

About the White Paper on Science, Technology and Innovations

- This white paper reports the measures taken by the government to promote the creation of science, technology and innovation in accordance with the Basic Act on Science, Technology and Innovation
- It consists of two parts: **Part 1 featuring topics and Part 2 for the annual report (as per every year).**

- In light of the **“New Form of Capitalism”** based on the **“Virtuous Cycle of Growth and Distribution”** and the **“Realization of a Science and Technology Nation,”** as well as **“Restoration of World-Class Research Capacity”** as stated in the 6th Science, Technology and Innovation Basic Plan, Part I, which is a section on special features, is titled **“Research Capacity of Japan: The Realization of a Science and Technology Nation.”**

Composition of Part 1: Research Capacity of Japan ~The Realization of a Science and Technology Nation~

◆ Chapter 1 Analysis of Research Capacity

- Analysis of the current state of research capacity of Japan and challenges faced in research, based on data on paper index, number of research hours, research personnel, R&D expenditures, international brain circulation, patents, etc.

◆ Chapter 2 Science, Technology, and Innovation Policies of Japan

- Overview of changes in science, technology and innovation policies of Japan, including the Science, Technology and Innovation Basic Plan

◆ Chapter 3 Human Resource Development and Establishment of Research Environment to Support Research Capacity

- New projects for strengthening research capacity of universities (University Endowment Fund and Comprehensive Promotion Package for Regional Core and Distinctive Research Universities)

- Enhancing of measures related to research personnel (support for young researchers including doctoral students, etc.), etc.

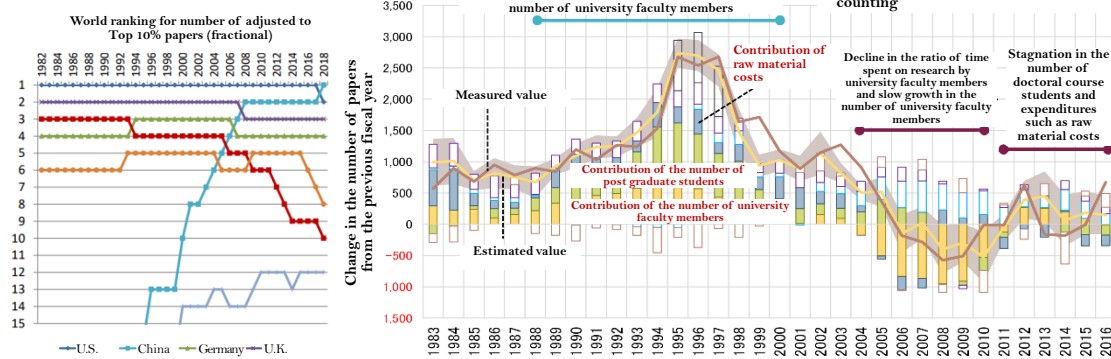
◆ Chapter 4 Social Implementation of “Knowledge” for Innovation Creation

- Initiatives for innovation creation (Moonshot R&D Program, SIP, etc.), etc.

Chapter 1 Japan’s Current State of Research Capacity and the Challenges Faced in Research

Analysis of Japan’s current state of research capacity and challenges faced in research, by making international comparisons with major countries regarding trends in various data used as indicators of research capacity, such as paper index, ratio of time spent on research by researchers, research personnel, R&D expenditures, international brain circulation, patents, technology trade, and cooperation between industry and academia

Number of papers attracting attention



Source: “Benchmarking Scientific Research 2021,” (NISTEP, RM-312)

Source: “Analyses on the production of scientific publications in Japanese universities using long-term input and output macro data” Prepared by NISTEP based on (NISTEP, DP-180)

Chapter 3 Human Resource Development and Establishment of Research Environment to Support Research Capacity

① New Projects for Strengthening Research Capacity of Universities

- Establishment of 10-trillion-yen University Endowment Fund
- Comprehensive Promotion Package for Regional Core and Distinctive Research Universities

② Enhancing of Measures related to Research Personnel

- Support for young researchers including doctoral students
- WG for Education and Human Resource Development
- Fostering and promotion of active participation of female researchers

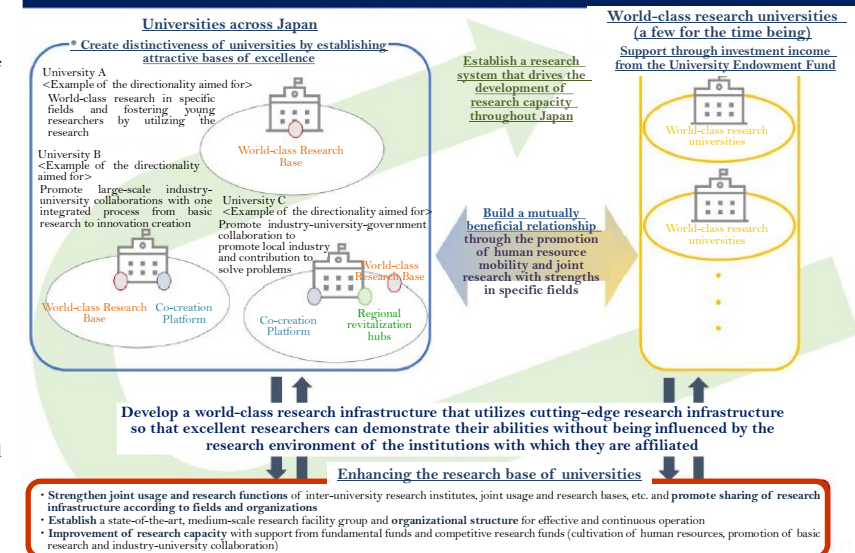
③ Strengthen Measures to Establish Research Environments

- Promotion of research DX and sharing of research equipment
- Large research facilities

④ Strategic Promotion of International Brain Circulation and International Joint Research

- Strategic promotion of international brain circulation and international joint research
- Encouraging students to study abroad and accepting international students, etc.

Toward formation of a diverse group of research universities (conceptual diagram)



Chapter 2 Science, Technology, and Innovation Policies of Japan

Science, Technology and Innovation Basic Plan

This chapter gives an overview of changes in science, technology and innovation policies. Specifically, measures such as, the Science, Technology and Innovation Basic Plan, government investment in R&D, creation of incorporated administrative agencies and the National Research and Development Agency System, and corporatization of national universities, the dual support system (basic research funds and competitive research funds), KAKENHI, Strategic Basic Research Programs and WPI, are reviewed in this chapter.

- 1st Basic Plan (1996 to 2000)
 - Expanding government investment in R&D, 10,000 Postdoctoral Fellows Plan
- 2nd Basic Plan (2001 to 2005), 3rd Basic Plan (2006 to 2010)
 - Focus on fields of specialization of high importance (four priority fields to be promoted: Life Science, Information and Communication, Environment, Nanotechnology and Materials)
 - Doubling of competitive funding and introduction of indirect costs (30%) (2nd Basic Plan)
- 4th Basic Plan (2011 to 2015)
 - Emphasis on innovation policy
 - A shift from area-focused prioritization to issue-oriented prioritization
- 5th Basic Plan (2016 to 2020)
 - Society 5.0 was proposed as a future society for which Japan should aim
- 6th Basic Plan (2021 to 2025)
 - Realization of Society 5.0, social transformation through the convergence knowledge, and investment in knowledge and people

COLUMN

- “Brilliant Female Researchers Award (The Jun Ashida Award)”
- Establishment of the First Engineering Department at a Women’s University
- “Emergent Researchers” Taking on Challenges
- Daredemo Piano (Auto-Accompanied)
- Science & Technology Week, etc.

Chapter 4 Social Implementation of “Knowledge” for Innovation Creation

① Initiatives to Implement the “Knowledge” Gained from Research into Society and Thereby Create Innovations

- Promotion of R&D and Social Implementation to Solve Social Issues (Moonshot R&D Program, SIP, Green Innovation Fund, etc.)
- Promotion of R&D projects aimed at commercialization (Support to start-ups, promotion of industry-university-government collaboration, etc.)

② Initiatives to Fight the Novel Coronavirus Infection

- Introduction of initiatives for the promotion of R&D of domestic vaccines, oral medicines, and next-generation diagnostic methods for infectious diseases, and development of pulse oximeter, etc.

③ Economic Security

- Think-tank functions for safety and security, Key and Advanced Technology R&D through Cross Community Collaboration Program (K Program), and Economic Security Promotion Act)

④ Status of Science, Technology and Innovation Policies Utilizing Convergence Knowledge

- Reasons for the Need for “Convergence Knowledge” and Utilization of Convergence Knowledge to Solve Social Issues



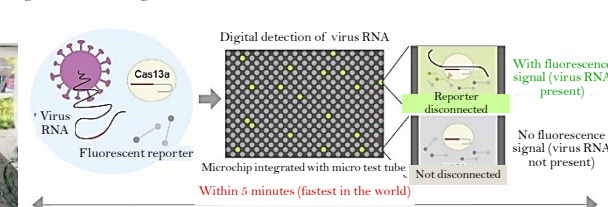
Dynamic map

Material: Presentation material at the SIP Symposium 2020 held by the Cabinet Office (Automated Driving (Extension of Systems and Services)) (November 17, 2020)



Face recognition system

Provided by: NEC Corporation



Digital detection technology for viral RNA

World’s fastest technology to detect viral RNA in less than five minutes, developed by RIKEN, the University of Tokyo, and Kyoto University



Pulse oximeter

Provided by: Nihon Kohden Corporation