

LANDSCAPE OF OPEN SCIENCE IN JAPAN

Yasushi Ogasaka

This paper is based on a keynote presentation at the inaugural Asia-Pacific meeting of the International Association of STM Publishers (STM) in Hong Kong in June 2019 by Dr. Yasushi Ogasaka. It covers his insight into the evolution of open science and the need to increase researcher engagement including a summary of the Japan story.

In his current role as the Director of the Department for Information Infrastructure, Dr. Yasushi Ogasaka leads the information services of the Japan Science and Technology Agency (JST) after 6 years at JST being initially involved with their funding programs. Ogasaka is also responsible for formulating and managing the agency's policies that promote open science, including open access and open data. He is involved in wider initiatives in Japan to open the research results funded by their five national agencies.

JST has been utilizing the CHORUS Japan Dashboard and has been a partner with CHORUS since 2017.

Researcher Engagement

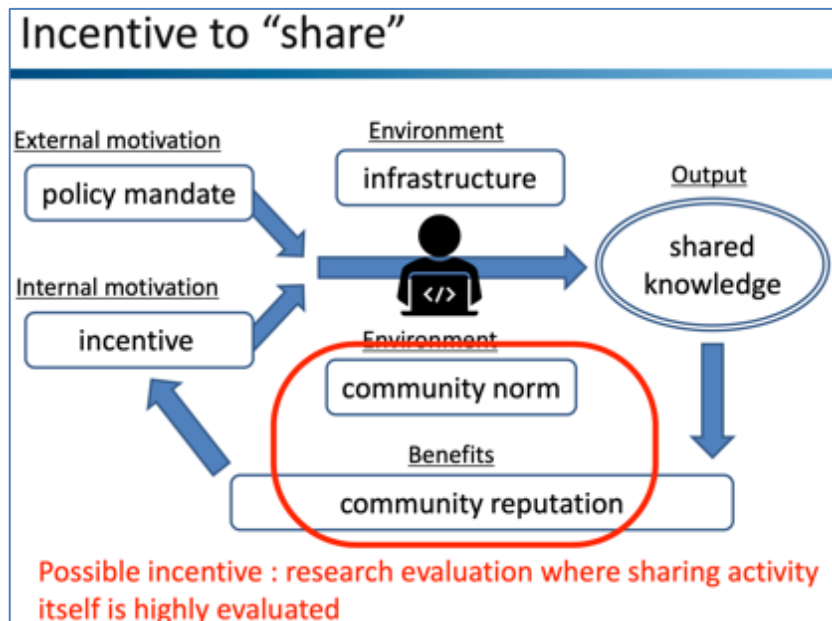
There are many types of “open” under the umbrella term of open science including open access articles, open data, the open research process and the contribution by non-professionals to scientific activity. Although open science is a relatively new way for researchers to engage, Ogasaka advises that waiving a magic wand to make comprehensive change will not work and that some of the traditional methods associated with research, including peer review and evaluation, will continue. The expectations of open science are high but this will lead to increased multi-disciplinary collaborations and advances in the area of research integrity.

Policy implementation has been in progress for some time including the OSTP memorandum in the US in 2013. According to SPARC Europe ([An Analysis of Open Science Policies in Europe - New report from DCC and SPARC Europe, August, 2019](#)) more than half of the European countries having national level policies of some type and more recently the release of Horizon 2020. Policy developments will continue and evolve. Ingredients for the associated infrastructure are also in place (e.g., data repositories and tools for data management plans and linking services). Ogasaka acknowledges that the publishing industry has been playing a central role in this scene, as the publishers are providing the key technology to enable the open-source methodology and sharing the outcomes.

The concept of open science is not new but has become a reality owing to the development of digital technology in recent years. Although the environment for open science exists, Ogasaka believes that researcher engagement is a missing component and that increasing the involvement of researchers in open science initiatives should become a priority. Researcher participation is not as high as had been hoped for and increasing researcher engagement is the final missing piece in the promotion of open science. Ogasaka notes that awareness is rising, quoting a recent report from SpringerNature ([Challenges and Opportunities for Data Sharing in Japan, 2019](#)) in which 95% of researchers in Japan have shared their data in some way. However, he is concerned that the practice of this sharing is

not very visible and quotes another study by Digital Science in 2017 ([The State of Open Data 2017, Figshare 2017](#)). This study indicates that motivation for sharing is diverse and varied by region.

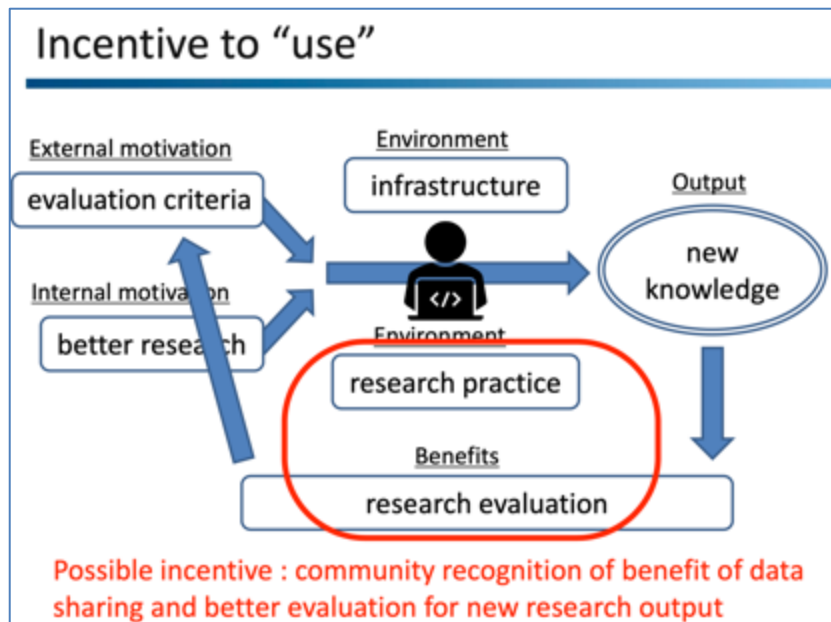
Ogasaka believes that by researchers sharing their knowledge there can be new insights and new collaborations fostered, therefore leading to better science and research outcomes. There are good reasons to share data but also reasons not to share. Some researchers ask why they should give their data away and are worried that results could be misinterpreted unless data management protocols are involved.



“So what can funders do to encourage researchers to share their data?” Ogasaka asks. Funders’ mandates will be an external motivation for researchers while establishment of digital infrastructure would be an internal motivation. Other enablers will be following the practice of the community where following a community norm would result in an increased reputation.

Conversely, researchers could be encouraged to use others’ data. Again following some research practice with supporting infrastructure will lead to better research output resulting in increased reputation. In other words, better use or reuse of data will lead to better output and better evaluation.

Ogasaka’s view is that the funders need to create incentives for researchers to share based on good community practice and on the community norm. At the same time, the role of the publishers and solution providers will be to enhance the discoverability of the outputs in line with the community norm. In summary, his belief is that full participation must come from researcher needs and the incentives must be based on community norms and good research practice.



Open Science Policy in Japan

Ogasaka continued his presentation by outlining a short history of open science policy in Japan from his perspective.

The highest group involved in setting policy in Japan is the Council for Science, Technology and Innovation which reports to the Prime Minister's Cabinet Office. Under the Cabinet Office there are ministries related to science and technology policy. Beneath the ministries, about 30 out of 87 Incorporated Administrative Agencies are involved in the implementation of science and technology innovation and policies. There are four major funding agencies.

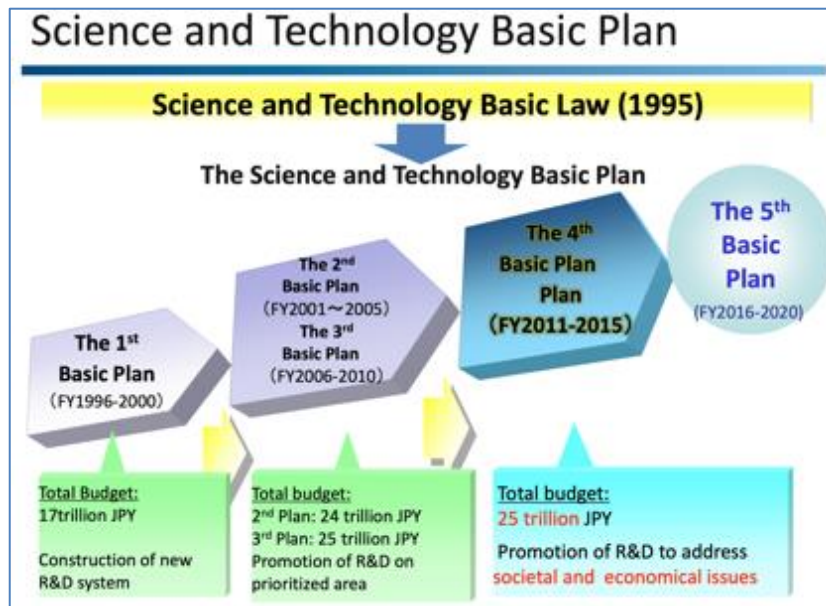
AMED – Japan Agency for Medical Research and Development

JST - Japan Science and Technology Agency

JSPS – Japan Society for the Promotion of Science

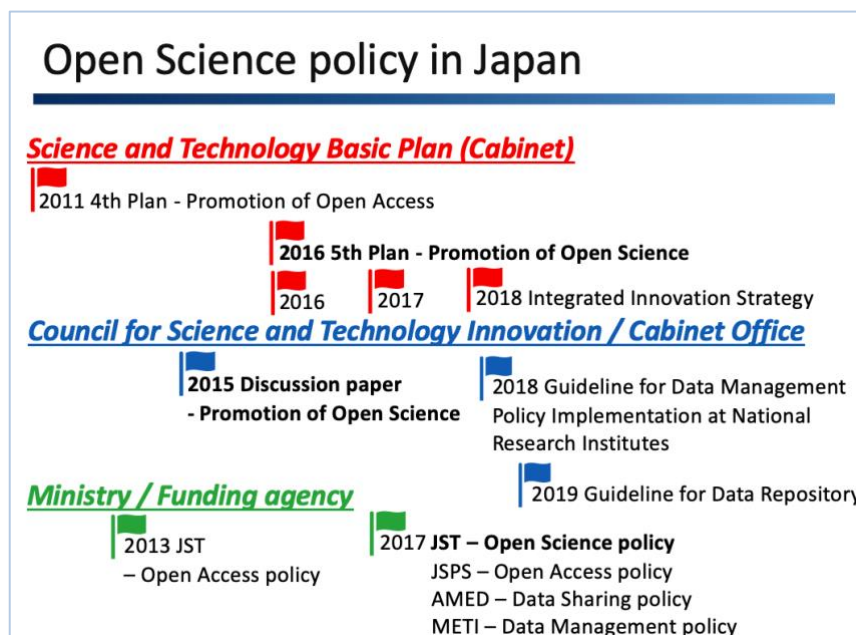
NEDO – New Energy and Industrial Technology Development Organization

The Basic Plan, started in 1995 and renewed every five years, governs the policies of the agencies. The word 'open' was mentioned in the fourth plan in 2011 and JST implemented its first open access policy in 2013. However, active discussion on open science was started later under the Council for Science, Technology and Innovation Report in 2015 which was incorporated into the current and fifth basic plan starting in 2016. Under that plan, the government of Japan is to establish a system for the promotion of science in Japan of which open science is an element of government policy.



Resulting from this policy direction, in 2017 JST issued a comprehensive open science policy, JSPS statements about open access and AMED and NEDO about data sharing and data management. That was the beginning of the implementation of a national strategy.

Under the structure of the Basic Plan, every year the government introduces more detailed plans called Integrative Innovation Strategies. In 2018, this included guidelines for data management policies to be implemented for all 24 national research institutions and the establishment of a national data platform, both by 2020. In addition, all 21 funding bodies will have to establish data management policies by 2021, as JST had done already.



In 2017, the Cabinet Office established an expert panel on the promotion of science, of which Ogasaka is a member. Its focus is science implementation policy in Japan and currently working on building national data infrastructure and data policy.

JST

Ogasaka concluded his presentation with some information about JST.

JST's annual budget is close to one billion US dollars of which 85% of the budget funds research and development in Japan. This is roughly a quarter of the competitive research grants open to Japanese researchers. Open science policies are implemented for the many programs from basic research through to commercial collaborations.

The JST open science mandate was introduced in April 2017 and the researchers are asked to follow three practices. First there is a mandate that their articles must be open. The method is not specified but can be gold open access where APCs can be paid out of research grants, green open access on publishers' platforms or institutional repositories. Second a data management plan must be submitted before the research is started and third researchers are recommended to make the underlying data openly available upon publication.

The open access mandate is working well and data reported by CHORUS to JST (adjusted to November 2019) shows that 38% of the 15,500 articles identified by CHORUS are verified open access on publishers' platforms. Filtering for CHORUS member-only publishers this increases to 40%. Similarly the data management policy is being followed successfully and Ogasaka suggests JST will be monitoring CHORUS reports on datasets once the numbers of datasets associated with published articles have increased.

Future ideas under review are direct funding of APCs for grant fundees, the implementation of grant IDs for more effective reporting and tracking of funded activity and potentially some financial support for data management.