## Strategic Intelligence Seminar Series
## STIG special International Symposium, "Toward Strengthening Strategic Intelligence in Science, Technology and Innovation (STI) Policies"

Date: Tuesday, May 28, 2024, 18:00–19:30
Organized by: Science, Technology and Innovation Policy (STIG), The University of Tokyo
Co-organized by the Institute for Future Initiatives (IFI), The University of Tokyo

The environment surrounding science, technology, and innovation (STI) policy is undergoing significant changes and uncertainties, including various issues such as climate change, rapidly changing geopolitical tensions, and rapid progress in science and technology. In such circumstances, the importance of "anticipatory governance," which enables future-oriented responses, is heightened.

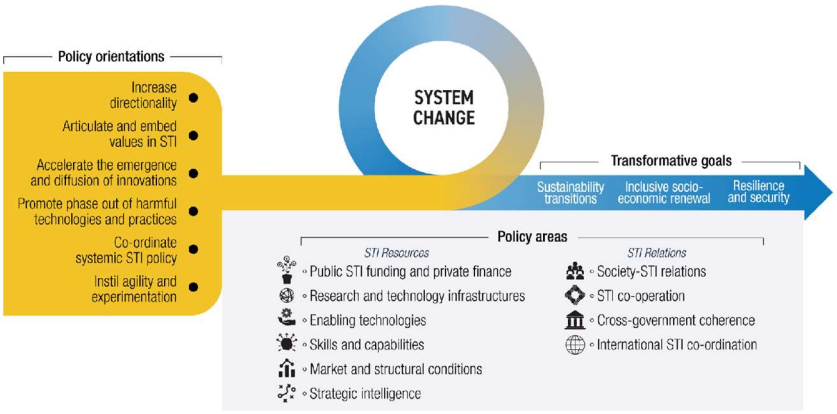
The need for "Strategic Intelligence" as the basis for all policies and responses is not new, but recent changes in the environment have made it more important than ever before, and there are discussions taking place in various countries on how to put this into practice, including those within the OECD.

This seminar invited Michael Keenan, Senior Analyst in the OECD Directorate for Science, Technology and Innovation, who shared his work and perspectives on the OECD's S&T Policy 2025 initiative and the latest developments in science and technology policy. Based on this, Japanese experts and policy/practitioners presented their thoughts in a round table discussion. The roundtable discussion was held as a first step to obtain ideas for better STI policy, institutional design, and ecosystem development in Japan, as well as to provide material for the 7th Science and Technology Basic Plan, which will be launched in FY2026.

**Keynote address "Meeting new expectations on STI policy – the OECD's Transformative Agenda for STI policies" (Dr. Michael Keenan, OECD)**

In his keynote address, Dr. Keenan focused on the Agenda for Transformative STI Policies (hereafter, the Transformative Agenda), the main output to date of the OECD's S&T Policy 2025 initiative of which he was the lead. The Transformative Agenda was one of two pillars of the April 2024 CSTP Ministerial Meeting Declaration (the other being the OECD Framework for Anticipatory Governance of Emerging Technologies). Both pillars draw special attention to the need for better Strategic Intelligence in policy making.

The background for the Transformative Agenda is described in the most recent edition of the OECD's STI Outlook[1] published in 2023. That report notes the growing "securitization" of STI policy, shaped by various global crises, rising geopolitical tensions, and the need for a sustainability transition. It was also noted that STI policies should be more ambitious in terms of transformation and the mental models that encompass relevant values and practices, new skills and competencies, new relationships, experimentation, and learning. These needs led the OECD to develop the Transformative Agenda.




In the April 2024 report on the **Transformative Agenda**[2], its **three** main elements were presented – (1) Three **Transformative Goals**: sustainability transitions, inclusion, and resilience and security; (2) Six **Policy Orientations**: clarifying directionality, embedding values, accelerating the diffusion of innovation, encouraging the phase-out of technology, adjusting systems related to STI policy, and taking an agile approach that allows for experimentation; and (3) Ten **STI Policy Areas** related to the resources and relationships required by STI systems: STI resources (funding and finance, research infrastructures, enabling technologies, skills and capabilities, markets, and strategic intelligence) and STI relationships (society and STI, STI cooperation, intra-governmental coherence, and international STI coordination). While all of the elements in the Transformative Agenda are already being implemented to some extent by policy makers, the new point is that it encourages a system-wide transformation by taking a systemic perspective and progressively moving forward on various fronts across the entire policy portfolio. To put

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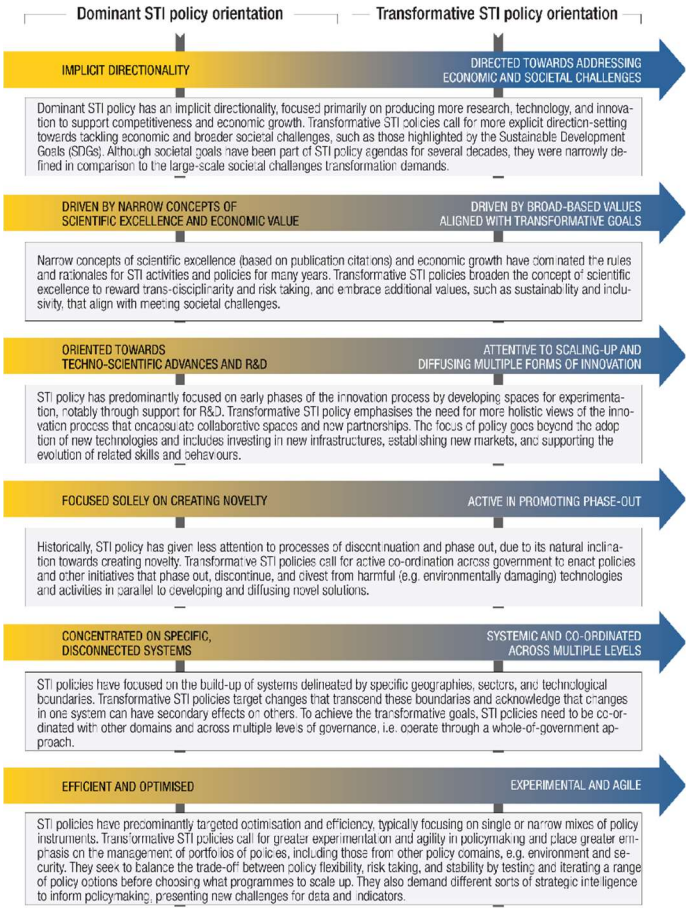
[1] OECD (2023) Science, Technology and Innovation Outlook 2023 - Enabling Transitions in Times of Disruption
https://www.oecd.org/sti/oecd-science-technology-and-innovation-outlook-25186167.htm

[2] OECD (2024) Agenda for Transformative Science, Technology and Innovation Policies
https://www.oecd-ilibrary.org/science-and-technology/oecd-agenda-for-transformative-science-technology-and-innovation-policies_ba2 aaf7b-en

this into practice, a concerted approach is necessary.

Based on the development of this agenda, **future activities** will include the development of guidance for policy actions in the 10 areas of STI policy (to be published by spring 2025). In addition, online interactive toolkits are being developed.

Based on this overall picture of activities related to STI in the OECD, Dr. Keenan introduced activities **related to Strategic Intelligence**. First, he defined Strategic Intelligence as "the available knowledge that supports policy makers in understanding the scope and impact of science and technology innovation and its potential future development," and it includes methods such as technology assessment, strategic foresight, evaluation, statistical metrics, and modeling. While there is currently a recognized need for increased knowledge and evidence to support decision making, there is a diverse and dispersed body of knowledge, some of which is emphasized within Strategic Intelligence and some of which is not, and fragmentation exists in the production and use of knowledge. Additionally, Strategic Intelligence is inadequately funded and receives insufficient policy attention. Therefore, as a transformative policy action, support for new and diverse forms of Strategic Intelligence and mechanisms to integrate and coordinate them needs to be considered, including building the skills and capacity to use them, to enable a transformative shift. The implementation of a policy response that implements a strategic "policy to evidence agenda" that promotes the production and use of Strategic Intelligence is required.




The other of the two pillars of the aforementioned Committee on Science and Technology Policy (CSTP) Ministerial meeting, the report [3] on an anticipatory governance framework, was also presented. In this report Strategic Intelligence is positioned as one of five goals (guiding values, strategic intelligence, stakeholder engagement, agile regulation, and international cooperation). The activities of the Global Forum on Technology[4] (a part of the OECD's various activities) were also introduced, in which immersive technologies, quantum technology, and synthetic biology are

[3] https://www.oecd-ilibrary.org/docserver/0248ead5-en.pdf?expires=1718536582&id=id&accname=guest&checksum=F9C9E0757AC5AC73bce072f610fe2a25

[4] https://www.oecd.org/digital/global-forum-on-technology/

identified as key emerging technologies. In his talk, Dr. Keenan also introduced the contribution of Japanese experts in the field of synthetic biology.

As for the OECD's future initiatives on Strategic Intelligence, it plans to provide opportunities for mutual learning, to practice Strategic Intelligence on specific technologies itself, and to support capacity building. Along these lines, the OECD will support mutual learning on building new institutions, given many countries are currently experimenting with establishing units for Strategic Intelligence within their governments (such as Sweden, the Czech Republic, Portugal, Korea, and Chile). Dr. Keenan also mentioned that training courses for policy makers on Strategic Intelligence tools are being offered in the Netherlands.

In response to this report, an online audience member asked about the evaluation of the effectiveness of Strategic Intelligence, and also asked what kind of organization should take on the role of a curator to mediate between the various policy issues and the various types of Strategic Intelligence. Dr. Keenan replied that first there have been attempts to evaluate strategic foresight and technology assessment exercises, but these have not been widespread and further development is needed. Dr. Douglas Robinson of the OECD, who joined online, also raised the challenge of ensuring the quality of Strategic Intelligence as it becomes more diverse. Second, curator, mediating organizations could take various forms, from centralized to decentralized, depending on the country. Synthesizing and networking the obtained information is a major challenge for consideration.

### Round Table Discussion

Dr. Makiko Matsuo, Associate Professor at The University of Tokyo School of Public Policy, moderated the round table discussion. The panelists presented their perspectives on the current status and challenges of Strategic Intelligence in Japan.

Ms. Kanae **Kurata, Director of R&D Strategy Division, Science and** Technology **Policy Bureau, Ministry of Education, Culture, Sports, Science and** Technology (**MEXT**) , stated that, in considering STI policy, it is necessary to take into account the current situation: i.e. rapid technological change, increasing geopolitical tension, public trust in science, aging population in the Japanese context (from growth to sustainability), and the need to strengthen evidence-based policy making (EBPM), as well as the declining relative status of Japan's research capabilities and the demand for increased international competitiveness. In addition, Ms. Kurata noted that Japan's current STI policy tends to follow major countries in its strategies for emerging major technologies in areas such as AI and quantum technology, and that prioritization of policies and anticipatory technology assessment are insufficient (especially in its response to technology convergence, assessment of social impact, and evaluation and consideration of overall impact). In response to this situation, agile and flexible governance is increasingly needed. Therefore, MEXT has just established the expert working team to discuss Strategic Intelligence[5]. The study group will consider the scope of the term Strategic Intelligence, specific initiatives, and the actual policy implications of the Strategic

[5] https://www.mext.go.jp/b_menu/shingi/chousa/gijyutu/041/index.html

Intelligence. The committee is also considering the effective use of the Strategic Intelligence function in actual policy making, identification of research and analysis functions (universities, think tanks, private sector), networking (decentralized), human resource development, enhancement of tool development, and more, with reference to international developments in this area.

Next, Mr. **Ueki, Director General of the Technology Strategy Center (TSC) of the New Energy and Industrial Technology Development Organization (NEDO),** gave an overview of NEDO's TSC and its challenges. NEDO's TSC has been conducting evidence-based project planning for METI since 2014 and has developed 101 technology strategies that have led to 159 projects to date. Despite these achievements, Mr. Ueki noted that some issues related to strategy formulation, project implementation, and social implementation must be improved. NEDO's projects are usually developed over 2 years, however, rapid technological progress and other factors can cause policy priorities to change, resulting in research budget requests that are not always met. In addition, NEDO projects are normally implemented over a five-year period but unforeseen changes in the social environment (for instance the war in Ukraine, the COVID-19 pandemic) may require changes in the policy agenda or a shift in direction. Further, the private sector is basically responsible for the practical application and commercialization of the project after its completion, but sometimes things do not go smoothly and the project may not be put into practical use. In light of these issues, the TSC is currently reviewing its innovation promotion system. The current focus has been on technological development that would lead to budgeted projects, but it aims to focus more on expanding the scope to include social implementation and examine the overall path forward through backcasting. In support of this, the TSC is considering producing the "Innovation Outlook" to organize the Strategic Intelligence of each field as a whole, from which it will identify elements for technological development and social implementation that should be addressed and compile them into an innovation strategy.

Mr. **Saeki, Deputy Director of the Center for Research Development Strategy (CRDS), Japan Science and Technology Agency (JST)** , spoke about his experience at the European Strategy and Policy Analysis System (ESPAS) (annual meeting held in the fall of 2022), which he attended when he was a member of NISTEP. In the EU, Strategic Foresight is embedded in policy and decision making. ESPAS is a framework for cooperation and consultation on such activities among EU institutions. The session on national foresight activities in which Mr. Saeki participated discussed the need for a diverse detection network for policy makers to deal with complex events and the need for an evolution of foresight methods. ESPAS covers all policy areas, not just science and technology policy, and a wide range of discussions take place. In particular, the concept of security expanded to various policy areas because of the influence of the war in Ukraine and other factors, and the need for cooperation with Japan and other Asian countries that share similar values was also mentioned throughout the conference. He also noted the importance of considering science and technology policy from a broader perspective. He also introduced the recently published CRDS report on strategic foresight[6].

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[6] CRDS Research Report: Initiatives in Other Countries Concerning Strategic Foresight - Basic Survey for Future R&D Strategies and Funding Areas
https://www.jst.go.jp/crds/report/CRDS-FY2024-RR-01.html

**Professor Shiroyama of The University of Tokyo's School of Public Policy** commented from two perspectives: the content of Strategic Intelligence and its management. First, there is a need to consider the contents of Strategic Intelligence. Strategic Intelligence includes both general evidence-based intelligence as embodied in so-called EBPM and uncertainty-based intelligence in areas such as diplomacy, security, and emerging technologies, but they are essentially different in nature. It is also necessary to be aware of the difference between the upstream and downstream contexts of technology. In particular, at the downstream, the issue of phasing-out (how to withdraw), which has traditionally been considered in industrial policy, should now also be considered in science and technology policy. In addition, with the increase of economic security considerations, sensitive technology and related topics are also considered objects of intelligence, but this too is of a very different nature. It is necessary to consider the extent to which the different qualities discussed in the name of intelligence should be discussed together without confusing them. Next, the following points were made regarding the management of information in Strategic Intelligence. In the implementation of transformative innovation, it is necessary to involve a wider range of multi-sectors and multi-actors, and in fact, the element of communication is important in this context. In other words, if the problem is that various forms of Strategic Intelligence currently exist but are not well connected, this is a problem of communication (translation and processing of existing information). It is also important for management to maintain an appropriate distance from decision makers. Sometimes it is important to organize the gathering of heterogeneous people, including information that is not direct and may not really be useful. Professor Shiroyama also noted that if information is ultimately secured through a network of people, creating such a network becomes an issue.

In response to these comments, Dr. Keenan expressed his expectations for Japan's participation and contribution in the next OECD programme of work and budget (the current one is 2023–2024), which will start in 2025, as well as for mutual learning with the discussions in the MEXT working team on Strategic Intelligence. It was also noted in the comments that Strategic Intelligence is not only about production and use but also about communication and networking, and the issue of distance from decision makers in the process, both of which are important. The difficulty for policy makers and scientists in dealing with dystopian scenarios was also noted. The point of economic security was also discussed, which has become even more apparent since the time it was covered in the 2023 edition of the STI Outlook.

The moderator expressed her gratitude to the speakers and panelists for their frank exchange of opinions and stated that she would like to organize and contribute to the discussion, taking into account international discussions at the OECD and other organizations, as the issues raised in this session are common issues faced by policy makers and others involved in STI policy, not only in Japan but also in other countries. She expressed her wish to organize and contribute to the discussion by continuously providing opportunities for discussion based on the international discussions at the OECD and other organizations.

Approximately 160 people attended the event, both on-site and online.

(Summarized by Makiko Matsuo, The University of Tokyo)

**Reference materials by speakers and panelists: materials on related activities by the organizers**

OECD (2024) Agenda for Transformative Science, Technology and Innovation Policies
https://www.oecd-ilibrary.org/science-and-technology/oecd-agenda-for-transformative-science-technology-and-innovation-policies_ba2 aaf7b-en
OECD (2024) Framework for Anticipatory Governance of Emerging Technologies
https://www.oecd-ilibrary.org/science-and-technology/framework-for-anticipatory-governance-of-emerging-technologies_0248ead5-en
OECD (2023) Science, Technology and Innovation Outlook 2023 - Enabling Transitions in Times of Disruption
https://www.oecd.org/sti/oecd-science-technology-and-innovation-outlook-25186167.htm

JST CRDS (2024) Policy Initiatives in Other Countries Concerning Future Insights - Basic Survey for Future R&D Strategies and Funding Areas
https://www.jst.go.jp/crds/report/CRDS-FY2024-RR-01.html

The University of Tokyo STIG Website
https://stig.pp.u-tokyo.ac.jp/

Ministry of Education, Culture, Sports, Science and Technology SciREX Coevolution Project
https://scirex.grips.ac.jp/news/archive/231002_2966.html

Projects implemented at The University of Tokyo among the above
Promoting bio-manufacturing for bioeconomy: visualization of policy issues and institutional design
https://scirex.grips.ac.jp/project/coevolution3-2.html
Policy research on Space Situation Assessment (SSA) to ensure the long-term sustainability of Japan's space activities
https://scirex.grips.ac.jp/project/coevolution3-3.html

Technology Governance Research Unit, Research Center for Future Vision
https://ifi.u-tokyo.ac.jp/units/technology-risk-governance/

Events at the Tokyo Foundation Institute for Policy Studies
"Rebuilding the Science and Technology Policy System to Address Social Issues."
https://www.tkfd.or.jp/research/detail.php?id=4407
International Symposium "Toward a Transition of Socio-Technical Systems: Based on New Science, Technology and Innovation Policies in the OECD"
https://www.tkfd.or.jp/research/detail.php?id=4227
International Workshop "Operationalizing Transformative Science and Technology Innovation Policies

and Future Challenges: Experiences from Japan and Overseas”
https://www.tkfd.or.jp/research/detail.php?id=4359