

# What is the Cross-ministerial Strategic Innovation Promotion Program (SIP)?

The Cross-ministerial Strategic Innovation Promotion Program (SIP) is a national project for science, technology and innovation, spearheaded by the Council for Science, Technology and Innovation as it exercises its headquarters function to accomplish its role in leading science, technology and innovation beyond the framework of government ministries and traditional disciplines. The SIP has identified 11 themes that will address the most important social problems facing Japan, as well as contribute to the resurgence of the Japanese economy. Each project is led by one of 11 experienced and talented program director who are responsible for end-to-end focused research and development, facilitating coordination among government, industry, and academic entities. These directors have been charged with guiding their project from basic research to practical application and commercialization, and ultimately to a clear exit strategy. The SIP focuses on science, technology, and innovation, which drive our nation's economic growth and vitality and which will dramatically change society. Incidentally, projects related specifically to health and medical innovation fall under the direction of the Headquarters of Healthcare Policy.

## Background

Science, technology, and innovation are core drivers of Japan's economic resurgence and sustainable growth. The Council for Science, Technology and Innovation has, under the leadership of the Prime Minister of Japan and the Minister of State for Science and Technology Policy, promoted planning and coordination for comprehensive basic science, technology and innovation policies, taking a bird's eye view of Japan's entire science and technology

landscape. With the goal of strengthening its own headquarters function, the Council for Science, Technology and Innovation proposed three new policies: (1) Strategic formulation of overall governmental science and technology budget; (2) The Cross-ministerial Strategic Innovation Promotion Program (SIP); and (3) Impulsing Paradigm Change through Disruptive Technologies (ImPACT).

## The Three Arrows to enhance the headquarters function of the Council for Science, Technology and Innovation

1

### Strategic Formulation of Overall Governmental Science and Technology Budget

The Council for Science, Technology and Innovation leads the formulation of the overall governmental science and technology budget, beginning with the study of budget requests at relevant ministries, utilizing policies such as the Comprehensive Strategy on Science, Technology and Innovation 2016. The government has also adopted a new mechanism whereby the Council takes the lead in directing the prioritized allocations of the budget. (The Science and Technology Budgeting Strategy Committee has convened ten times, chaired by the Minister of State for Science and Technology Policy and attended by director-generals and their equivalents from related ministries.)

2

### Cross-ministerial Strategic Innovation Promotion Program

The Council for Science, Technology and Innovation takes the lead in allocating budgets that cross the traditional framework of government ministries and disciplines. The Council promotes innovation along the entire path from basic research to effective exit strategies (practical application/commercialization), as well as taking on initiatives to reform regulations and systems.

**Expenditures on Science, Technology, and Innovation Promotion  
Fiscal 2016 Budget**

**¥50 billion**

\* Of this amount, 35 percent (¥17.5 billion) was allocated to medical fields

3

### Impulsing Paradigm Change through Disruptive Technologies Program 革新的研究開発推進プログラム

Promotion of high-risk, high-impact research and development that could result in industry- and society-changing disruptive science, technology and innovation.

**Fiscal 2013 Revised Budget**

**¥55 billion**

(budgeted under the Ministry of Education, Culture, Sports, Science & Technology)

## Features of the SIP Program

- ▶ The Council for Science, Technology and Innovation selects projects that **answer critical social needs and offer competitive advantage to Japanese industry and the economy.**
- ▶ **Cross-ministerial** Initiatives.
- ▶ Promote focused, end-to-end research and development, from **basic research to practical application and commercialization.** Utilize results in regulations, systems, special wards, government procurement, etc. Utilize results in regulations, systems, special wards, government procurement, etc.
- ▶ **Intellectual property management system** facilitating strategic corporate use of research results.

## The 11 Issues Addressed by SIP

The Cross-ministerial Strategic Innovation Promotion Program has identified 11 issues from the field of energy, next-generation infrastructure and regional resources to address social issues, to revitalize the Japanese economy, and to bolster Japan's industrial posture in the world.

### Programs

Program Name	Program Overview	Funding (Management) Agencies/ Related Ministries
 <b>Innovative Combustion Technology</b>	Realize innovative combustion technologies for maximum thermal efficiency of more than 50%, contributing to energy savings and CO <sub>2</sub> emission reduction. Foster world-leading researchers and build sustainable industry-academia collaboration in the field of combustion technology.	Japan Science and Technology Agency (JST)
 <b>Next-Generation Power Electronics</b>	Introduce major improvements (reduce loss by half, reduce volume to one-fourth of current levels) in the performance of current power electronics by using silicon carbide, gallium nitride, and other next-generation materials. Contribute to energy savings and the wider adoption of renewable energy, while creating large markets for and expanding the global market share of power electronics.	New Energy and Industrial Technology Development Organization (NEDO)
 <b>Structural Materials for Innovation (SM<sup>4</sup>)</b>	Accelerate the development of innovative lightweight, heat- and environment-resistant materials for use in aircraft. Contribute to energy savings and CO <sub>2</sub> reduction, while protecting and strengthening Japan's competitiveness in the component materials industry.	Japan Science and Technology Agency (JST)
 <b>Energy Carriers</b>	Create an economically secure, low-carbon society using hydrogen and other carriers from renewable energy sources. Spread and share these advancements around the world.	Japan Science and Technology Agency (JST)
 <b>Next-Generation Technology for Ocean Resources Exploration</b>	Lead the world in developing efficient survey technologies to survey cobalt-rich manganese crusts, rare metals, and other hydrothermal ores, creating an ocean resource survey industry.	Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
 <b>Automated Driving System</b>	Promote cooperative industry-academy-government research and development key issues leading to the creation of advanced automated driving systems. Work with relevant partners to establish public bus systems, etc. for the elderly and others with limited travel options. Drastically reduce accidents and traffic congestion for a major leap forward in travel convenience.	Cabinet Office, National Police Agency, Ministry of Internal Affairs and Communications, Ministry of Economy, Trade and Industry, Ministry of Land, Infrastructure, Transport and Tourism
 <b>Infrastructure Maintenance, Renovation, and Management</b>	Realization of high quality infrastructure maintenance by cost-effective preventive measure, under the circumstances of serious accident risk increase and maintenance cost shortage because of aging. Creation of sustainable maintenance market, and promotion of expansion into overseas market.	Ministry of Land, Infrastructure, Transport and Tourism, Japan Science and Technology Agency (JST), New Energy and Industrial Technology Development Organization (NEDO)
 <b>Enhancement of Societal Resiliency against Natural Disasters</b>	Build a mechanism for sharing disaster information in real time among public and private sector entities to prepare for major earthquakes, tsunami, heavy rains, tornadoes, volcanic eruptions, and other natural disasters. Strengthen technical capabilities to prevent and predict disasters, and improve the capacity of disaster response in our society.	Japan Science and Technology Agency (JST)
 <b>Cyber-security for Critical Infrastructure</b>	Research and develop monitoring/analysis technologies and defense technologies, including authentication determination technologies for control and communications systems (technologies to confirm the authenticity and integrity of devices and software). Strengthen the international competitive posture of Japan's critical infrastructure industry and contribute to a safe, secure 2020 Tokyo Olympic and Paralympic Games.	New Energy and Industrial Technology Development Organization (NEDO)
 <b>Technologies for Creating Next-Generation Agriculture, Forestry and Fisheries</b>	Integrate agriculture policies and the creation of smart farms and innovative technologies that lead to value-added agriculture, forestry, and fisheries products. Contribute to the development of new agriculture careers and higher income for farmers and rural citizens. Improve quality of life, grow related industries through coordination with the private sector, and contribute to solving the world's food problems.	National Agriculture and Food Research Organization (NARO)
 <b>Innovative Design/Manufacturing Technologies</b>	Establish a new style of manufacturing that breaks with time and geographical constraints by leveraging the creativity and expertise of regional businesses and individuals. Facilitate high added-value product design and manufacturing to quickly respond to the needs of businesses and individual users. Improve industrial and regional competitiveness.	New Energy and Industrial Technology Development Organization (NEDO)

# What is the Cross-ministerial Strategic Innovation Promotion Program (SIP)?

## Implementation Structure

A strong central headquarters structure is vital for effective coordination between ministries and among industry, academy, and government agencies. The Cross-ministerial Strategic Innovation Promotion Program has selected program directors to be responsible for each of the 11 individual programs making up this government initiative. Each program director has been selected for their proven leadership, which allows them to effectively manage

### Implementation Structure







- ▶ Select **directors for each program (PD)**
- ▶ Program directors break through ministerial silos, managing programs from a cross-ministerial perspective.
- ▶ **Governing Board** (Members: Executive members of the Council for Science, Technology and Innovation) to provide **advice/ assessment**

### Fiscal 2016 Budget

- ▶ Cabinet Office secured a **budget of ¥50 billion for science, technology and innovation promotion expenditures included in the fiscal 2016 government budget bill.**  
(Budget Flow) Cabinet Office → Ministries → (Funding (Management) Agencies →) Research Organizations

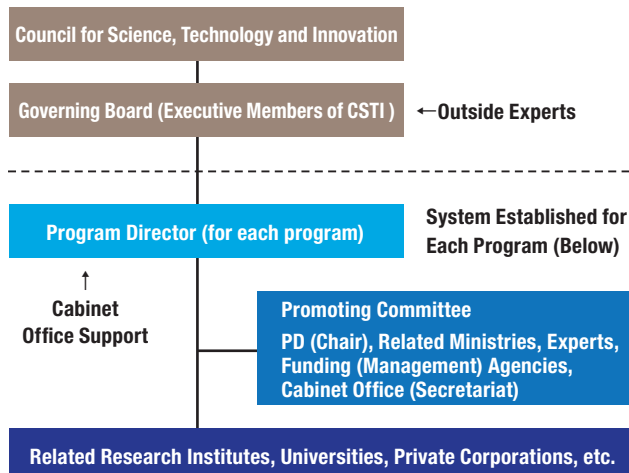
PDs selected by invitation from among top-class leaders in industry and academy






### Program Director

Program Name	Program Director/Affiliation	Page
 <b>Innovative Combustion Technology</b>	Masanori Sugiyama Toyota Motor Corporation Field General Manager, Advanced Power train Engineering Field	8-11
 <b>Next-Generation Power Electronics</b>	Tatsuo Oomori Mitsubishi Electric Corporation Chief Technical Adviser, Corporate Research and Development Group	12-15
 <b>Structural Materials for Innovation (SM<sup>4</sup>)</b>	Teruo Kishi Innovative Structural Materials Association President University of Tokyo Professor Emeritus National Institute for Materials Science Advisor Emeritus	16-19
 <b>Energy Carriers</b>	Shigeru Muraki Tokyo Gas Co., Ltd. Executive Advisor	20-23
 <b>Next-Generation Technology for Ocean Resources Exploration</b>	Tetsuro Urabe University of Tokyo Professor Emeritus JMEC Executive Adviser Commission on the Limits of the Continental Shelf (CLCS) Member	24-27
 <b>Automated Driving System</b>	Seigo Kuzumaki Toyota Motor Corporation Chief Safety Technology Officer (CSTO) Secretary Advanced Technologies Development Company Advanced Technologies Division Project General Manager, Vehicle Safety Planning	28-31

industry-academy-government coordination. The Cabinet Office set aside a budget of ¥50 billion, shifting funds to various ministries on the path to creating this first-of-its kind breakthrough program.

As a side note, programs related to the field of health and medicine are managed under the guidance of the Headquarters of Healthcare Policy.



Program Name	Program Director/Affiliation	Page
 <b>Infrastructure Maintenance, Renovation, and Management</b>	Yozo Fujino Yokohama National University Institute of Advanced Sciences Distinguished Professor	32-35
 <b>Enhancement of Societal Resiliency against Natural Disasters</b>	Masayoshi Nakashima Kyoto University Professor Disaster Prevention Research Institute	36-39
 <b>Cyber-security for Critical Infrastructure</b>	Atsuhiko Goto Institute of Information Security Dean and Professor, Graduate School of Information Security	40-43
 <b>Technologies for Creating Next-Generation Agriculture, Forestry and Fisheries</b>	Noboru Noguchi Hokkaido University Graduate School of Agriculture Professor, Research Faculty of Agriculture	44-47
 <b>Innovative Design/Manufacturing Technologies</b>	Naoya Sasaki Hitachi, Ltd. Corporate Chief Engineer, Research & Development Group	48-51

## What is the Mission of the Governing Board?

The Governing Board is a steering committee that deliberates and considers basic SIP policies, researches and develops plans, allocates budgets, and conducts follow-up and other matters to ensure the progress of the SIP. The Governing Board plays a role in offering necessary advice and assessments of SIP and individual program research and development plans and progress.

The results of Board assessments are reflected in annual SIP policy guidelines. Board members consist of individuals representing experts on the Council for Science, Technology and Innovation. The Board may bring in outside experts to offer assessments as deemed necessary.