

# New Science, Technology and Innovation Policies and Scientists' Social Responsibilities



Science Policy and Governance: Inventing the Future

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# From Science and Technology Policies to Science, Technology and Innovation Policies



- Changing the title of its science promotion policies from “Science and Technology Policies” to “Science, Technology and Innovation policies” in Japan.
- “Innovation” means that the Government intended to stress that innovating the society through application of the advancement of science and technology is fundamentally important.
- Materializing the scientific knowledge and technological principles in the form of industrial products or social infrastructure is crucial for well-being of the people.



# SIP, Cross-Ministerial Strategic Innovation Promotion Program

- SIP and ImPACT are new policies.
- SIP is promoting government-led research development programs integrating individual S&T policies done so far each ministry.
- Program directors will be appointed to lead each program working closely with the Government STI policy headquarters.
- SIP program directors are expected in various fields such as energy, next generation infrastructure and local resources to design programs and to identify research projects and the leaders constituting those projects.
- The aim of the policy is to make government research policies more effective through integrating research projects so far separately conducted by different ministries.



# ImPACT, Impulsing Paradigm Change through Disruptive Technologies

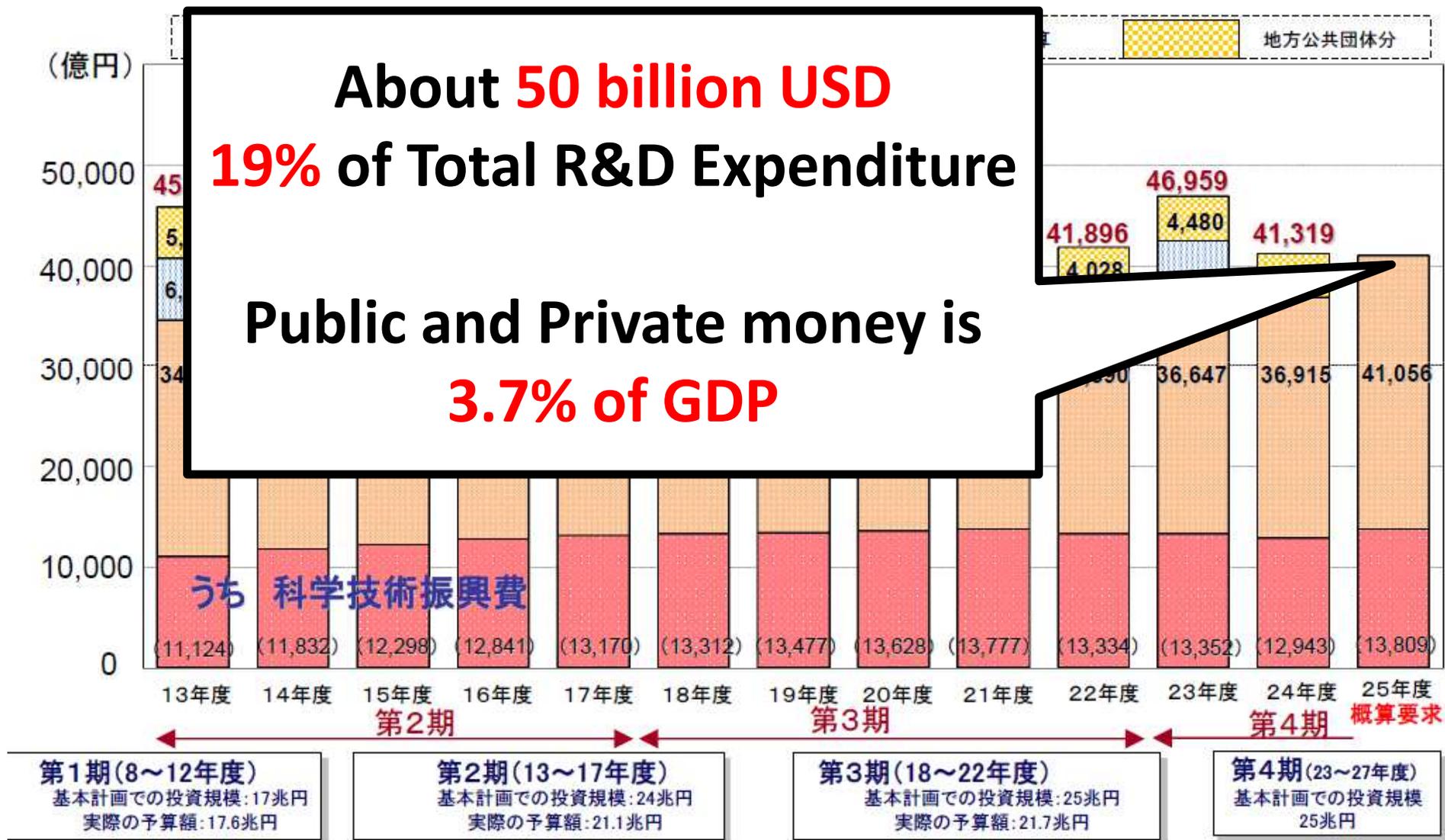
- ImPACT is explained to promote high risk/high return research development programs.
- Program managers are appointed among university or private research institute researchers to identify programs and choose appropriate projects useful for those programs.
- Themes for the programs will be in the fields of life-sciences, disaster reduction, disaster rescue program, material sciences and so on.
- Program Managers are expected to set unique program with the risk of no gain and then find research projects and researchers who may contribute to achieve the goal.



# Overall R&D and STI Activities in Japan

- Public and private R&D funding are 188 billion dollars accounting for 3.7% of GDP.
- The Government sector occupies 18.6%.
- Since the share of defense R&D use is very little, almost all public R&D expenditure of Japan is used for non-defense purpose, securing research activities in basic research sector and promoting further applied and development research sectors.

# S&T Public Expenditure From 2001 to 2014





# Background of New Science Policy

- The background of the new science policy is simple that scientific discovery produces new technology, which then brings about social innovation.
- As a country without abundant natural resources, Japanese people believe that science and technology is indispensable for its economic development.
- The science, technology and innovation policy is basically supported by general public, but at the same time the government must consider at least three things in order that this policy is conducted properly:  
**Safety, Integrity and Equity in Science and Technology.**

# Safety of Science and Technology



- We experienced huge earthquake, Tsunami caused by the earthquake and nuclear power plants accident caused by the Tsunami.
- The nuclear power plant accident in Fukushima makes 150 thousand people impossible to return to their hometowns because of high radiation level.
- All of nuclear power plant suspend their operation now. Furthermore, severer problem is that high level radioactive wastes from nuclear power plants cannot find the places to be kept safely for hundred thousand years until their radioactivity gets harmless.
- It is the role of science policy to show the possibility of alternative energy resources in the earliest opportunity and to create the condition to stop the use of nuclear power energy without shortage of energy supply.
- On top of this, the dual-use issue of advanced science and technology in bio, chemical and physical science and technology fields provide difficult problems to be solved.

# Tsunami hit Japan - Miyako City, Iwate Prefecture -

**Tsunami easily surmounted the Great Seawall.**

Photo originally provided by Taro-cho Fishery Cooperative;  
Courtesy of Cabinet Office, Government of Japan



# Fukushima Daiichi Nuclear Power Plant - No. 4 Unit (Taken on 22 May, 2011)

Courtesy of Nuclear and  
Industrial Safety Agency





# Science and Technology and Research Integrity

- The ethics of scientific research cannot be more important than before.
- Misconducts in scientific research and the lack of research integrity lose the reliability of science and technology, and eventually impede its progress.
- On the other hand, as the role of science technology gets more important, bad motivation to distort scientific research for competing the first place too much get stronger.
- Scientific academies in the world must play important role to secure research integrity to maintain the reliability of the people to science and technology.



# Equitable Blessing of the Fruits of Science and Technology

- The people of poor countries cannot enjoy them, because science and technology develop only slowly in those countries.
- The unbalanced development causes further expansion of economic and social disparities between rich and poor countries.
- Even poor countries should enjoy blessings of science and technology through providing equal opportunities to the people of poor countries to obtain higher education and their involvement in scientific research and to make use of these opportunities for economic and social development of their own countries.
- It is most important task for science academies and scientists in industrialized countries to create various opportunities for this, such as scholarships, providing research funds, joint research programs on top of international conference to share advanced science technology knowledge.