

Interview

Aiming for results implemented in society

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Differing “evidence” between fields

—RISTEX’s “Science of Science, Technology and Innovation Policy R&D Program,” which began in 2011, has approved 36 projects over its first and second phases. What are your impressions and thoughts looking back on the initiatives taken so far?

Yamagata: In recent years, applications have been submitted while taking into account projects that have been selected in the past, and I think they are becoming much more suited to the purpose. Broadly speaking, there are two types of proposals: those from people who have specialized in science policy in the past, and those from natural science researchers regarding social

implementation. I get the feeling that the latter is becoming more common in relative terms. I think people are turning their attention to how to put their research results into practice in society.



MORITA Akira,

Director-General, the Research Institute of Science and Technology for Society

Morita: We now have the term EBPM (evidence-based policy making), but the original starting point was the question of what kind of policy-making is appropriate for something like science and technology policy, which has an uncertain future but involves large-scale investments. To address this, we initially conducted screenings and calls for proposals with an emphasis on how to introduce science and technology as seeds into the application phase,

and how to institutionalize them. However, implementing the results of research in society requires institutionalization and financial support. The problem is that experts in science and technology and experts in social science think about the evidence that contributes to this in different ways, making it difficult to move forward.



YAMAGATA Zentaro, Program Supervisor

Yamagata: In medicine, we have the term EBM (evidence-based medicine). Evidence in the context of EBM is the idea of taking as proof things that increase the probability of an answer that is to some extent already known. Conversely, for the EBPM that Dr. Morita just mentioned, it is evidence for something that has no answer or is uncertain. Clearly, there is a difference

here. At the moment, there is a proposal from the Kajikawa Project¹ on what kind of perspective should be used to evaluate evidence when making policy decisions. I think that will be a very important project.

Morita: The discussion about evidence has been with us for a long time. There are often cases where we'll say let's stop budgeting and making projects based on the demands and random ideas of some higher-up, and try to make policy based on a more logical understanding of why things are the way they are and whether there is actually a need for them. Of course, if we are aiming for real evidence, we still need to formulate policies based on objective evidence in the strictest sense. In practical terms, however, this is difficult to put into practice, both methodologically and in terms of the cost of collecting the data. How, then, do we find a middle ground between the two? That is, a proposal that has a certain rationale and can be expected to produce certain results, while excluding things that are irrelevant. This is the realistic approach to policy making that we are aiming for.

For example, when developing new drugs, there are cases where the drug itself is amazing and effective, but the price is too high. So when we think about how to improve the conditions of the many sufferers in the population, it is very costly. If the policy is not made with proper consideration of who will pay that cost, there will be many people who will not actually be able to benefit.

So, if you don't think about what kind of patients it will be applied to, how it will be priced, and who will be able to use it and under what conditions, you will end up paying a huge amount. We need to find a path that will have as great an effect on society as possible, or in the case of medicine, that will provide relief to as many patients as possible, while still keeping the big picture in mind.

Otherwise, the people who developed the drug will insist that since it works, someone should pay for it, while the people paying for it will say that they don't have that kind of money, and so the two sides will not be able to come together. In the past, when this happened, it was decided by power relations, the loudest voice, or some other contingent factor. What we are aiming at is for these things to be decided based on logic and a scientific, objective process.

Yamagata: I completely agree. Although biotechnology is making great progress and the number of things it can do is increasing, the question is whether or not society will accept it. When there is no need for a technology so far, but the technology comes to us first and it insists on being able to make something like this, we need to reexamine the question of what the technology is for from a social implementation perspective.

—If we look at the past cases that were successful under this program, we can see that, as with Dr. Nishiura's² and Dr. Nirei's³ projects, the needs of the government were well understood.

Morita: Yes. At the policy level, we need to think about how to minimize damage for society as a whole. The most typical case is a pandemic, that is, an outbreak of an aggressive infectious disease. The basis of the field of public administration is governmental authority as the power of the state.

Unfortunately, in order to reduce the number of infected people and prevent secondary infections, it is important to isolate infected people so that they do not pass on the disease to others. For this reason, a system is in place that can restrict the freedom of action guaranteed by the constitution without a trial.

In terms of how we can use science to minimize the damage to society as a whole, one example is Dr. Nishiura's project to estimate the scale of infection and risk of spread with greater accuracy through the use of mathematical models. The goal was to develop a method that, with a certain amount of data, could be used to estimate the extent of infection and to find effective policy guidelines and suggestions based on those estimates, even for infectious diseases that have never been encountered before. However, I think it was Dr. Imanaka's Project⁴ that pointed out that using science to make the problem visible might make it more serious.

—Dr. Furuta's project⁵ is another example. It seems that measures can only be arrived at by unraveling the wariness that society and the affected parties hold toward making ever-present risks visible. How should we proceed toward these measures, i.e., to implementation?

Yamagata: This is a difficult issue, but I think many people looked at the hazard maps during Typhoon Hagibis in 2019, for example. Visualization of disaster risks such as a hazard map allows people to think about what steps to take next. In other words, I think visualization is necessary, up to and including how the data can be utilized. I think the really important perspective is to create a process or mechanism for obtaining data and information for that purpose.

Morita: The key term is “social communication,” and within that, the most important point is the form of communication and what it conveys. How well can we make the argument that, with so many benefits, we should allow for a certain amount of cost and risk? We need data to do this, but it’s frustrating that we’re still talking about the fact that we don’t have it.



Yamagata: You're absolutely right. In the UK, they have tracked children born in 1946 right up until the present day. Meanwhile, in Denmark, they have a cohort study of 100,000 people, and tracking information is available using disease registries from the national resident registration system. In Japan, the Ministry of the Environment has been conducting a nationwide survey on children's living environment called the Japan Environment and Children's Study⁶ since 2011, but it contains only information provided by participants, with no registration of diseases involved, so it is not possible to obtain enough of the necessary data.

Morita: It is very important to properly categorize things and systematize the collection of data that can be used as a basis for policy making. To this end, I would like to see more proposals that look to the future, discussing what the data means, what benefits it holds for us, and what can be achieved with it.

Interpreting change and gathering expertise.

—What do you hope to see from projects submitted in the future?

Morita: As Japan's society goes into contraction mode due to a shrinking population, we will require knowledge of how to downsize well, that is, where and how to downsize to become more efficient and adaptable. In addition, as global warming progresses, we will see unprecedented natural disasters, and information technology will continue to develop. In an age when we can no longer think of policies and solutions in terms of extensions of what we have

done in the past, we hope to see research on how to objectively interpret future changes and how to use that to develop solutions.

Yamagata: Predicting the future is not something that can be done by a single person or in a single field. I want to see results that reveal various aspects of an issue, based on joint research bringing together various stakeholders for actual discussions, and then show the steps that have been taken toward a particular future. Researchers need to enjoy their research, and I think that would be a fun thing to do. However, since the focus of this program is science for policy making, we need not just a desire to pursue the truth, but also a constant awareness of how we can give back to the world. That's where the fun is, I think.

Morita: What we hope to see, then, are people who can communicate what they want to say in a way that can convince people in completely different fields. This has always been the case, but we need to be able to discuss things based on information and data.

—In fact, I believe that such people have already emerged from this program. I would like to see applications from people who can properly envision a future and put together the elements and partnerships required to make it happen. Thank you all very much.

(Interviewer: Kurokawa Akio, Summary: Maehama Akiko, Editor: Fujita Masami)

1

[“Research on description and interpretation of evidence in policy process,” by KAJIKAWA Yuya \(project adopted in FY2012\)](#)

Policy Door article: [Increase Japanese Innovation Power](#)

2

[“Realizing Policymaking Process of Infectious Disease Control using Mathematical Modeling Techniques,” by NISHIURA Hiroshi \(project adopted in FY2014\)](#)

Policy Door article: [Stop Infectious Disease Using Mathematical Modeling Techniques](#)

3

[“Economic Growth Analysis of Science, Technology, and Innovation Policies,” by NIREI Makoto \(project adopted in FY2012\)](#)

4

[“Innovation in Evidence-Informed Policy Making : Through Visualizing and Re-designing Social Systems for Countermeasures against Regional Disparity in Healthcare Quality,” by IMANAKA Yuichi \(project adopted in FY2014\)](#)

Policy Door article: [Eliminate Regional Disparity in Healthcare](#)

5

[“Resilience Analysis for Social Safety Policy,” by FURUTA Kazuo \(project adopted in FY2013\)](#)

Policy Door article: [No More “Unexpected”](#)

6

[The Japan Environment and Children’s Study \(Ministry of the Environment\)](#)

Japanese : <https://www.jst.go.jp/ristex/stipolicy/policy-door/interview-03.html>