

# Improvement of on-site technical capabilities

## 1. Policy on initiatives

### 1) Development of on-site technical capabilities

The field of housing and social infrastructure in which the NILIM is involved is characterized by the existence of individual sites. By providing good housing and social infrastructure at each of these sites, it will be possible to realize a safe, secure, dynamic, and attractive land and society now and in the future. Therefore, it is extremely important to improve and maintain on-site technical capabilities.

The technical capabilities required in the field can be divided into the following three categories, depending on their levels.

- i) Accurate understanding of technical standards etc. and the ability to apply them appropriately and flexibly.
- ii) Ability to deal with technical issues that arise in the field with a certain degree of independence
- iii) Ability to identify issues in the field and make proposals for improving technical standards etc.

The NILIM provides training, accepts people, and delivers on-site lectures in order to develop technical capabilities required in the above-mentioned fields.

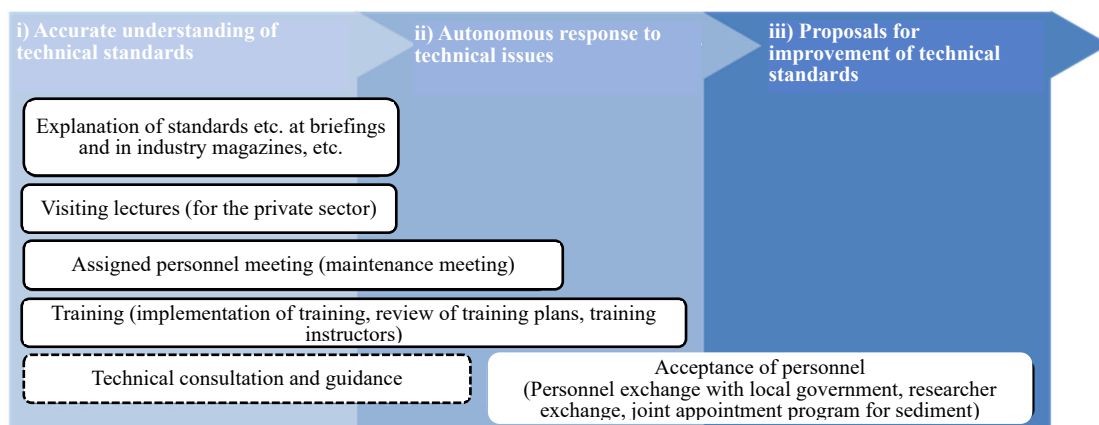


Figure 1. Major initiatives to improve on-site technical capabilities conducted at the NILIM

The specifics of the main initiatives are as follows:

#### ① Training

The NILIM is providing training to ensure accurate understanding of technical standards etc. and to develop technical capabilities to deal with technical issues independently.

The Yokosuka Office, which is in charge of port and harbor, airports, and coastal-marine areas, provides training to ensure that operations in these areas are carried out appropriately and efficiently. Figure 2 shows its training curriculum system. About 40 training sessions are held per year (see Figure 3), including training sessions for the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) officials and others according to the trainee's years of experience and by theme.

The NILIM is also providing support for training programs organized by the College of Land, Infrastructure, Transport and Tourism and Regional Development Bureaus by reviewing the structure of lectures, preparing training textbooks, and dispatching lecturers.



Photo 1. A training session

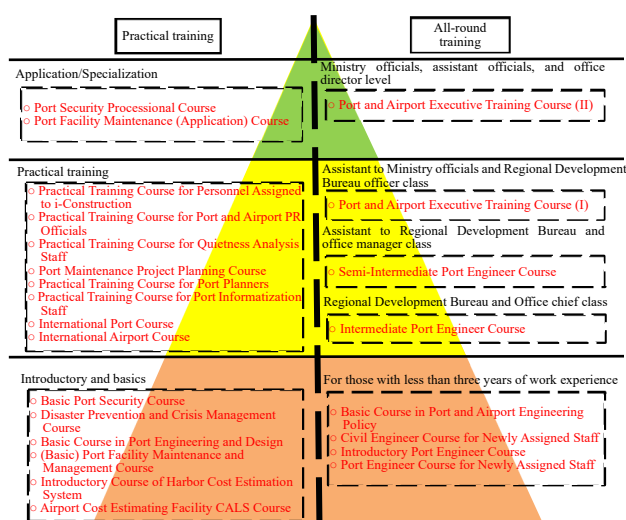


Figure 2. Training curriculum

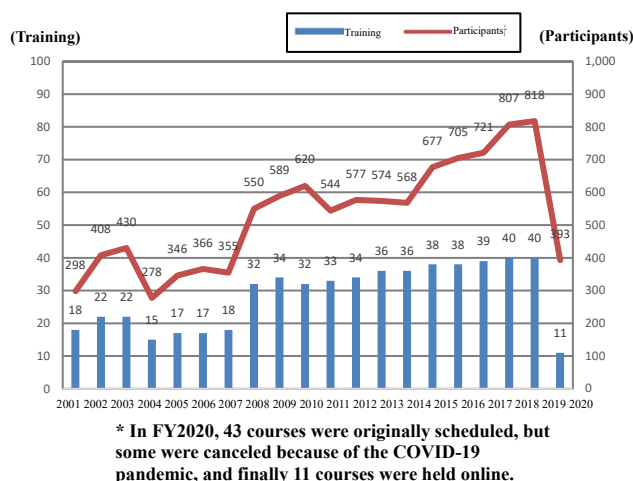


Figure 3. Number of training sessions held and number of participants

## ②Acceptance of personnel

The NILIM is accepting personnel to work at the NILIM for a certain period of time with the aim of improving the on-site technical capabilities of employees of Regional Development Bureaus, local governments, and private companies.

## ③Visiting lectures

The NILIM is visiting other organizations to give lectures as the NILIM-wide initiative. The visiting lectures include training and classes that cover fields that the NILIM is working on, such as river, road, housing, airport, and ports and airports. About 30 visiting lectures are being provided each year mainly due to the request from foundations, associations, public corporation, educational institutions, and local governments.

Other initiatives include holding briefing sessions, publishing articles in industry newspapers, and providing information on technical standards and their revisions at meetings of assigned personnel.

## 2) Support to the field

In addition to the ongoing training of field technicians as described above, the NILIM is also providing individual field support when issues arise in the field. The main initiatives include technical guidance, revision of standards, and provision of operation support tools. The specifics of these initiatives are as follows:

### ①Technical guidance

The NILIM is providing technical guidance and support to Regional Development Bureaus and local governments in response to technical questions and inquiries raised from them. A one-stop technical consultation service as the NILIM as a whole was established in 2014, which created a system that allows field operators to easily access to technical consultations. In addition to the Regional Development Bureaus and local governments, the NILIM receives inquiries from independent administrative agencies, private companies, and other ministries and agencies. In recent years, the NILIM has provided about 1,000 consultations per year (see Photo 2, Figure 4, and Figure 5). The NILIM provides various consultations, including commentary on technical standards and technical guidance on the design, construction, and maintenance of dams.

### ②Revision of standards etc.

In order to solve problems in the field, the NILIM is sharing issues raised in the field to prepare and revise standards in addition to giving technical guidance.

### ③Provision of operation support tools

The NILIM is also developing tools to manage the work of field engineers to help them implement and streamline their work.



Photo 2. A technical consultation session

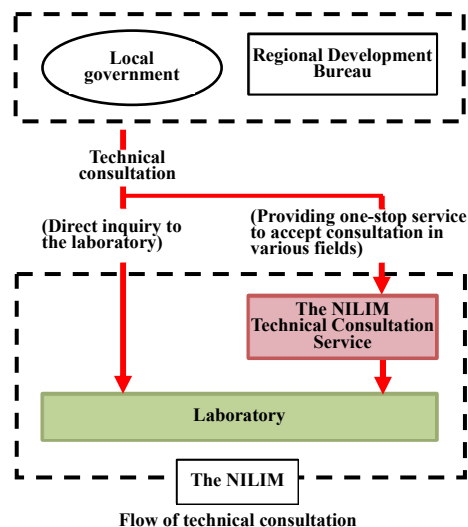


Figure 4. Flow of technical consultation

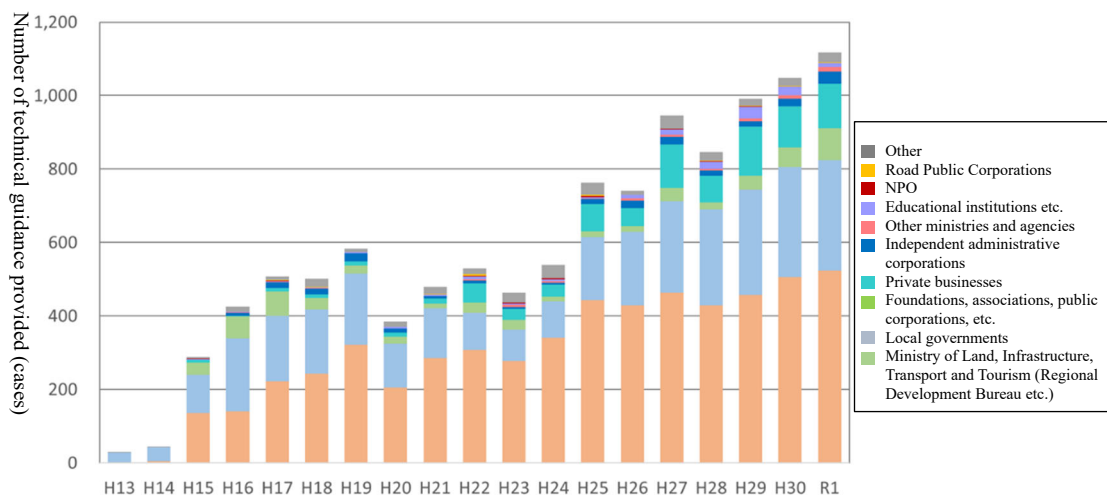


Figure 5. Number of technical guidance provided

## 2. Policy on initiatives

### ①Example of technical guidance: Technical guidance on how to manage bridges after restoration from disaster (Kuwazuruo Bridge, Kumamoto)

The Kumamoto Earthquake Recovery Division was established to provide advanced technical support for the prompt recovery from the damage caused by the Kumamoto earthquakes in April 2008. Its activities include the survey of structural characteristics of the damaged bridges and the overview of the damage, and the provision of technical advice for recovery measures.

In addition to providing support for the restoration, the NILIM staff held a briefing session for Kumamoto Prefecture, which would be the bridge administrator after the restoration, on the future maintenance and management of cable-stayed bridges, including how to manage cable tension. (See Photo 3)



Photo 3. Explaining technical considerations for restoration by the head of the Kumamoto Earthquake Recovery Division

## ②Example of the revision of standards etc.: Preparation and revision of technical standards

### • Technical standardization of bollards

In May 2019, in response to an accident at an intersection in Otsu City, Shiga Prefecture, in which a vehicle crashed into a line of kindergarten children on the sidewalk, the NILIM proposed bollards as a measure to protect pedestrians waiting at the intersection and prepared a draft of technical standards for their installation. (See Figure 6)

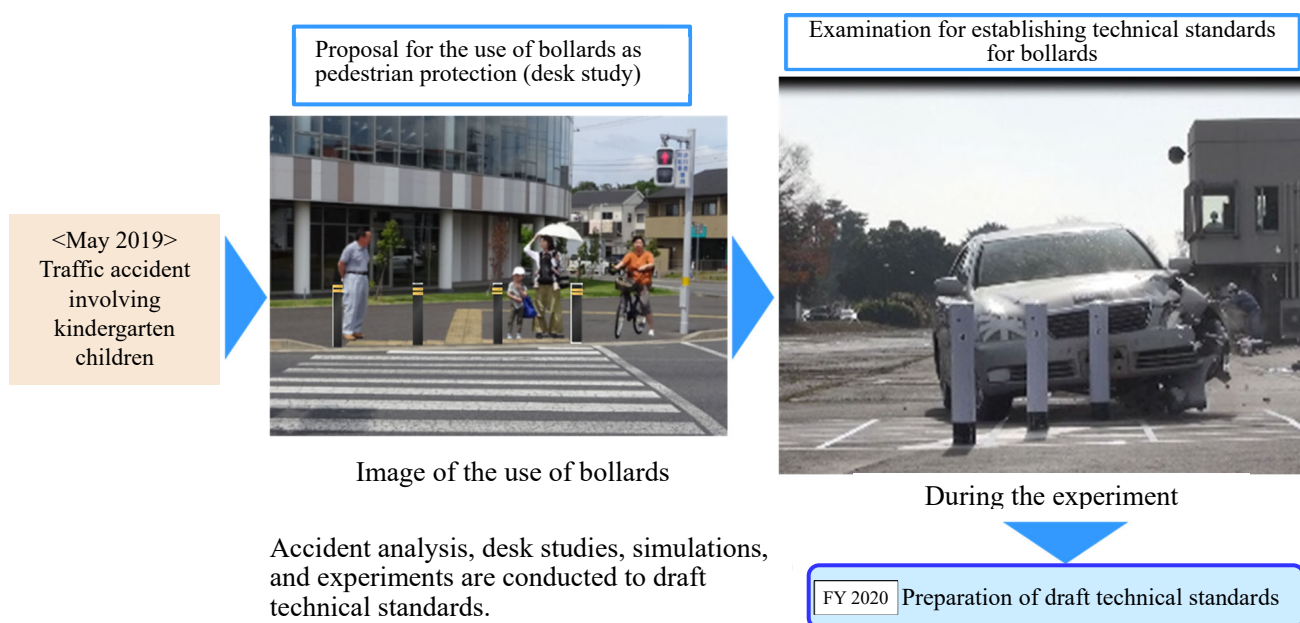


Figure 6. Examination of technical standards related to bollard installation

### • Revision of the Specifications for Road Bridges

For PC bridges where cracks have occurred, technical advice on the causes of the cracks and measures to be implemented are provided, and design considerations are shared. Since similar phenomena have occurred in other bridges, the NILIM studied how to deal with them through joint research, and the results were reflected in technical standards. (See Figure 7)

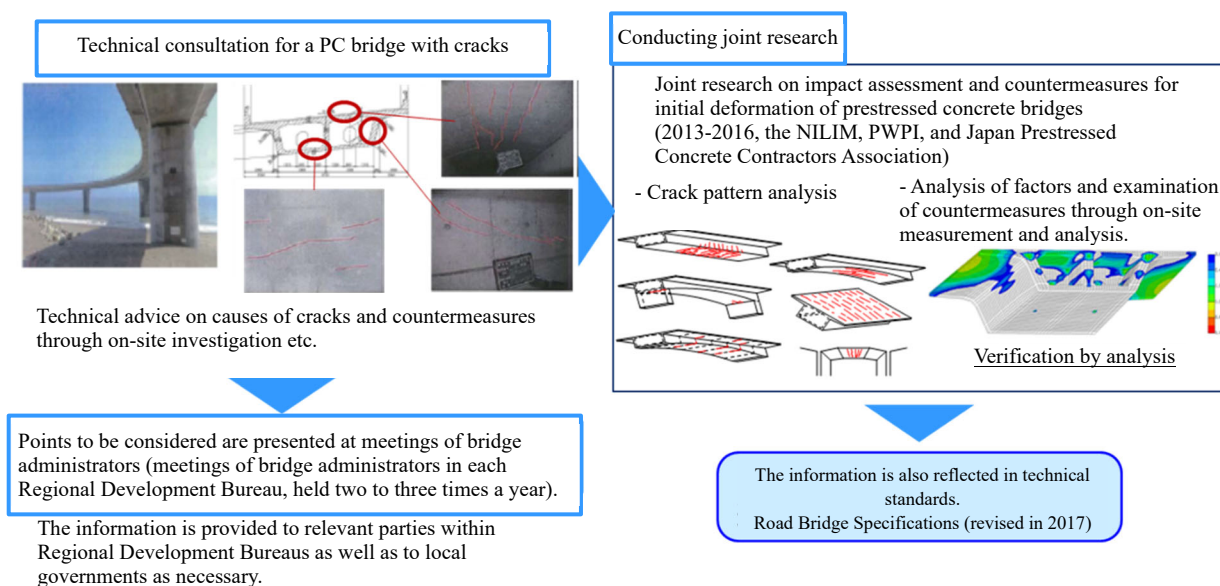


Figure 7. Revision of the Road Bridge Specification regarding cracks in PC bridges



### ③Example of providing operation support tools: Research and development to support field engineers

In the field of rivers, the NILIM has been accumulating information on river bases, such as regular observation data at each site, and developing the River Base Computerization System (RBCOM) that can be viewed at river offices, satellite offices, Regional Development Bureaus, the Ministry of Land, Infrastructure and Transport, and the NILIM.

The system is being updated to improve the efficiency of staff work time in daily operations and to support decision-making based on data and on experience.

After collecting and organizing information on river channel base for rivers under direct jurisdiction nationwide, the NILIM supports the preparation of basic river channel management sheets as basic information for river channel management. In addition, the River Environment Database was integrated into the RBCOM, and other improvements are being continuously made to enable seamless use of river channel information and environmental information.

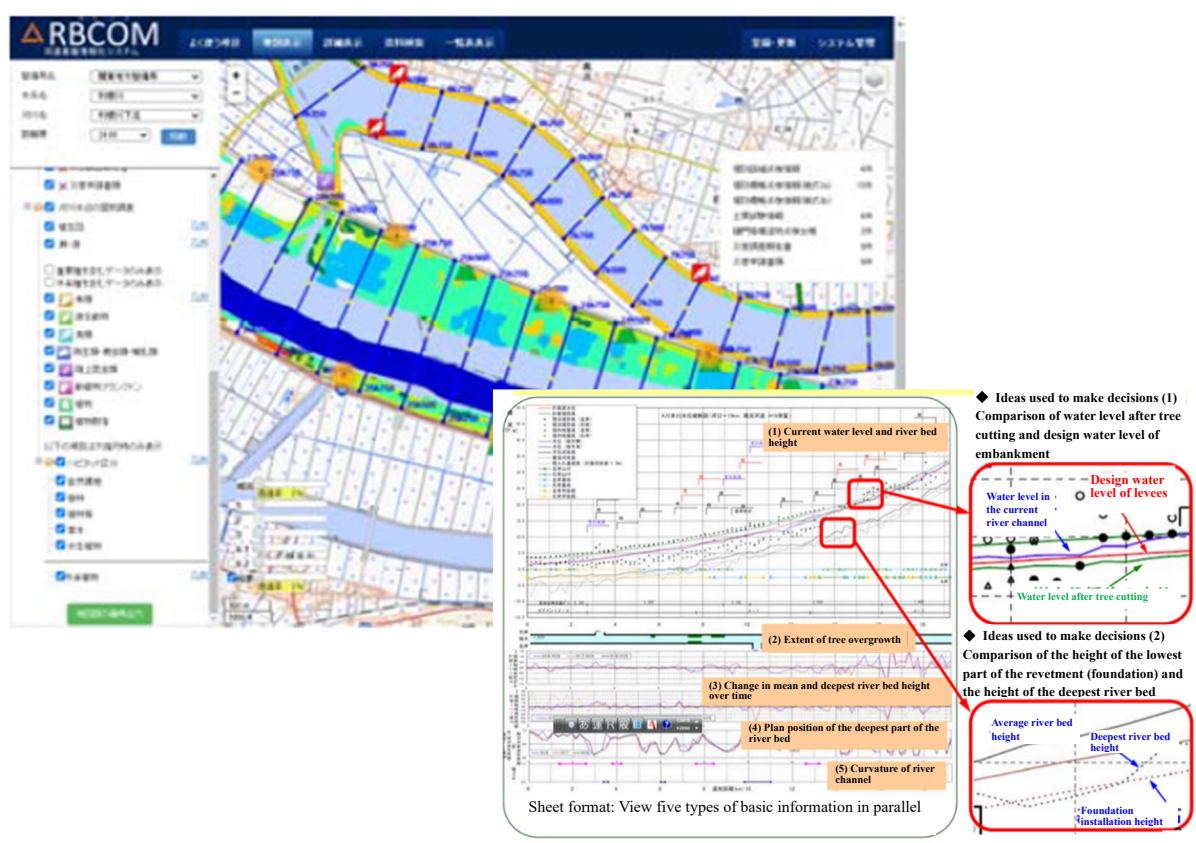


Figure 8. Example of a basic river channel management sheet that contributes to determining the need for maintenance management

### ④Acceptance and training of personnel in the field of road structure maintenance and management

Staff members from Regional Development Bureaus are accepted to the Road Structure Department, where they participate in research, field surveys, technical consultation, and the formulation of technical standards, thereby acquiring advanced technical skills. When they return to the respective Regional Development Bureaus, they lead their bureaus as core engineers in each region. (See Figure 9) The accepted engineers from Regional Development Bureaus accompany experts from the department for technical guidance and field surveys and improve their technical senses through actual experience, such as developing their ability to respond to various types of damage and failures. (See Photo 4)

It is essential that engineers assigned to the maintenance and management of road structures have the necessary knowledge and skills. Three levels of training are thus provided to match the years of experience of the engineers. The NILIM provides support for training sessions conducted at the College of Land, Infrastructure, Transport and Tourism and Regional Development Bureaus by examining the structure of lectures, preparing training textbooks, and dispatching lecturers. The textbooks and other materials used in these training sessions are made available to the public as NILIM references. (See Figure 10)

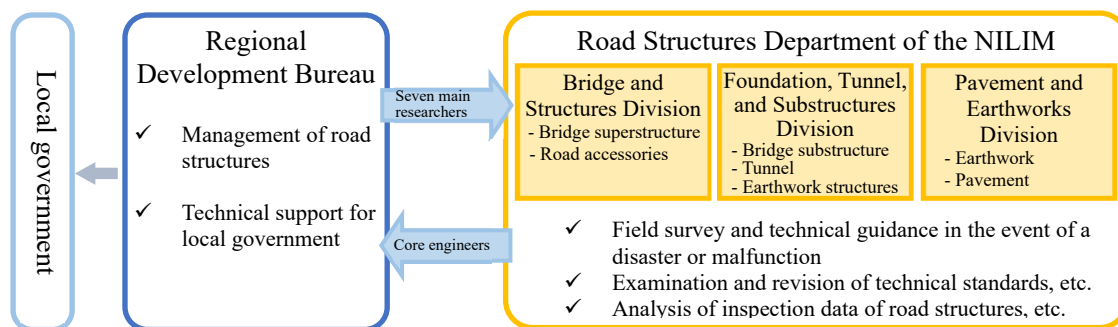


Figure 9. Training of personnel by accepting staff from Regional Development Bureaus to the Road Structures Department

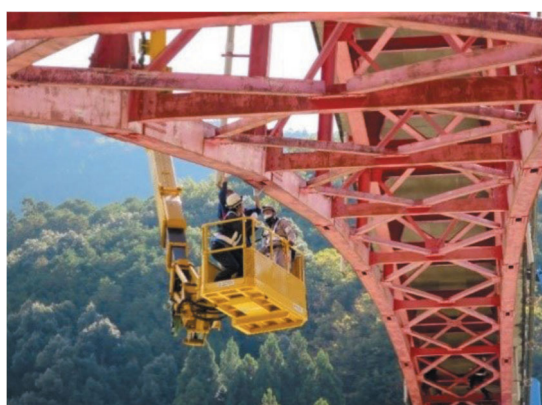


Photo 4. Participating in field surveys

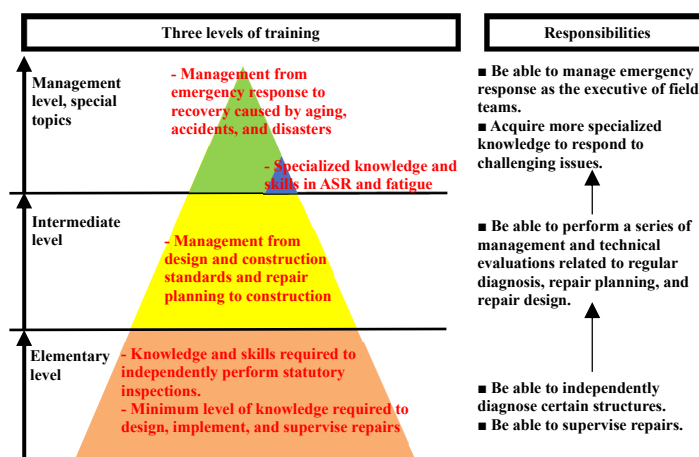


Figure 10. Training system

### (5) Landslide disaster control - Training support program

The NILIM offers a program to train local government officials who are familiar with the implementation of emergency surveys based on the revised Act on Sediment Disaster Countermeasures for Sediment Disaster Prone Areas. This program aims to develop a system in which engineers from the NILIM and PWRI as well as ones from Regional Development Bureaus who are familiar with a given region would respond to a disaster in that region, instead of the current system in which only the NILIM and PWRI engineers respond to disasters.

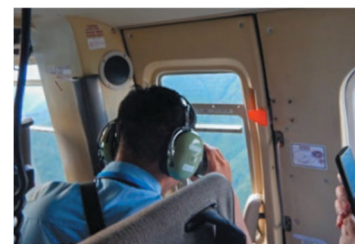
In the program, staff members from Regional Development Bureaus are assigned to serve concurrently for the NILIM. They thus accompany NILIM experts dispatched to provide technical support at the time of landslide disasters and to conduct field surveys at landslide disaster sites. The program also includes exercises to conduct emergency surveys and urgent measures and waterway experiments on overflow erosion of natural dams. The NILIM is thereby training personnel who would play the role of instructors who provide training and lectures as at their respective Regional Development Bureaus based on the experiences they gain through the training.



Officials from the Regional Development Bureau dispatched to the site of a landslide in Iwaki City, Fukushima Prefecture.



Exercises on emergency survey and emergency response



Laser distance measurement training from a helicopter at an actual river channel blockage (Kii Mountain Range)

Photo 5. Landslide disaster control - Scene of the training support program