Final Report

Empowering EU-Japan

Science, Technology & Innovation Cooperation

Key programmes to facilitate EU-Japan cooperation

Overview

On 9 June 2016, the seminar "Empowering EU-Japan Science Technology and Innovation Cooperation: Key programmes to facility EU-Japan Cooperation" was held in Brussels at the Royal Flemish Academy of Belgium for Science and the Arts. It was organised by the JEUPISTE consortium, the EU-Japan Centre for Industrial Cooperation, Kobe University and the Agency for the Promotion of European Research (APRE). Support was received from the Japan Society for the Promotion of Science (JSPS), the Royal Flemish Academy of Belgium for Science and the Arts, the European Institute for Asian Studies and KU Leuven.

The aim of this event was to discuss the current state of EU-Japan Innovation, Science and Technology (STI) cooperation, to report on the outcomes of the FP7-funded Japan-EU Partnership in Innovation, Science and Technology (JEUPISTE) project, as well as to give an overview of programmes to facilitate EU-Japan STI cooperation. Three leading Japanese research agencies, the Japan Society for the Promotion of Science (JSPS), the Japan Science and Technology Agency (JST) and the New Energy and Industrial Technology Development Organisation (NEDO), presented funding opportunities, tools and programmes open to European researchers.

80 people from research institutions, academia, government and companies participated in this event.

Ms Aiko Higuchi, Director, EU-Japan Centre for Industrial Cooperation — *Opening remarks*

Ms Aiko Higuchi opened the seminar by introducing how the EU-Japan Centre for Industrial Cooperation has become an active player in assisting the expansion of STI cooperation between Europe and Japan ever since the signing of the EU-Japan Science and Technology Cooperation Agreement in 2009. The JEUPISTE project and the Horizon 2020 National Contact Point in Japan are such examples. The seminar was organised as part of the JEUPISTE project in order to provide information on: (1) STI policy landscape in the EU and Japan; (2) activities and results of the JEUPISTE project; and (3) tools available to facilitate EU-Japan STI cooperation.

Part I: EU-Japan Policy Perspective on Science, Technology & Innovation Cooperation

Dr Anne Haglund-Morrissey, Senior Policy Officer, DG Research & Innovation, European Commission

Horizon 2020 and Cooperation with Japan

Photo 1: Presentation by Anne Haglund-Morrissey (European Commission)

Dr Anne Haglund-Morrissey noted that Horizon 2020 has been essential in the context of advancing cooperation between the EU and Japan in the area of research and innovation. At present, one of the main priorities for research and innovation is the strengthening of international cooperation in this area, with partners from around the world, and in particular with Japan.

The fact that there has been an overall commitment to cooperation between Japan and the EU was highlighted. This can be seen in the birth of a new strategic partnership in research and innovation between the two parties in May 2015. Dr Haglund-Morrissey also reiterated that such partnerships and areas of cooperation aim to deepen dialogue at different levels so as to continue the momentum of science and technology collaboration between the EU and Japan in years to come. A number of strategic areas have also been identified where cooperation has been, and will continue to be strengthened, for instance in ICT, aeronautics, and materials research. Apart from these priority areas, some further areas of interest have been identified to be explored – health research, energy research, environmental research, and high energy physics, to name a few.

However, there are still areas that remain open for improvement. First, in developing more co-funding schemes with Japan. It is noteworthy that co-funding mechanisms are being discussed with strategic partners. One of which, with the Japan Science and Technology Agency (JST), is currently underway, and is hoped to be expanded. Second, in finding ways to further facilitate research mobility as seen in the agreement signed last year between the Japan Society for the Promotion of Science (JSPS) and the European Research Council (ERC), which allows Japanese researchers to team up with their European counterparts. Third, in continuing support for activities and engaging the wider public. And finally, in identifying new areas for potential cooperation.

Japan has been very active in the EU framework, with approximately 100 projects with numerous Japanese partners thus far. Moving into the next phase of Horizon 2020, beginning in autumn 2016, will enable the EU and Japan to discuss further their common interests and areas for potential collaboration, so as to continue what has been a fruitful partnership in multiple areas within science, technology, and research and innovation.

Dr Dan Andrée, Special Advisor, Ministry of Education and Research (Sweden) & VINNOVA, Chair of Strategic Forum for International S&T Cooperation

Strategic Forum for International S&T Cooperation: EU Member States and Japan

Dr Dan Andrée pointed out the necessity for greater coordination given the difficulties countries outside of the EU have in trying to forge cooperation with the EU due to the many member states that constitute the Union. Thus, the Strategic Forum for International S&T Cooperation (SFIC) works to ameliorate this by giving strategic advice to EU member states, Associated Countries and the European Commission on how they can move forward with cooperation with third countries. SFIC also identifies stakeholders, common interests and priorities so as to establish new opportunities for collaboration or intervention. It is in this light that the SFIC has released its newest development, a toolbox that will act as a practical guide to ease the process of implementing and coordinating STI agreements and cooperation between the EU, Associated Countries and the European Commission.

The toolbox will be effective for EU-Japan cooperation by providing a resource of past experiences and networks that Japan can utilise. It will also allow greater coordination on the side of the EU when engaging with Japanese partners. Dr Andrée concluded with a reiteration of interest in establishing connections and contacts with the JEUPISTE project and other organisers and stakeholders looking towards more cooperation between the EU and Japan.

Mr Kazumi Shindo, Counsellor, Mission of Japan to the European Union

Japan's Science, Technology & Innovation Landscape and Cooperation with Europe

Mr Kazumi Shindo elaborated on Japan's STI policy, which is outlined in Japan's 5th Science and Technology Basic Plan. The Basic Plans are released every 5 years, and reflect the Government's priorities. As such, the current Basic Plan focuses on science and technology policy as one of the most important strategies of growth. Mr Shindo pointed out that increasing complexity in both the domestic and international spheres has brought about an era of change in terms of the social and economic structure of Japan. As a result, a greater emphasis on innovation and open science is seen as necessary to deal with this changing context.

Mr Shindo highlighted several noteworthy developments and key points that have been conceived under the Basic Plan via the seven chapters that elucidate the 'how' and 'what' of the plan – first, to work towards greater coordination across numerous systems. An example of this is the Strategic Innovation Promotion Programme (SIP), which works to foster innovation and facilitate collaboration across ministries, universities and the government.

On the other hand, one of the most important agendas is to build networks that will allow greater international cooperation. Mr Shindo underscored the necessity of breaking the inward-facing tendency of Japanese researchers and encouraging their success overseas. At the same time however, Mr Shindo noted that the number of outgoing Japanese researchers is greater than the number of foreign researchers coming to Japan. He expressed that equal attention should be paid to promoting the success of foreign researchers incoming to Japan. To this end, the 5th Basic Plan covers the pursuit of science and technology diplomacy through building bilateral and multilateral relationships for cooperation.

Part II: Europe-Japan Cooperation on Science, Technology & Innovation

Mr. Stijn Lambrecht, Project Manager, EU-Japan Centre for Industrial Cooperation

Outcomes of the JEUPISTE Project

Mr. Stijn Lambrecht gave a brief presentation on the aims and outcomes of EU-Japan cooperation under the Japan-EU Partnership in Innovation, Science and Technology (JEUPISTE) Project. The aims of the JEUPISTE project include supporting policy dialogues, bilateral dissemination, networking and twinning, and individual help desk support and training.

Mr. Lambrecht highlighted helpdesk support as one of the most beneficial outcomes of JEUPISTE so far, and expected to receive more than 1,000 enquiries over a three-year period. The helpdesk provides information to stakeholders with questions on EU-Japan cooperation such as specific administrative procedures or how a Japanese organisation can be integrated into a Horizon 2020 project. Other outcomes of JEUPISTE include reports to provide input to the EU-Japan STI policy dialogues, such as an inventory of joint STI programmes, and analytical reports on EU-Japan cooperation and co-publications. It has been also active in promoting EU-Japan cooperation through events in Europe and Japan, as well as connecting research communities through networking events in areas such as smart communities, biotechnology and nanotechnology.

By holding dialogues to bring together stakeholders, setting up a helpdesk to disseminate information and publishing reports to help policy dialogues, JEUPISTE has played an active role in facilitating the flow of information between stakeholders in Japan and Europe. In addition, maintaining an inventory of past cooperation and providing analysis on such collaborative efforts aids in identifying future areas for cooperation in the field of STI.

Professor Ken-ichi Yoshida, Graduate School of Science, Technology and Innovation, Kobe University, Executive Director of Kobe University Brussels European Centre

The Added Value of EU-Japan Science, Technology & Innovation Cooperation

Professor Ken-ichi Yoshida gave a presentation on the outcomes of EU-Japan STI cooperation: Japan and the EU have had a long history of collaborative research in STI. From the 1988 EURATOM-Japan Fusion Cooperation Agreement to the 2009 Science and Technology Cooperation Agreement, these multiple efforts at improving cooperation indicate that the EU and Japan share many of the same interests and problems. Therefore, they need to work together to find solutions to these problems, to share ideas and to increase competitiveness of industries.

In 2015, the Japanese Government and the European Commission established a joint vision towards a new strategic partnership in research and innovation. The common challenges that the joint vision focused on include climate change and environmental policy, development policy, disaster relief and security policy. The key strategic areas specified by a joint committee were critical raw materials, aeronautics, and ICT, especially *vis-à-vis* cybersecurity.

Professor Yoshida stated that the added value of cooperation comes from sharing accumulated knowledge and experiences between institutions and experts that research in specialised areas. For example, Kobe University established a Research Center for Urban Safety and Security in 1996. A report following the tragic 2011 Tōhuku Earthquake was presented at an academic event in Brussels to share lessons learned on how to build a safer and more resilient society against mega-disasters.

In his conclusion, Professor Yoshida shared his own research experiences as a microbiologist. He studied *bacillus subtilis*, a type of bacteria that produces enzymes which can be used for fermentation and the production of starch. Over five years, he collaborated with European researchers to make a genome sequence and analysed the entire genome to discover the 300 out of 4000 genes that were "essential" to its life. This then led to further EU-Japan collaborative research that used new knowledge of *bacillus subtilis* to produce proteins, thus opening up opportunities for both European and Japanese societies to innovate in issues of health and nutrition.

Prof Alessandro Vercelli, Neuroscience Institute Cavalieri Ottolenghi, University of Turin

Success Case EU-Japan Cooperation in Horizon 2020: My Active and Healthy Ageing (My-AHA)

Professor Alessandro Vercelli presented the project "My Active and Healthy Ageing (My-AHA)" as an example of how international cooperation can yield innovative solutions to social challenges around the world. As its name suggests, My-AHA aims to address the challenges of an aging population – difficulties faced by both European and Japanese societies – with the use of technology. Researchers from the University of Turin worked with European, Japanese, Korean and Australian partners on this undertaking. International collaboration allowed multiple research samples to be taken in user centres in Europe, Tokyo, Seoul and Brisbane. These different samples allowed researchers to control for cultural factors and provide more accurate scientific results.

The project focuses on addressing frailty, defined as the effects of aging which starts from 55. Researchers such as Professor Vercelli have developed a new concept of "cognitive" frailty, expanding on the traditional notion of physical frailty, which involves issues with balance, gait and motor impairment. This expanded concept of frailty includes psychological frailty (such as depression or anxiety), social frailty (loneliness) and even a poor quality of sleep.

Certain aspects of frailty can be managed by promoting physical exercise, cognitive stimulation, a healthy diet and sufficient sleep. As such, My-AHA has developed ICT-based solutions such as MEME glasses, produced by a Japanese company. These glasses detect eye movements and employs accelerometers to measure gait and transmit data to a smartphone, which then forwards it for analysis. Other products use technology for "brain training," as well as designing recipes tailored to the elderly.

Many European and other countries face a need to update policies to manage the effect of an aging population, especially *vis-à-vis* sustaining the workforce and providing healthcare. Meanwhile, My-AHA assists this effort using innovative technological applications. Working together with Japanese and other partners has yielded positive results and provides optimism for future collaborative efforts.

Photo 2: Mitsuhiro Yamazaki (NEDO), Kumiko Nakayama (JST Paris), Nobuo Ueno (JSPS London) and Béla Kardon (RCISD)

Part III: Science, Technology and Innovation programmes to engage with Japan

Dr. Béla Kardon, Chief Scientific Officer, Regional Centre for Information and Scientific Development

Overview of Science, Technology & Innovation Programmes for EU-Japan Cooperation

When it comes to cooperation with Japan, Dr. Kardon pointed out difficulties due to the complexity of the Japanese system. In order to make the process easier, RCISD has been working on the creation of a comprehensive inventory of STI cooperation programmes. The objective was to create an STI database of bilateral and multilateral cooperation delivering more content than the previous effort to create such a database, done by the CONCERT-Japan project.

To reach this objective, several problems needed to be overcome: the terminology is not always the same and has to be standardised to make cooperation easier. The lack of data available on earlier and current cooperation programmes in different EU member states is uneven and language barriers can be a difficulty when programmes are not written in English. Moreover, contents of programmes such as budgets or eligibility criteria change over time and data about cooperation is not available on the web.

RCISD's working methods consisted of identifying the different cooperation opportunities between the EU and Japan listed on websites of Japanese funding agencies. After identifying the partners' institutions, RCISD tried to determine the matching programmes from the Europe side, information concerning fields of cooperation, contacts for these programmes, and finally made it searchable on the web.

Prof. Nobuo Ueno, Director, JSPS London ***JSPS Programmes for Japan EU collaboration***

Established in 1932 through an endowment by Emperor Showa, the Japan Society of the Promotion of Science (JSPS) is an organisation which carries out a large amount of funding programmes promoting science research through a bottom-up approach in which researchers can propose certain topics for cooperation. Administratively, JSPS falls under the Ministry of Education, Culture, Sports, Science and Technology (MEXT) – the largest public funding organisation for research in Japan. Contrary to other funding agencies, JSPS is the only one to support exchange programmes for PhDs and researchers through fellowship exchange programmes.

Through its annual subsidies from MEXT, JSPS supports young researchers and awards Grants-in-Aid for scientific research, promotes competitiveness and supports collaboration between universities and industries through joint programmes. In addition, JSPS promotes international research with the goal of building robust cooperation with foreign countries. The organisation has many overseas offices. Concerning the EU, JSPS offices are located in London, Stockholm, Bonn and Strasbourg. In 2014, 1,875 Japanese researchers were based in Europe while 1,296 Europeans were working in Japan through its international programmes.

Through its bottom-up approach, research proposals come from researchers' initiative within bilateral programmes. European and Japanese researchers submit their proposals to their national funding agencies in order to receive financial support. An example of JSPS international cooperation is the Core-to-Core programme, which builds linkages between Japanese and overseas researchers in cutting-edge fields and fosters early career researchers through joint activities. In 2015, 31 projects with European research institutes were funded through this programme.

Ms Kumiko Nakayama, deputy director, JST Paris Office

Overview of the Japan Science and Technology Agency (JST) and international research cooperation

The Japan Science and Technology Agency (JST) was established in 1996 and has 1,247 employees including 251 PhDs. As part of Japan's National R&D Agencies, JST receives funding from MEXT. In 2015, it had an annual budget of EUR 850 million and funded 4,485 projects, benefiting 294 Japanese universities and 126 research institutes. The mission of JST is to contribute to the creation of innovation in science and technology through creative research and development, the development of Japan's infrastructures for S&T and through acceleration in innovation fields for S&T.

Through different prioritised areas such as green innovation, nanotechnologies or ICT, the Strategic International Collaborative Research Programme (SICORP) outlines how JST conducts cooperation with foreign partners. SICORP's objective of is to find solutions to global issues through collaboration with a large number of countries in the scientific innovation field. In terms of funding, this programme works in cooperation with national funding agencies. JST funds SICORP projects for the Japan side when the counterpart agency provides funding for the partner for bilateral or multilateral projects such as the superconductivity project between the EU and Japan on the properties of novel superconducting materials and their use.

Mr. Mitsuhiro Yamazaki, Deputy Director, NEDO Representative Office in Europe

International collaboration activities of the New Energy and Industrial Technology Development Organization (NEDO)

NEDO is the largest public organisation promoting research and development, industrial technologies and energy saving technologies in Japan. It was established in 1980 is under the Ministry of Economy Trade and Industry (METI), as an incorporated administrative agency, and has c.900 employees and (in 2016) a budget of EUR 1.04 billion. Mr. Yamazaki explained that NEDO's mission is mainly focused on global environmental issues and the enhancement of Japan's industrial competitiveness. It participates in many areas such as renewable energy, ICT, robotics, water treatment or nanotechnologies. Achievements include the ENE-FARM, Blue LED or EcoCute. For these different projects, NEDO combines top-down and bottom-up approaches for technology development.

NEDO is also extremely active concerning cooperation with foreign partners and has conducted many partnerships with the EU such as a project in Germany concerning medical service robots using the robot suit "HAL" (Hybrid Assistive Limb) or a project for energy switching of heat consumption of households in Manchester. The Smart City project in Lyon is also a good illustration of NEDO's partnership with an EU member state and aims to establish a future city model through sustainable and innovative city planning which matches with the environmental target of the EU. The French and Japanese cooperation was built on different projects like positive energy buildings, home energy monitoring systems and car sharing initiatives.

Q&A on a wide range of issues

Points raised included: how to ensure that the fruits of the various initiatives would actually translate into improving citizens' well-being and whether global governance would ensure that global challenges are addressed; what were the biggest challenges facing EU-Japan STI cooperation and how to overcome them; the application process for the JSPS KAKENHI grant; and whether EU researchers and companies were eligible for NEDO's programmes.

Photo 3: The audience at the event

Report prepared by the European Institute for Asian Studies and the EU-Japan Centre for Industrial Cooperation.

Presentations available on the websites of the JEUPISTE project and the EU-Japan Centre for Industrial Cooperation