

## **Regional impact assessment in Japan:**

### **Comprehensive Research on Climate Change Impact Assessment and Adaptation Policies (S-8 project)**

#### 1) Research Objectives

The objective of the S-8 Project is to promote research in response to the new tasks described above concerning measures to cope with climate change. Firstly, this will involve the development of an advanced impact/adaptation assessment model (bottom-up model) to obtain a more detailed understanding of the physical and economic impacts by field as well as estimations of the effects of implementing adaptation measures, targeted at Japan. Concurrently, a nationwide top-down impact projection model will be developed, and used together with the bottom-up model to further refine nationwide impact assessments. Through these efforts, projections will be made regarding the extent to which future impact risks will be reduced by the implementation of adaptation measures.

Secondly, monitoring methods at the prefectural and municipal levels will be developed in order to grasp climate change impacts at the prefectural level. Furthermore, by developing an impact projection method that can readily be used at the regional level, and a method for visualizing the results of projections, support for the formulation of adaptation measures in individual regions will become possible.

Thirdly, based on the results of the research in Japan, in order to analyze the order of priority and cost-effectiveness of implementing adaptation measures elsewhere in the Asia-Pacific region, indexes for the assessment of vulnerability, impacts, and adaptation effects that are applicable to developing countries will be developed and standardized. This will contribute to the planning and implementation of adaptation measures in those countries, where severer impacts are expected.

The S-8 Project will serve as a foundation for the formulation of adaptation measures in Japan and assessment of the feasibility of realizing a safe and secure climate change-adaptive society. Moreover, the development of a simplified method for making quantitative impact assessments will facilitate the presentation of comprehensive policy development plans for social implementation of more concrete adaptation measures at the local government level. The assessment of vulnerability, impacts, and adaptive capacity in the developing countries is also of great importance from the standpoint of contributing to international society. This project will strive to realize these aims by gathering researchers in a wide range of related fields in Japan and organically integrating their efforts.

#### 2) AIM's research objectives in S-8 project

Targeting the whole of Japan, the AIM's research objective is to develop and improve an integrated assessment model in order to assess levels of impacts and effects of adaptation

measures according to different climate stabilization levels and adaptation policies. Moreover, in collaboration with other research teams, we will develop a simplified climate change impact estimation tool for use at the prefectural and municipal levels. Further, we will support the systematization and development of methods related to climate and socioeconomic scenarios that allow climate change impacts and effects of adaptation measures to be assessed in a form that makes comparison and synthesis of each theme possible.

### 3) Expert perception on climate change risks and adaptation in agricultural system in Japan

The impacts of climate change have become obvious in Japan broadly these days, and agriculture and food production is one of the key fields recognized as a national issue with risks to be dealt with. Japanese agriculture has faced challenges such as increasingly aging as long-term matters through recent globalization and Japanese social circumstances, and today it is facing climate change impacts in addition. Scientific findings on climate change impacts have been numerous provided so far, however, the prospective risks and risk management in a broader context of current Japanese society and Japanese agriculture as national food supply system have not been investigated in detail.

The objective of this study was to create the expert mental models with regard to the climate change risks and its management from a broad spectrum of viewpoint in Japanese agricultural system, covering scientific knowledge, and social, cultural and political dimensions. In the climate change adaptation, building the risk communication and cooperation among concerned diversified stakeholders is significant to encourage social or individual decision-making and policymaking. In this study, the structure of stakeholders will be analyzed based on expert perspectives. The considerable factors, which obstruct or facilitate the risk management, adaptation, will be also identified, such as the uncertainty included in currently available scientific knowledge.

We have conducted the individual interviews to 10 multidisciplinary experts engaging in climate change impacts research in agricultural production, economics, engineering, policy, and so on. Based on the results and the latest scientific literature available for risk assessment as well, we are currently designing a wide-ranging expert knowledge-based mental model. It will include clarified relevant stakeholders and factors, which will facilitate or obstruct decision-making or adaptation practice. This study will contribute to the development of the adaptation strategies to climate change risks in Japanese agricultural system.