
Preface: New Administration and Science & Technology Policy

In September 2009, the new administration was born in Japan. On the New Growth Strategies and others, it is strongly promoting the green innovation and the life innovation as the drive for the growth of Japan, considering science, technology, and human resources to be the platform to support the growth under the basic goals “lead the world with science and technology,” “spending not on concrete, but on people,” and “contribute to the world with know-how and human resources.” In the meantime, Council for Science and Technology Policy created “Action Plans for Science and Technology Priority Measures,” for example, trying to cooperate with the government to implement measures to prioritize the process of budget planning for science and technology and to increase its efficiency and transparency while attempting to budget for the whole year.

In addition, Council for Science and Technology Policy has been working actively to open their discussions to the public and to promote interaction with the citizens regarding scientific and technological policies since it is important to ensure transparency and participation of citizens during the policy making process. For instance, in a discussion of judging priority in the matters regarding the scientific and technological policy, the process was opened to the public while calling for public opinions, for the first time in the history, to be reflected in the prioritization of S&T measures. Another case was “Science and Technology Meeting in Osaka,” the first trial by the members of Council for Science and Technology Policy, including ministers and experts, to exchange opinions with local researchers and general people in March 2010. Ministry of Education, Culture, Sports, Science and Technology (MEXT) hosted symposiums in relation to science and technology policies as one of the events organized for the Science and Technology Week in April 2010, which was considered to be the start of government efforts to ensure the transparency and participation of citizens in policymaking. The remit of reviewing government programs was executed in November 2009 and this event attracted interests not only of researchers but also of the general public, triggering heightened arguments regarding science and technology, calling for detailed explanations for their existence.

Currently, the committees in the government are having intensive discussions in relation to important policies of science and technology, upon which the destiny of Japanese people rests. More specifically, they are trying to make the 4th Science and Technology Basic Plan to define basic guidelines of the government regarding science and technology to be implemented in 2011 or thereafter, and to reorganize Council for Science and Technology Policy into an organization tentatively called “the Command center for science and technology policy.” Furthermore, they are discussing new comprehensive structures to promote science and technology in the whole country, including the establishment of “Organization of National Institute of Research and Development”. These are some of the actions taken by the new government, since the succession of the governing position, to review how to promote science and technology and to provide transparency while implementing science and technology policies more effectively and efficiently. According to the government, it will try to enhance communication with the citizens to urge their participation in the process of implementation of these important policies in the future.

Turning to the eyes to the global situations surrounding Japan, we are experiencing more life-threatening global problems, such as global warming and other environmental problems, exhaustion of conventional energy resources and rare metals, new influenza or other infectious diseases, in addition to problems related to declining birth rates, the aging society, globalization, financial or economic crisis, etc. Considering such situations, the conditions under which we are placed are turning harsher than ever, with increasing degree of international competitions. There is a pile of problems to be solved for Japan as one of the principal members of the international society.

In our time, the outcomes of science and technology have penetrated through every corner of our society for us to utilize and we are influenced by them in every situation of our daily lives. Science and technology have not only benefited our society in a variety of ways, such as new products and technological development, but also created, sometimes, new industries and expanded the market size, resulting in economic growth. Science and technology can bring us safety, security, convenience, or even wealth but these can also function as great forces to enhance people's health and welfare significantly. Not limiting our discussions to environmental problems, many of the global problems that we are facing now require adequate application and further development of science and technology, although it may true that the rapid development of science and technology have been one of the causes for the problems.

Human beings have been trying to learn how the universe has come into existence while devoting ourselves in exploration, observation, and research on the universe, ocean, living creatures, etc. to find answers to the questions in relation to the origin of Mother Nature and "substances," and we have been studying about ultimate particles that may consist of an object, birth of a life, biological instinct, human evolutions, and many other matters. Such activities to obtain knowledge are usually motivated by personal questions or inquiring mind and are not intended, from the beginning, primarily to apply such knowledge directly in technological development or for other practical purposes. Still, these activities have contributed to human beings to find answers to many questions, to discover new principles or theories, and to start civilizations, giving great impacts on human thoughts, such as perception of nature and philosophy of life. Newly obtained knowledge must be received by another generation after being organized or systemized, resulting in accumulated assets of all human beings. Abundance of such assets can mean the wealth of citizens or of the human beings. The importance of scientific research that aims to make attempts to know unknown and to find answers to questions or to obtain knowledge will increase further in the future.

Science and technology will have to play important parts for Japan to restart for growth. And it is "human resources" who are responsible for the development of science and technology, and it is excellent researches and technicians, among human beings, who can produce outcomes that may lead us directly to innovations. However, in the contemporary society, where things have been globalized and science and technology are already highly developed and complicated, it is necessary to have people in the managerial positions and in a department that deals with intellectual property or with collaboration of industry, university, and government, or teachers of math and science who are supposed to bring up people of the next generation to play more important roles to carry out

scientific and technological activities at higher levels, to create innovations¹ and new values. Especially in Japan, where population is decreasing, each person with different characteristics is required to enhance further their creativity and productivity, and also he/she will need to coordinate and cooperate with a variety of people and organizations.

Part I of this White Paper is dedicated to current states of major issues in relation to scientific and technological promotion while mainly discussing the problems in relation to human resources, with the title “A New Frontier to Be Extended by Value-creating Human Resources~How Science and Technology Should Be for Japan to Make a New Start~.” Researchers and technicians as mentioned above will be called “Value-creating Human Resources” in this report. These value-creating human resources are required to fully utilize their capacity individually, as a team, or as an organization, in various situations in the society. Recently, there have been discussions on the problems of the career paths of the holders of doctoral degrees, but it is important that these people take parts as “Value-creating Human Resources” to build steadily a society in which they can work actively. With such problems in mind, this report will provide summary of the issues on science and technology which may contribute to solving contemporary problems, enhancement of basic scientific capacity, training of value-creating human resources, creation of a place to bring out innovations, and how science and technology should be in relation to society and citizens.

¹ “Creation of innovation” is defined “Act to Strengthen R&D Capacity by Advancing R&D System Reform and Promote R&D Efficiency (Act No.63 of 2008)” as “the creation of new values through the development or production of new products, the development or supply of new services, the introduction of a new system for production or marketing, the introduction of a new system to supply services, and the introduction of a new system for business management in order to effect significant change in economic society.