Part 2 describes the measures taken to promote S&T (science and technology) in FY 2012 in accordance with the 4th Science and Technology Basic Plan (Cabinet decision, August, 2011) (hereinafter referred to as "Basic Plan").

Chapter 1 Development of Science and Technology Policy

Section 1 The S&T Basic Plan

The S&T policy in Japan is comprehensively promoted in a planned manner, pursuant to the Basic Plan, which is determined every five years and is based on the "Science and Technology Basic Law" (Law No. 130, effective in 1995).

The world is now facing various issues on a global-scale, including threats to the environment, energy resources, food security, and the spread of infectious diseases. The GEJE (Great East Japan Earthquake) is not only an unprecedented crisis in Japan, but also a global issue.

Each country needs to collaborate and cooperate in dealing with these global issues and Japan, as a developed country in science and technology, should take leadership to address these issues.

Under these circumstances, in the 4th Basic Plan, we have laid out five visions for the future of Japan in the form of major goals that Japan should aim for through the following S&T policies: 1) the "Recovery and reconstruction from the Great East Japan Earthquake," aimed at the strong reconstruction and revival of society after the GEJE, 2) the "Promotion of green innovation," focusing on the environment and energy, and 3) the "Promotion of life innovation," focusing on medical care, nursing care, and health. These policies are positioned to become the major pillars for the realization of growth and social development in Japan for years to come. The Basic Plan also determines the "Priority issues facing Japan," and efforts will be made to shift from the existing area-focused prioritization to a critical-issue-oriented prioritization. In addition, comprehensive development of the S&T innovation policy, including a system reform, is required to address these priority issues and these efforts will be promoted integrally. In addition, the basic plan proposes coping with critical issues and, as an "inseparable" matter, also proposes to promote "enhancing basic research and human resource development," including 1) drastic enhancements of basic research based on a long-term perspective, 2) the development of human resources, such as young researchers leading future S&T research, and 3) the formation of an international-standard research environment and foundation. Furthermore, it is recognized that the "development of policy created together with society" is important, and consequently the Basic Plan articulates that there should be promotions of public participation in these policies, S&T communication activities, and the reformation and re-establishment of a promotion system for R&D. With regard to an increase in investment in R&D, the Basic Plan clearly indicates that it is aiming for a ratio of the total amount of public and private investment in R&D against GDP as being 4% or higher, and the ratio of the governmental R&D expenditure against GDP as being 1%, and the total amount of the governmental R&D expenditure during the term of the 4th Basic Plan as being around 25 trillion yen. (This is a provisional calculation that assumes the ratio of the governmental R&D expenditure against GDP is 1% and that the average growth rate of nominal GDP is 2.8% during the term of the 4th Basic Plan.) (Figure 2-1-1)

The following chart summarizes subsequent progress in accordance with the 4th Basic Plan.

Figure 2-1-1 / The 4th Science and Technology Basic Plan (2011 to 2015) Overview

I. Basic concept

1. The unprecedented crisis in Japan and changes in the world

Considering the Great East Japan Earthquake as a global issue, the government must work to deal with the earthquake and tsunami disaster by fully mobilizing every possible policy measure. Furthermore, Japan and the world have been in the midst of upheaval politically, socially and economically, and the expected roles of science and technology (S&T) are also changing considerably in those circumstances.

<The unprecedented crisis in Japan>
- Direct and indirect damage caused by the Great East Japan Earthquake, including the Fukushima Daiichi Nuclear Power Station accident
- An aging and decreasing population as well as a declining birthrate, plus a loss of social and economic vitality
- Long, downward trend of industrial competitiveness

<Changes in the world>
- Surfacing of global-scale problems, and heating up of competition for natural resources, energy and food, etc.
- Economic rise of emerging nations, and the advance of economic globalization
- Changing innovation systems, and the evolution of brain circulation

2. Positioning of the Basic Plan

The 4th Basic Plan is positioned as a basic policy for systematically and comprehensively promoting Japan's S&T policies, as a national strategy for the next five years, while giving greater depth and concrete form to the New Growth Strategy from a wide range of viewpoints and seeking greater coordination with other important policies.

3. Achievements and issues from the 3rd Basic Plan

There have been numerous successes since the 1st Basic Plan, such as an increase in research and development (R&D) investment and S&T system reforms. On the other hand, a number of issues have also surfaced.
- Individual achievements have fallen short of attaining social challenges
- Decrease in share of scientific papers of Japan, and remaining low in international ranking of the frequency of scientific paper citations.
- Slack government investment growth in recent years notwithstanding its upward trend
- Decrease in posts for young researchers in university. Obstacles to maintenance and management of facilities
- S&T has not always been fully understood and supported by the public.

4. Principles for the 4th Basic Plan

(1) Target picture of Japan
- (i) A nation achieving sustainable growth and societal development into the future, while accomplishing reconstruction and rebirth from the disaster.
- (ii) A nation realizing a safe, full and high-quality life for citizens
- (iii) A nation leading in the resolution of global problems such as large-scale natural disasters.
- (iv) A nation maintaining S&T which forms the basis of its existence
- (v) A nation continuing to create intellectual property and nurturing a culture of S&T

(2) Basic principles for future S&T policies
- (i) Integrated promotion of "science, technology and innovation (STI) policies"
- (ii) Greater priority to "roles of human resources and their supporting organizations"
- (iii) Implementation of the "STI policy created together with society"

II. Realization of sustainable growth and societal development into the future

1. Basic principle

STI will be strategically promoted aiming at reconstruction and revival from the disaster and realizing sustainable growth and societal development into the future.

2. Reconstruction and revival from the disaster
- i) Rebuilding and revival of industries in affected areas.
- ii) Restoration and renewal of social infrastructure.
- iii) Realization of safe living environments in affected areas.

3. Promoting Green Innovation
- i) Realization of a stable energy supply and lower-carbon energy sources usage
- ii) Improvement of energy use in efficiency and smartness
- iii) Development of lower-carbon technologies for social infrastructure

4. Promoting Life Innovation
- i) Development of revolutionary disease prevention methods
- ii) Development of new early diagnosis methods
- iii) Realization of safe and highly effective medical treatment
- iv) Improvement of Quality of life (QOL) for the sick, elderly and disabled

5. System reforms directed at promoting STI

(1) Enhancement of the strategic systems for promotion STI
- (i) Establishment of "STI Strategy Councils (tentative name)"
- (ii) Enhancement of knowledge networks among industrial sector, academic sector and government
- (iii) Creation of new places to promote collaborations among industrial sector, academic sector and government (Formation of centers of open innovation, etc.)

(2) Building new systems for STI
- (i) Improvement of circumstances for strengthening of supports of commercialization
- (ii) Utilization of regulations and institutions to promote innovations
- (iii) Building of regional innovation systems
- (iv) Promotion of intellectual property strategies and international standardization strategies

III. Key challenges to the priority issues facing Japan

1. Basic principle

Priority issues to be addressed as a nation will be set, and the promoting measures aimed at achieving these issues will be focused on

2. Promoting measures for achieving the priority issues
1) Realization of a safe, affluent and high-quality life
2) Enhancement of industrial competitiveness of Japan
3) Contribution to the resolution of global problems
4) Promoting fundamental R&D of the nation's existence
5) Enrichment and enhancement of common bases for S&T

3. System reforms directed at achieving the priority issues

(Promoting activities based on the promotion measures listed in II.5)

4. Strategic development of international activities

1) Promotion of R&D aimed at resolving common issues across Asia
("East Asian Science and Innovation Area (e-ASIA) Initiative.", etc.)

2) New developments in S&T diplomacy
- (i) Development of international activities capitalizing on Japan's strengths
- (ii) Promotion of international activities for advanced S&T
- (iii) Promotion of coordination and cooperation with developing countries for global-scale issues
- (iv) Reinforcement of foundations for developing international S&T activities

IV. Enhancing basic research and human resource development

1. Basic principle

In addition to addressing the priority issues, initiatives also need to be enhanced for promoting basic research and human resource development

2. Drastic enhancement of basic research
- i) Strengthening creative and diverse basic research
  (Further expansion of Grants-in-Aid for Scientific Research, etc.)
- ii) Enhancement of world-class basic research
  (Formation of research-focused university groups, formation of world-class research centers, etc.)

3. Development of S&T-related human resources
- i) Development of human resources that can be actively involved in a variety of places
  - (i) Drastic enhancement of graduate school education
    (Creation of new places to dialogue between industrial sector and academic sector, establishment of the "Guideline for Promotion of Graduate School Education", etc.)
  - (ii) Support for doctoral course students, and diversification of career paths
  - (iii) Development and vocational training of engineers
- ii) Development of creative and outstanding researchers
  - (i) Creating fair and highly transparent evaluation systems
  - (ii) Improving the career paths of researchers
  - (iii) Promoting the active involvement of female researchers
- iii) Developing the new generation for future S&T activities

4. Formation of an international-standard research environment and foundations
- i) Improvement of R&D circumstances at universities and public research institutions
  - (i) Improving university facilities and equipment
  - (ii) Promoting development and shared use of advanced research facilities and equipment
- ii) Improving the intellectual infrastructure
- iii) Improving the research information infrastructure

V. Development of policy created together with society

1. Basic principle

In order to achieve "policy for society and the public", initiatives need to be developed for gaining public understanding, trust and support

2- Deepening relationship between society and STI
- i) Promotion of STI policy based on the viewpoints of ordinary citizens
  - (i) Encouraging public participation in policy planning and promotion
  - (ii) Addressing ethical, legal and social issues (ELSI)
  - (iii) Developing and securing human resources that link STI policy to society
- ii) Promotion of S&T communication activities

3. Promotion of effective STI policy
- i) Strengthening the policy planning and promotion function
  (establishment of the "STI Strategy Headquarters (tentative name)", etc.)
- ii) Enhancing the screening and allocation functions in the research funding programs
  - (i) Structural reform of research funds for the effective and efficient screening and allocation
  - (ii) Improvement and enrichment of the competitive fund systems
- iii) Enhancement of the R&D implementing system
  - (i) Reform of the R&D Corporations
    (Establishment of new system for national R&D institutions)
  - (ii) Improvements of systems for promoting research activities effectively
- iv) Establishing the PDCA (plan-do-check-act) cycle in STI policy
  - (i) Ensuring the effectiveness of the PDCA cycle
  - (ii) Improvement and expansion of R&D evaluation systems

4. Expansion of R&D investment

Increasing the combined public-sector and private-sector R&D investment to over 4% of GDP, increasing the governmental R&D investment to 1% of GDP which will bring the total amount of the governmental R&D investment to about 25 trillion yen

Source: Created by Cabinet Office

Section 2 Council for Science and Technology Policy

The Council for Science and Technology Policy (CSTP) is placed in the Cabinet Office as a "council for key policy," and it vigorously promotes Japan's S&T policies under the leadership of the Prime Minister. The Council is comprised of the Prime Minister as the chairperson, related Cabinet members, expert members, etc., and has the twin mission of overseeing the nation's S&T efforts and offering comprehensive and fundamental policy plans and overall adjustment. (Table 2-1-2)

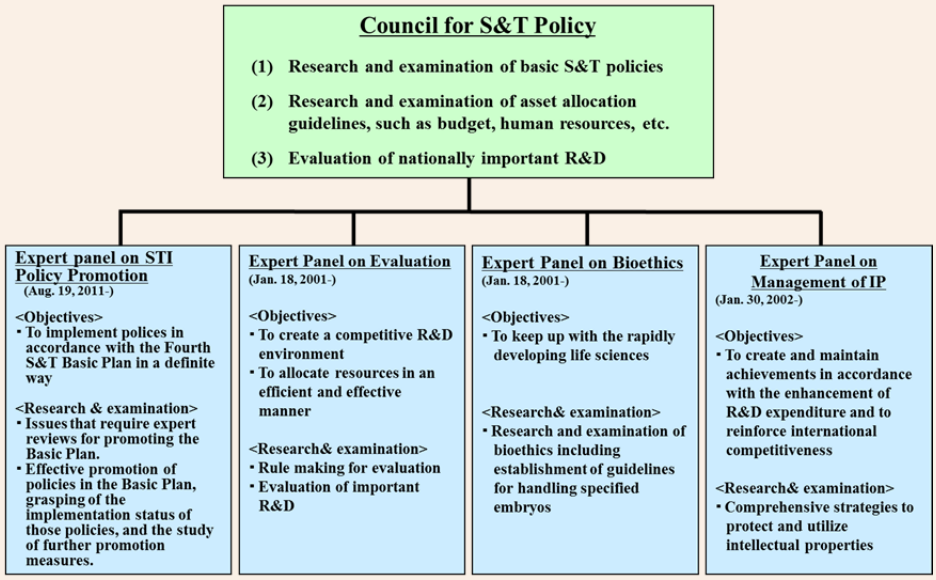
As of March 2013, there are four expert panels for examining the technical aspects of key issues under the CSTP, including the Expert Panel on STI Policy Promotion. (Figure 2-1-3)

Table 2-1-2 / List of Diet Members in the CSTP

Cabinet members	Shinzo Abe	Prime Minister
	Yoshihide Suga	Chief Cabinet Secretary
	Ichita Yamamoto	Minister of State for Science and Technology Policy, Minister of Education, Culture, Sports, Science and Technology
	Yoshitaka Shindo	Minister of Internal Affairs and Communications
	Taro Aso	Minister of Finance
	Hakubun Shimomura	Minister of Education, Culture, Sports, Science and Technology
	Toshimitsu Motegi	Minister of Economy, Trade and Industry
Experts	Yuko Harayama (full-time)	Former Professor of the Graduate School of Engineering at Tohoku University
	Kazuo Kyuma (full-time)	Former Senior Corporate Adviser, Mitsubishi Electric Corporation
	Reiko Aoki (part-time)	Professor at the Institute of Economic Research at Hitotsubashi University
	Takeshi Uchiyamada (part-time)	Vice Chairman of the Board, Toyota Motor Corporation
	Ryoji Chubachi (part-time)	Vice Chairman of Sony Corp.
	Kazuhito Hashimoto (part-time)	Professor at the Graduate School of Engineering, The University of Tokyo Professor at the Research Center for Advanced Science and Technology, The University of Tokyo
	Toshio Hirano (part-time)	President of Osaka University
	Takashi Onishi	President of the Science Council of Japan *affiliated institution

Source: Created by Cabinet Office

Figure 2-1-3 / Organization Chart of the Council for Science and Technology Policy (CSTP)



Source: Created by Cabinet Office

1 Major Projects of the Council for S&T Policy, FY 2012

The CSTP, as the controlling entity of STI policies, has conducted reviews, including hearings on STI-related issues by Shinya Yamanaka, MD, PhD, a professor at Kyoto University who won a Nobel Prize. In the CSTP 107th session, the Prime Minister provided instructions in the following three areas: 1) Formulation of the "Comprehensive Strategy on Science and Technology Innovation (Provisional)," which includes the long-term vision showing the overall picture of science and technology innovation policies, and short-term action programs, 2) Consideration of policies to be included in the growth strategy, from the perspective of science and technology innovation, and 3) Consideration of measures to fundamentally reinforce the function of the CSTP as the controlling entity.

2 Strategic Priority Setting and Comprehensive Promotion in S&T Policy

The expert panel on STI policy promotion under the CSTP created "Action Plans for Science and Technology Priority Measures in 2013" (hereinafter referred to as the "Action Plan") to prioritize the government's S&T budget. The Minister of State for Science and Technology Policy and the expert CSTP members identified measures included in the Action Plan and the "priority measure package."

(1) Guidelines for Resource Allocation, including the S&T Budget (Decided on July 30, 2012, supplementary recommendation)

The CSTP adopted the "Guidelines for Resource Allocation, including the S&T Budget," which clarifies guidelines for resource allocation, including the budget for FY 2013; it also provided supplementary recommendations to the Prime Minister and related Cabinet ministers. In order to cope with critical issues facing Japan, this guideline includes 1) giving the highest priority on resource allocation to measures in the Action Plan, 2) giving the priority on resource allocation to the priority

measure package, and 3) enhancing basic research and human-resource development to serve as the basis of innovation.

(2) Action Plans for Science and Technology Priority Measures 2013 (July 19, 2012)

The expert panel on STI policy promotion under the CSTP summarized the Action Plan for the 2013 S&T budget preparation in July 2012. Prior to budget requests, the CSTP prioritizes the government's whole S&T budget by positioning the Action Plan as one of the most important policy-induced tools and by specifying the direction of the measures that the CTSP considers important for addressing priority issues facing Japan.

In the Action Plan, the "target of a future society" was set in each of the following three "priority areas." The necessary "policy theme" and the "priority activities" that should be most prioritized to achieve that theme were also specified.

- Reconstruction and revival after the disaster and the enhancement of safety measures
- Green innovation
- Life innovation

In September 2012, the Minister of State for Science and Technology Policy and the expert CSTP members applied guidelines to select excellent measures, and identified measures proposed from the ministries and agencies that follow the purpose of the Action Plan as the Action Plan measures that should be the most prioritized in the 2013 S&T budget.

(3) Identification of the 2013 S&T Budget-Priority Measure Package (October, 2012)

Other than the Action Plan measures, the Minister of State for Science and Technology Policy and expert CSTP members identified priority measure packages for achieving the important themes facing Japan, including the realization of a safe, affluent and high-quality lifestyle, the enhancement of Japan's industrial competitiveness, and the preservation of the nation's existence. It also prioritized the 2013 S&T budget.

Regarding the identification of the priority measure package, ministries and agencies proposed a series of activities, from research to the achievement of themes, from which the Minister of State for Science and Technology Policy and expert CSTP members evaluated its purpose and goals, its approach to achievement, its implementation system, and its identified priority measures. In concrete terms, nine packages were identified, including the "ICT International Cooperation Promotion Research and Development Program" (MIC); the "Infrastructure Development for Creation of New Industry and Innovation through Big Data (MIC (Collaboration: MEXT, METI)); the "Development of Technology for Rare Elements Recycling and the Alternative Materials Creation toward Solution for Resources Problems" (MEXT (Collaboration: METI, MOE)); the "Program for Promoting the Research and Development of Basic Technology for Marine Resources Development (MLIT); and, the "Realization of a Safe and Secure Environment through the Establishment of a Risk Management System Considering Children's Vulnerability" (MOE (Collaboration: MEXT, MHLW)).

(4) Toward Formulation of the S&T Budget (January 24, 2013. The Minister of State for Science and Technology Policy and expert CSTP members)

Toward formulation of an S&T budget that appropriately reflects the resource allocation policies of the S&T budget, the Minister of State for Science and Technology Policy and expert CSTP members summarized and reported "Toward Formulation of the Science and Technology Budget for FY 2013," stating important points and points of attention for budget preparation.

(5) Regarding Views on S&T Activities in Independent Administrative Agencies and National University Corporations (FY 2010)

Independent Administrative Agencies and national university corporations[1] are engaged in activities related to S&T and receive operating expense subsidies, but there are limits to understanding what the uses, affairs and allocations were at the time of budget formation. Thus, the CSTP investigated various indicators representing corporate output as related to resource investment status and the activities of these corporations; it reported the investigation results in July 2012.

(6) Execution of R&D Evaluation

1) Preliminary Evaluation on Large-Scale R&D (Decided on March 28, 2013, notification)

For large-scale R&D which will be implemented from 2013, and for the national expenditure, which will be more than 30 billion yen in total, a preliminary evaluation was conducted as a R&D project of national importance, and the Minister of Economy, Trade and Industry having jurisdiction over the project was notified of the evaluation results. This R&D includes the development of fundamental technology for creating next-generation drugs for personalized medicine and the technology development for innovative new structural materials.

2) Follow-up of Preliminary Evaluation on Large-Scale R&D (September, 2012)

Regarding the METI report on the "Demonstration of CO2-reduction technology to address climate-change issues (provisional)," the CSTP conducted a preliminary evaluation in 2008, and its expert panel on evaluation verified the status of responses to the evaluation results and notified the department of METI, having jurisdiction over the project, of improvements, etc.

3) Post Evaluation of Large-Scale R&D (Decided on June 20, 2012, notification)

Regarding the "Development and shared use of X-RAY free electron lasers (XFEL)" and the "Japanese Antarctic Research Programs" (MEXT), a preliminary evaluation was conducted by the CSTP, and research of the preliminary evaluated parts was completed in 2010; the CSTP conducted a post-evaluation and notified the department of MEXT having jurisdiction over the project of the evaluation results.

4) Evaluation of R&D as specified by the CSTP (Decided on August 31, 2012, notification)

Regarding the "Tohoku Medical Megabank Project" (MEXT), of which the CSTP confirmed and

1 Including the Inter-University Research Institute Corporation and the Institute of National Colleges of Technology, Independent Administrative Agency.

specified the necessity of evaluation, the CSTP conducted an evaluation and notified the department of MEXT having jurisdiction over the project of the evaluation results.

5) Revision of National Guideline on the Method of Evaluation for Government R&D (Decided on December 6, 2012, supplementary recommendation)

With the viewpoint of responding to the integrated development of STI policies based on the Basic Plan and the establishment of the Plan-Do-Check-Action (PDCA) cycle, the CSTP considered revising the "National Guideline on the Method of Evaluation for Government R&D" as decided by the Prime Minister. (Hereinafter referred to as "National Guidelines") This was done in order to further improve and enhance the R&D evaluation system and to offer recommendations to the Prime Minister. The Prime Minister responded to this decided to revise the National Guidelines and notified the relevant ministries.

(7) Pioneering Projects for the Acceleration of Social Return

Under the leadership of the CSTP, projects are implemented in collaboration with multiple ministries and public-private interests in order to accelerate the dissemination of research outcomes to society and to improve upon the return. This was done through feasibility experiments while simultaneously conducting interdisciplinary R&D, as well as system reform. More specifically, the following six projects were executed in FY 2008 and completed by the end of FY 2012.

- Realizing regenerative medicine for lost human physiological functions
- Establishment of an information and telecommunication system that is useful at the time of disaster and that can provide detailed disaster information to every citizen
- Realization of a safe and efficient road transportation system using information and telecommunications technology
- Realization of advanced home care and home nursing for the elderly, the ailing, and individuals with disabilities
- Comprehensive utilization of biomass resources that contribute to solving environmental and energy problems
- Realization of voice-communication technologies to overcome language barriers

The "Realization of voice communication technology which overcomes language barriers" was terminated at the end of FY 2011, because its initial goals were near completion.

3 Major Points to Be Discussed in Expert Panels

(1) Expert Panel on STI Policy Promotion

Aiming at the steady promotion of policies in compliance with the 4th Basic Plan, the expert panel on STI-policy promotion investigates and reviews issues related to the promotion of basic S&T policy, including the securing of an efficient PDCA cycle regarding important matters such as 1) "Reconstruction and revival from the earthquake," 2) "Green innovation," 3) "Life innovation," and 4) "Basic research and human resources development" in the 4th Basic Plan.

In July 2012, in order to formulate the S&T budget in 2013, the "2013 Action Plan" and "Priority issues of 2013 Priority Measures Package and approach" were summarized after having been reviewed in

the "Science, Technology and Innovation Strategy Council[1] (provisional)," the "Task Force for Priority Issue Review[2]" (provisional), and the "Task Force for Science and Technology Diplomatic Strategy[3]" (provisional). In addition, a report on "Systematic Reforms for the Promotion of Science and Technology Innovations and Reformation of the Environment to Create Innovation (provisional)" was summarized as a system reformation and was used to promote STI, after having been reviewed by the expert panel on STI Policy Promotion; the Science, Technology and Innovation Strategy Council (provisional); and the Task Force for Basic Research and Human Resource Development[4] (provisional).

(2) Expert Panel on Evaluation

The Expert Panel on Evaluation summarized a preliminary evaluation plan of large-scale R&D to be implemented in 2013; a post-evaluation plan of R&D, including a preliminary evaluation that was conducted and whose evaluated parts were completed in 2010; and an R&D evaluation plan whose necessity was confirmed by the CSTP. The panel also conducted a follow-up of large-scale R&D, including a preliminary evaluation that was implemented in 2008. Finally, the panel studied revising the National Guidelines and summarized a revision plan.

(3) Expert panel on Bioethics

In response to recent life-science developments, including research on the reproduction of human embryos using ES cells[5] and iPS cells[6], new issues on bioethics are being investigated and reviewed.

Section 3 Administrative Structure and Budget for S&T

1 Administrative Structure for S&T

In the national administrative structure, the Council for Science and Technology Policy (CSTP) is placed in the Cabinet Office, the operations of which include projecting plans and making overall adjustments regarding important governmental policies, with the Council providing a variety of advice on comprehensive strategies and resource allocation policies, including budget and human resources concerning the promotion of S&T. Based on its advice, the government offices concerned conduct research activities, promote research in various research programs, and develop an R&D environment at national experimental research institutions, independent administrative agencies, universities, and so on.

The Ministry of Education, Culture, Sports, Science and Technology (MEXT) not only adjusts efforts related to the S&T of administrative institutions concerned while creating specific R&D plans for different fields and allocating the strategic funds for the promotion of S&T, but also conducts R&D in

1 On March 21, 2012, in the Expert panel on STI policy promotion, the "Science, Technology and Innovation Strategy Council (provisional)" for promoting Chapter 2 of the Basic Plan was set up, including the "Reconstruction and Reconstruction Strategy Council (provisional)," "the Green Innovation Strategy Council (provisional)," and "the Life Innovation Strategy Council (provisional)."

2 On March 21, 2012, in the Expert panel on STI policy promotion, the "Task Force for Priority Issue Review (provisional)" was temporarily set up as a place to review the specification and prioritization of issues regarding Chapter 3 of the Basic Plan. Dissolved in July 2012.

3 On March 21, 2012, in the Expert panel on STI policy promotion, the "Task Force for Science and Technology Diplomatic Strategy (provisional)" was temporarily set up to conduct reviews for addressing issues on international relations which are stated in Chapter 2 and Chapter 3 of the Basic Plan.

4 On March 21, 2012, in the Expert panel on STI policy promotion, the "Task Force for Basic Research and Human Resource Development (provisional)" was set up to promote Chapter 4 of the Basic Plan.

5 Embryonic stem cells. Pluripotent and self-renewal cells that are derived from an early-stage embryo.

6 Induced pluripotent stem cells. Pluripotent and self-renewal cells that are derived by inducing specific genes in somatic cells such as skin cells.

cutting-edge and important S&T fields and comprehensively promotes administrative tasks such as the enhancement of creative and basic research activities. The Council for Science and Technology (CST) exists within MEXT to investigate and examine important matters related to the overall promotion of S&T and other topics in general, both upon request for advice from the Minister, and by providing its own opinions to the Minister.

In particular, regarding the response to the GEJE, the "Promotion of Research and Observation Program for Earthquake and Volcanic Eruption Prediction," which is valid through 2013, was comprehensively examined and discussions for revising were conducted; these discussions were based on the 2011 Tohoku Region Pacific Coast Earthquake (hereinafter referred to as Tohoku Region Pacific Coast Earthquake), and the "Revision of Program for Research and Observation for Earthquake and Volcanic Eruption Prediction" (Proposal) that was summarized in the 40th Council for Science and Technology held on November 28, 2012.

Based on issues that have been brought to the surface by the GEJE, the CST conducted deliberations for system reform in regard to applying the task-achieving type of R&D to STI policy; CST also summarized the "Ideal Future Policy for Science and Technology based on the Great East Japan Earthquake (provisional)" (proposal) in the 41st Council for Science and Technology on January 17, 2013.

The CST's proposals and major reports are as indicated in Table 2-1-4.

Table 2-1-4 / Proposals and Major Reports from the Council for Science and Technology (2012)

Date	Proposals and Major Reports
	General Meeting
November 28, 2012	Revision of Program for Research and Observation for Earthquake and Volcanic Eruption Prediction (Proposal)
January 17, 2013	Ideal Future Policy for Science and Technology based on the Great East Japan Earthquake (provisional)
	Subdivision on R&D Planning and Evaluation
August 23, 2012	R&D Measures
	Subdivision on Science, Council for Science and Technology
July 25, 2012	Promotion of the Humanities and Social Sciences Addressing a Risk Society and a Matured Intellectual Society (Report) Subdivision on Science, Council for Science and Technology
July 25, 2012	Appropriate use of Grants-in-Aid for the Scientific Research Program (KAKENHI) (Deliberation Summary part 1) [Subdivision on Grants-in-Aid for Research]
	Ocean Resources Development Subcommittee
January 28, 2013	Strategy for developing ocean frontiers for the sustainable use of marine resources - Study for Next Basic Plan for Ocean Policy-
	Subdivision on Engineer
June 27, 2012	Revision of Professional Engineer Test

Source: Created by MEXT

In addition, the Science Council of Japan, comprised of 210 members and about 2,000 associate members, is placed under the authority of the Prime Minister as a representative institution established for the following purposes: 1) networking scientists in Japan, 2) engaging in policy suggestions regarding

the government and society, 3) examining important matters, 4) constructing a network among scientists, 5) facilitating collaboration with international academic institutions, and 6) spreading and enhancing public awareness regarding science literacy (Figure 2-1-5, Table 2-1-6).

In particular, as for the response to the GEJE, the committee of scientific investigation on the GEJE, upon the request of deliberations from MEXT, engaged in studying the trends of scientific investigations and summarized various proposals. In April, 2012, the SCJ summarized the "Recommendations from the Science Council of Japan – With Confident Steps towards Reconstruction," as based on proposals from the Sub-Committee on Building Disaster-Resilient Communities, the Sub-Committee on the Promotion of Industry and Employment, and the Sub-Committee on Counter-measures for Radiation under the Committee on Supporting Reconstruction after the Great East Japan Earthquake; the summary was then delivered to the Prime Minister. After that, the Sub-Committee on Building Resilience to Disasters, the Sub-Committee on Fukushima Restoration Support, and the Sub-Committee on the Study of Energy Supply Issues were set up and deliberations have since taken place.

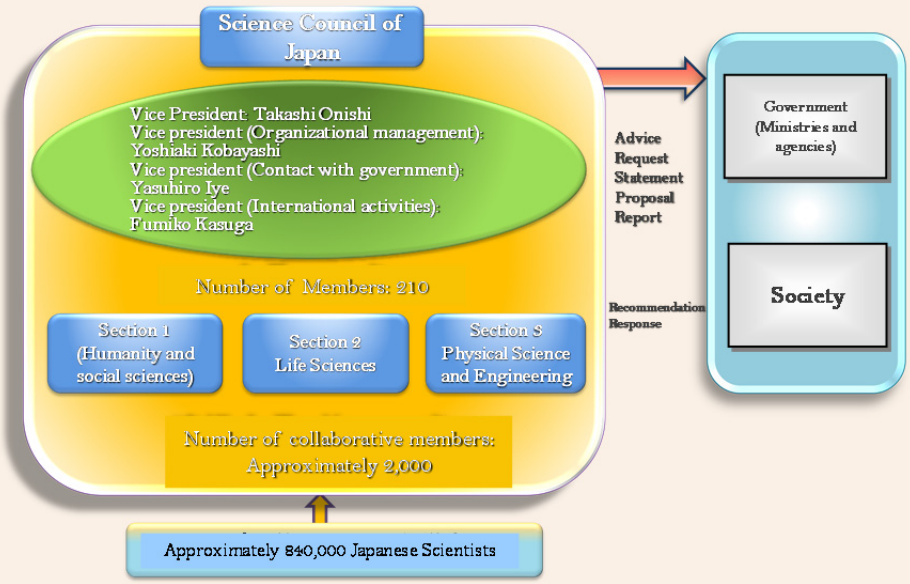
For the purpose of eliminating the harmful effects of the vertically-divided administration on policies related to nuclear energy that were revealed due to the Accident at the Fukushima Daiichi Nuclear Power Station, the functions related to the promotion and regulation of nuclear-energy use were separated, and the Nuclear Regulation Authority and its secretariat, the Nuclear Regulatory Agency were established in September 2012. They independently exercise their authority regarding tasks related to nuclear safety regulations, based on their own expertise, and from a fair and neutral standpoint, regarding tasks related to nuclear safety regulations. Accordingly, the administrations relating to nuclear safety regulations and countermeasures against nuclear disasters (including operation of the System for Prediction of Environmental Emergency Dose Information (SPEEDI)), which had been previously governed by the Nuclear Safety Commission, MEXT, the Nuclear and Industrial Safety Agency and other organizations, were all integrated into the Nuclear Regulation Authority. In addition, in April 2013, the nonproliferation safeguards, radiation monitoring and regulations on the use of radioisotopes, all of which had been the responsibility of MEXT, were also transferred to the Nuclear Regulation Authority.

The new administration takes countermeasures against nuclear disasters by appropriately utilizing technology. For example, in response to the fact that SPEEDI was not used as planned due to a lack of information on the release source of radioactive substances in the Accident at the Fukushima Daiichi Nuclear Power Station, measures to utilize SPEEDI have been reviewed[1].

The unauthorized use of research funds and cases of forged research papers are often occurring, and while there is a debate over the ambiguity of the use of scientific research related to anthrax and avian flu viruses, issues are arising as to the status of social responsibility born by scientists, as a result of the GEJE and the nuclear power plant accident. Today, in consideration of these issues, the SCJ has revised "The Code of Conduct for Scientists," the SCJ statement in 2006.

1 The Nuclear Emergency Response Guidelines (October 31, 2012, decided by Nuclear Regulation Authority) states that, as a utilization of SPEEDI, "estimate the discharge of radioactive materials within the realm of possibility, for example, by using an inverse estimation method using air diffusion simulation based on the rate of radiation doses and other results obtained by emergency monitoring, such as SPEEDI."

Figure 2-1-5/Science Council of Japan (As of April 3, 2013)



Source: Created by Cabinet Office

Table 2-1-6/Major proposals and reports of SCJ (FY 2012)

Related items in the White Paper	Proposals, etc.	Issued date	Summary
Realization of reconstruction and recovery from the earthquake	Recommendations from the Science Council of Japan (SCJ) - with Confident Steps towards Reconstruction – (Recommendation)	April 9, 2012	In order to tackle various issues on reconstruction after the Great East Japan Earthquake, summarized recommendations were made regarding the building of disaster-resilient communities, the promotion of industry and employment, counter-measures for radiation, and the cross-regional processing of disaster wastes.
	Toward Making a New Step Forward in Radiation Measures (Recommendation)	April 9, 2012	Regarding radioactive substances released from the Fukushima Daiichi Nuclear Power Station accident which resulted from the Tsunami, in order to respond to the anxiety of the residents in the neighborhood of the Station and of Japanese people across the country, two proposals were made, including minimizing the effects of exposure and more precisely estimating the negative health effects due to exposure.
	Supporting Job-Seekers and Establishing "Reconstruction Non-profits" in Disaster-Stricken Areas (Recommendation)	April 9, 2012	A proposal was made identifying the ideal way of industrial promotion and employment support in disaster-stricken and other related areas by analyzing the employment and industry situation in the disaster-stricken areas as well as the needs for employment support and industrial promotion.
	Building Tsunami-proof Communities (Recommendation)	April 9, 2012	In relation to reconstruction after the Great East Japan Earthquake, proposals were made regarding the following areas: the creation of national land, community building, information infrastructure, medical care and nursing, the magnified vulnerability of children in disasters, preventive disaster mitigation measures, and the creation and succession of disaster records with a focus on the ideal ways of building disaster-resilient communities through reconstruction after the Great East Japan Earthquake.
	On Cross-regional Processing of Disaster Wastes (Recommendation)	April 9, 2012	Four measures were proposed on ways of processing the disaster wastes in Iwate and Miyagi Prefectures caused by the Great East Japan Earthquake.
	Emergency Recommendation regarding the Platform for Post-Earthquake Town Reconstruction Using the Power of "People" and "Community" (Recommendation)	December 5, 2012	Regarding "Town Reconstruction," an urgent proposal was made for the creation of a "Platform for Town Reconstruction" as a place to realize sustained maintenance of local communities and the joint responsibility of the government and its citizens in order to restore "people," "power of community," and "community connections" that utilize both self-help and mutual assistance.
	Emergency Recommendation regarding the Integration of Disaster Waste Measures, Multiple Protection Measures, and Biodiversity Measures Aimed at Early Realization and the Formation of Safe Coastal Areas that Cultivate Lives. (Recommendation)	December 5, 2012	An urgent proposal was made regarding the integration of measures, disaster waste disposal, use of resources, and measures against tsunami debris washed ashore, in order to show a path towards reconstruction in the disaster-affected areas by realizing the "restoration of safe coastal areas that can protect lives" promptly and in a visible manner.

Promoting measures for achieving critical issues	Disposal of High-Level Radioactive Waste (reply)	September 11, 2012	Upon receiving a request for review from the Japan Atomic Energy Commission (JAEC) in September 2012, appropriate ways to give explanations and information on the disposal of high-level radioactive waste to the public were reviewed, and six proposals including a restructuring of the policy framework focusing on 1) a fundamental review of policies, 2) identification of the limits of scientific and technical viability that ensure scientific autonomy, and 3) temporal storage and total volume control, were summarized and sent to the JAEC in September, 2012.
	The Modality of Japan's Space Policy and Space Science Promotion (Recommendation)	June 27, 2012	A proposal was made, from the standpoint of the science community, so that Japan's space-science research, which has achieved world-class, excellent results, can provide further leadership in the overall exploration of space by developing great vitality.
	Examination of Large City System and Economic Growth in Asia and Suggestion to Japan (Answer)	December 26, 2012	A summarized answer was reached, stating, "In order for large city areas to exert their potential and to contribute to economic growth, not by scattering money, but by selection and concentration, it is necessary to establish collaboration between local areas and appropriate role-sharing between the national and local governments."
	Towards Sharing Geology and Ground Information (Recommendation)	January 31, 2013	A proposal was made regarding the enactment of a comprehensive law relating to geology and ground information, and the establishment of a system to maintain, release, and share geology and ground information; the promotion of the utilization of such information for solving social themes; and the improvement of the nation's understanding, toward the promotion of sharing geology and ground information for establishing safe and secure society and development of a law for it.
	Toward Planning and Implementation of Japan's Economic Policy (Recommendation)	February 25, 2013	A review was made concerning the fostering of young researchers and technicians, the improvement of the research environment and the technological development environment, and an ideal education relating to fostering future generations. A proposal was also made regarding 1) ideal primary, secondary, and higher education; 2) the fostering of young researchers and technicians including postdoctoral fellows; and 3) measures to improve and enhance the research and technological development environment.
Fostering human resources in order to lead the world in S&T	The Modality of Japan's Research Evaluation System (Recommendation)	October 26, 2012	It is necessary to clarify the purposes of evaluations and measures for utilizing evaluation results. In this regard, it was proposed that the modality of the research-evaluation system should occur from the perspective of fostering and supporting researchers through evaluations, instead of focusing on only executing the accountability for the expenses of public funds for research activities.
	Measures to Foster the Next Generation of Scientists and Engineers (Recommendation)	February 25, 2013	A review was made concerning the fostering of young researchers and technicians, the improvement of the research environment and the technological development environment, and an ideal education relating to fostering future generations. A proposal was also made regarding 1) ideal primary, secondary, and higher education; 2) the fostering of young researchers and technicians including postdoctoral fellows; and 3) measures to improve and enhance the research and technological development environment.
Deepening the Relations between the Society and Science, Technology and Innovation	Code of Conduct for Scientists –Revision (Statement)	January 25, 2013	The unauthorized use of research funds and cases of forged research papers are often occurring, and while there is a debate over the ambiguity of the use of scientific research related to anthrax and avian flu viruses, issues are arising, spurred by the Great East Japan Earthquake and the nuclear power reactor accident, as to the status of social responsibility born by scientists. Taking these issues of today into consideration, "The Code of Conduct for Scientists" (SCJ statement in 2006) was revised.
	Review Report Regarding Issues on the Dual-use of Science and Technology (Report)	November 30, 2012	It was again verified that dual-use is an issue related to broad areas of science and technology, and that it may relate to acts of destruction. Also, since the manner of relating may differ depending on the research field, reports were made on rules for dual use that can include various fields.

Source: Created by Cabinet Office

2 S&T Budget

The S&T budget in Japan's initial budget for FY 2012 was 3.6926 trillion yen, of which 2.9863 trillion yen was appropriated for the general-account budget, and of which 706.3 billion yen was appropriated for the special-account budget. The funds for promoting S&T, which represent the principal expenditure in the general account, amounted to 1.3136 trillion yen. Also, the government allocated its supplementary budgets in FY 2013 based on the "Emergency Economic Package for the Japanese Economic Recovery" (cabinet decision in January 11, 2013). The S&T budget in the supplementary budgets is 1.0191 trillion yen, of which 1.0060 trillion yen was appropriated for the general account budget (Funds for promoting S&T: 439.7 billion yen), and 13.2 billion yen of which was appropriated for the special account budget. The trend in the S&T budget is shown in Table 2-1-7 and the S&T budget by ministry and agency is shown in Table 2-1-8.

In Japan, S&T are overseen by several relevant ministries. To promote S&T efficiently and effectively while also maintaining consistency nationwide, it is necessary to develop S&T-related policies in relevant ministries while also eliminating redundancies, and making appropriate adjustments, such as strengthening partnerships between offices, based on the guidelines set forth by the CSTP.

Table 2-1-7/ Trends in S&T Budget

(Unit: 100 million yen)

Item \ Fiscal year		FY 2008	FY 2009	FY 2010	FY 2011	FY 2012
	Funds for promoting S&T (A)	13,628	13,777	13,334	13,352	13,135
	Comparison to previous year's %	101.1	101.1	96.8	100.1	98.4
	Other research expenditures (B)	16,770	16,414	17,197	17,213	16,728
	Comparison to previous year's %	102.1	97.9	104.8	100.1	97.2
S&T budget in general account (C) = (A) + (B)		30,398	30,191	30,531	30,565	29,863
Comparison to previous year's %		101.6	99.3	101.1	100.1	97.7
Special account: S&T budget (D)		5,310	5,449	5,359	6,083	7,063
Comparison to previous year's %		102.0	102.6	98.3	113.5	116.1
S&T budget (E) = (C) + (D)		35,708	35,639	35,890	36,648	36,926
Comparison to previous year's %		101.7	99.8	100.7	102.1	100.8
National budget for general account (F)		830,613	885,480	922,992	924,116	903,339
Comparison to previous year's %		100.2	106.6	104.2	100.1	97.8
National general appropriation (G)		472,845	517,310	541,724	540,780	517,957
Comparison to previous year's %		100.7	109.4	104.7	99.8	95.8

Note: 1. Initial budget for each FY
2. The accumulations and the numbers in the totals may not match due to rounding off.
Source: Created by MEXT

Table 2-1-8/ S&T Budget at Each Government Office

(Unit: 1 million yen)

	FY 2011 (Initial Budget)				FY 2011 (Supplemental Budget)				FY 2012 (Initial Budget)				FY 2012 (Supplemental Budget)			
	General account	Funds for promoting S & T	Special account	Total	General account	Funds for promoting S & T	Special account	Total	General account	Funds for promoting S & T	Special account	Total	General account	Funds for promoting S & T	Special account	Total
Diet	1,153	1,093	—	1,153	—	—	—	—	1,117	1,092	-	1,117	-	-	-	-
Cabinet Secretariat	66,993	—	—	66,993	16,536	—	—	16,536	63,002	-	-	63,002	-	-	-	-
Reconstruction Agency									-	-	49,581	49,581	-	-	12,864	12,864
Cabinet Office	17,166	14,436	—	17,166	196	—	—	196	14,602	12,838	34	14,637	4,671	4,671	-	4,671
National Police Agency	2,194	2,056	—	2,194	—	—	—	—	1,997	1,967	-	1,997	6,776	277	-	6,776
Ministry of Internal Affairs and Communications	53,073	43,116	—	53,073	20,846	9,054	—	20,846	56,244	41,738	88	56,332	64,032	53,800	-	64,032
Ministry of Justice	6,435	—	—	6,435	135	—	—	135	5,201	-	26	5,227	387	-	-	387
Ministry of Foreign Affairs	11,626	—	—	11,626	59	—	—	59	11,793	-	-	11,793	-	-	-	-
Ministry of Finance	1,341	1,020	—	1,341	54	54	—	54	1,306	992	57	1,364	-	-	-	-
Ministry of Education, Culture, Sports, Science and Technology	2,314,484	892,866	134,883	2,449,367	266,824	62,835	6,498	273,322	2,251,217	887,302	214,482	2,465,699	742,796	289,944	299	743,095
Ministry of Health, Labour and Welfare	147,442	109,021	2,621	150,063	408	408	—	408	156,950	116,136	5,632	162,582	8,747	1,202	-	8,747
Ministry of Agriculture, Forestry and Fisheries	113,474	108,308	300	113,774	9,336	8,769	—	9,336	102,628	99,174	388	103,016	21,872	21,872	-	21,872
Ministry of Economy, Trade and Industry	142,629	108,675	443,621	586,250	224,823	85,220	10,000	234,823	134,200	100,677	378,474	512,674	151,777	63,251	-	151,777
Ministry of Land, Infrastructure, Transport and Tourism	52,016	28,129	17,226	69,242	24,420	6,089	—	24,420	52,449	27,070	18,416	70,865	1,527	1,328	-	1,527
Ministry of the Environment	29,645	26,447	9,615	39,259	2,204	2,204	—	2,204	28,037	24,563	37,040	65,077	3,384	3,384	-	3,384
Ministry of Defense	96,817	—	—	96,817	823	—	—	823	105,584	-	2,048	107,631	-	-	-	-
Total	3,056,489	1,335,165	608,266	3,664,755	566,664	174,633	16,498	583,162	2,986,327	1,313,550	706,267	3,692,594	1,005,969	439,729	13,163	1,019,132

Note: The accumulations and the numbers in the totals may not match due to rounding off.
Source: Created by MEXT