Setting the Tone

Symposium on the Global Innovation Ecosystem (GIES)

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1. Direction of science and technology for the 21st century

In the last century, the pursuit of new scientific knowledge was a basis for technological and economic advances. However, as proclaimed in the declaration of the World Conference on Science 1999 in Budapest, human society seems no longer to support knowledge production alone ("science for knowledge"): science and technology for the 21st century also needs to look at a new commitment toward "science for peace," "science for sustainable development," and "science in society and science for society." This new commitment involves proper use and control of scientific knowledge: it calls for a paradigm shift of public policy-making on science and technology to move into more innovation-oriented policies.

In academic communities, integration has been promoted in many specialized fields of modern science through the amazing refinement of scientific knowledge and progress in computer science. In fact, there is the high expectation for information and communications technology (ICT) that, when coupled with other fields like nanotechnology and biotechnology, it will create a new frontier of science and bring promising value to society.

2. Enhancement of science of innovation policy

The end of the Cold War, coupled with the revolution in ICT, has changed the world dramatically. As more information and money come and go globally, our planet has entered a period of mega-competition in terms of industry production and distribution, research and development, and deployment of human resources. Policy for science has shifted to science for policy, namely innovation policy.

This has accelerated policies and policy studies on innovation in different regions and countries including Asia, often making them more comprehensive with a greater emphasis on compatibility between economic development and sustainability. Whether we work for a company, a university, or the government, we have one thing in common: we must change. This conference on the Global Innovation Ecosystem (GIES) has been planned against this background.

Interactions between policy studies and their planning and implementation have been increasingly important. As suggested by U.S. Science Adviser to the President John H. Marburger, policymakers and

researchers, regardless of whether they are from social or natural sciences, need to work together to bring up the nascent field of the "science of science policy." This is important not only to understand today's society that is developing through scientific and technological advances in a globally dynamic and intricate manner, but also to implement evidence-based innovation policies and to predict their outcomes.

3. Distinctive attributes of innovation

The Japanese government has laid out its basic science and technology policies in a series of 5-year Basic Plans. The third Plan (2006-2010) was approved by the Cabinet in March 2006. The new plan refers to innovation as "the creation of new social and economic values by combining insights with scientific discoveries and technological inventions for further development;" and stresses the importance of innovations that are generated from their own seeds of technology, and the necessity to reform the socioeconomic conditions that foster them.

In November last year, we held a symposium entitled "Socioeconomic Conditions for Innovation," which was jointly hosted by the Science Council of Japan, the Economic and Social Research Institute, and the JST/CRDS. With enthusiastic discussions among experts of various disciplines from universities and industry, the symposium has had a great bearing on the way the Japanese innovation policy is developed.

In conclusion, the discussants chaired by Professor Ikoma (Director General of JST/CRDS) point out:

- Firstly, innovation is so unpredictable and discontinuous that we should conceive it as a stochastic process. To increase the success probability of the innovation process, our challenge is how we can design and manage comprehensive public and private measures in accordance with the staged development of innovation.
- Secondly, discoveries and inventions do not create any value by themselves: creation of a sphere of interaction (now called the Interaction Field) is crucially important where those discoveries or inventions must meet and interact with other elements such as people, knowledge, technologies, financial and legal systems, and markets before they can evolve into various forms of values that satisfy social and economic needs in general.

The participants in the coming GIES symposium may want to use these points as guideposts for their discussions.

4. Mega-competition for human resources

In terms of human resources, their development and retention largely depend on education, one of the most conservative areas in the modern social system. In recent years, however, education too has undergone a major challenge and become a globally competitive market at all levels from elementary to postgraduate education. A central reason for this change is that the reinforcement of innovative activities which ensure competitive advantages largely relies on good human resources. Now the increase in mobility of human resources between different sectors and areas is conceived as a question of their networking and circulation in the world.

According to Joseph A. Schumpeter, entrepreneurs carry out innovation by leaving the old orbit of habit with a free spirit and insight into the future, and by influencing others with strong powers to overcome uncertainty and resistance from society. In the complex context of the current world, innovation requires not only scientists and engineers, but also a wide range of expertise including producers capable of managing the interactions of stakeholders, experts in finance and intellectual property management, as well as good communicators with modern markets and societies.

5. Innovation and sustainable development

We hope economic development will remain sustainable with the help of innovations. All regions and countries should in this regard establish an international framework of collaboration for innovation-based, global economic growth toward a more substantial protection of environmental resources.

The end goal of innovation is the realization of social and economic values: while some such values would be universal, most could be more local to each country and region. It is important to establish, both at domestic and international levels, a social mechanism in which all citizens can enjoy the benefits of these innovation-based values. Free market strategy is insufficient to achieve it: we must also pay attention to each country's state of development in terms of democracy, traditional cultures and techniques, and diversity of values.

Innovation is a long-term, uncertain, stochastic process: with a diversified range of outcomes, it is very hard to measure it. However, we must develop an evaluation method of innovation by combining scientific expertise with all other intellectual fields, including economics, sociology, political science, and ethics. We have high hopes that this GIES conference will lead to the initiation of a proactive, international program for innovation policy studies for the 21st century.

6. Expectations for GIES sessions

The GIES symposium is a two-day conference that comprises the following agenda:

Session I:

- Identify the characteristics of innovation in each country that varies in size, tradition, and stage of economic development; and possible common issues.
- Identify the roles of politics, government, industry, academic communities, and citizens.
- Identify a preferable framework of international collaboration to enable innovation that makes economic growth compatible with environment protection.

Session II:

- Identify the roles of public policies that promote S&T-based innovations.
- Identify the innovation ecosystem and the roles of the interaction fields of stakeholders that promote innovation through risk management and safety-net systems and of dialogue with markets.
- Discuss how to monitor and evaluate innovation processes.

Session III:

- Discuss how to create and secure a diversified base of human resources for innovation.

- Discuss how to bolster undergraduate and postgraduate education with a focus on entrepreneurship and ethics.
- Discuss the networking and circulation of human resources in the context of mega-competition.

Session IV:

- Discuss innovation as a stochastic process in the context of the SL (Step and Loop) Model developed by JST/CRDS.
- Discuss a funding system that enables a continuous supply of funds for innovation processes.
- Discuss the making and continuation of the interaction fields of innovation stakeholders.

We invite vigorous discussions among participants from countries that vary in size and stage of economic development, and hope to reach a resolution that is effective in each country as well as in the world.