

Background of the Revision of the International Strategy

On the Revision of JST's International Strategy

JST, a National Research and Development Agency supporting Japanese STI, conducts strategic and comprehensive R&D in accordance with the Act of Establishment, maximizes its outcomes, and contributes back to society. Our mission is to lead innovation in tandem with wider society, as one of the world's top-tier network-based research institutions. The world is increasingly open, undergoing dramatic and drastic change. JST facilitates the globalization of the Japanese research community and contributes to high-impact innovation, as well as the creation of innovation-friendly environment via the effective distribution of funds. We view societal issues such as demographic change as opportunities. In response, we seek to lead world-class innovation processes aimed at realizing a sustainable society through the creation of new value.

The International Strategy is based on JST's Fourth Medium- to Long-term Objectives and Plan, and discussions within various governmental committees. It is written as a guideline for JST's various activities, in order to accelerate the pace of innovation through internationalization and to ensure its widest possible dissemination both inside and outside of Japan.

JST's Aims

- We foster innovation in an era of dramatic and drastic transformation of the modalities of society and science, as well as what people regard as beneficial. We achieve this through our various programmes, leveraging exemplars of research and innovation in cooperation with domestic and foreign partners. We focus on realizing innovation in order to achieve the goals set out in the Japanese growth strategy. Innovation here refers not only to value creation based on technological seeds. It also identifies value creation as a result of addressing common global challenges and the realization of Society 5.0, a key concept in the 5th Science and Technology Basic Plan of Japan.
- While addressing global transformation and the achievement of common goals, such as the United Nation's Sustainable Development Goals (SDGs), we create synergy through cooperation with domestic and foreign partners, thereby mutually increasing our capacity. We apply these efforts to solving local societal issues.
- Science is essentially a global enterprise pursuing universality, upon which various technologies are based. Sources of innovation exist everywhere, not limited to Japan. We

therefore regard JST's activities as fundamentally global and consider it ideal that the word "international" is not viewed as something distinct.

The Changing STI environment and Background Consideration

- (1) **Internationalization to promote diversity and increase innovation:** If we understand innovation as a process that creates new value, be that a new societal/industrial product, service, system, or process, and if we consider that these values have often been created combining existing knowledge, we can also expect that the probability of innovation increases when a variety of ideas, views, fields, and tools exist. In other words, diversity. There are many different ways to increase diversity, such as the expansion of academic fields, inter-disciplinarity, gender difference, indigenous knowledge, and public engagement. Internationalization can also be such a factor. For example, despite the increased internationalization of scientific research, Japan has experienced a smaller increase in the number of academic papers with international co-authors compared with other countries. The benefits of open innovation with international organizations have not been fully exploited. We therefore argue that one effective way to further (and more efficiently) promote diversity as a Japanese organization is to incorporate outside knowledge and networks as much as possible.
- (2) **Three key points for internationalization:** From the global perspective, we consider the following three points as key: 1) to trigger innovation efficiently in the midst of a tide of trends towards increased openness, such as open innovation, open science, open data, and so on; 2) how our STI activities can contribute to global efforts to achieve common goals, address global issues, and relate these to solving local challenges; and 3) provide platforms for research excellence across borders, where talented researchers/managers/administrators can demonstrate their competence.
 - (2-1) **Openness and paradigm shifts:** Research, production, and service sites have been experiencing significant changes caused by, for example, the powerful surge of open access and open data, and the arrival of inexpensive 3D printers (added manufacturing technology). These enable mass access to data and tools once owned by a limited few. There have been drastic changes in the modalities of STI and in the way they are implemented—more specifically, the rapid progress of ICT, and the relationship between ICT development and the happiness of people. We are in the midst of a paradigm shift.
 - (2-2) **Contribution to the realization of global goals:** STI, with the integration of social sciences and humanities, is expected to play a major role in efforts to achieve global goals and realize a desirable world. This encompasses meeting the SDGs, tackling

issues such as poverty, healthy ageing, stable supplies of food and water, urban and environmental problems, the depletion of resources, and the establishment of a safe and secure society. For socioeconomic issues that are difficult for a single country or region alone to tackle, it is essential to seek feasible solutions beyond political restrictions (e.g. national borders), while making the most of public-public and public-private cooperation. The risks, costs, and results of R&D should naturally be shared in such processes, and it is right to expect public organizations to play a major part in R&D for such public good.

(2-3) **Building highly advanced R&D capacity and promoting mobility of talents:** To maximize R&D outcomes and create new value, it is important to promote the mobility of talent both inwards and outwards. This enhances the international network within which researchers and research managers are able to pursue excellence across research fields and national borders. The importance of such efforts has been repeatedly pointed out, including by various governmental proposals over more than a decade. However, this has not been addressed sufficiently and thus remains an important challenge. It is necessary to establish an excellent knowledge creation environment in Japan by strategically exchanging researchers to promote joint R&D.

(3) **JST's role and the international strategy:** R&D outcomes can take various forms, such as breakthroughs in basic science or the development of new technologies. JST focuses on leading innovation by facilitating favourable environments for the creation of new value (i.e. innovation ecosystems) under national STI policies. Our strength lies in our extensive portfolio of programmes and services. These cover a breadth of innovation-related activities centered around strategic frontier research and the promotion of industry-academia cooperation. JST activities range from fostering next generation talents to supporting entrepreneurs through equity investment, including science communication and information services. We believe that, acting as a catalyzer, JST can contribute to the creation of the ecosystems discussed above.

Taking into account the implementation of the Hamaguchi Plan for reforming JST and the Fourth Medium- to Long-term Plan, the conclusion of discussions on the internationalization of STI at the Ministry of Education, Culture, Sports, Science and Technology and other bodies, and with the deepening of discussions about the role of STI in realizing the SDGs, we have chosen to draft a new International Strategy to enable us to most effectively fulfill our mission.