

Japanese Science, Technology and Innovation Policy

-To the most innovation-friendly country in the world-



**EMBAIXADA
DO JAPÃO**
NO BRASIL

Akira Yamada

Ambassador Extraordinary and Plenipotentiary
of Japan to the Federative Republic of Brazil

The Council for Science, Technology and Innovation

Role

1. To investigate and discuss basic policies concerning science and technology.
2. to investigate and discuss science and technology budgets and the allocation of human resources
3. to assess Japan's key research and development

Member



Chair Person		Shinzo ABE	Prime Minister
Members	Cabinet Members	Yoshihide SUGA	Chief Cabinet Secretary
		Masaji MATSUYAMA	Minister of State of Science and Technology Policy
		Seiko NODA	Minister for Internal Affairs and Communications
		Taro ASO	Minister of Finance
		Yoshimasa HAYASHI	Minister of Education, Culture, Sports, Science and Technology
		Hiroshige SEKO	Minister of Economy
	Executive Members	Takahiro UEYAMA	Former Vice President, National Graduate Institute for Policy Studies
		Yumiko KAJIWARA	Corporate Executive Officer, Fujitsu Limited
		Motoko KOTANI	Director, Professor and Principal Investigator, Advanced Institute for Materials Research, & Mathematics Institute, Graduate School of Science Tohoku University
		Yoshimitsu KOBAYASHI	Present Chairman of Mitsubishi Chemical Holdings Corporation Present Chairman of Japan Association of Corporate Executives (Keizai Doyukai)
		Masakazu TOKURA	Representative Director & President, Sumitomo Chemical Co., Ltd.
		Kazuhito HASHIMOTO	President, National Institute for Materials Science
		Seiichi MATSUO	President, Nagoya University
	Head of an Affiliated Organization	Jyuichi YAMAGIWA	President of Science Council of Japan

The 5th Science and Technology Basic Plan (FY 2016-2020)

Target National Profile

1. Sustainable growth and self-sustaining regional development
2. Ensure the safety and security for our nation and its citizens along with a high-quality, prosperous way of life
3. Respond to global challenges and contribute to global development
4. Sustainable creation of intellectual property

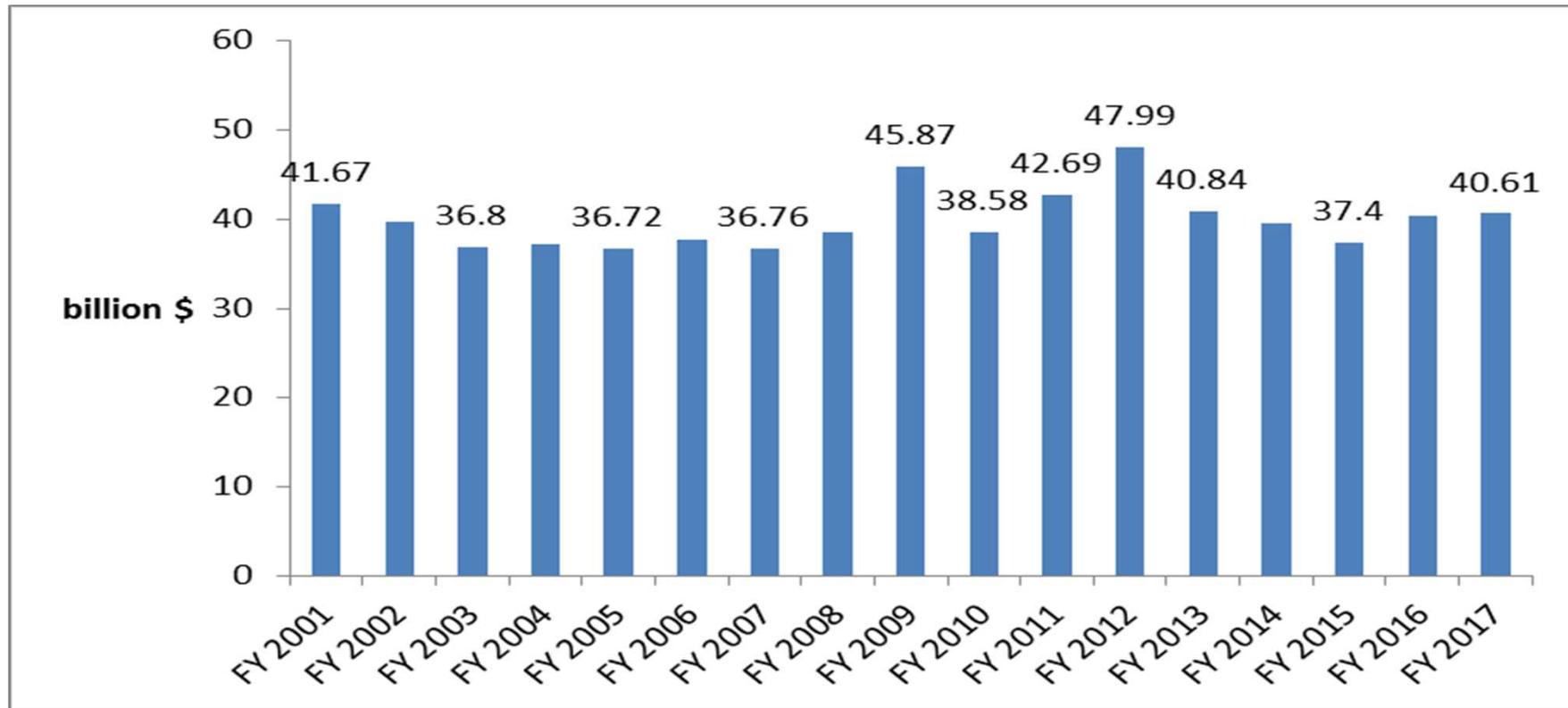
Four pillars of the Fifth Science and Technology Basic Plan

1. Acting to create new value for the development
2. Addressing economic and social challenges
3. Reinforcing the “fundamentals” of STI
4. Establishing a systemic virtuous cycle of human resources, knowledge, and capital for innovation

Budget for STI in Japan

• Budget

A fluctuation of budgets for STI

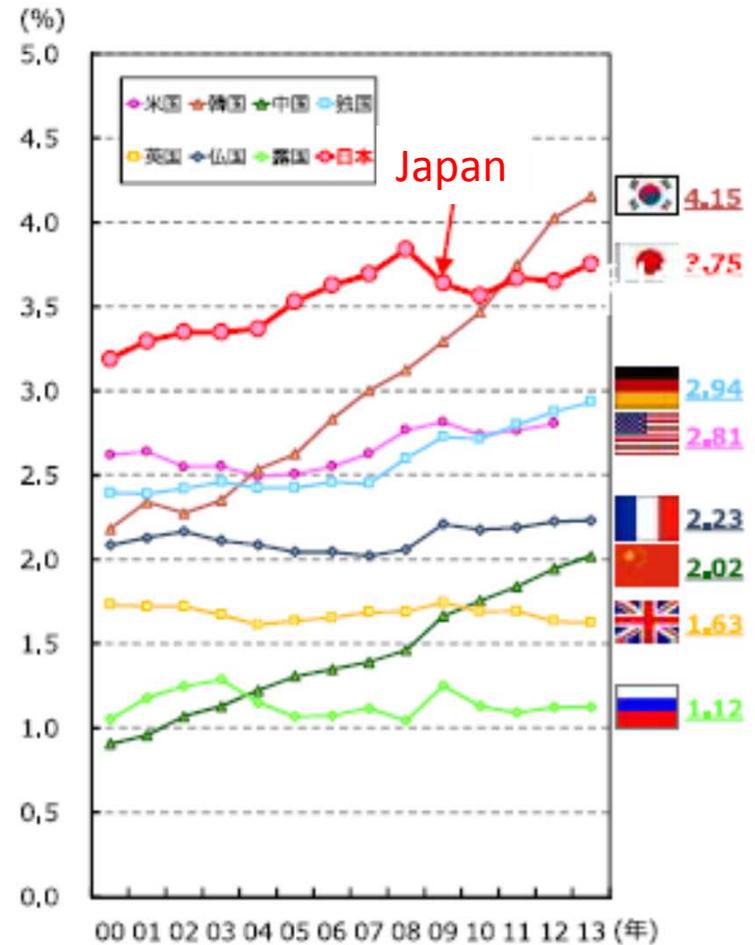


Reference: budget of MCTIC in 2017 – 5.22 billion Real (1.37 billion\$)

The 5th Basic Plan - R & D investment

- Target
 - combined public and private sector R & D investment is **at least 4 % of GDP**
 - government R & D investment is **at least 1% of GDP**
 - total government R & D investment (FY 2016-2020) would be **approximately 26 trillion yen (≒ 236.3 billion \$)**

reference : nominal GDP in 2017 :
546.5 trillion yen (≒ 4.9 trillion \$)

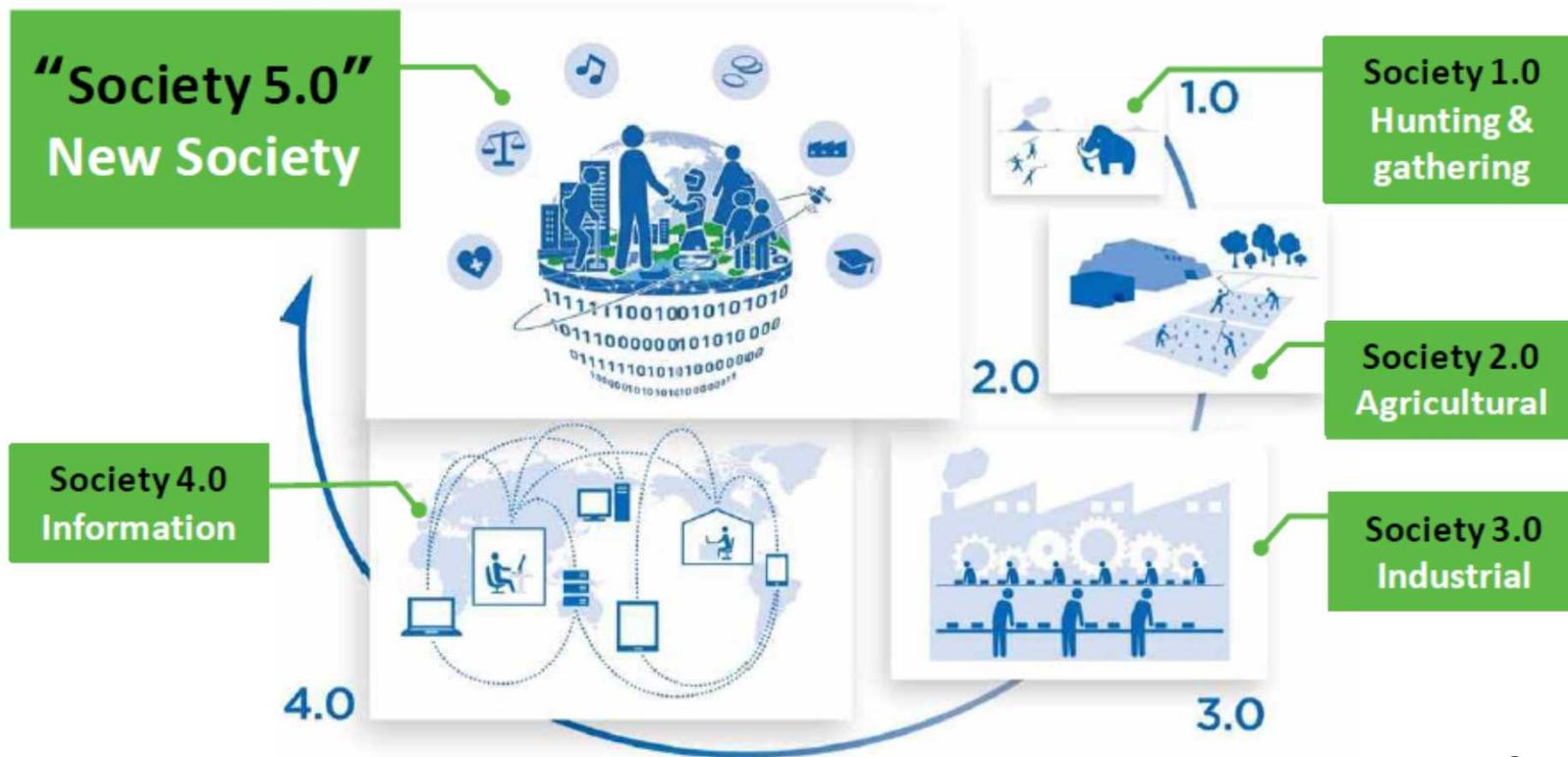


Fluctuation of Public and Private sector R & D investment

Society 5.0

What is “Society 5.0”?

Realize the advanced fusion of cyberspace and physical space,
To balance economic advancement with the resolution of social problems,
Bring about a human-centered society



Source: CAO

Current society

Knowledge and information are not shared and cross-sector value is difficult to create.



IoT will connect all people and things, all sorts of knowledge and information will be shared, and totally **new value will be born.**

Current society

A variety of constraints exists with respect to social problems such as the aging society and regional depopulation making a sufficient response difficult.



Social issues will be overcome and humans will be liberated from various types of constraints.

Society 5.0



Current society

With an overflow of information, the work of finding and analyzing the information desired is difficult and burdensome.

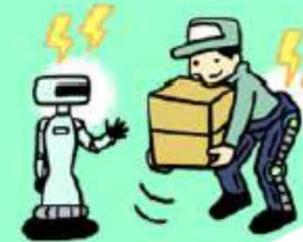


AI will **free humans from the burdensome work** of analyzing huge amounts of information.



Current society

People do a large amount of work, their abilities had limitations, and the behavior of the physically challenged is constrained.



The possibilities open to humans will expand through the use of robots, automatic-driving cars, etc.

Addressing Economic and Social Challenges

1. Sustainable growth and self-sustaining regional development

- Ensuring stable energy and improving energy efficiency
- Ensuring stable resources and cyclical use
- Securing a stable food supply
- Establishment of a society in which people enjoy long and healthy lives with world-leading medical technology
- Building infrastructure for sustainable cities and regions;
- Extending service life for efficient, effective infrastructure
- Improving competitiveness in manufacturing and value creation

2. Ensure safety and security for our nation and its citizens and a high-quality, prosperous way of life

- Addressing natural disasters
- Ensuring food safety, living environments, and occupational health
- Ensuring Cybersecurity
- Addressing national security issues

3. Addressing global challenges and contributing to global development

- Addressing global climate change;
- Responding to biodiversity loss

Example 1

● Regenerative Medicine

To realize the development of new drugs or regenerative medicines, which utilize human-induced pluripotent stem (**iPS**), the Japanese government has promoted the study of this area through initiative for improvement of research system, assurance of financial resources and management of intellectual property right.

Center for iPS Cell Research and Application,
Kyoto University



● Climate Change

GOSAT (**G**reenhouse gases **O**bservation **S**atellite) has been measuring a concentration distribution and a fluctuation of greenhouse gases all over the world, aiming at contributing to further promotion of global warming countermeasures.

GOSAT

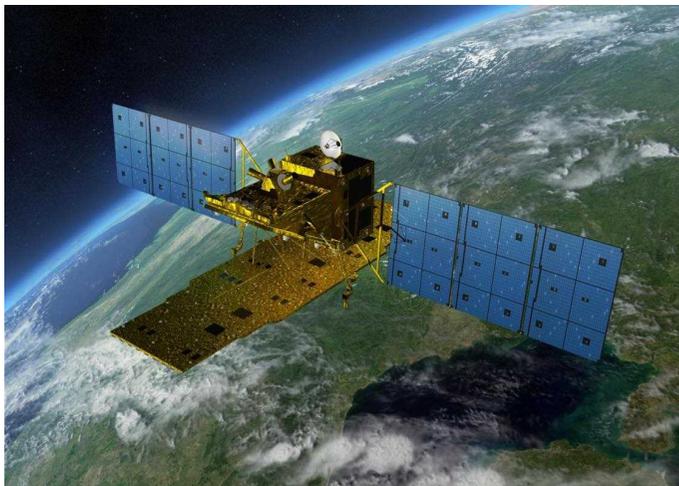


Example 2

JICA-JAXA Forest Early Warning System in the Tropics (JJ-FAST)

- JJ-FAST is a web-based system using JAXA's **ALOS-2** (Advanced Land Observing Satellite 2) to monitor tropical forests in 77 countries (including **Brazil**) every 1.5 months and release deforestation data, even in the rainy season.
- Users can easily access the data for deforested areas from PCs and mobile devices and download the data.
- **IBAMA utilizes this data to crack down on illegal forest loggers.**

ALOS-2



Target Countries



Example 3

Science and Technology Research Partnership for Sustainable Development (SATREPS)

- JICA, JST(Japan Science and Technology Agency) and AMED (Japan Agency for Medical Research and Development) have jointly supported collaborative researches on global issues like environment, energy, food security and disaster prevention by researchers of Japan and developing countries.

- Record of Activity

 - from FY2008 - 133 projects in 50 countries

- Activity of Brazil

 - Biodiversity Conservation in Amazon based on a new concept of “Field Museum”

 - Project for the Establishment of a Research and Reference Collaborative System for the Diagnoses of Fungal Infections including Drug-Resistant Ones both in Brazil and Japan

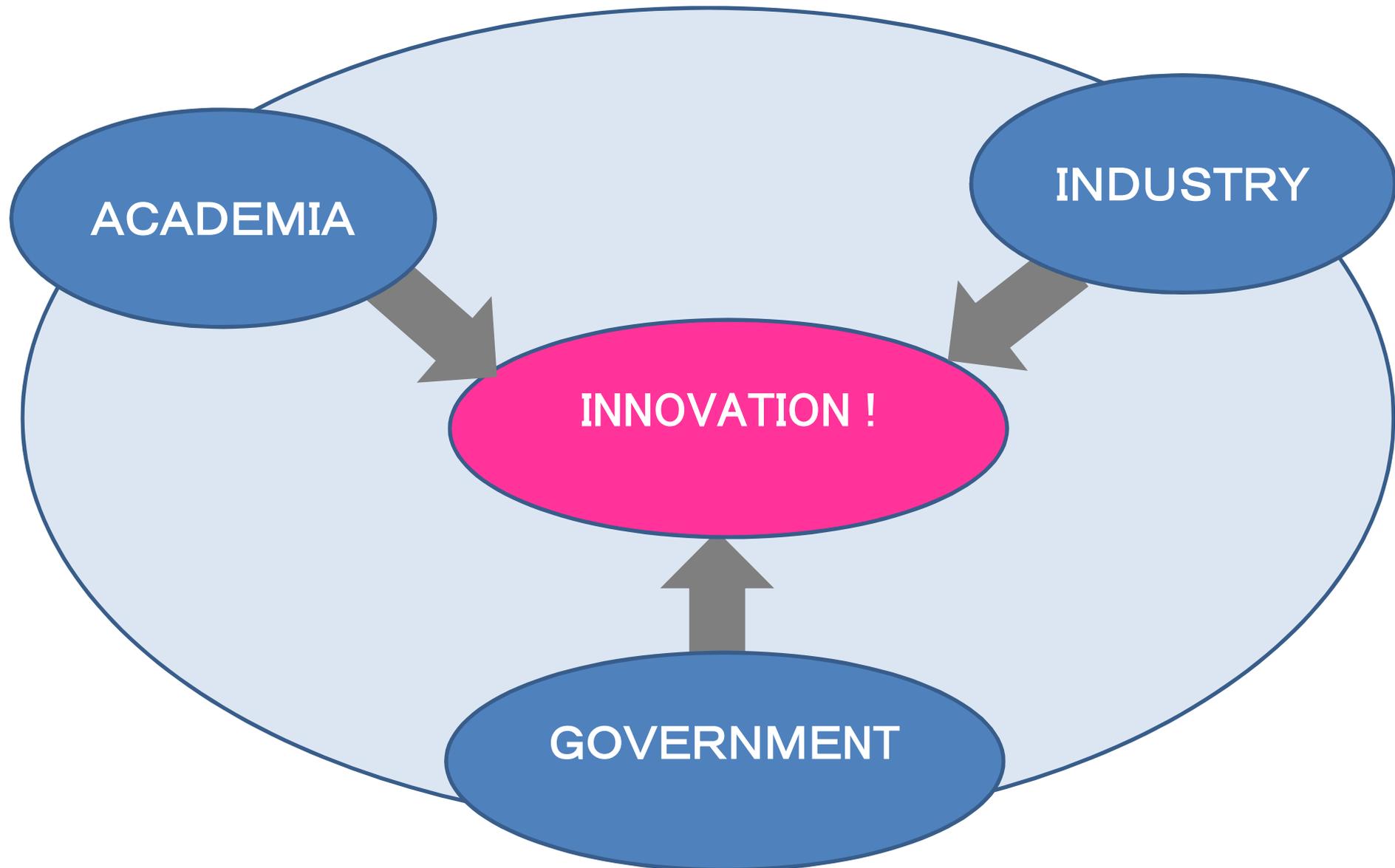
Biodiversity conservation in Amazon based on a new concept of "Field Museum"

- Joint Research between Kyoto University and INPA (National Institute for Amazonian Research)
- Establish a Field Museum Network, consisting of facilities for observational studies of nature and a nature reserve.
- Conduct research that makes use of bio-logging and other cutting-edge Japanese technology
- Establish methods of conserving ecosystems
- achieve sustainable development of the local society and economy through ecotourism and other means
- Develop programs for environmental education and ecotourism and establish an organizational structure for self-sustaining operation
- Contribution by Japanese Private Company (ITOCHU)

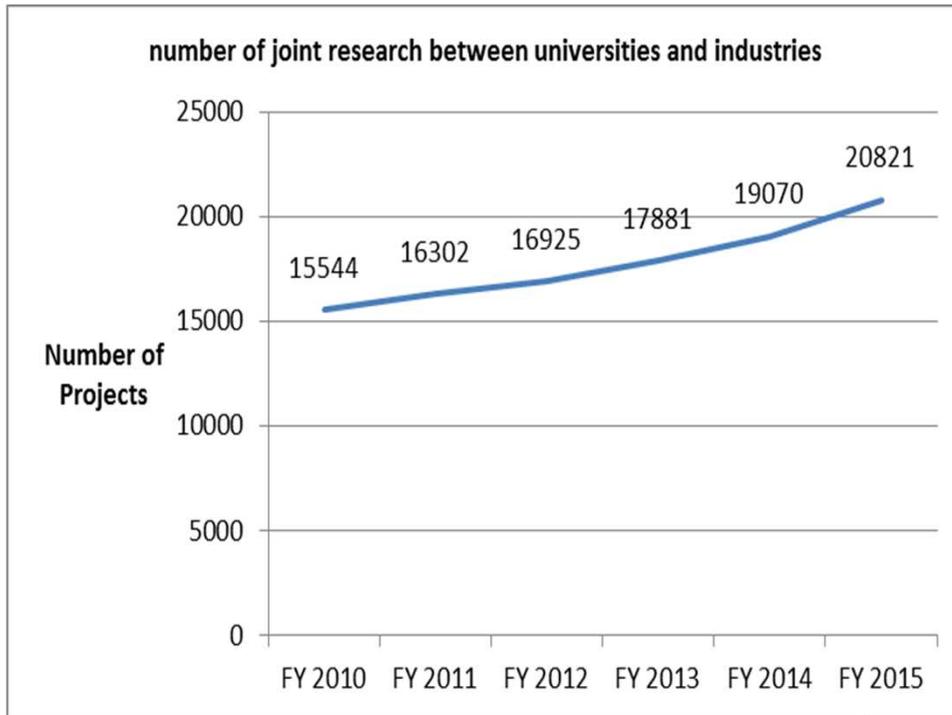


Station Center

Establishing a Systemic Virtuous Cycle of Human Resources, Knowledge and Capital for Innovation

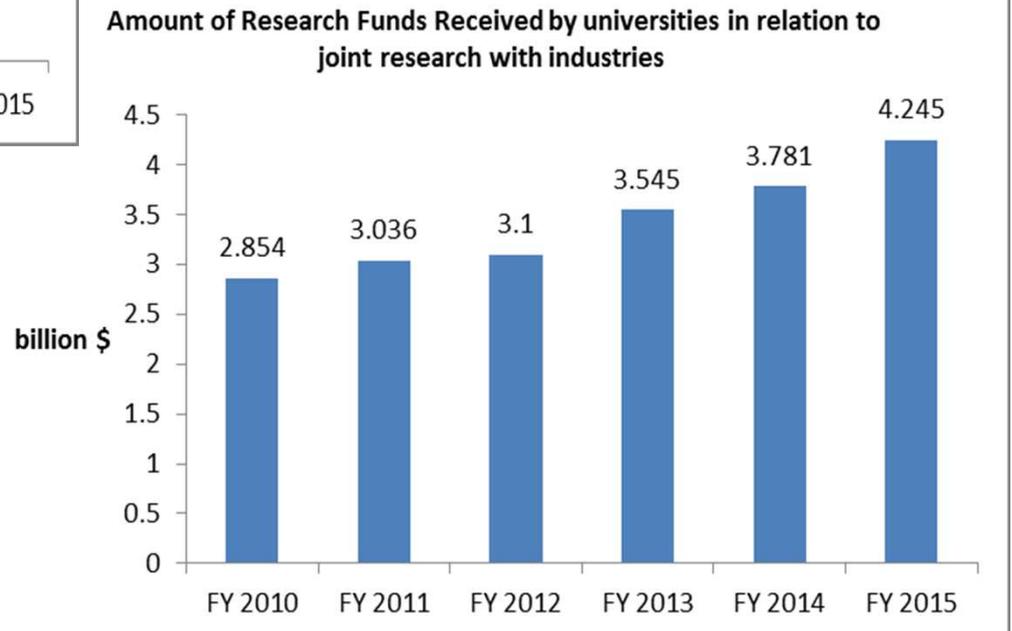


Current Situation of collaboration between government, industry and academia



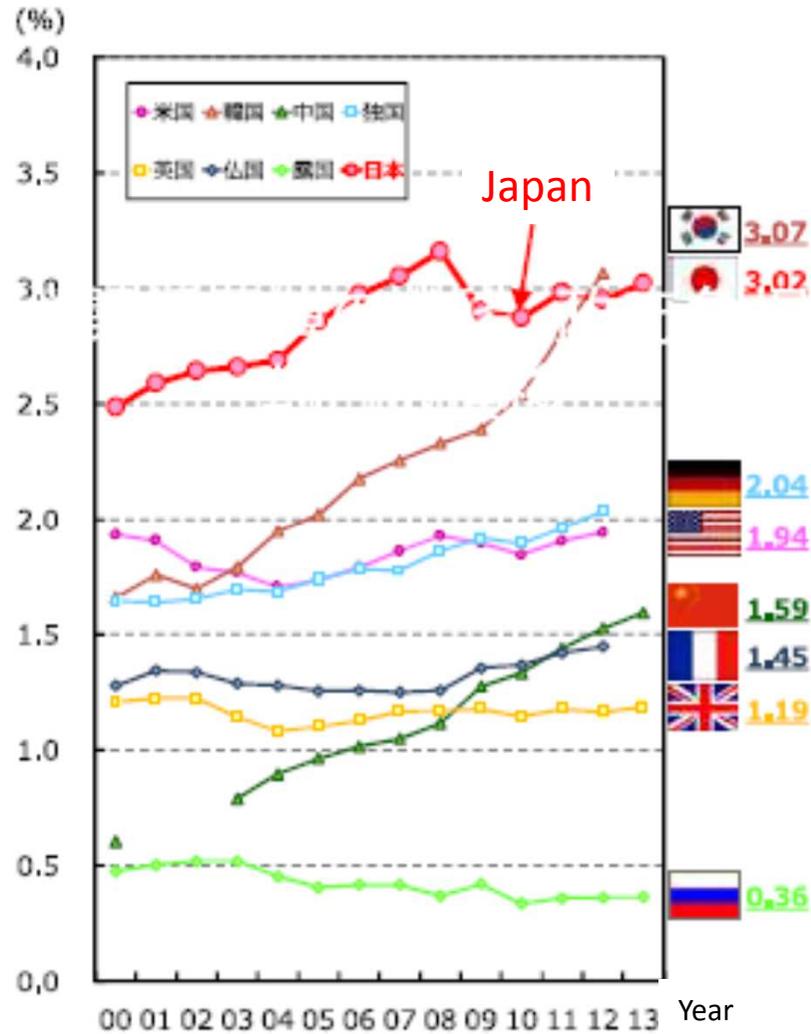
Compared to FY 2010, increased by **1.3 times** to 20821.

Compared to FY 2010, increased by **1.5 times** to 4.245 billion \$

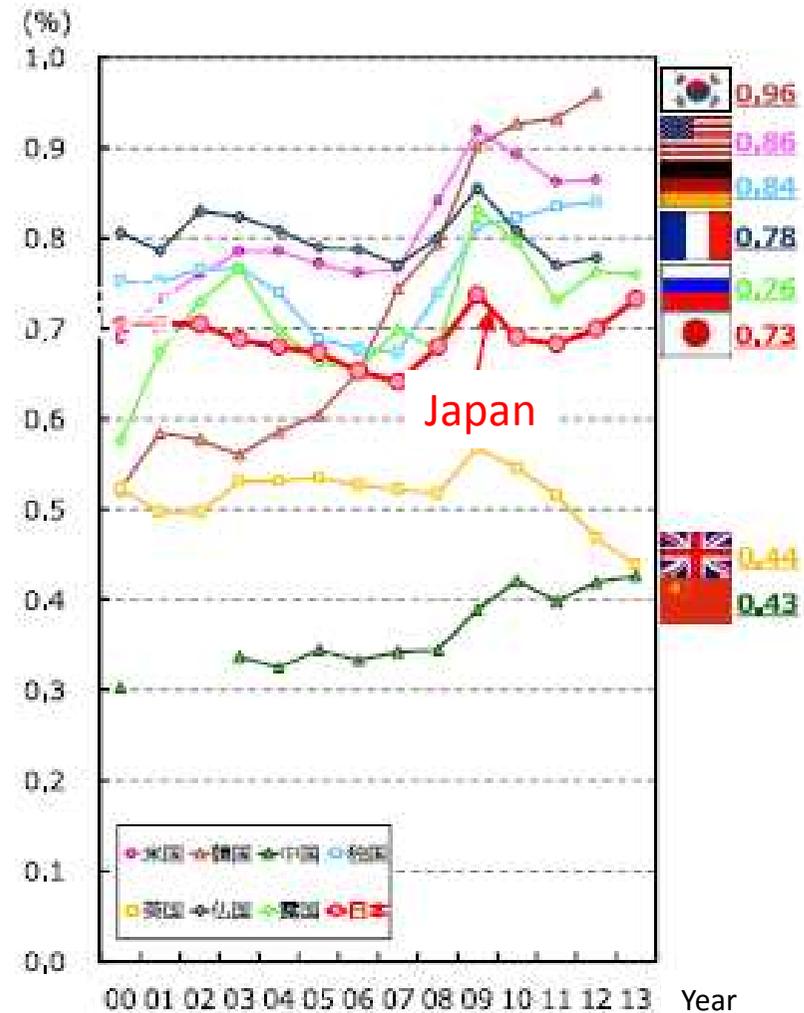


Character of Japanese R & D investment

Fluctuation of Private Sector R & D investment



Fluctuation of Public Sector R & D investment



Policies to promote Private Sector R & D investment 1

- Preferential Tax Treatment

Japanese government establishes tax system for promoting research and development.

Deduction of Corporate Tax

A : Total amount type

- Large Corporation 6~14 %
- small and medium-sized enterprises 12~17%

B : Open Innovation type

- joint research with universities or national institutes 30%
- joint research with other private companies 20%

Policies to promote Private Sector R & D investment 2

- Guideline to strengthen joint research by collaboration among industry, academia and government
 - Improvement of cost sharing between universities and industries
 - create and nurture startup ventures started by universities
 - promotion of cross-appoint system
 - reforms of personnel evaluations system
- Model project on risk management on collaboration among industry, academia and government
 - support to establish and development of risk management system on collaboration among industry, academia and government, to cope with risks related to collaboration like technological leakages and conflicts of interest

Policies to promote Private Sector R & D investment 3

- Award System

- to award successful initiative which made great contribution for promotion of collaboration among industry, academia and government

Award of Prime Minister in 2017



Commercialization of single crystal wafer of diamond

Award of Minister of Agriculture, Forestry and Fisheries in 2017



Mass-production of bread which uses Japanese wheats

Policies to promote Private Sector R & D investment 4

- “spaces for co-creation”
 - Tsukuba Science City
 - ⇒ more than 300 research institutes including 32 national research and educational institutes
 - Kansai Science City
 - ⇒ more than 180 research institutes
- Industry-Academia Match-Up Events
 - Innovation JAPAN – University Fair
 - Agribusiness Creation Fair



Innovation JAPAN 2017
University Fair

Science and Technology in Society Forum

Object

To resolve the new challenges stemming from the application of science and technology

Participants

Global leaders in academia, industry and government
In 2017, 1400 leaders from 80 countries and regions
including 15 Nobel Laureates

This year's annual meeting

The 15th Annual Meeting 7-9th October Kyoto Japan

The Science Ministers' Round Table

The Science Ministers' Round Table is held as one of
side events in this Forum



The 15th ANNUAL MEETING
October 7, 8 and 9, 2018 Kyoto, Japan



Photos as of October 2017 (14th Annual Meeting)

STI in Tokyo Olympic and Paralympic, 2020

ロボットたちが
大会運営を
サポート

