

## Report on FY2012 JICA Training Program: Capacity Development for Flood Risk Management with IFAS

The International Centre for Water Hazard and Risk Management (ICHARM) implemented a JICA training program, “Capacity Development for Flood Risk Management with IFAS,” from 10 July to 7 August in the fiscal year of 2012 in collaboration with the Japan International Cooperation Agency (JICA).

### 1. Background and Purpose

Water-related disasters, such as floods, have been on an upward trend throughout the world. Particularly in developing countries, it is urgent to take measures for flood disasters, which cause large-scale damage in many cases. The implementation of structural measures, such as levees, flood control basins and dams, is usually the first to come to people’s minds; however, that of non-structural measures such as flood forecasting and warning systems and flood hazard maps is equally important, provided that developing countries often lack financial and human resources. In addition, to use the results of flood forecasting effectively, efficient collaboration among meteorologists, river administrators and disaster management personnel who are in charge of evacuation by local residents is indispensable. In developing countries, this is also at issue, as those three bodies of responsible personnel are unfortunately not necessarily communicating well with one another.

This training program was designed to provide opportunity for meteorologists, river administrators and disaster management officers in flood-vulnerable developing countries to learn the use of the Integrated Flood Analysis System (IFAS)\*<sup>1</sup>, developed and upgraded by ICHARM. The other important purposes are to learn about disaster management and evacuation plans and flood response cases in Japan, and to develop an action plan for local flood management of flood-vulnerable areas in the participants’ countries. These training activities aim to enhance individual flood-coping capacities and eventually to contribute to flood damage mitigation in the countries.

The training program started this fiscal year and will be provided for the next two years. To create as great synergy as possible with JICA’s current and future local flood projects, the following conditions are considered:

- The target basins are those also selected for the JICA local projects.
- The target participants are to be selected from three categories of responsible personnel (meteorologists, river administrators, disaster management officers) who are currently working at organizations involved in the JICA local projects.

These conditions are considered for the following effects:

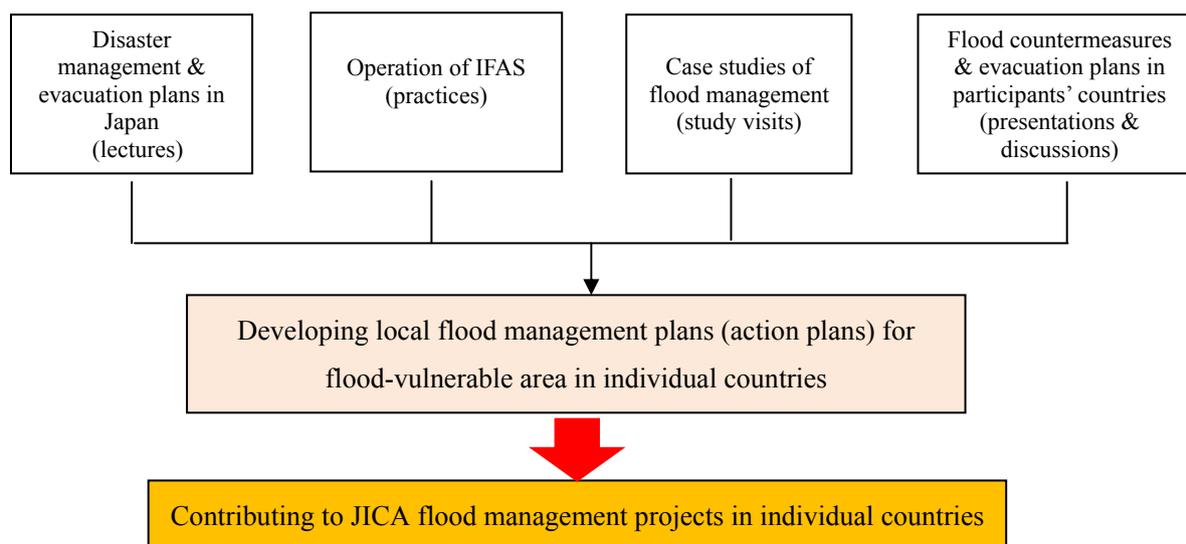
- The participants will have clear visions of what they should do after the training in their countries, and thus be able to develop a detailed action plan.
- Organizations sharing the same basin as their project target can increase collaboration among them.

These effects are also expected to increase the effectiveness of the training at ICHARM.

\*1: The Integrated Flood Analysis System (IFAS) has been developed by ICHARM in a joint effort with private consultant firms to forecast river discharges and water levels by using automatically collected satellite data such as geographical, land-use and rainfall data as input. Currently, IFAS ver.1.3β is available free of charge at the ICHARM homepage.

A total of 13 people (three each from Bangladesh, Kenya and Thailand and two each from Nigeria and the Philippines) participated in the training program this fiscal year. Most countries sent the expected combination of personnel.

The figure below shows the outline of the training program. The program consists of four components: lectures, practices, study visits, and presentations and discussions.



Outline of the “Capacity Development for Flood Risk Management with IFAS” training program

## 2. Training Report

On July 10, all participants gathered at the JICA Tsukuba Office. Mr. Yuasa, officer of JICA, and Mr. Kamoto, a chief researcher of ICHARM, led an orientation meeting there to encourage them and outline the content and purpose of the training. The meeting was planned also to ease the nervous participants. After that, the opening ceremony was held at the same venue where they were greeted by Mr. Kimura, the director of JICA Tsukuba, and

Dr. Uomoto, the chief executive of PWRI. Mr. Chongtragul Sirishai also spoke on behalf of the participants, expressing their high expectations towards the training.



Dr. Uomoto, the chief executive of PWRI, welcomes the training participants at JICA Tsukuba.



Mr. Sirichai speaks on behalf of the participants at the opening ceremony.



The participants and training organizers smiles for photos after the opening ceremony

During the first two days, the participants attended a series of lectures on disaster management issues in Japan, including planning of disaster management and evacuation, fundamental hydrological observation and flood analysis.

The Flood Fighting Act of Japan, the basic concept of disaster, and disaster countermeasures in Japan were lectured by Mr. Kaneko, the director for flood fighting coordination of the MLIT Water and Disaster Management Bureau, Dr. Takeuchi, the director of ICHARM, and Mr. Kamoto, respectively. ICHARM researchers Mr. Motonaga and Dr. Sayama also provided lectures on hydrological observation in Japan and flood inundation analysis.

On the following three days, they learned the theory and practice of the Project Cycle Management (PCM). In this class, they learned how to analyze problems and objectives and

other problem-solving techniques that will be useful to systematically scheduling and budgeting activities they are planning to carry out at home.



Lecture by Chief Researcher Kamoto



Presentation by a participant using the PCM method

On July 19, the participants presented inception reports on their countries. To prepare the presentation, a unique supervisor system was introduced for the first time. An ICHARM researcher or research assistant was assigned to each of the five participating country groups. They were called tutors and available for the participants to ask questions, discuss issues, and ask for advice.



Presentation by a participant on the inception report

On July 20, the participants visited the Japan Meteorological Agency to attend a lecture on meteorological activity and flood forecasting in Japan. After the lecture, they also had a chance to see the weather forecasting section at the agency. Then, to learn flood management in an urban area, the group went to the Arakawa Museum of Aqua (amoa), where they were provided with the outline of the Arakawa River and its brief history as a discharge channel. They also visited the disaster management room in the office. All this was possible with cooperation from the MLIT Arakawa-Downstream (Karyu) River Office. A few other sites

were also visited by the participants, including a staff gauge showing previous flood levels which stands near the old Iwabuchi water gate, the Ukima Disaster Management Station, and the Shinden Super Levee.



The Weather Forecasting Section at the meteorological agency



At the “amoa” museum



A staff gauge showing previous flood levels



At the Ukima Disaster Management Station

From July 22 to 24, the participants visited Niigata Prefecture to see flood countermeasures around the downstream Shinanogawa River. The prefecture suffered from serious flood disasters in July 2004 and July 2011.

The purpose of this study trip was to learn knowledge and lessons about flood countermeasures in Japan and compare them with countermeasures back home to analyze. To



Overview of the movable weir from the Ohkouzu Museum

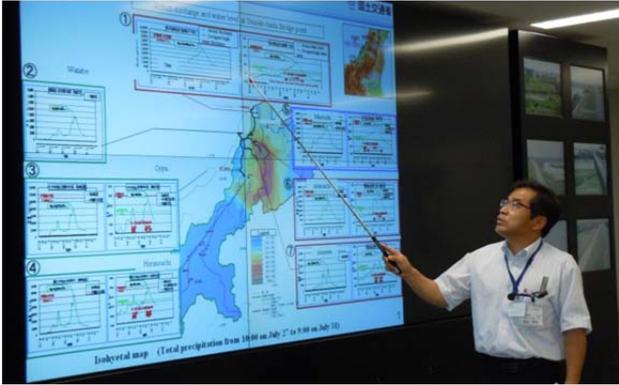
this end, they listened to lectures by local management officers and visited local flood management facilities and structures to find out the damage reduction effects of countermeasures implemented after July 2004, as well as issues still left unsolved.

On July 22, the group visited the Shinano River Ohkouzu Museum. They were given a lecture about the outline of the downstream Shinanogawa River and learned about the key role of the Ohkouzu discharge channel in flood management over the downstream Shinanogawa area. Because the old movable weir is presently being replaced with a new one, the participants were lucky to see both of them. Their next destination was the Toki Messe, a convention complex, where they overviewed Downtown Niigata City, spreading over the downstream Shinanogawa River.

On July 23, the participants visited the MLIT Hokuriku Regional Development Bureau located at Niigata City. They were greeted at the Disaster Management Office by Mr. Tadokoro, the head of the bureau's River Department. Then, they listened to disaster management officers of MLIT and Niigata Prefecture explain about flood countermeasures in the downstream Shinanogawa River, including structural and non-structural measures.



Mr. Tadokoro



Lecture by Mr. Morita



Lecture by Mr. Naito



Lecture by Mr. Kano

On the afternoon of the same day, Mr. Naito, a section chief of the Shinanogawa Karyu River Office, kindly showed the group around different types of facilities and structures along the Shinanogawa River, travelling upstream from the Niigata Large Weir, located the furthest downstream, to the Ikarashigawa River. Learning that the July 2004 flood disaster urged the authorities to promptly implement disaster management projects especially focused on embankment building along Shinanogawa, the participants realized that such intensive efforts in a short period of time resulted in the reduced flood damage in July 2011.



Sekiya Diversion Channel  
(at Niigata Large Weir)



Toyano Drainage Pump Station



Akashibu Disaster Management Station



The embankment project at the Kosudobashi Bridge



Levee widening at Homyo-shinden



At a park near the Ikarashigawa levee breach point during the 2004 flood

On July 24, the participants visited the Sanjo City Hall, where they learned about the city's pioneering disaster management implemented after the July 2004 flood disaster. They also had chance to ask questions about flood fighting, which were kindly answered by the chief of the local firefighting corps.



Lecture at the Sanjo City Hall



Chief of the Sanjo Fire Fighting Corps

The city is addressing the “Marugoto Machigoto Hazard Map” project as part of its flood management effort, in which the city itself is used as a hazard map with flood information signs posted in many places in its area. For example, signs of anticipated and previous inundation depths are posted on electric poles around the city. They were also in a parking lot of the city hall.

In the afternoon, local disaster management officers of the prefectural civil engineering department took the participants on a local study trip along the Ikarashigawa and Kariyatagawa Rivers, both of which are under the prefectural management. Along Ikarashigawa, they observed a restoration project for levees damaged by last year's flood and

other flood countermeasures currently in place including a project to create a straight river channel by cutting off a bend, rice fields used as reservoirs, and a flood control basin along Kariyatagawa.

The Niigata study trip was regarded highly valuable for the participants to understand flood management in Japan. Despite the short trip only for three days, they had chance to observe various flood countermeasures firsthand ranging from non-governmental to governmental levels.



At a project site of the Ikarashigawa Levee Restoration Project



At a project site of the Kariyatagawa Channel Improvement Project



A Mitsuke City officer explains about how rice fields work as reservoirs.



A local officer explains about a over-topping weir in the Kariyatagawa Flood Control Basin (Site E).

During the four days starting from 26 July, the participants learned how to operate the Integrated Flood Analysis System (IFAS). After Mr. Fukami, a chief researcher of ICHARM, outlined the system, Mr. Nabesaka, a researcher, and Dr. Sugiura, a research specialist, instructed how to operate IFAS. The participants commented on the IFAS operation training in the post-training questionnaire, saying that they needed more time, which should be considered to improve the training from next year on.



Lecture by Mr. Nabesaka



Learning how to operate IFAS



Lecture by Dr. Sugimoto



Presentation by each country group

On August 1, facilitated by Dr. Sugimoto and Dr. Dinar Istiyanto, research specialists, the participants discussed issues on early evacuation. They first had a group discussion by country about issues and their possible solutions regarding early evacuation, and then presented the results in class.

On August 2, the participants finally started developing action plans. On the final training day of August 7, they presented their action plans in front of the class members. They each explained how they analyzed issues in their target basins by the PCM method and how they can possibly solve them by incorporating what they observed and learned in this training program. They are expected to continue revising the action plans at their organizations with colleagues and superiors through discussions and presentations, and finally submit the revised version by mid-November.



Presentation on action plans

The training program ended with the closing ceremony. The ceremony was attended by JICA Tsukuba Deputy Director Umezaki, Section Chief Mr. Kawazumi, ICHARM Director Takeuchi, Deputy Director Tanaka, and Chief Researcher Kamoto.

After congratulatory remarks by Ms. Umezaki and Dr. Takeuchi, the participants were given a training certificate by Ms. Umezaki. Mr. Khan Mohammad Abdur Rahman of Bangladesh was selected for the Sontoku Award, an award that is given the most distinguished participant selected by the fellow participants.

Finally, Mr. Rufai Abbadabo of Nigeria expressed the participants' gratitude for the program, which ended the closing ceremony.



Congratulatory remarks by Director Takeuchi



A participant is awarded a training certificate by JICA Deputy Director Umezaki



Mr. Khan is awarded the Sontoku Award by ICHARM Deputy Director Tanaka.



Mr. Abba thanks the training organizers on behalf of the participants

The four-week training provided the participants with valuable experience through which they learned concepts and methods to cope with flood-related issues in their home countries. They are expected to share knowledge and experience they acquired in Japan with their fellow engineers and administrators at organizations to which they presently belong. The sharing of the training results is an integral part of the training program for it to be fully effective. As explained in the introduction of this report, this training program is designed with the emphasis on the collaboration with local flood countermeasure projects. Thus, throughout the training, participants were always encouraged to find and analyze issues of their target basins from their own perspectives and try to come up with appropriate actions to solve them. The organizers are hoping that the training will contribute to reduction of flood damage in their countries.

At the end of the training, the participants were asked for feedback on the program. Many of them listed the study trip as the most impressive event during the four weeks. Some pointed out a high level of commitment, behavior, attitude and readiness in Japan's flood management. Considering this comment, the training successfully conveyed its message to the participants that the mentality of people involved is the most important factor for successful flood management although tangible measures, either structural or non-structural, are also essential.

Last but not least, the program organizers would like to express gratitude for the great cooperation to the governmental and municipal offices, namely, the MLIT Bureau of Water and Disaster Management, the Japan Meteorological Agency, the MLIT Hokuriku Regional Development Bureau, the Arakawa-Karyu River Office, the Shinanogawa-Karyu River Office, The Niigata Prefecture Civil Engineering Department, and the Sanjo City Hall.



The participants and organizers after the closing ceremony