

政策提言「日本の復興と科学技術外交」

A Policy Proposal on Restoration following the Massive Earthquake
in East Coast of Japan from the Viewpoint of Science Diplomacy

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The Committee for Strategy for International
Collaboration in Science and Technology
The Takeda Foundation

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Two months have passed by since the Great Earthquake struck Japan, and caused unprecedented damage and losses to East Japan as well as irreparably damaging the Fukushima Daiichi Nuclear Power Plant. Japan is now devoting its strength to restoration, and it is important to plan and conduct this restoration and plan for the post-disaster era based on a hands-on policy in collaboration with international experts. We would like to submit a policy proposal for the restoration from the viewpoint of science diplomacy for Japan.

1. Sending strong messages to international society: Harmonious development of international competitiveness and cooperation

Japan needs not only to provide information about damage to and restoration plans for the disaster hit areas and nuclear power plants, but, more importantly, it needs to send the message that Japan is going to re-design its economic and science & technology systems, reform and rebuild new systems, and maintain the international competitiveness of Japanese companies, universities and regions. This message should demonstrate the determination of Japan to introduce new systems, and construct an open and ever-more attractive society that will attract many foreign researchers and students to come for research and study.

The unprecedented complex disaster is now compelling Japan to transform the social systems and value concepts of its people and presenting challenges to the world in the 21st century. Japan should recognize the presence of this challenge, and convey to the international community its strong will to overcome difficulties and develop a society with new social systems and value concepts.

2. Urgent actions

- (1) Prompt and constant dissemination of information about the disaster and the nuclear power plants to the International community, Asia in particular.**

Japan should promptly and constantly disseminate information about the disaster areas and its restoration plans, damage to the nuclear power plants and their containment processes based on transparent and continuing monitoring to the international community, especially to Asian countries that experience various effects including the stoppage of imports of agricultural and industrial goods from Japan and the discharge of radioactive materials. It is also necessary to develop open and highly objective dissemination methods that will lead to confidence building in the international community giving special consideration to neighboring countries. To do so, Japan should utilize all available public and private international channels that will fit the global networked society.

(2) Introduction of global viewpoints into the Restoration plans

Disasters such as earthquakes, tsunamis, and nuclear power plant accidents cause complex damage that has various effects on people and societies both domestically and internationally. It is essential to plan and conduct restoration based on hands-on policy, and utilize the world's best knowledge and practices for planning the restoration processes. We propose that neutral and transparent international forums should be organized to which international experts and various stakeholders can be invited to study the damage caused by natural catastrophes and the breakdown of the nuclear power plant, discuss restoration plans for disaster areas and containment processes for nuclear power plants, and promptly and constantly disseminate the results of their discussions to the public both domestically and internationally. In this case, a consideration should be given to stakeholders in the Asia-Pacific region.

(3) Confidence building for foreign researchers and students, and revitalization of research and study in Japan

The Massive Earthquake off the East Coast of Japan has caused serious damage to research facilities and instruments as well as to research activities, and also resulted in the departure of foreign researchers and students from Japan, thus causing critical damage to the image and status of Japan as a prominent and credible research and study center. The Japanese government should promptly disseminate accurate information about the restoration plans for the disaster areas including relevant universities and research facilities, explain the safety status of research and study facilities, and take strong measures in all areas of Japan to encourage foreign researchers and students to come back to Japan, and revitalize

research and study in Japan. It is also necessary to build both domestic and international human networks related to research and education in Japan.

3. Policy Proposals for the 4th Basic Plan for Science and Technology of the Japanese government (Japan's new S&T and innovation policy for the next 5 years)

(1) Strengthening collaboration with Asia: Creation of the Asian Research Area

Asian countries share many common problems including those in the areas of safety and disaster prevention, environment and energy, medicine and health, securing of food and water. Japan should strengthen its science diplomacy in Asia using its strong science and technology power in order to contribute to solving common problems and achieving the sustainable growth of Asian countries. From the viewpoint of Japan's new growth strategy following the unprecedented disaster, it is essential for Japan to incorporate the dynamism of and opportunities in Asia into its own economic growth. Japan should take the initiative to create immediately the Asian Research Area that promotes international collaborative R&D on social and economic problems, commercializes such R&D for wider applications, and develops exchanges of human resources. Specific R&D programs should include the development of new social systems and infrastructure and innovative cutting-edge technologies as well as programs that address the above-mentioned problems. Taking into consideration the international impact of the large scale disaster and the breakdown of the nuclear power plant on Japan and the challenges to the world that are presented, the 4th Basic Plan for Science and Technology should place a high priority to strengthening international collaboration centering on the Asian Research Area as its key component, and global governance in science and technology.

(2) Domestic and International diversification of research and educational institutions and large-size research facilities, and their networking

The powerful earthquake clearly forces risk diversification in research and educational institutions and their networking. Since multiple large scale earthquakes have been predicted in the Asia-Pacific region, we propose that the 4th Basic Plan for Science and Technology should incorporate the evaluation of the possible risks of the over-concentration of research and educational institutions in large cities of Asia, and the implementation of diversification of institutions and facilities in domestic and foreign locations including Asia, building networks among relevant institutions, and promoting the large scale circulation of research human resources. One specific

example includes the establishment of several special districts for international science and technology exchange where many researchers and facilities come together in both domestic and international areas (science and technology offshore).

(3) Re-evaluation of Japan's current status and systems of science and technology, and fostering and securing of global leaders

Various sectors of Japan's science and technology experienced setbacks and difficulties resulting from the massive earthquake off the east coast of Japan. Some endured the trial of earthquake and tsunami, while others revealed their vulnerability to disaster. In order to maintain or raise the level of Japan's science and technology, its current status should be re-evaluated, and measures need to be taken to change its weaknesses into strengths and further expand its strengths. Specifically, the earthquake has revealed the weakness of system sciences in Japan. Industry and academia should work together on large-scale solution- and system-oriented and cross-boundary projects, and develop new system projects involving design, development, simulation, risk management, and depart from the current practice where technology and products are sold piecemeal. On the other hand, the earthquake has revealed the effectiveness of Japanese energy-saving technology and mindset, and prompted society to realize the importance of further strengthening its energy-saving technology. Energy-saving technology will become increasingly important internationally in the future from the perspective of the development of sustainable society and disaster prevention. It is important to conduct R&D in disaster affected areas and implement technologies representing Japan's strengths as national projects in order to make them globally leading technologies.

The massive disaster has also revealed problems of the absence of global leaders in Japan. In order to restore and reconstruct business and science and technology effectively, it is essential to foster global leaders who are able to understand global needs and trends in industry and society, design targets and solution methods, and possess the conceptual power and the management capacity to bring together wisdom and experience to solve problems.

Discussions about reform at the Council for Science and Technology are now under way, and it is necessary to examine the decision making processes for science and technology policy based on the experience of the massive earthquake, and design new decision making processes from a mid- to long-term point of view by reaffirming the importance of technology assessment in the analysis of the nuclear power plant breakdown.

(4) Drastic strengthening of international communication

Responses to the massive disaster have revealed the weaknesses in international communication by Japan at all levels. It is necessary to develop methods and systems of international communication of risks and scientific matters, and find ways to foster experts who can effectively carry out this communication with the international community. On that basis, it is important to strengthen the professional ability of information collection and analysis in order to effectively implement science diplomacy, and develop a framework that will enable the effective use of the information for the implementation of diplomatic policies and international activities. It is also important to develop systems to foster human resources who will engage in global communication. For example, top-level graduate schools should hold all lectures in English.

Although more than two million foreigners are living in Japan, there is no systematic method for the dissemination of information in foreign languages other than some part of NHK news on television. After the recent earthquake, many foreigners left Japan, and one of the main reasons for this is the lack of sufficient information about the earthquake and nuclear power plant problems available for them in Japan. In an age of globalization, it is necessary to develop domestic systems for the dissemination of information in foreign languages as well as the dissemination of extensive information to the international community.

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