Comprehensive Approach to Nanotechnology R&D and its Public Engagement

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ABSTRACT

This paper describes the latest achievement of the ongoing research project "Developing knowledge-based platform to support nanomaterials R&D for public acceptance", which is the release of demonstration version of the knowledge platform for risk assessment of nanomaterial with focus on AIST contributions.

Keywords: public engagement, societal implication, nanomaterial risk governance, nanomaterials database index

1 INTRODUCTION

The media attention toward nanotechnology is gradually lowering in the past several years in Japan as shown in Figure 1, however, the calm dose not mean inactive in nanotechnology R&D. To the contrary, nanotechnology R&D is passing the period of hyped push and entering into down-to-earth practical application period. In fact, investment in nanotechnology R&D shows solid growth. Commercialization of nanotechnology R&D is steadily progressed and many companies desire to put R&D into market fast but, at the same time, they afraid of many unknowns such as health impact of nanomaterial which may lead to backlash from the public. A new database index which we develop in the project aims to help overcome this potential barrier and other obstacles which private companies face when they commercialize their R&D and ultimately benefit the society as a whole.

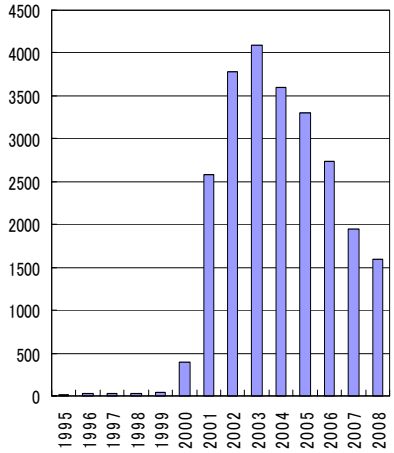

Figure 1: Nanotechnology-related news and report appeared in mass-media (Nikkei Telecon; Domestic: 90 news papers, 80 journals and magazines)

2 CURRENT SITUATIONS ON NANOTECHNOLOGY R&D AND SOCIETAL IMPLICATION IN JAPAN

Although a few but good materials research in relation to health were conducted, there was little understandings to the importance of the strategic approach toward societal implication nanotechnology R&D or concrete action to address this issues until recently. Reflecting extensiveness of fields which nanotechnology will be applicable, various factors are encompassed in societal implication of nanotechnology; environment and health safety, ethical issues, education and capacity building, risk management, standardization of nanotechnology and so on. These issues also require to be addressed by multi-stakeholder approach.

AIST works under this concept and started new initiative to address these issues in summer of 2004. The open forum "nanotechnology and society" provided a place to discuss topics related to societal implication of nanotechnology R&D and made relevant information share among stakeholders and develop network among them. In the end of the series, AIST successfully led cooperation

from the government and other public research institutes under different supervisory agency. This unprecedented cooperation gave birth to a new research project" Facilitation of the Public Acceptance of Nanotechnology" and we issued a policy recommendations in the end of the project to address the issues in the strategic action plan of nanotechnology R&D. The policy recommendations has been reflected in the Third Science and Technology Basic Plan as one of the agenda in the priority research field "nanotechnology/materials", which enacted in 2006. The Basic Plan clearly stated that the government address issues emerging innovative technology will pose when they enter the society and ensure the society receive the benefits from these technologies. It works as a catalyst and many research activities related to societal implications of nanotechnology R&D have bloomed as shown in Figure 2.

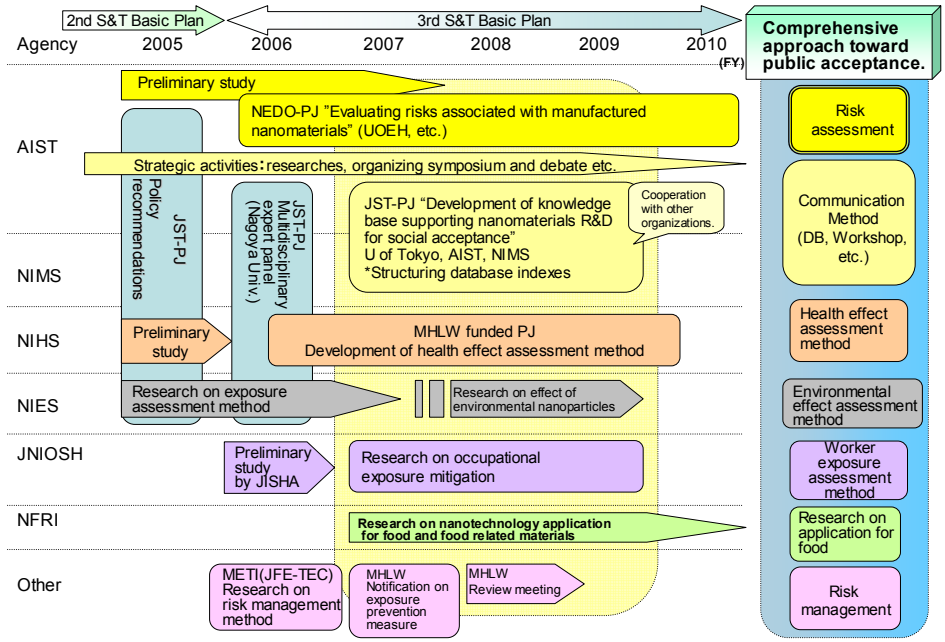

Figure 2: Japan's activities in societal implication of nanotechnology

3 A NEW PROJECT IN THE INTER-MINISTERIAL FRAMEWORK

Realizing urgent nature and demand from concerned stakeholders, the government finally decided to take this daunting task with concerted effort among ministries and agencies and set the new inter-ministerial framework of the Coordination Program of Science and Technology Project in CSTP. The "Developing Nanotechnology and Engaging the Public" started in 2007, which plans to reduce redundancy and efficiently forwarded R&D. For example, since release of the notification on nanomaterial handling from the Ministry of Health, Labour and Welfare, several committees are established within three different ministries, the framework works as information hub among these activities.

A new research project "Developing knowledge-based platform to support nanomaterial R&D for public acceptance" reinforces the framework as a supplemental research project. The project is implemented during three years from fiscal 2007 to 2010 and Prof. Dr. Yukio Yamaguchi at the University of Tokyo is in charge of the project supervisor. AIST has participated in the research project together with National Institute for Materials Science (NIMS) from the beginning of the project. The project aims to develop a knowledge platform to support nanomaterial R&D and commercialization by identifying appropriate index. The index incorporates both nanomaterial risk information which enables to develop best practice for the good governance of nanomaterial R&D and information on societal implications of nanotechnology R&D. Effective index provides nanotechnology companies measures to gauge their technology as well as give them right direction to take. Each participating institute of the project takes responsibility on the subjects shown in Figure 3. The University of Tokyo is responsible for developing database index and NIMS provides data regarding standardization issues of nanotechnology and nanomaterial. AIST deliberates communication tools and plans to recommend effective and suitable ways of providing information for stakeholders about nanotechnology in the end of the project.

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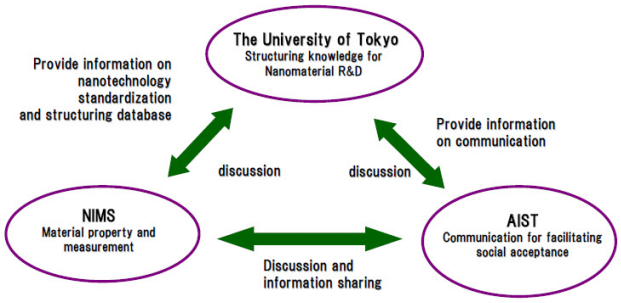

Figure 3: Project cooperation framework

4 THE GROWING IMPORTANCE OF INFORMATION

In the first half of 2008, two research papers on nanomaterial toxicity were published one after another and drew media attention as shown in Figure 4 and many voiced concern. This highlights the importance of correct information anew. Currently nanomaterial environmental, health and safety issue attracts more attention than other issues, but the importance is same for other issues. It also clearly shows that piecemeal information, as well as insufficient information, is another obstacle many nanotechnology companies face in the course of core technology R&D to commercialization.

Several large companies, such as DuPont, have already introduced voluntary program of their own for nanomaterial risk governance with the growing demand for information on nanomaterial in the background. The situation is same in the international community and organizations like OECD encourage each country to cooperate for sharing information.

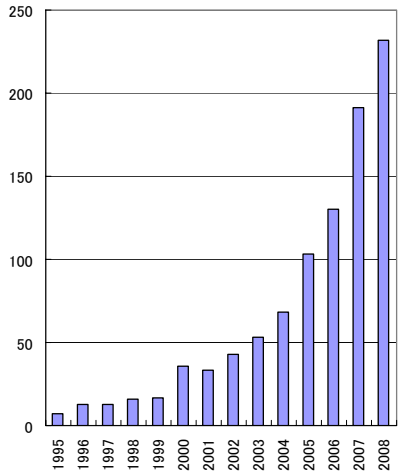

Figure 4: Scientific paper on Nano Risks (ISI web of Science; Nano * Risk)

For the purpose of supporting information sharing regarding societal implication of nanotechnology, we publish reports and document, provide opportunity to get information at first hand and to create network among various stakeholders. Currently, we issue online newsletter twice a month with financial support from the project and publish document occasionally as AIST is responsible for the part of the stakeholder involvement in the project.

5 CONCLUSION

Nanotechnology as an emerging and novel technology has significant impact on society. Those issues related to societal implication of nanotechnology requires to be addressed not only within research community or policy makers but with pubic. We optimizes its unique position in the project and expand our endeavor to create an information hub which meets the needs from the society and support sound development and commercialization of nanotechnology.

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