RECOMMENDATION

Revitalizing Japan's Research Ecosystem under Crisis: Advancing a Sustainable Future for Academia and Society

27 November 2025

Science Council of Japan

This Recommendation is largely the outcome of the deliberations of the Committee for Academic Development and Enhancement of Research Capability in Japan, Science Council of Japan, and is issued under the auspices of the Science Council of Japan.

Committee for Academic Development and Enhancement of Research Capability in Japan

Chair	HAYASHI Takayuki	(Associate Member)	Professor, National Graduate Institute for Policy Studies
Vice-chair	NISHIYAMA Yoshihiko	(Section Ⅰ Council Member)	Professor, Kyoto University Institute of Economic Research
Secretary	KAWAGUCCI Shinsuke	(Associate Member)	Principle Researcher, Japan Agency for Marine-Earth Science and Technology (JAMSTEC)
Secretary	MOROZUMI Akiko	(Designated Associate Member)	Professor, Graduate School of Education, The University of Tokyo
	ARITA Shin	(Section Ⅰ Council Member)	Professor, Institute of Social Science, The University of Tokyo
	USUI Emiko	(Section Ⅰ Council Member)	Professor, Hitotsubashi University
	KONAGAYA Yuki	(Section Ⅰ Council Member)	Professor Emeritus, National Museum of Ethnology
	GOTOH Yukiko	(Section Ⅱ Council Member)	Professor, The University of Tokyo
	KOBAYASHI Takehiko	(Section Ⅱ Council Member)	Professor, Institute for Quantitative Biosciences, The University of Tokyo
	SASAKI Hiroyuki	(Section Ⅱ Council Member)	University Professor. Institute for Advanced Study, Kyushu University / Emeritus Professor, Kyushu University
	TAKAYAMA Kotaro	(Section Ⅱ Council Member)	Professor Dr. Kotaro Takayama Graduate School of Engineering, Toyohashi University of Technology, And Graduate School of Agriculture, Ehime University
	YAMAMOTO Haruko	(Section Ⅱ Council Member)	Executive Director National Cerebral and Cardiovascular Center

YUZAKI Michisuke	(Section Ⅱ Council Member)	Project Professor, WPI-Bio2Q, Keio University
ICHIKAWA Atsuko	(Section Ⅲ Council Member)	Professor, Tohoku University
KATO Kazumi	(Section Ⅲ Council Member)	Fellow, National Institute of Advanced Industrial Science and Technology (AIST)
KOSHIHARA Shinya	(Section Ⅲ Council Member)	Institute Professor, Institute of Science Tokyo / Visiting Professor, Institute of Pure and Applied Sciences, University of Tsukuba
SAIGUSA Nobuko	(Section Ⅲ Council Member)	Vice President, National Institute for Environmental Studies
MITSUISHI Mamoru	(Section Ⅲ Council Member)	Vice President, National Institution for Academic Degrees and Quality Enhancement of Higher Education Professor Emeritus, the University of Tokyo
TAKEDA Hiroyuki	(Associate Member)	Kyoto Sangyo University, Faculty of Life Sciences

The following members have contributed to this Recommendation.

SHIRAHASE Sawako	(Section Ⅰ Council Member)	Project Professor, Graduate School of Agricultural and Life Sciences, The University of Tokyo
WAKE Junko	(Section Ⅰ Council Member)	Professor, Graduate School of Humanities, Tokyo Metropolitan University
IGARASHI Kazuhiko	(Section Ⅱ Council Member)	Professor, Graduate School of Medicine, Tohoku University
NISHITANI Yoko	(Section Ⅱ Council Member)	Professor, Department of Forensic Medicine, Graduate School of Medicine, Kyoto University
YAMADA Yasuhiro	(Section Ⅱ Council Member)	Professor, Department of Molecular Pathology, Graduate School of Medicine, The University of Tokyo
OZAKI Yukiko	(Section Ⅲ Council Member)	Part-time Lecturer, Graduate School of Engineering, Kyushu University Invited Professor, Joining and Welding Research Institute, The University of

		Osaka
KISHIMOTO Yasuo	(Section Ⅲ Council Member)	Fellow, Steel Research Laboratory, JFE Steel Corporation
NAKANO Takayoshi	(Section Ⅲ Council Member)	Professor, Division of Materials and Manufacturing Science, Graduate School of Engineering, Osaka University
MORITA Kazuki	(Section Ⅲ Council Member)	Professor, Department of Materials Engineering, Graduate School of Engineering, The University of Tokyo
IIJIMA Toru	(Associate Member)	Professor, Kobayashi-Maskawa Institute, Nagoya University
GONOKAMI Makoto	(Associate Member)	President, RIKEN
SHINNAGA Hiroko	(Associate Member)	Associate Professor, Graduate School of Science and Engineering, Kagoshima University
NOJIRI Mihoko	(Associate Member)	Professor, Institute of Particle and Nuclear Studies, Inter-University Research Institute Corporation High Energy Accelerator Research Organization
MIYAKAWA Tsuyoshi	(Associate Member)	Professor, Division of Systems Medical Science, Center for Medical Science, Fujita Health University
ISHIKAWA Masatoshi		President, Tokyo University of Science
ISHIGURO Fujiyo		Pegasus Tech Ventures
UMEMORI Hisashi		Professor, Harvard Medical School
KITANO Hiroaki		Senior Executive Vice President and CTO, Sony Group Corporation
KOJIMA Kentaro		Secretariat, Advanced Science & Technology Strategy Committee, Japan Association of Corporate Executives
SUZUKI Jyun		Senior Advisor, Teijin Limited
NANBU Toshikazu		Vice Chairman, Sumitomo Corporation
HARIKAE Takayuki		Secretariat, Advanced Science & Technology Strategy Committee, Japan Association of Corporate Executives
MORIYAMA Takeru		Secretariat, Advanced Science & Technology Strategy Committee, Japan Association of Corporate Executives
YUKAWA Hideaki		CEO/CSO, Utilization of Carbon Dioxide Insutitute Co.,Ltd.

Staff members responsible for preparation of Advisory Report.

Secretariat	NITTA Koshi	Director, Division for Scientific Affairs Ⅱ
	KAKUTA Michiko	Deputy Director, Division for Scientific Affairs Ⅱ
	NODA Taiki	Unit Chief, Division for Scientific Affairs Ⅱ
	SATO Azumi	Official, Division for Scientific Affairs Ⅱ
	OKUWADA Kumiko	Senior Research Specialist

This English version is a translation of the original written in Japanese.

EXECTIVE SUMMARY

Ⅰ Background

In recent years, social structures have undergone significant transformation as multiple complex shifts occur simultaneously, including declining population and demographic aging, intensifying climate change and natural disasters, the spread of infectious diseases, rising geopolitical tensions, deepening value-based societal fragmentation, and rapid technological innovations such as generative AI. To address these multifaceted changes and prepare for future challenges that have not even yet foreseen, the creation, accumulation, and societal utilization of diverse knowledge are indispensable, in which academia plays a key role.

However, for more than a decade, it has been pointed out that Japan has been experiencing a decline in its research capabilities. This decline is evident not only in the stagnation of output indicators such as the number of academic publications, but also in the weakening of the overall health of the research ecosystem that enables the continuous emergence of creative and exploratory research. Thus, comprehensive reform of the foundational systems that support research is indispensable for enabling researchers to demonstrate their abilities and for establishing research careers as attractive professions for the next generation. The Science Council of Japan, as an organization composed of diverse experts ranging from the humanities, social sciences, to natural sciences, bears the responsibility to provide recommendations grounded in the realities of the research environment.

Ⅱ Current Status and Issues

Discussions on “research capability” in Japan have primarily relied on quantitative indicators such as the number of papers and citation counts. In international comparisons based on the number of highly cited papers, Japan's ranking has fallen from fourth to thirteenth. However, these indicators are merely proxy and highly aggregated measures that do not sufficiently reflect the distinctive characteristics of each academic field or the diversity of research practices. Moreover, excessive dependence on such indicators causes researchers to follow overseas trends, which potentially undermines Japan’s capacity for original and creative research.

This report defines research capability as “the ability to sustainably generate both academic contributions and socio-economic impact by dynamically advancing cutting-edge research grounded in a robust foundation of fundamental research.” When viewed through this definition, the sense of crisis over declining research capability is shared beyond

boundaries of disciplines. In physics, international leadership and academic visibility have been dminished; in materials engineering, the decline in the number of young researchers and international students, together with the weakening of research strength at regional universities, has become pronounced; in medical science, the depth of the research community has become thinner except the one of the top tier; and in sociology, international outreach and network-building capabilities have continued to be weakened.

Factors underlying this decline in research capability, which are commonly observed across disciplines, include the diminished attractiveness of research careers (such as faculty staff and research institute positions) which results in an outflow of young talent; insufficient baseline funding for fundamental research; the fragmentation of competitive funding schemes, the increased burden of grant applications, and the uneven distribution of resources across universities and individual researchers; and the reduction of research time caused by excessive non-research administrative duties. Notably, career instability has been increased due to the expansion of fixed-term employment has heightened, which has also accelerated the outflow of top talent to industry. The decrease in core funding (Management Expenses Grants) provided by the national government has not kept pace with surging research costs caused by inflation and the depreciation of the yen, which results in threatening the continuity of research activities. Competitive funding is short-term and narrowly scoped, and researchers are forced to submit an increasing number of applications as its success rates are decreasing. This has caused heavier administrative workloads and researcher burnout.

In addition, discipline-specific challenges further exacerbate the situations. These include a lack of genuine commitment to industry–academia collaboration; insufficient support structures for the early independence of young researchers; the aging of research facilities and vulnerability of shared research infrastructure; reduced research opportunities for graduate students resulting from changes in graduate education (such as increased curricular formalization and a greater emphasis on coursework); and weak international outreach and institutional misalignments. The convergence of these factors is severely undermining the sustainability of Japan’s research ecosystem.

Ⅲ Main Points of the Advisory Opinion

To address common challenges across disciplines, the following measures are recommended as means to revitalize research capability.

(1) Establishing a Sustainable Researcher Employment System (Achieving Both Stability and Mobility)

Growing job insecurity and worsening working conditions for young researchers has ruined the appeal of research careers and pushing young talent out of academia. To change this situation, it is essential to significantly expand core funding while also

maximizing flexibility in the use of external funding so that it can be allocated to stable employment. Furthermore, it is expected to introduce mechanisms whereby ministries (including those outside MEXT) and national R&D institutes establish research centers within universities to provide long-term stable employment, similar to the WPI program.

Universities must convert their personnel management from a position-based model to total personnel cost management and develop medium- to long-term recruitment plans that take age balance into account. To promote this conversion, the national government is expected to provide fiscal incentives, for example by incorporating the conversion of young researchers' employment to permanent one and the expansion of tenure-track posts into common indicators used for allocating core funding. In addition, universities are expected to make effective use of senior researchers, utilizing competitive funding to support their employment in ways that do not compete with the one of young researchers, so as to sustain international networks and contribute to the development of young researchers.

While financial support for doctoral students has been strengthened, it is necessary for the government to consider creating stable mid-term positions lasting approximately five to ten years after completion of the doctoral degree. It is also essential for the government to consider establishment of systems in which national R&D institutes employ outstanding researchers and assign them to universities, as well as models in which universities invest in creating non-profit R&D corporations that provide stable employment for researchers and to expand such employment models for achieving a balance between stability and mobility in the research workforce.

Furthermore, in order to prevent the non-renewal of contracts and the use of short-term appointments immediately before conversion to a permanent employment contract the government should indicate appropriate ways of interpreting and applying the Labor Contracts Act and its Enforcement Regulations, taking into account the specific characteristics of researchers. In the medium- to long-term, it is desirable for the government to review the framework of the Labor Contracts Act itself in light of the specific characteristics of researchers. Similar problems also arise for research assistants, for which corresponding measures are required.

(2) Review of Research Funding and the Financial Framework (Strengthening and Balancing Core and Competitive Funding)

The sustainability of the research ecosystem has been undermined as the core funding was reduced and shifted to competitive funding which is short-term in nature and lacks flexibility in its allowable uses, following national university corporatization. In line with the UK's "balanced funding principle," the ratio of core to competitive funding and its impacts on research practice should be continuously monitored, and allocations adjusted accordingly. At the same time, mechanisms should be explored to allow a portion of competitive funding to be used flexibly as core funding.

With regard to core funding, in response to the growing range of expected functions of

universities, it is desirable that the national government should incorporate high-performing initiatives currently supported by external funding into core funding streams and thereby institutionalize them as permanent programs. It is also desirable that the Grants-in-Aid for Scientific Research program should be expanded to increase both the overall level of funding and the success rate, and to promote the design to reduce application and review burdens through appropriate adjustments to funding levels on a per-project basis. The government should consider the measures such as transferring certain funding allocation functions to field-specific national R&D institutes, and develop the systems to enable organizations with specialized expertise to provide agile and substantive support that leads to stimulation of research.

(3) Escape from Research Bureaucracy (Maximizing Research and Educational Outcomes)

Excessive auditing practices are consuming research time and reducing productivity. To curb “research bureaucracy,” universities and associations should play a central role to establish a whitelist system to shift management practices to the minimum necessary. Furthermore, it is also expected for the national government and universities to drastically expand professional staff, including those responsible for research, education, and student support, and improve the effectiveness of faculty research and education through appropriate staffing. It is essential to ensure a minimum level of research time and funding for faculty members, including those at regional and smaller universities, and to ensure resilience of the national academic foundation in order to secure nationwide research diversity and depth and in order to enable swift and flexible responses when new research fields emerge or begin to flourish. At the same time, it is required to maximize research and educational outcomes. This includes developing and sharing on-demand teaching materials, reducing faculty burdens while maintaining educational quality through educational DX, and introducing flexible and inclusive evaluation practices based on diverse faculty workstyles to create environments in which diverse human resources can demonstrate their capacities.

The national government should adopt measures such as introducing a two-stage review process for large-scale research funding, in which only applicants who pass a simplified initial screening submit detailed proposals for full review, and sharing review results across funding programs to reduce burdens on applicants and reviewers. It should also secure basic regular funding (high-trust funding) to support nascent research for a defined period to mitigate application burdens. Universities and other institutions should refrain from using competitive funding application rates as KPIs.

(4) Reforming Graduate Education as a Core Driver of Advanced Talent Development

In addition to increasing the number of doctoral students, it is essential to improve the quality of doctoral programs and strengthen their connection with society. The national government should position doctoral students as “professional researchers” and strengthen

systems that enable them to be employed and compensated through external research project funding in addition to fellowship. The national government and universities should clarify the core competencies guaranteed by a doctoral degree, while promoting acquisition of transferable skills beyond specialized expertise through research activities. Universities must rigorously assess research preparedness in entrance examinations for doctoral course and promote team-based supervision by multiple faculty members, formulation of individual development plans, and faculty training in research supervision.

To promote talent development through collaboration among academia, industry, and society, the government should support the return of working professionals to graduate programs. Looking ahead, it will be necessary to establish joint doctoral supervision systems involving industry, government, and academia, by utilizing national R&D institutes as hubs, in order to build a talent ecosystem in which individuals develop through fluid movement across diverse sectors. Furthermore, because companies sometimes lack mechanisms to appropriately value doctoral talent, it is expected for them to develop organizational designs that enable their capabilities to be properly recognized and utilized. In addition, to respond to rapid population decline and societal and academic changes, it is required for graduate schools with robust internal quality assurance systems to be granted certain regulatory flexibility and to enable agile restructuring and enrollment adjustment.

(5) Establishing a Research Capability Monitoring System

Alongside advancing the above-mentioned improvement measures, it is necessary to establish a mechanism for continuously monitoring research capability as an indicator of the capability of Japan’s research ecosystem. The Science Council of Japan should leverage its strength as an organization composed of researchers from diverse academic fields to consider establishing a long-term monitoring system based on appropriate qualitative and quantitative methods. Given the current global trend of wavering public trust in academia, the monitoring system should incorporate features that help communicate the public value and credibility of academic research to society, including indicators that visualize responds to societal challenges of academia.