (The head of affiliated institutions)

Source: Cabinet Office

■ Figure 2-1-2 / Organizational chart of CSTI



Source: Cabinet Office

1 Major Endeavors of CSTI in FY2016

CSTI has been discussing policy, budgets and systems. Such discussions address the following: 1) the establishment of the 5th Basic Plan and the Comprehensive Strategy on Science, Technology and Innovation 2016 (approved on May 24, 2016 by Cabinet Decision), 2) contributions to the compilation of the Japan Revitalization Strategy 2016 (approved on June 2, 2016 by Cabinet Decision), 3) the strategic development of science and technology budgets by the entire government, and 4) the operation of the Cross-ministerial Strategic Innovation Promotion Program (SIP) and the Impulsing Paradigm Change through Disruptive Technologies Program (ImPACT).

Particularly in fiscal 2016 CSTI made discussions for further promotion of Science and Technology Innovation toward powerful redevelopment of the Japanese economy and compiled the "Public and Private Investment Expansion Initiative for Science and Technology Innovation (final report)" in December. Aiming to expand public and private investment through strengthening of CSTI's control tower function, the initiative has been working for realization of this goal with focus on the following three actions.

(1) Action 1: Action to reform the budget planning process

For the process of budget planning for science and technology, the budget for expansion of Public and Private Investment for Science and Technology Innovation was established at the Cabinet Office in fiscal 2018. CSTI conducted studies to expand public and private R&D investment by strengthening its control tower function by guiding ministries/agencies' measures to the fields where effects to induce private

investment is high, introducing SIP-based management [1] that is highly evaluated in industry to ministries/agencies and introducing stage-gate evaluation, while at the same time allocating budget to R&D-related programs that can made greater contribution to the achievement of "600 trillion yen GDP.".

(2) Action 2: System reform toward expansion of R&D investment

In order to realize crosscutting science and technology innovations that will lead to changes in society including the 4th Industrial Revolution and Society 5.0, and carry through the system reform for expansion of investment from industry, CSTI has advanced studies of system reforms including acceleration of university reform and deepening of industry-academia collaboration for promotion of open innovation, facilitation of creation of R&D-based startups and expansion of public procurement for creation of new markets.

(3) Action 3: Effective public-private R&D investment expansion based on evidence

In order to maximize the effects of limited national R&D investments and expand the budget for policy objectives/fields to grow, CSTI carried out studies for systematic collection and linking of information related to science and technology innovation from its input to output and outcomes, while at the same time accumulating supporting evidence pertaining to important policy themes and using it for policy making.

2 Strategic Prioritization in the Science and Technology-related Budget

CSTI allocates the science and technology-related budget to important fields and measures, oversees all science, technology and innovation measures, and leads the activities of relevant ministries and agencies. It does the above in order for the Basic Plan and the Comprehensive Strategy on Science, Technology and Innovation to be implemented. Towards the formulation of the science and technology budget for 2017, the Science, Technology and Innovation Budget Strategy Committee, whose chairperson is the Minister of State for Science, Technology and Innovation Policy and whose members are the directors of relevant ministries, was convened to identify "priority measures" for making decisions on policy areas of prioritization for budget allocations in accordance with the Comprehensive Strategy on Science, Technology and Innovation 2016.

(1) The policy for the allocation of budgets and other resources related to science and technology

According to the basic plan showing the medium- to long-term policy direction and based on the changes in the situation of the year, CSTI under the Comprehensive Strategy on Science, Technology and Innovation suggested areas of policy focus for the year, and proposed that allocations of governmental science and technology-related budgets be focused on important areas and programs and that policy be subjected to PDCA cycles.

(2) Meetings of the Science, Technology and Innovation Budget Strategy Committee

The Council held a meeting of the Science, Technology and Innovation Budget Strategy Committee that

1 Management method characterized by assignment of a program director, clear target setting and detailed progress management, integrated industry-academia-government cooperation system, etc.

were chaired by the Minister of State for Science and Technology Policy and whose members include the directors of relevant ministries and agencies concerned. These meetings aimed at close coordination among relevant ministries and agencies prior to the formulation of the FY2017 science and technology budget, towards ensuring the implementation of the Comprehensive Strategy on Science, Technology and Innovation. Based on the discussions at the meetings, CSTI determined the priority measures and led the entire government in formulating the science and technology budget starting from the planning stage of budget requests by each ministry and agency.

(3) Priority measures under the Comprehensive Strategy on Science, Technology and Innovation 2016 (decisions and supplementary recommendations by the Council for Science, Technology and Innovation on September 15, 2016)

The Comprehensive Strategy on Science, Technology and Innovation 2016 determined "priority initiatives" for the period from fiscal 2016 to 2017 based on a basic recognition and sorting out of challenges with a focus on the four pillars of the 5th Basic Plan: "Acting to create new value for the development of future industry and social transformation," "Addressing economic and social challenges," "Reinforcing the 'Fundamentals' for STI (science, technology, and innovation)" and "Establishing a systemic virtuous cycle of human resources, knowledge, and capital for innovation." Relevant ministries proposed to CSTI the programs that should be included as "priority initiatives." After interviewing ministry officials on proposals and conducting necessary coordination, CSTI identified 232 "prioritized programs."

(4) Promotion of the Strategic Innovation Promotion Program (SIP)

Through interdisciplinary and inter-ministerial management where the Council for Science, Technology and Innovation functions as the control tower, the SIP encompasses everything from basic research to the practical application and commercialization of research results under industry-academia-government collaborations. The 11 program directors (PDs) play central roles in relevant programs to powerfully promote science, technology and innovation that will be economic growth engine and dramatically change society. According to the CSTI policies, the Cabinet Office budget for the Creating and Promoting Science, Technology and Innovation (FY 2016: 50 billion yen) is intensively allocated to the implementation of the SIP. Health and medicine are promoted under the Headquarters for Healthcare Policy.

Under the SIP the following 11 programs have been selected to contribute to the solution of social problems, enhancement of industry competitiveness and economic reform.

・Innovative Combustion Technology

Realize innovative combustion technology to improve Maximum Thermal Efficiency of internal-combustion engines for passenger vehicles to 50% in industry-academia cooperation.

- Next-Generation Power Electronics

  Significantly improve the performance of the current power electronics to contribute to energy conservation and expansion of introduction of renewable energy and thereby create a big market.
- Structural Materials for Innovation (SM^4I)

  Accelerate development of revolutionary light-weight materials having excellent heat/environment resistance and their application to airplanes and other real machines so that Japanese component/materials industries can maintain and strengthen their competitiveness.
- Energy Carriers

  Utilize the hydrogen derived from renewable energy, etc. to create a clean, economically efficient and highly secure society.
- Next-Generation Technology for Ocean Resources Exploration

  Establish technologies for highly efficient survey of ocean resources including sea-floor hydrothermal deposits and cobalt-rich manganese crusts to create an ocean resource surveying industry.
- Automated Driving System

  Realize an automated driving system, including its development to the next-generation urban transportation. Reduce accidents and congestion while improving convenience.
- Infrastructure Maintenance, Renovation and Management

  Raise the level of maintenance at low cost through preventive maintenance. Create a continuing maintenance market while promoting overseas development.
- Enhancement of Societal Resiliency against Natural Disasters

  Construct a mechanism to share disaster information in public and private efforts in preparation against natural disasters in order to improve our prevention/predictiion capabilities and strengthen our response capability.
- Cyber-Security for Critical Infrastructures

  Conduct R&D of behavior monitoring and analysis technology and defense technology including authenticity determination for control/communication equipment to strengthen the international competitiveness of critical infrastructure operators.
- Technologies for Creating Next-generation Agriculture, Forestry and Fisheries

  Develop innovative production systems, new breeding, plant protection and new functions integrally with the agricultural reform to contribute to income increase for new farmers, agriculture and villages.
- Innovative Design / Manufacturing Technologies

  Establish a new manufacturing style to break through temporal and spatial restrictions, which will enable high value-added product design and production and thereby strengthen the competitiveness of industrial areas.

(6) Promotion of the Impulsing Paradigm Change through Disruptive Technologies (ImPACT) Program

The ImPACT Program for high-risk, high-impact, innovative R&D is being promoted to create STI that will bring significant changes to industry and society if it is realized.

16 program managers (PM) who have been given major authority and responsibility for planning, promoting and managing R&D implemented R&D programs based on their respective R&D plans.

3 R&D Evaluation of Projects of National Importance

(1) Ex-ante Evaluation of Large-Scale R&D Projects (approved and notified on September 15, 2016)

Large new R&D development projects started in FY 2016[1] includes the Advanced Integrated Intelligence Platform Project (AIP: Ministry of Education, Culture, Sports, Science and Technology (MEXT)): This comprehensive project covers AI, big data, the IoT and cyber security. CSTI reassessed the AIP project and provided advice to the Minister of MEXT, who is in charge of that project.

(2) Ex-post Evaluation of Large-Scale R&D Projects (approved and reported on December 21, 2016)

CSTI conducted an ex-post evaluation on the completed development of an observation network of the tsunami caused by a Japan Trench submarine earthquake and a system pertaining to the emergency tsunami report (MEXT), which had been subject to preliminary evaluation by CSTI, and CSTI sent the evaluation results to the Minister of MEXT, who is in charge of that project.

(3) Revision of the National Guideline on the Method of Evaluation for Governmental R&D (Decisions and supplementary recommendations on December 21, 2016)

CSTI presented "Revision of the National Guideline on the Method of Evaluation for Government R&D" as supplementary recommendations to the Prime Minister.

4 Major Deliberations at Expert Panels

(1) Efforts for revitalization of Economic, Social and Science Technology Innovation

For further revitalization of Science Technology Innovation toward powerful redevelopment of the Japanese economy, the Committee for the Activation of STI and Economy and Society was set up under the Council on Economic and Fiscal Policy and the CSTI, and started discussions in June 2016. In December of the same year, the CSTI compiled the "Public and Private Investment Expansion Initiative for Science and Technology Innovation (final report)" to enhance CSTI's function as control tower toward expansion of public-private investment and has been working to implement the initiative.

(2)Undertakings toward setting of priority areas for promotion of public-private investment expansion

The "Public and Private Investment Expansion Initiative for Science and Technology Innovation (final report)" suggested the budget for expansion of Public and Private Investment for Science and Technology Innovation and the budget is to be established by fiscal 2018. In order to select target fields for R&D investment based on the budget and survey and examine related matters, the "Committee for studying target fields of expenditure to expand public and private investment for Science and Technology Innovation" was set up and started its studies in January 2017.

1 R&D projects for which national funds totaling over 30 billion yen were allocated

(3) Expert Panel on STI Policy Promotion

The Expert panel on STI policy promotion carried out surveys and studies on matters pertaining to promotion of basic science and technology policies and programs in order to ensure promotion of the policies and programs in line with the 5th Basic Plan and the Comprehensive Strategy on Science, Technology, and Innovation.

(4) Expert Panel on Key Issues

The Panel that was established to use its more sophisticated expertise for investigation and examination of the priority initiatives to strengthen fundamental technologies and solve economic and social problems toward realization of Society 5.0 included in the Comprehensive Strategy on Science, Technology, and Innovation 2016 carried out detailed investigations, examinations, etc. in each field.

(5) Expert Panel on Evaluation

The Expert Panel on Evaluation conducted one reevaluation and one ex-post evaluations of large R&D development projects in FY 2016. The panel also compiled the Revision of the "National Guideline on the Method of Evaluation for Government R&D (Draft)".

(6) Expert Panel on Bioethics

The Expert Panel on Bioethics examined research that uses genome editing technology for human fertilized embryo and published the result as "Interim Report" and "Result of the examination after the interim report and future policy." The Panel has been studying emerging bioethical issues in response to recent advances in the life sciences and has published an interim report.

Section 3 Comprehensive Strategy on Science, Technology and Innovation

Each year, the Comprehensive Strategy on Science, Technology and Innovation is formulated for initiatives prioritized in the year based on the medium- to long-term policy direction set forth in the Basic Plan, considering the changes in the situation, because STI is positioned as an important pillar of the growth strategy. The Comprehensive Strategy on Science, Technology and Innovation 2016 was established in May 2016 (Figure 2-1-3).

The strategy is the first comprehensive strategy formulated under the 5th Basic Plan. Focusing on the four policy pillars of the 5th Basic Plan: "Acting to create new value for the development of future industry and social transformation," "Addressing economic and social challenges," "Reinforcing the 'Fundamentals' for STI (science, technology, and innovation)" and "Establishing a systemic virtuous cycle of human resources, knowledge, and capital for innovation," the strategy listed initiatives that should be prioritized for the period from fiscal 2016 to 2017. As matters requiring deeper examination, it lists (1) Deepening and promoting Society 5.0; (2) Strengthening of human resources with focus on young people; (3) Integrated promotion of university reform and funding reform; (4) Establishing a systemic virtuous cycle of human resources, knowledge, and capital for innovation through promotion of open innovation, and; (5) Reinforcing functions to promote science and technology innovation.

■ Figure 2-1-3 / Outline of the Comprehensive Strategy on Science, Technology and Innovation 2016

Source: Cabinet Office

Section 4 Administrative Structure and Budget for Science, Technology and Innovation Policies

1 Administrative Structure for Science, Technology and Innovation Policies

On the basis of these recommendations and guidelines, relevant administrative agencies are supervising the following: 1) research conducted at national experiment and research institutions, at national R&D agencies and at universities, 2) the promotion of research under various research programs, and 3) improvements in the environment for R&D activities.

MEXT is responsible for the coordination that is necessary for the development of specific R&D programs in diverse fields as well as for science and technology-related of various administrative agencies. MEXT also has initiatives in comprehensively promoting the implementation of R&D programs in important advanced science and technology fields and the advancement of creative basic research. The Council for Science and Technology (CST), under the jurisdiction of MEXT, is engaged in investigations and deliberations regarding important matters related to the comprehensive promotion of S&T, following the advice of the Minister of Education, Culture, Sports, Science and Technology, and also offers its views to the minister.

Table 2-1-4 shows major reports from CST.

Table 2-1-4 / Major reports from Council for Science and Technology (FY 2016)

Date of issue	Major Reports
	Subdivision on Research Planning and Evaluation
Feb. 8, 2017	R&D plan
	Subdivision on Resources Research
Dec. 22, 2016	Standard tables of food composition in Japan 2015 (Seventh Revised Edition) Supplementary edition 2016 Amino Acids, Standard Tables of Food Composition in Japan 2015 Supplementary edition 2016 Fatty Acids, Standard Tables of Food Composition in Japan (Seventh Revised Edition) Supplementary edition2016 Available Carbohydrates, Polyols and Organic Acids, Standard Tables of Food Composition in Japan (Seventh Revised Edition) Supplementary edition 2016
	Subdivision on Science
Dec. 20, 2016	On the Strengthening of Support for Challenging Research through KAKENHI [Grants-in-Aid for Research in the Subdivision on Science, Council for Science and Technology]
Jan. 17, 2017	About Reform of the Review System for Grants-in-Aid for Scientific Research–KAKENHI
	Subdivision on Ocean Development
Aug. 5, 2016	Approaches to future deep-water exploration systems [Next-generation Deep-water Exploration Systems Committee] Approaches to arctic research (summary of discussions) [Arctic Research Strategy Committee]
Jan. 26, 2017	R&D plan pertaining to ocean science and technology
	Geodesy Subcommittee
Jan. 16, 2017	Review report of the implementation status of "the earthquake/volcano observation and research plan to contribute to disaster mitigation"
	Professional engineer subdivision
Dec. 22, 2016	What the future Professional Engineer system should be
	Subcommittee on Industrial Collaboration and Regional Support
Apr. 5, 2016	Handling of Inventions by Employees in universities, etc. [Examination Committee for the Management of Risk in Cooperative Industrial-Academic Activities at Universities]
	Bioethics and Biosafety Commission
Dec. 12, 2016	Review of the guidelines upon the revision of the Act on the Protection of Personal Information (final report)
	Strategic Basic Research Working Group
July 15, 2016	Programs necessary for promotion of mathematics innovation [Mathematics Innovation Committee] Evaluation and assessment of the World Premier International Research Center (WPI) Initiative
	International Strategy Committee
Feb.14, 20174	The 8th Report of the International Strategy Committee – International development toward enhancement of science/technology and academic cooperation -
	Committee on Human Resources
Jan. 16, 2017	Encouraging Doctorate Holders to Play an Active Role in a Variety of Sectors
	Special Committee on Comprehensive STI Policy
Jan. 25, 2017	Summing up of the deliberation on follow-up, etc. of the implementation status of the 5th Science and Technology Basic Plan at the Comprehensive Policy Special Committee

Source: MEXT

The Science Council of Japan (SCJ), an organization that represents Japan's scientific community and has 210 members and about 2,000 associate members, is under the supervision of the prime minister.

SCJ's duties are to carry out deliberations of important matters regarding science and work for their realization, while coordinating scientific research to improve their efficiency (Figure 2-1-5).

Based on the "Future prospects of the Science Council of Japan" (decided by the expert meeting to think about new prospects of the Science Council of Japan in March 2015) the SCJ is working on (1) enhancement of its proposals to the government and society; (2) strengthening and utilization of the networks in science community; (3) strengthening of coordination and communication with actors outside of the community, and ;(4) enhancement of its function as an academy in the world.

In terms of proposals to the government and society, the SCJ announced one statement, 14 proposals and 4 reports in fiscal 2016 (there were no reports, recommendations, responses or requests). The council has set up various committees that are conducting deliberations toward publication of proposals, etc. (Table 2-1-6).

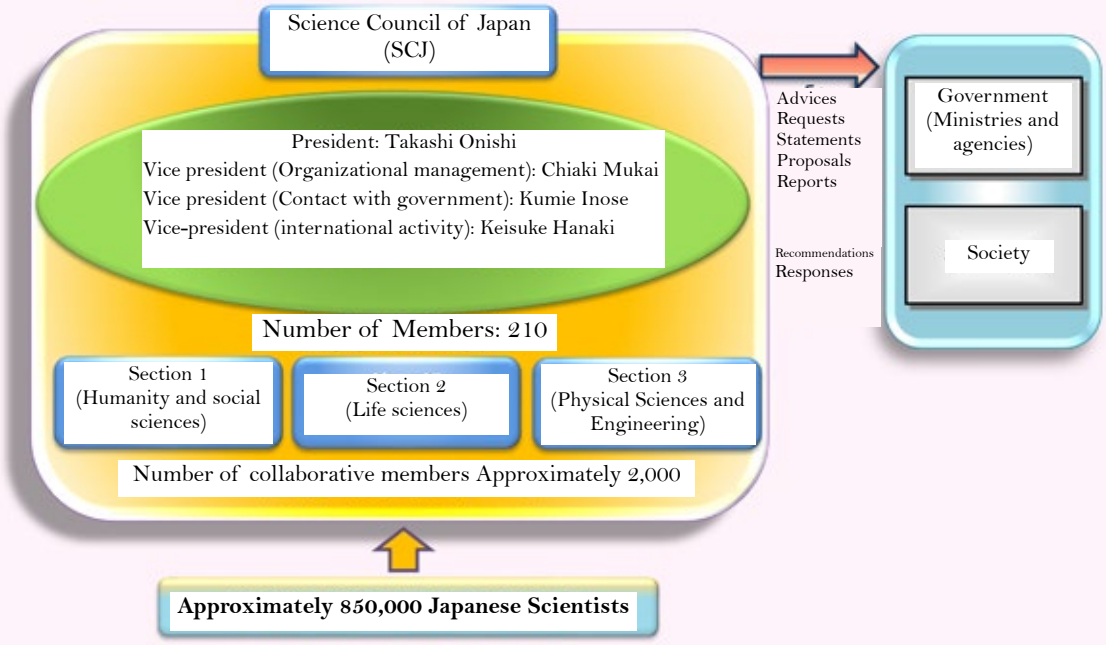
In order to discuss what relationship academia should have with security-related matters, the SCJ set up the Committee on National Security and Scientific Research in May 2016 and held 11 meetings and an academic forum. On these occasions, lively discussions were made on (1) the independence of the scientists' community, (2) academic freedom and study of national security; (3) civilian studies and studies on national security; (4) openness of research to the public; (5) self-discipline of the scientists' community; (6) the desired form of research funds, and other matters. Based on the discussions, the SCJ decided the Statement on Research for Military Security at the 243th session of the Executive Board of Science Council of Japan on March 24, 2017.

In order to clarify the current state of basic medical research and clinical application of genome editing technologies in Japan and deliberate their usefulness and ethical issues, the SCJ set up the Committee to Discuss Approaches to Genome Editing Technologies in the Medical Field in May 2016. The committee held six meetings during the fiscal year.

The SCI is also working to strengthen and utilize networks in the scientists' community including cooperative academic societies (2,014 societies as of the end of fiscal 2016) while at the same time promoting cooperation and communication with parties outside of the community through various symposiums, science cafes, press conferences and other opportunities. In response to the Kumamoto Earthquake in 2016, for example, the SCJ in cooperation with relevant academic societies held emergency joint press conferences and briefing sessions.

In addition, the council represents Japan in 45 international academic societies including the International Council for Science (ICSU) in an effort to strengthen its function as an academy in the world. In April 2016, the SCJ took the chair looking toward the Ise-Shima Summit, compiled the G-Science Academies' Joint Statements jointly with academies of the member countries and submitted the statement to the Prime Minister.

■ Figure 2-1-5 / Organizational structure of the Science Council of Japan (SCJ)



Note: As of April 1, 2017
Source: Cabinet Office

■ Table 2-1-6 / Major recommendations by the Science Council of Japan (SCJ) (FY 2016)

Matters related to this white paper	Recommendations	Date of issue	Gist
Responses to global challenges and contribution to the global development	Toward realization of sustainable global society – promotion of Future Earth (proposal)	April 5, 2016	In order to promote Future Earth that is an international program to seek preservation of the global environment and the realization of sustainable global society the SCJ proposed building research, education and implementation systems for promotion of interdisciplinary studies and transdisciplinary cooperation, building of a system to exercise global leadership of FE and specific research tasks for international efforts especially in Asia.
Promotion of Open Science Reform and enhancement for promotion of scientific research	Proposal on approaches to Open Science contributing to Open Innovation	July 6, 2016	The SCJ heard opinions of relevant communities and government offices on the goals for "opening of research data to public" and "data sharing" and proposed development of a research data base enabling interdisciplinary management and opening of research data, establishment of data strategies in research communities and career planning for data producers and distributors.
Reform and strengthening toward promotion of scientific research	The 23th Master Plan for large-scale academic research programs (proposal)	February 8, 2017	With the aim of covering all large-scale research programs necessary for each academic field with a general and systematic view of academic studies while providing guiding principles for planning of such projects, the SCJ compiled large-scale research programs necessary for each academic field and formulated the Master Plan 2017 by selecting priority large-scale programs among them.

2 Science and Technology Budgets

The science and technology-related portion of Japan's initial budget for FY2016 is 3.4766 trillion yen, of which 2.8921 trillion yen is allocated for the general account budget and 584.5 billion yen is allocated for the special account budget. The funds for promoting science and technology, which represent the principal science and technology-related expenditures in the general account, are 1.2930 trillion yen. The science and technology-related portion of Japan's supplementary budget in FY 2016 was 393.8 billion yen, of

which 393.3billion yen was allocated for the general account budget (including 224.1 billion yen in funds for promoting science and technology), and 0.4 billion yen was allocated for the special account budget. Changes in the science and technology budget (initial budget) are shown in Table 2-1-7, and science and technology budgets are broken down by ministry in Table 2-1-8.

■ Table 2-1-7 / Changes in science and technology budgets

(Unit: 100 million yen)

Item \ FY		FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
	Science and technology promotion expenditures (A)	13,352	13,135	13,007	13,372	12,857	12,930
	As a % of the previous FY	98.0	98.4	99.0	102.8	96.2	100.6
	Other research-related budget (B)	17,213	16,728	16,571	17,102	16,610	15,991
	As a % of the previous FY	102.6	97.2	99.1	103.2	97.1	96.3
Science and technology budget included in the general account budget (C) = (A) + (B)		30,565	29,863	29,578	30,474	29,467	28,921
As a % of the previous FY		100.5	97.7	99.0	103.0	96.7	98.1
Science and technology budget included in the special account budget (D)		6,083	7,063	6,520	6,039	5,309	5,845
As a % of the previous FY		114.6	116.1	92.3	92.6	87.9	110.1
Science and technology budget (E) = (C) + (D)		36,648	36,927	36,098	36,513	34,776	34,766
As a % of the previous FY		102.6	100.8	97.8	101.1	95.2	100.0
General account budget of Japan (F)		924,116	903,339	926,115	958,823	963,420	967,218
As a % of the previous FY		111.3	97.8	102.5	103.5	100.5	100.4
General expenditure budget of Japan (G)		540,780	517,957	539,774	564,697	573,555	578,286
As a % of the previous FY		114.4	95.8	104.2	104.6	101.6	100.8

Note: 1. Initial budget amounts are shown.
2. Because of rounding, the cumulative amounts in some columns may not equal the totals.
Source: Adapted by MEXT based on data provided by the Cabinet Office and MOF

Table 2-1-8 / Science and technology budgets of each ministry/office/agency

(Unit: 100 million yen)

Item / Ministry/Office/Agency	FY2015 (Initial budget)				FY2015 (Supplementary budget)				FY2016 (Initial budget)				FY2016 (Supplementary budget)			
	General account	Science and technology promotion expenditures	Special account	Total	General account	Science and technology promotion expenditures	Special account	Total	General account	Science and technology promotion expenditures	Special account	Total	General account	Science and technology promotion expenditures	Special account	Total
National Diet	11	11	-	11	-	-	-	-	11	11	-	11	-	-	-	-
Cabinet Secretariat	614	-	-	614	100	-	-	100	619	0	-	619	175	-	-	175
Reconstruction Agency	-	-	240	240	-	-	-	-	-	-	232	232	-	-	1	1
Cabinet Office	708	689	-	708	76	25	-	76	853	689	-	853	646	598	-	646
National Police Agency (NPA)	21	21	-	21	-	-	-	-	21	21	-	21	-	-	-	-
MIC	459	406	-	459	26	23	-	26	473	404	-	473	83	37	-	83
Ministry of Justice (MOJ)	59	-	-	59	0	-	-	0	18	-	-	18	6	-	-	6
Ministry of Foreign Affairs (MOFA)	108	-	-	108	2	-	-	2	113	-	-	113	-	-	-	-
Ministry of Finance (MOF)	13	10	-	13	-	-	-	-	13	10	-	13	-	-	-	-
Ministry of Education, Culture, Sports and Science (MEXT)	21,629	8,530	1,172	22,801	397	359	-	397	21,368	8,635	1,095	22,463	1,397	863	-	1,397
Ministry of Health, Labour and Welfare (MHLW)	1,027	751	28	1,055	10	2	-	10	1,039	677	29	1,068	104	65	-	104
Ministry of Agriculture, Forestry and Fisheries (MAFF)	970	922	-	970	100	100	-	100	1,022	984	-	1,022	128	127	-	128
Ministry of Economy, Trade and Industry (METI)	1,287	997	3,530	4,817	300	279	542	842	1,313	979	4,053	5,366	1,337	504	3	1,340
Ministry of Land, Infrastructure, Transport and Tourism (MLIT)	732	275	4	736	5	-	-	5	686	272	5	691	44	34	-	44
Ministry of the Environment (MOE)	314	246	335	649	15	15	16	31	314	248	430	744	14	13	-	14
Ministry of Defense (MOD)	1,517	-	-	1,517	-	-	-	-	1,066	-	-	1,066	-	-	-	-
Total	30,474	13,372	6,039	36,513	1,406	789	852	2,258	28,929	12,930	5,845	34,766	3,933	2,241	4	3,938

Note: Because of rounding, the cumulative amounts in some columns may not equal the totals.
Source: Adopted by MEXT based on data from the Cabinet Office