

Agenda item 1. About Science and Technology Policy of each country.

Professor Yuko Harayama: Good morning. We'd like to begin the meeting. Today, Minister Yamaguchi, Senior Vice Minister is absent. Two members are absent: Mr. Yoichi Yamada and Mr. Onishi are absent. We wanted to make this meeting open to other people from outside. Is it okay? Yes.

Today, from the EU and the UK, we have guests to speak about their experiences in how they set up innovation-related initiatives. We have two guests, eminent speakers, one from the European Union, Dr. Leonidas Karapiperis, in charge of Science and Technology of the EU delegation in Tokyo in Japan. And we also have Elizabeth Hogben, she is head of Science and Innovation section with the British Embassy in Tokyo. So you have a short presentation from both of you, and then we will pass to the discussion. Could you start? Fifteen minutes maximum, please.

<The explanation from Dr. Leonidas Karapiperis, Minister Counselor, EU Science and Technology Section Delegation>

Prof. Harayama: Thank you very much. We quickly move to Elizabeth.

<The explanation from Ms. Elizabeth Hogben, Head of Science and Innovation, British Embassy Tokyo>

Prof. Harayama: Thank you so much for your overview from both of you. The floor is open. Questions, or remarks, or comments. Mr. Nakanishi?

Mr. Nakanishi: My first question is for the UK government activities. First one is that you listed up so many of the departments in the UK government, just started from the HM Treasury, Department for Business, Innovation and Skills. How do you overcome the, kind of the silos? How do you make some more integrated planning for the science and technology development innovation?

Ms. Hogben: This is a really big challenge. We have a government office for science, which takes an overview across all of government department scientific activity. They help with that process of avoiding departments working in silos. On things like science budgets, in many cases there'll be a chief scientific adviser in the departments who provide advice on the budgets and talk with their counterparts in other government

departments as well, to help make sure that they're not both spending on the same sort of area. And increasingly the government, between departments, they're trying to build teams that work across different departments too. So groups of officials working on a specific area. But it's a problem for, I think, any major bureaucracy.

Mr. Nakanishi: That's also the same case as ours. So that's my first question. So in some cases, for example, you mentioned about infrastructures for such science and technology development. The first question is, what is the definition of the infrastructure for this document? The page was, the investing in scientific infrastructure, what are the definitions? And also, I guess that the major activities of the infrastructure might be the Innovate UK, that's the real value of implementation of the infrastructure for that activity.

Ms. Hogben: The science infrastructure in this context means quite a wide range of things. It would be either public sector laboratories. It could be the major research facilities. So one of the research councils is the Science and Technology Facilities Research Council, and they cover some of our major infrastructure, like, we have the Diamond Light Synchrotron, which is I think a little bit equivalent to the Spring-8 Synchrotron here in Japan.

We have the ISIS, we also have the Rutherford-Appleton Laboratory, we have also investments in European and international major laboratories like the European Organization for Nuclear Research (CERN), for example. So there's that kind of scientific infrastructure, as well as new centers in universities, which would be national centers for a specific area, such as, I think we have a new center in Manchester around graphene and one in Cambridge on graphene. So those sorts of centers for developing specific areas.

Mr. Nakanishi: So a wide range of these additional activities are included here.

Ms. Hogben: Yes. Yes.

Prof. Hashimoto: I have a question on the Horizon 2020. I understand that this program does not contain the education program, an education especially for the undergraduate. Partly maybe the graduate course education could be included in this one, but not the undergraduate education program. Our discussion now is very important for the connection between such an education and such research funding. Do you have any specific programs for the encouragement, a program to have such a connection between

the education, especially undergraduate and graduate course education, and the research innovation programs?

Dr. Karapiperis: Thank you very much. You are right in what you said. I concentrated very much on the research innovation part, although we do have at the EU-level also some education-oriented programs. I should stress through that among the EU competencies, that is, where the EU has been given the obligation and the right to develop programs and spend money, education is one of the smaller ones, because education very much is still a national priority. So most of the spending, especially at the undergraduate level, happens at the national level.

However, we do have, because we do have some very important mobility schemes, the Erasmus scheme, including an international component of the Erasmus scheme, which has become a very standard fixture. That is, a significant percentage of students in Europe, thanks to this EU-level program, spend a semester or a year of their time doing undergraduate work in a different country or abroad.

Prof. Hashimoto: I see.

Dr. Karapiperis: So this is a huge success, is very popular, and I think it contributes–

Prof. Hashimoto: How much money does it contribute?

Dr. Karapiperis: The European Union contributes a certain stipend per month, and then they have to complete some more from their pocket. Basic expenses, the money is there to cover basic expenses. But more importantly it creates a framework for these exchanges to happen. The universities know that now, and there is a network now between universities which know each other a lot better by exchanging students. And on top of that, we also have a program, which is run by the, we have a minister so to speak, a director-general for education and culture, who also runs a program for the exchange of professors and teachers.

So, therefore the main activity we have is primarily in exchanges, in exchange programs, but also, we do promote studies and activities in the renovation and modernization of the university systems. For example, how to better manage research, how to do budgeting of research, how to calculate the costs better. How to have a better recognition of equivalence between degrees. There is a famous process called the Bologna Process,

which helps universities to more or less align with each other, which facilitates a graduate from a university in Spain to be recognized automatically by when they move, because freedom of movement is a very important thing.

Prof. Hashimoto: I understand the importance of that system. My question is, how do you encourage the universities to have such unity?

Dr. Karapiperis: Well the first thing is the mobility. We do the mobility schemes and...

Prof. Hashimoto: How do you encourage them? Through a financial support?

Dr. Karapiperis: We give money. So you provide...

Prof. Hashimoto: I see. Which money? Horizon 2020?

Dr. Karapiperis: As I said, the framework. What is very important is the framework, not so much the money is there, but creating a framework. For example, we created frameworks at, and then, what I mentioned earlier in my presentation very quickly, there is the European Institute of Innovation and Technology, which is linking education at all levels, also with research of course, with industry, entrepreneurship, and creating really a mentality of students to look into applications and transfer the knowledge as soon as possible into the real economy.

So this is a program that, in the previous framework program, the previous seven years, it had 300 million euros, and it was felt to be so important that its budget was multiplied by ten. So they have 3 billion euros, but they have to prove that they really know how to spend this money well, so there will be a very important, very in-depth evaluation in 2017 before the money continues. But there again there is a European dimension. We create what we call the Knowledge and Innovation Communities, usually involving three major urban areas, like Stockholm, London, and Marseilles, around a theme, which could be renewable energies, which could be, you know, food, and so on. And the universities, the industries, the local authorities, they all cooperate to link education and economy at the local level and also across Europe to these hubs that constitute these communities.

Prof. Hashimoto: Thank you.

Prof. Harayama: Dr. Hirano.

Dr. Hirano: Concerning the Horizon 2020, you almost equally allocate the budget to the three categories. One in the excellent science, the other one is industry-oriented, and the social program-oriented. Do you have any philosophy or special reason how you finally determined such a kind of balance? I think this kind of balance is important. Maybe it reflects the philosophy of the country.

Dr. Karapiperis: I think I was, well, this is a very difficult question, and I have asked it to my colleagues back home when I was invited just before Christmas to come and speak to you here today. There is no magic answer. But I think there has to be some continuity with previous programs that we've had. Because we consider at the Europe Union-level, we can contribute really to the mobility of researchers. So this part of the mobility scheme, the Marie Curie scheme, is part of the excellence part. This is something that member-states on their own they cannot do, but the EU can do it. So mobility is a very important aspect.

Research infrastructure is another important aspect, because more and more infrastructures are so expensive that we really need a European approach. And therefore we are more privileged, better suited I think to develop long-term strategy. And this is an area where Europe is really developing ten, twenty-year long strategies of the next infrastructures that can be built. And we're building them in collaboration with the structural funds that we have. So we have a very extreme light source, which will be one of the three brightest in the world, which is being built between Romania and Hungary, for example. By themselves they would never have the money to do it, but thanks to the structural funds, and the belief that science and technology, even basic science, can really spur local growth, and really help the regional regeneration.

Therefore, this is another area which is considered to be excellence, of course. It's promoting excellence in science, but at the same time it promotes regional growth. So this is also part of that pillar. And in the end it was continued on the belief this type of activity is essential, even when we have a crisis, even when we try to get out of a crisis, we need more investment in industry and new technologies. We will not have that unless we have the skills, the people, and the basic knowledge. That's why I think this is the main lesson: that instead of decreasing, we in fact, if anything, we increase proportionately. This is, I think, the main lesson. Our support, mobility, and bottom-up excellent science than decreases it.

Dr. Kyuma: Let me ask a question about the UK's strategy. You talked about a Catapult Centers, and the story of regional clusters. How industry, academia and government are involved? How do they collaborate with each other? In particular, which institution takes the leadership? How do they get the research fund? Could you tell us?

Ms. Hogben: So I think that is quite a difficult question, because a lot depends on each individual area. So for Innovate UK and the work done on innovation, the body was set up by the government, but the priorities are determined in consultation with business. And I think a key aspect of the projects and the schemes that are funded through Innovate UK, is that it's the one-third/one-third model. So, no project will go ahead without the one-third from business. And so, for individual projects, business has a strong role to play in determining which projects are within that particular theme.

As the next level up, I think for the industrial strategy, that was very much driven by the industry leaders that came together in each sector to say what the big challenges were, how the global recession was hitting their sector, what kind of supports they would welcome from the government that they couldn't do by themselves. So looking at things like skills and technologies and financial structures, that kind of thing. But the technology areas themselves, they came from business. One of the important things that the government platform and the government-hosted discussion helped to do was to identify where there were some common themes across different sectors that were starting to be identified as the areas where the whole country needed to get behind supporting development of a particular technology area. Because the UK needed it for supporting its industrial base across a number of different sectors, and it was also likely to be a technology that was going to be important for the future, and where the UK either was starting to be or would like to be a global leader. So those sorts of areas were very much driven by the industry leaders in each of the sector groups.

For things like research activity, we have a principle in the UK called the Haldane Principle, which suggests that for selecting research topics, that's best done by the scientists themselves, for purposes of making sure that we're really truly funding excellent science. We have a research excellence framework for assessing what comes out of universities, and it's historical, so it looks at the publications, it looks at what kind of impact case studies the universities can produce. But it's driven, again, by what the universities have already done, what the academia has already achieved, and the decisions that they have made. So, again, the power is very much in the hands of business and

academia depending on the sphere of activity, and government plays a convening role in most cases.

The area where government takes most direct decisions on research and development activity is around policy questions and policy research, and those budgets are held by individual departments. So our Ministry of Defense; our Department for Energy and Climate Change; for Environment, Food and Rural Affairs; they all have their own research budgets to spend specifically on policy questions. And some of them have their own research institutes as well. So on things like infectious diseases, there are individual research institutes that are supported by those departments. And in many cases those individual research institutes are world-class. Because they're all assessed, and not just on how well they deliver the policy research, but is it excellent research.

Prof. Harayama: Thank you so much. The time is over now, so we hope we will continue our dialogue [inaudible], and we will share with you our advancements in the discussion. So thank you so much, Leo and Elizabeth, and we're finished with the meeting today. Thank you very much.

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