

# Partnership with Other Organizations

## 1. Partnerships with domestic organizations etc.

In order to maximize all research and development achievements of Japan including a product of research and development by universities, private companies and other organizations, we form appropriate partnerships with domestic public research organizations, universities, private research institutes and so on by actively conducting periodical information exchanges, joint research, research cooperation and personnel exchanges according to the characteristics of research and development, and promote research and development while incorporating technological knowledge of other fields.

We also actively accept researchers from within Japan based on the exchange researcher system.

## 2. Partnerships with overseas organizations etc.

We undertake joint research and cooperative research with overseas research organizations based on science and technology cooperation agreements. In addition, we actively exchange researchers and hold international conferences.

Also, by aggressively using fellowship systems, we accept superior researchers from outside Japan at the same time as we actively dispatch PWRI researchers overseas.

## 3. Obtaining competitive funding

We make efforts to aggressively obtain external sources of funds such as competitive research funds etc., by submitting strategic applications in cooperation with other research organizations, to boost the potential of the PWRI and the capabilities of our researchers. We also aggressively obtain funds through Grants-in-aid for Scientific Research (Kakenhi) projects, the Ministry of Land, Infrastructure, Transport, and Tourism's River Sediment Prevention Technology Development System, and the Cabinet Office's Strategic Innovation Creation Program (SIP) Second Phase.

### Example: SIP Phase 2 "Strengthening National Resilience"

Research performed by the Public Works Research Institute

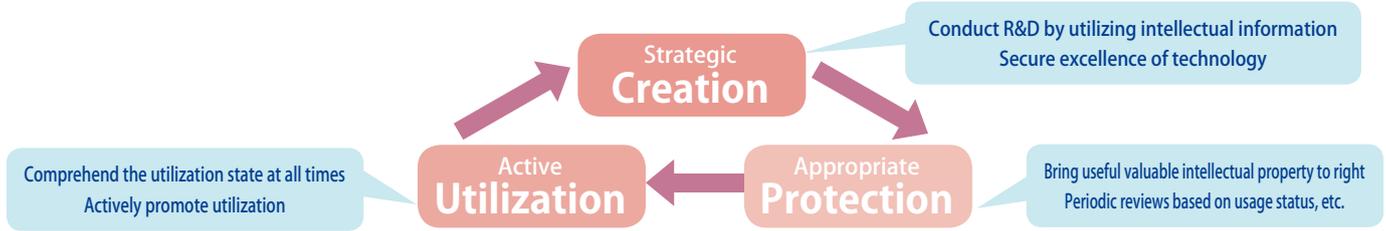
R&D items	Person responsible for the research	R&D Challenge	Participating PWRI division
I. Development of an integrated evacuation/emergency activity support system	Yuichiro Usuda (National Research Institute for Earth Science and Disaster Resilience)	R&D of an integrated evacuation/emergency activity support system	ICHARM Water-related Hazard Research Group
II. Development of a disaster state analysis/sharing system	Naoki Sakai (National Research Institute for Earth Science and Disaster Resilience)	Development of an evacuation decision/emergency activity/training support and integrated municipal disaster response system	Erosion and Sediment Control Research Group Volcano and Debris Flow Research Team
VI. Development of a super typhoon disaster prediction system	Yasuto Tachikawa (Kyoto University)	Developing a super typhoon disaster prediction system	Construction Technology Research Department Advanced Technology Research Team



# Creation / Protection / Utilization of Intellectual Properties

PWRI manages intellectual properties appropriately based on an Intellectual Property Policy to bring the best possible value to society as a whole in a strategic and active manner.

## Concepts of the Intellectual Property Policy



For more information about intellectual property rights of Public Works Research Institute, please see below.

**Industrial property rights such as patents**  
 Tsukuba Central Research Institute, ICHARM, CAESAR, iMaRRC  
<http://www.pwri.go.jp/eng/results/patent/index.html>  
 Civil Engineering Research Institute for Cold Region  
<http://www.ceri.go.jp/contents/research/research03.html>

**Program works/Guidelines**  
 Tsukuba Central Research Institute, ICHARM, CAESAR, iMaRRC  
<http://www.pwri.go.jp/eng/results/offer/index.html>  
 Civil Engineering Research Institute for Cold Region  
<http://www.ceri.go.jp/contents/center/center07.html>

**Corporate works** (also posted on page 40 in this handbook) <http://www.pwri.go.jp/eng/about/pr/publication/index.html#publications>

We recommend transfer of technology to private companies so that the new technology with a focus on intellectual property rights is widely used.

**Examples of use of industrial property rights**

**【Fluidized Bed Incineration System with Turbocharger】**  
 (Pat. No. 5,482,792, the other 12)  
 Energy/space-saving and low environmental load incinerator for sewage sludge

**【Drainage System for the end of concrete bridge girders】**  
 (Pat. No.6384906, Pat. No.6410304, Pat. No. 6455753)  
 Improving the corrosion environments around the ends of concrete bridge girders as quickly as possible

**Practitioner recruitment system for underutilized patent**  
 Public Works Research Institute looks for a partner, such as a private company that is able to carry out development, manufacturing and sales of specific products so that the technologies developed can be utilized on actual site.  
 "Practitioner recruitment system for underutilized patent" is to present the conditions of technical contents and patents which are implemented and to widely recruit partners who want to participate.

**Research Consortium**  
 As a national research and development agency, the Public Works Research Institute is actively involved in the promotion of on-site utilization of their own research results. And we are strongly required to contribute to promotion, utilize new technologies, and improve quality of the public infrastructures and reduce costs. etc.  
 For this reason, for some of the new technologies that the Public Works Research Institute has developed, active follow-up will be carried out until achieve certain level of to self-reliance, through a new attempt of such research consortium.

For overview and use of each intellectual property, please contact Tsukuba Central Research Institute, ICHARM, CAESAR, iMaRRC (Technology Applications Research Team), CERl (Cold-Region Technology Promotion Division). We will provide further information.

## Introduction of PWRI-Developed Technologies Utilized at Construction Sites

Infrastructure maintenance award / Infrastructure Technology Development Award

### Steel structure paint reinforcement method using sheets of titanium foil

(iMaRRC (Advanced materials and improvement))

Used on steel bridges protected from corrosion by painting, this technology is the application of titanium foil sheets to places susceptible to rusting such as girder ends, splices, or corners of members where it is difficult to ensure sufficient paint thickness, thereby strengthening corrosion protection of the bridge. A thick anticorrosion coating is formed by first applying the corrosion-proofing undercoat (corrosion prevention performance) and a ground coat (blocks causes of deterioration) then a middle or top coat (weather-proofing) on the steel surface. The titanium foil sheet is placed above the corrosion-proofing undercoat as a replacement for the ground coat. Appropriately applying a titanium foil sheet can completely block causes of the corrosion of steel. The execution is easier than a super thick anticorrosion coating, and can lower 100 year running cost by about 7%.

This technology received the Second Infrastructure Maintenance Award.



### Fluidized Bed Incineration System with Turbocharger

(iMaRRC (Recycling))

This system improves incineration efficiency by incinerating the composite of sewage sludge and other biomass at approximately 0.15 MPa, and allows utilization of compressed air generated by operating a turbocharger with exhaust gas. It can reduce power consumption by 40%, fuel by 10% and CO<sub>2</sub> by 40%. It can also reduce a great amount of N<sub>2</sub>O, which has more of a greenhouse effect than CO<sub>2</sub> when the combustion temperature is adjusted to the high-temperature zone. Based on good results in an experimental plant located in Oshamanbe, Hokkaido, this system has been adopted at 9 wastewater treatment plants in Tokyo and other places. This technology received the 17th Infrastructure Technology Development Award (MLIT Minister's Award) and the 41st Excellent Environmental Equipment Award (METI Minister's Award).



Turbocharger

## Wire Rope Guardrail System (Traffic Engineering Research Team)

The wire rope guardrail system consists of high toughness wire ropes and thin posts that break when they are hit by a car. By absorbing shocks of vehicle collision mainly with deflection of wire rope, it is expected to drastically reduce fatal accidents. There is no difference between shapes of both sides of the system, thus the width required for installation is narrow and the installation cost can be reduced. Since this guardrail system can be installed and removed by humans, it is possible to partially make opening sections in an emergency to allow car drivers to drive in the opposite lane and complete repair work in a short time. The Ministry of Land, Infrastructure, Transport, and Tourism is responding to the fact that on (toll-charging) expressways, the fatal accident rate on temporary two-lane sections is higher than it is on four lane sections by, as an emergency measure, starting trial installation of these on approximately 113 km of temporary two-lane sections throughout Japan in April 2017, and in FY2018, beginning standard installation on newly opened sections of temporary two lane sections of expressways. The ministry has also decided on a policy of installing them on low priority sections changed to four lanes on existing sections and on newly opened sections. This technology won the Twentieth Infrastructure Technology Development Award (Minister of Land, Infrastructure, Transport, and Tourism Prize).



The wire rope-type protective fence



Collision experiment with the large-size car

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## PWRI's Focused Dissemination Technologies/Techniques (FY2018) (Example)

### Installed anchor tensile monitoring system (Aki-Mos) (Landslide Research Team)

Ground anchor for slope stability should be maintained property. Especially, it is important to know any changes of the tensile stress in order to maintain ground anchor. However, the tensile stresses are not measured in many cases. We therefore developed continuous monitoring techniques of load for installed anchors. These techniques have enabled us to get the load data remotely by radio. By these techniques, it is possible to monitor the load, which it could hardly be done in the past. As of January 2018, 333 systems have been adopted in 71 locations, such as dams and roads managed by Regional Development Bureaus and NEXCO roads.



Installation of the technology

### Drainage system for the end of concrete bridge girders (CAESAR)

A rubber or polyethylene gutter-shaped drainage available to insert into the expansion gap from the side of existing concrete bridges allows preventing salt damage of girders and substructures due to leakage water contaminated by deicing salt from expansion joints. This drainage can be easily installed from under the bridges without affecting to traffic flow. They have been installed on expressways in Hyogo Prefecture and Tokushima Prefecture.



Sample execution

# Technical Support

## Technical support at the time of disasters

Our nation suffers from a lot of natural disasters such as human/material damages due to earthquake, heavy rain, landslides, and snow. To prepare to give disaster support immediately after disasters, the PWRI established the Disaster Countermeasure Headquarters to respond to requests for disaster experts from the national government and local governments. Since then it has received requests for disaster support from managers of damaged facilities etc. and responded by sending personnel to the scene to survey actual damage and to provide advanced technical guidance concerning methods of restoring damaged civil engineering structures and saving lives during a disaster.



Kumamoto Earthquake: Inspection of damages at the crossover in the City Road Chuo Line (Apr. 17, 2016)



Typhoon No.10 etc.: Investigation of the overflow and the collapse of embankment in Kitami City (Aug. 21, 2016)



Kumamoto Earthquake: Field survey of the collapsed Aso-Ohashi Bridge and the landslide on the national highway No.57 (Apr. 17, 2016)



Torrential rainfall in July 2018: View of sediment disaster survey in Yasuura-cho in Kure City (July 10, 2018)



Hokkaido Eastern Iburi Earthquake: view of a meeting held to plan an emergency sediment accident survey in the Atsumagawa River Basin (Sep. 13, 2018)



Hokkaido Eastern Iburi Earthquake: View of many surface collapses in the Atsumagawa River Basin (Dec. 6, 2018)

## Technical support relating to civil engineering technology in general

We provide technical support by the request from the national and local public organizations even at the time of the non-disaster for the purpose of supporting solution related to agriculture, fisheries and harbors and providing civil engineering technology in cold regions. We also participate in the technical committee, such as the government and relevant societies to provide technical support. Public Works Research Institute has accumulated knowledge and research results that are reflected in the formulation and revision of various technical standards.



A road maintenance technical team assessing the earthquake resistance of a bridge



Technical support on the maintenance and management of the snowbreak woods in Hokkaido

## Dispatch of lecturers

We offer the trainings to engineers of College of Land, Infrastructure, Transport and Tourism, Regional Development Bureau, Hokkaido Regional Development Bureau, local governments, and universities. We also organize lectures for the general public including elementary, junior high, and high schools as well as dispatch a lecturer to institutions by request to give guidance and promote civil engineering technology.



Training session for relevant officers in central and local government and for private businesses (58th sediment control and landslide prevention lecture meeting)



Training sessions for civil engineers

# Dissemination of Research Findings

## Publications of the Public Works Research Institute

Research results of PWRI are published and/or posted on the internet as: Reports of PWRI, PWRI Materials, Joint Research Reports, Monthly Reports of the Civil Engineering Research Institute for Cold Region, etc.

## Publications by PWRI

PWRI has published the below books under copyright. These books are available at bookstores.

Book title	Publisher
<i>Eco-cement Concrete Utilization Technology Manual</i>	Gihodo Shuppan
<i>Manual for Inspecting Soundness Level of Concrete Structures Using Nondestructive Tests</i>	Gihodo Shuppan
<i>Collection of Physical and Chemical Information Regarding Human Use Pharmaceuticals</i>	Gihodo Shuppan
<i>Manual of Countermeasures for Ground Contamination in Construction Works (Revised edition)</i>	Kajima Publishing
<i>Guideline for Recycling Waste Wood (Draft)</i>	Taisei Shuppan
<i>Manual of Application Technology of Other Industries Recycled Material in Construction Works</i>	Taisei Shuppan
<i>Manual of Simple Measurement Methods for Dioxins in Soil</i>	Kajima Publishing
<i>Manual for Utilization of Liquefied Stabilized Soil (2nd edition, 2007)</i>	Gihodo Shuppan
<i>Inspection and Maintenance Manual for Ground Anchors</i>	Kajima Publishing
<i>Manual for Recycling Construction Generated Sludge</i>	Taisei Shuppan
<i>Soil Pavement Handbook (for Pedestrian Pavement)</i>	Taisei Shuppan
<i>Manual for Landslide Measurements with Insertion Borehole Incliner</i>	Rikohtosho
<i>Manual for Inspection of Concrete Structures by Nondestructive/Micro-destructive Tests</i>	Taisei Shuppan
<i>Manual of Countermeasures for Dioxin-Contaminated Soil in Construction Works (provisional edition)</i>	Kajima Publishing
<i>Integrated geophysical exploration of levee systems – A Guideline for the application to the safety assessment –</i>	Aichi Shuppan
<i>Shape estimation method of landslides line</i>	Kajima Publishing
<i>Manual for Utilization of Soils from Construction (4th Edition)</i>	Public Works Research Center
<i>Practical Guide to Water Drainage Boring for Preventing Landslides</i>	Kajima Publishing
<i>Handbook for Handling Rocks and Soils Containing Naturally-occurring Heavy Metals at construction works</i>	Taisei Shuppan



## Application in Standards

Research findings are reflected in new and revised standards for infrastructure.

- River Bureau, Ministry of Land, Infrastructure, Transport and Tourism
  - Preliminary Technical Guidelines for Landslide Investigation and Its Remedies for Reservoirs
  - Guidelines for Seismic Safety Evaluation of Dams for Large Earthquakes (Draft)
- Road Bureau, Ministry of Land, Infrastructure, Transport and Tourism
  - Highway Bridge Specifications and Instruction Manual
- Ministry of the Environment
  - Guidelines for Applying for Offshore Disposal of Waste
  - Guidelines for Topographical Changes to Final Disposal Sites
- Related Organizations
  - Standard Specifications for Concrete Structures etc. Japan Society of Civil Engineers
  - Engineering Bedrock Classification Method, etc. Japanese Geotechnical Society
  - Guidelines and Commentary on Earthquake Proofing Sewage Treatment Facilities, etc. Japan Sewage Works Association
  - River Earthwork Manual etc. Japan Institute of Construction Engineering
  - Manual of Design and Construction of Reinforced Earth Using Geotextiles, etc. Public Works Research Center
  - Manual of Design and Construction of High-Standard Embankments Foundation for Riverfront Improvement and Restoration
  - Electronic Delivery Methods for Geological and Soil Research Findings Japan Construction Information Center

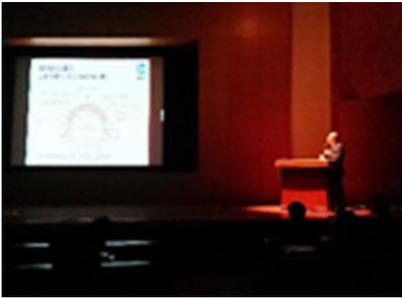


## Presentation of Papers

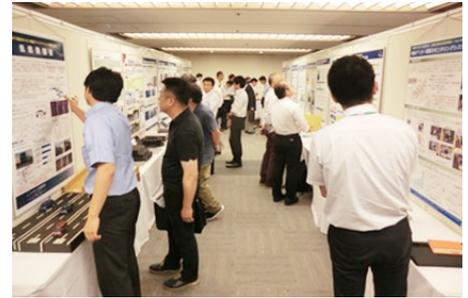
PWRI publishes approximately 1,500 papers each year, including the presentation of papers at international conferences and academic meetings, and the submission of papers for publication in collections of papers and specialist journals. We aim to present high-quality findings, with more than 300 of these papers undergoing peer review before publication.

## PWRI New Technology Showcase

The “PWRI New Technology showcase” is a seminar event to explain our new technologies. The panels and models are also exhibited at the events. The researchers provide consultation to introduce our new technologies into actual sites. The Showcases are held every year in Tokyo, and a few other cities. In FY2018, 1601 participants attended the Showcase in the five cities, Tokyo, Osaka, Niigata, Naha, and Takamatsu.



Seminar in New Technology Showcase (Tokyo, Niigata)



Exhibition/Technical consultation corner (Osaka)

## PWRI New Technology Seminar / On-site Tour

The PWRI New Technology Seminar gives lectures about selected PWRI technologies for cost reduction, time shortening or other effect, so as to address current detailed technical trends in the respective areas as may be required for application at sites, etc. The seminars are held every year in Tokyo and other cities.

The On-site Tour is held on as many occasions as practical in the field where PWRI developed technology is being actually applied to ensure that the participants can actually see with their eyes, understand application methods and benefits.



New Technology Seminar



Scene of on-site tour

## Developmental Technology Seminar

PWRI holds briefing sessions on development technologies regarding subjects which are of interest to engineers in snowy cold regions on related institutions in order to promote the utilization of new technologies researched and developed in snowy cold regions on sites of public works.



Akita



Toyama

## On-site Seminar

On-site seminars are cosponsored in various areas of Hokkaido by the Civil Engineering Research Institute for Cold Region and the Hokkaido Regional Development Bureau so that survey methods and countermeasures in snowy cold regions can be effectively utilized at sites and such seminars contribute to the promotion of development in Hokkaido.



Asahikawa



Abashiri

# International Contribution

The Public Works Research Institute (PWRI) has been active in conducting research and on-site activities in collaboration with international organizations and research institutes in Asian and other regions.

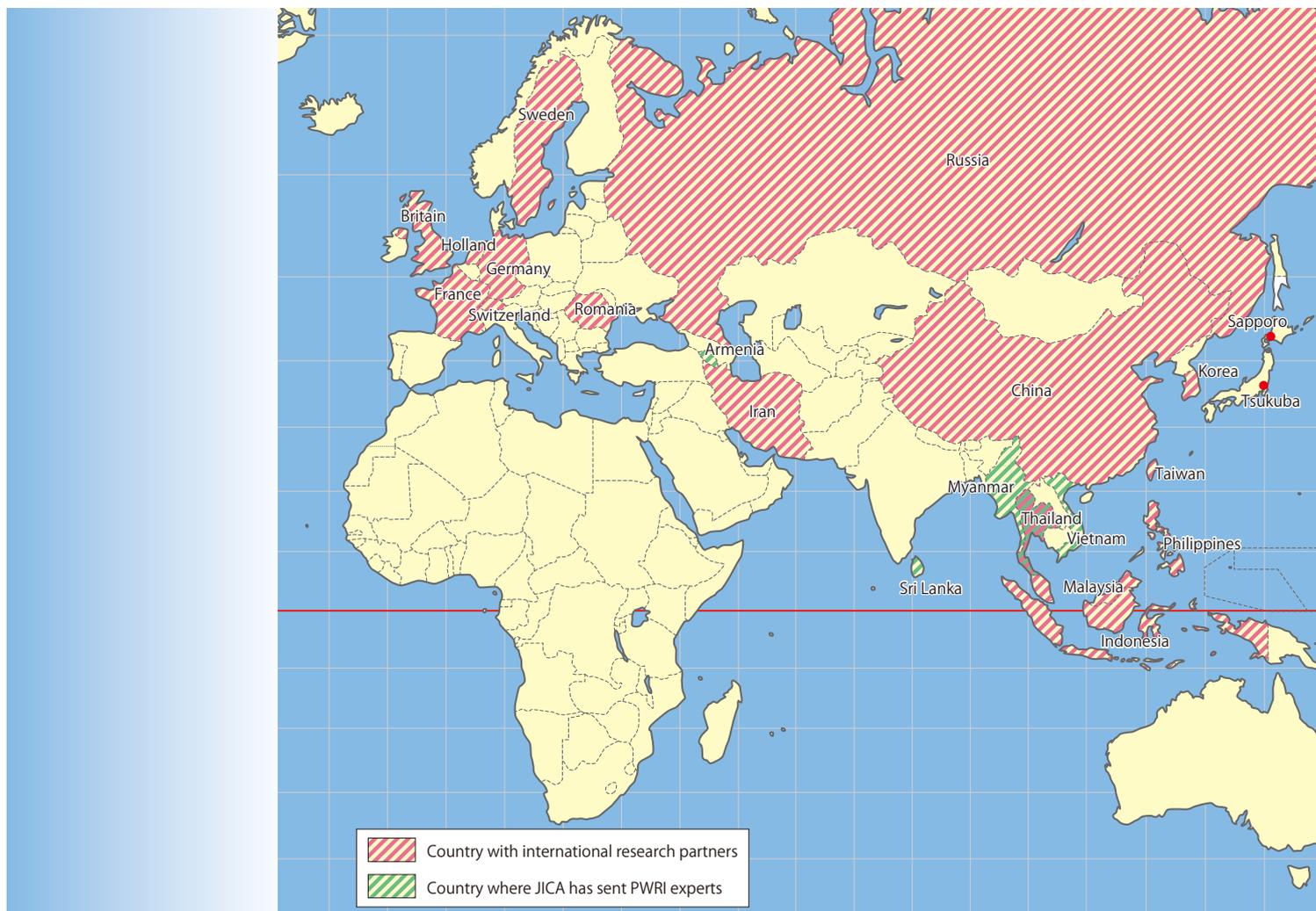
One example is an international project, "Transformation of Urban Management (TA8456 MYA)," in which the International Centre for Water Hazard and Risk Management (ICHARM) has been involved since July 2014. The project is led by the Asian Development Bank and specifically developed for Myanmar. Assigned to strengthen the nation's urban flood management capacity, ICHARM has provided local government personnel with training and technical assistance needed to perform flood and storm-surge risk assessment and hazard mapping. ICHARM is also involved in a UNESCO-funded project, "Strategic Strengthening of Flood Warning and Management Capacity of Pakistan Phase II." Furthermore, it has been the secretariat of the International Flood Initiative (IFI), a global framework to promote collaboration on flood management with major international organizations such as UNESCO, the World Meteorological Organization (WMO), and the United Nations University. PWRI will continue to plan and implement a wide range of activities in partnership with donor organizations such as the Japan International Cooperation Agency (JICA) and the World Bank.



Workshop for Improvement of Flood Management Capacity in Myanmar (TA84656MYA)



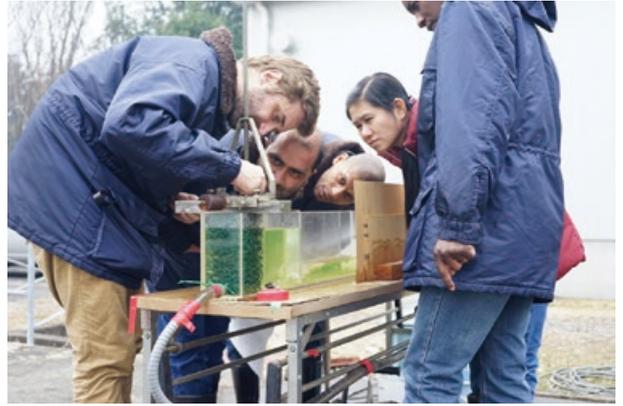
International Flood Initiative (IFI) Workshop (Jan. 2017)



## Human Resource Development

The Public Works Research Institute accepts trainees of civil engineering technology field of more than 300 people every year from Africa, Asia, and Central and South America. We also dispatch a large number of instructors in specialized training of civil engineering that JICA organized to work on human resource development.

In particular, the three parties, ICHARM, the National Graduate Institute for Policy Studies (GRIPS) and JICA jointly launched a one-year Master's course "Disaster Management Policy Program and water disaster risk management course". ICHARM also launched a three-years Ph.D. program "disaster prevention science program" with GRIPS..



Hydrological exercises for trainees

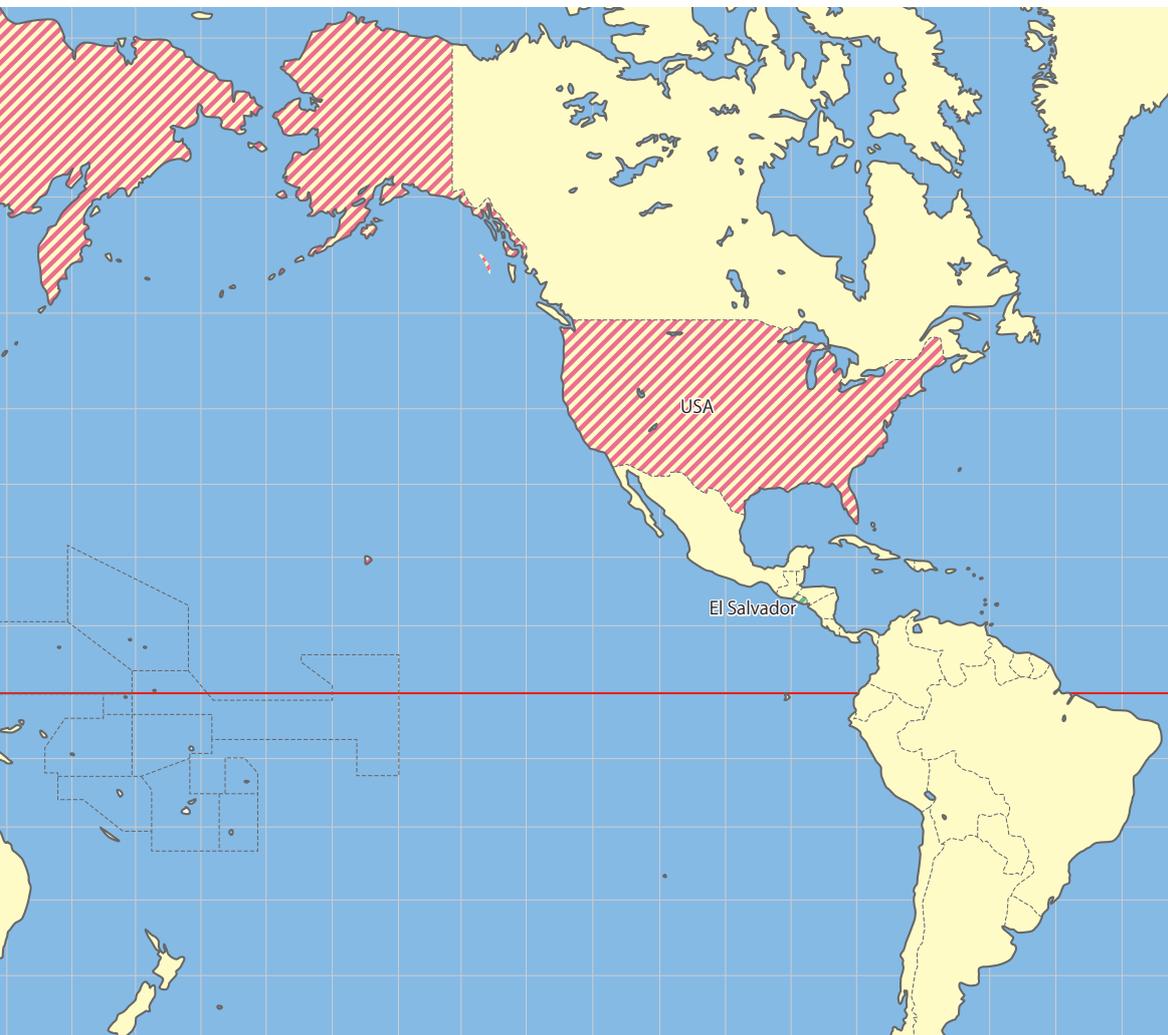
## Overseas Technical Support

As a reply for requests made by JICA, foreign governments, and foreign research institutes, PWRI dispatches engineers to foreign countries, and disseminates technical knowledge and research outcomes of PWRI, depending on the need.

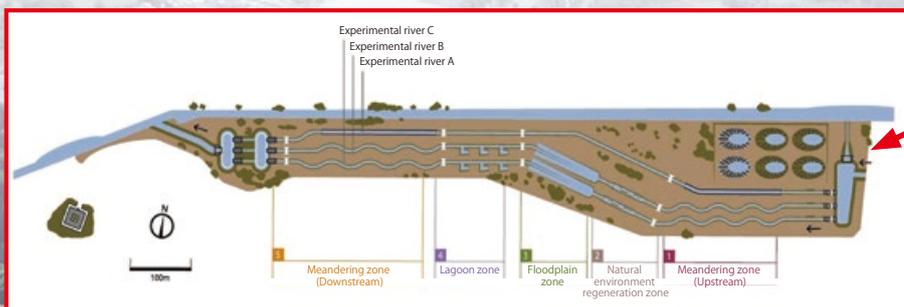
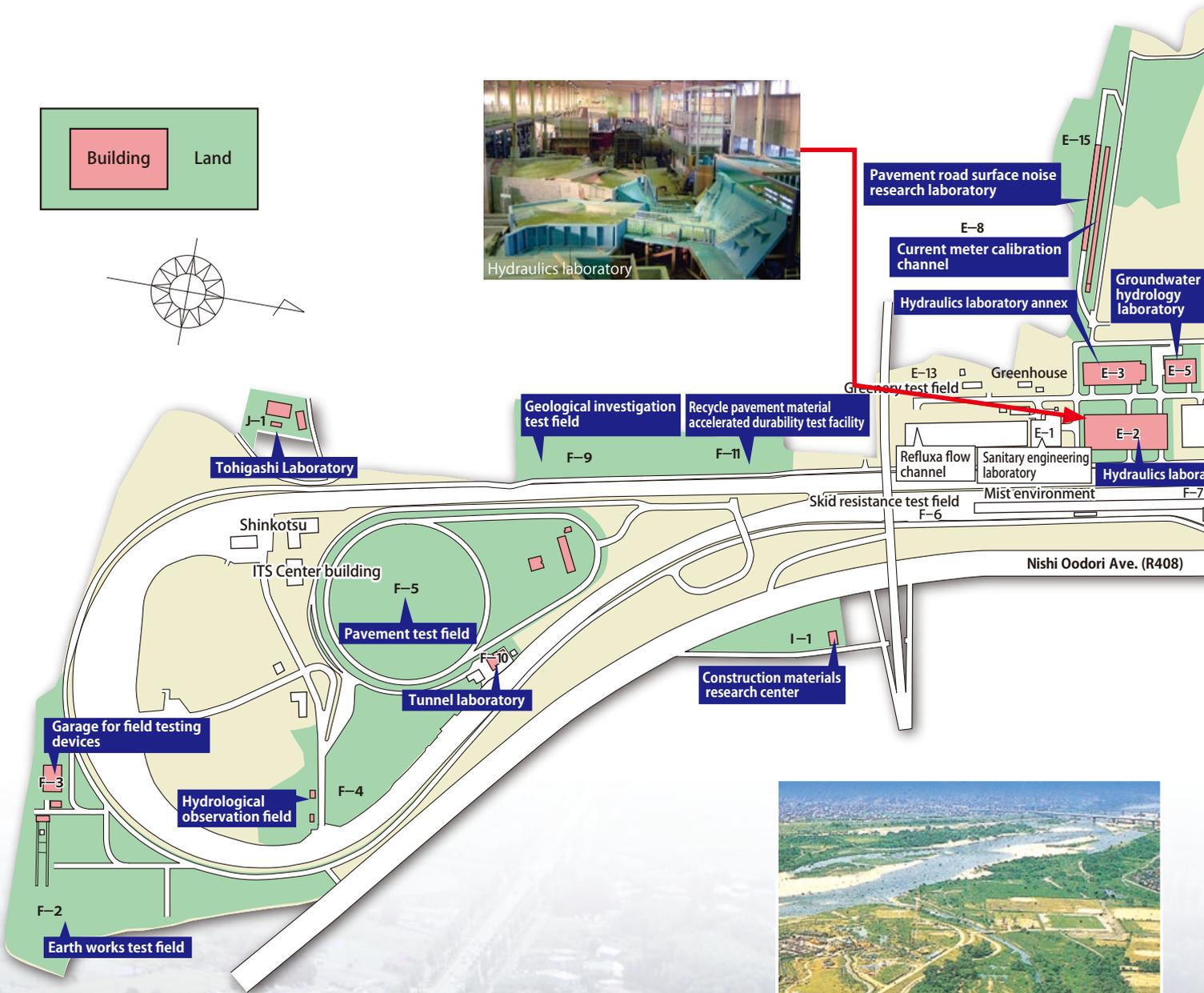
At the end of May 2017, after flooding in Sri Lanka, we investigated the scene as part of a specialist international emergency assistance team. We observed and prevented secondary damage and provided guidance and assistance related to infrastructure recovery and improvement.



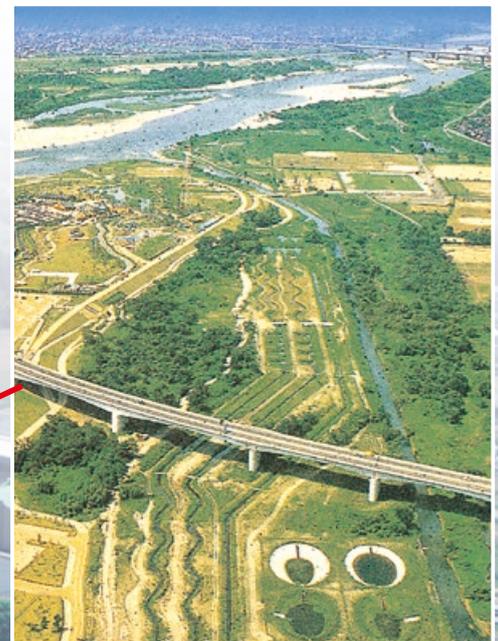
Meeting with Sri Lanka's government minister responsible for disaster prevention



- **Tsukuba Central Research Institute**
- **International Centre for Water Hazard and Risk Management**
- **Center for Advanced Engineering Structural Assessment and Research**
- **Innovative Materials Resources Research Center**



Aqua Restoration Research Center (Gifu)

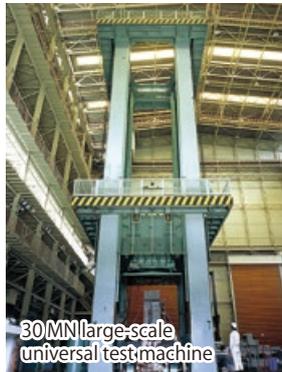




TSUKUBA CITY



Tunnel lining loading test



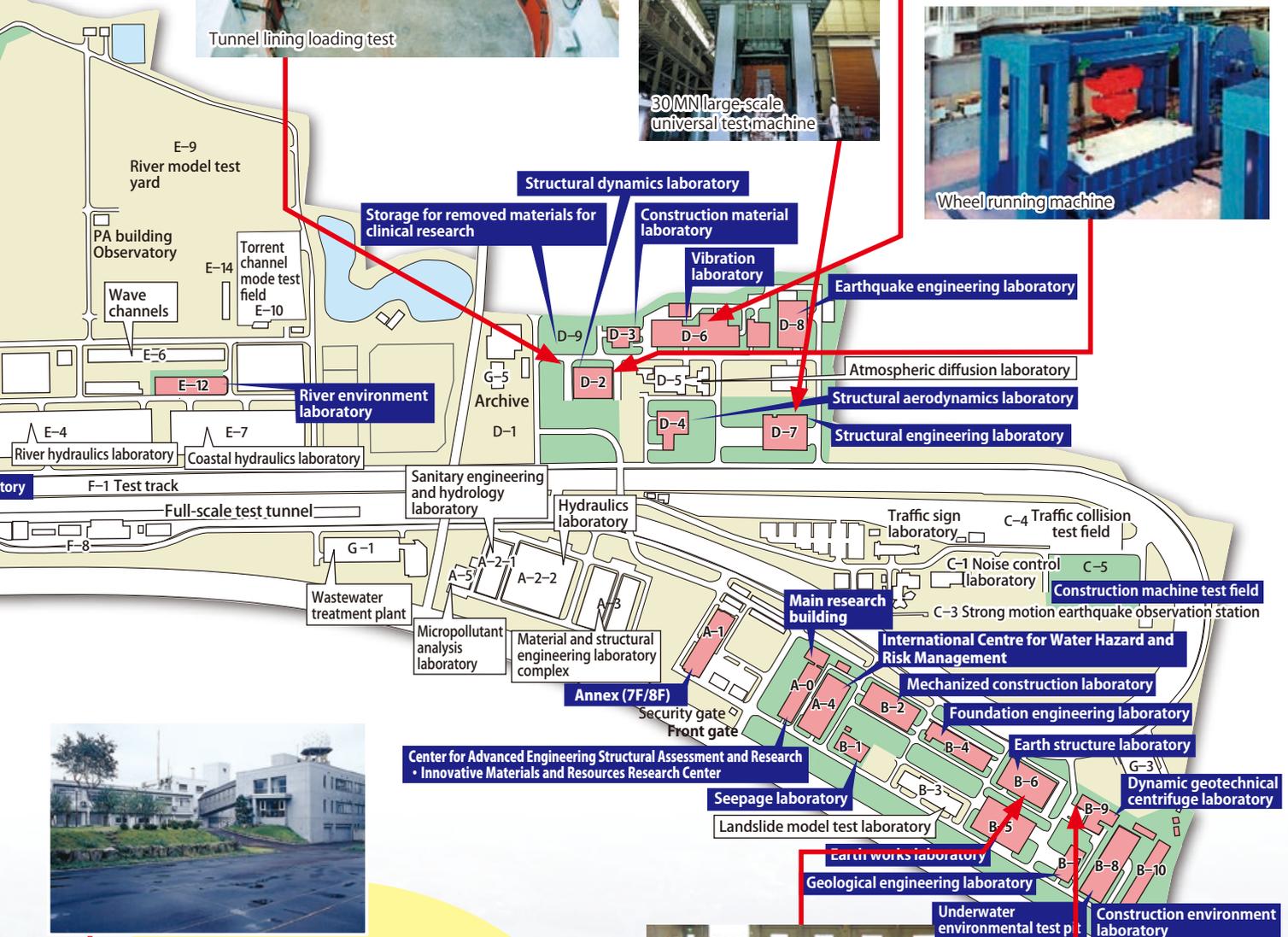
30 MN large-scale universal test machine



3D large-scale shaking table



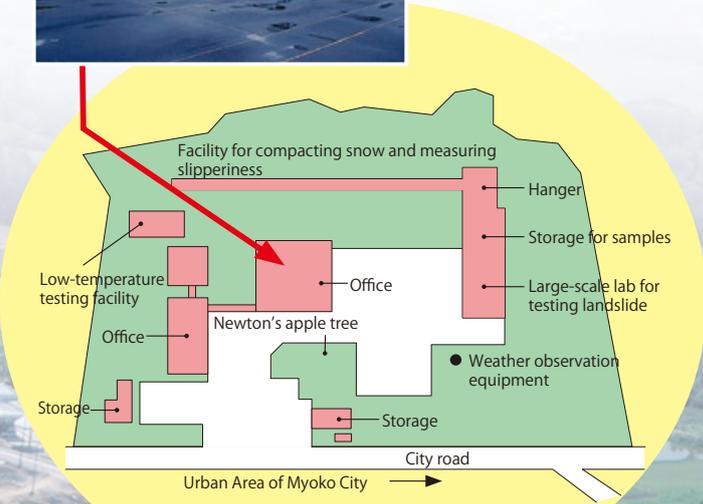
Wheel running machine



Earth structure laboratory



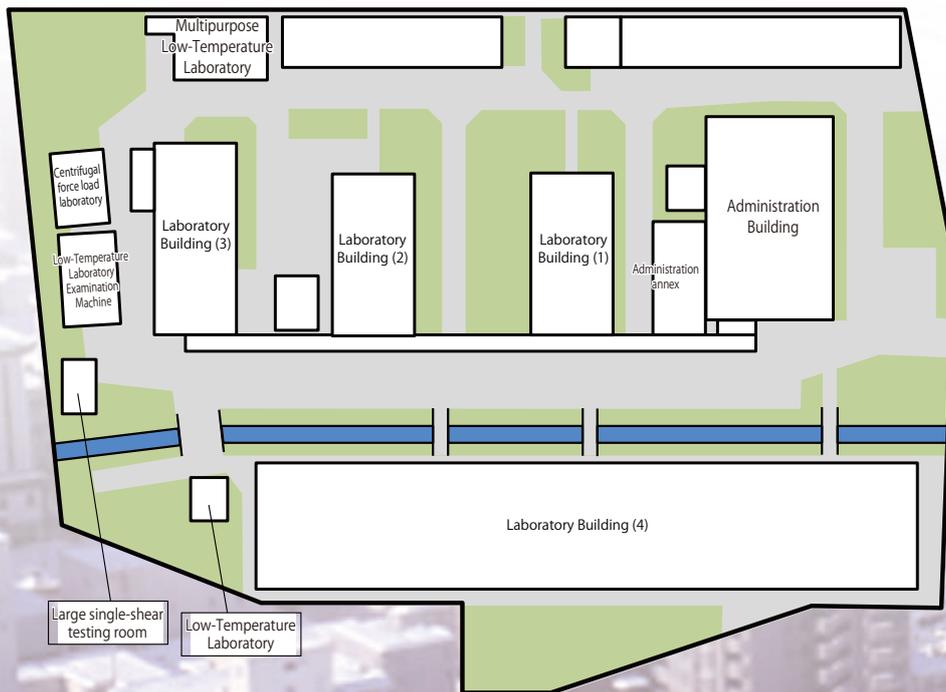
Large-scale Geotechnical Dynamic Centrifuge



Snow Avalanche and Landslide Research Center (Niigata)

Introduction of Facilities

# Civil Engineering Research Institute for Cold Region



Concrete combined-deterioration accelerating test apparatus



Irregular oscillatory water tunnel



High-speed hydraulic channel



# Off-Site Facilities



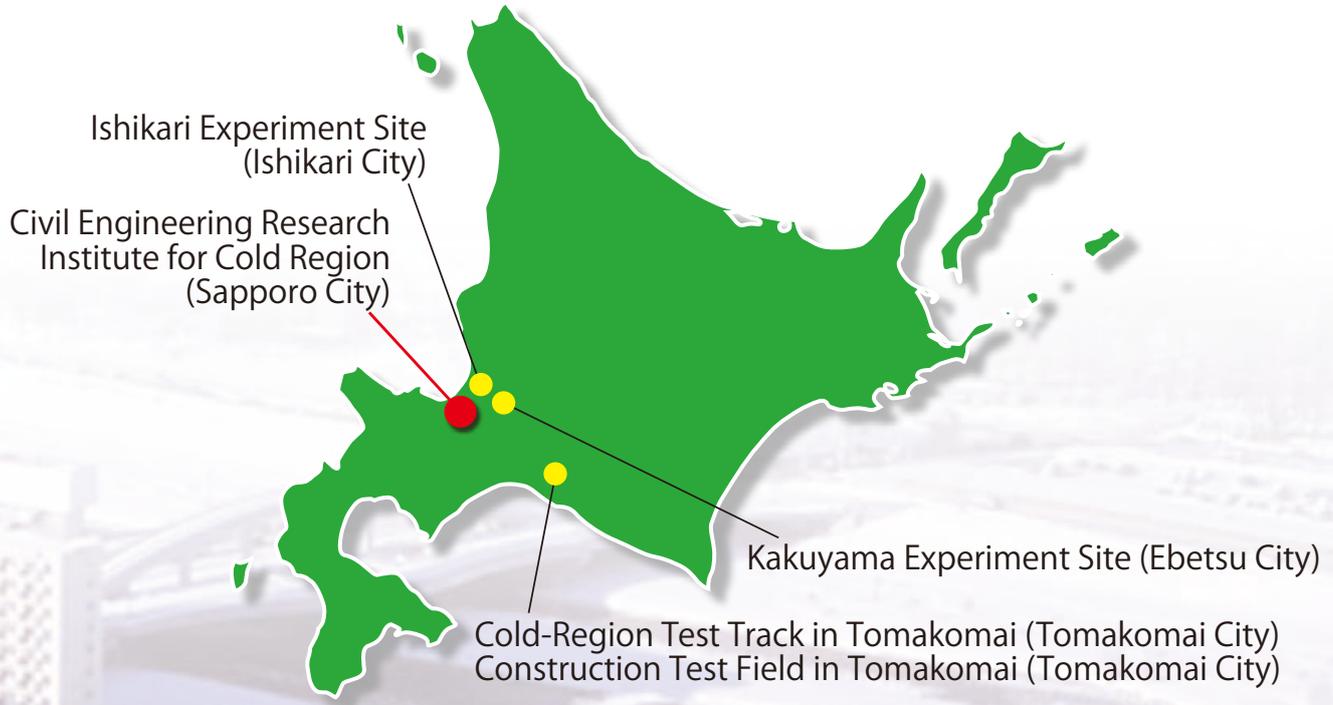
Ishikari Experiment Site



The Double Fence Intercomparison Reference (at the Ishikari Experiment Site)



Wind tunnel experimental apparatus (at the Ishikari Experiment Site)



Cold-Region Test Track in Tomakomai



Construction Test Field in Tomakomai



Kakuyama Experiment Site

# Lease System of Facilities

PWRI leases test facilities and equipment in its possession to national institutions, local governments, universities, public-interest corporations and private research organizations as a rule. There are special civil engineering test machines that are expensive or difficult to maintain properly. Some of the lease-signers are from fields other than civil engineering.

## Examples of lease

### Civil engineering-related experimental research



### Other experiments



### Other facilities for lease

Tsukuba	30 MN large-scale universal testing machine
	Earthquake engineering laboratory
	Current meter calibration channel
	Earth Structure Laboratory
	Differential settlement
	Earthwork experimental laboratory
	Large-scale Geotechnical Dynamic Centrifuge
	Dam hydraulics laboratory
	Pavement test field
	Large-scale box shear test apparatus

Civil Engineering Research Institute for Cold Region	Impact acceleration tester
	Wind tunnel experimental apparatus
	Ishikari hydraulic experimental station
	Wheel tracking test machine
	Ishikari Blowing-Snow Test Field
	Freeze-thaw testing machine
	Raveling testing machine
	Centrifuge
	Inclinable channel

Other civil engineering facilities

■ Please check our homepage for application procedures, forms and regulations.



# Open House

We organize open house for the general public to get to know more about our research. Research institutions, corporate officials, university students and vocational school students as well as the residents of the region who have no contact to our research visit our facilities so they can observe part of our activities. We also accept the facility tour if it is pre-registered.

## Public Works Research Institute

The research facilities of Tsukuba, Ibaraki Prefecture, has an open house during "Science and Technology Week (April)" and on the "Civil Engineering Day" (November) in collaboration with the National Institute for Land and Infrastructure Management.

We introduce civil engineering in recent years and the mechanism of disasters through hands-on events and demonstration/experiment.

We also introduce special vehicles used in the field in cooperation with Ministry of Land, Infrastructure and Transport Kanto Regional Development Bureau.

At open house in November, we hold the bridge making contest for elementally students with support from the city Board of Education cooperation. We display the bridges which elementally students create.



The works of the bridge contest



Teleoperation of unmanned construction machines



Experience of striking sound test of concrete



Introduce damage due to debris flow and its countermeasures

## Civil Engineering Research Institute for Cold Region

CERI in Sapporo, Hokkaido has held open house every year in July since 1983 in conjunction with the "Land, Infrastructure, Transport and Tourism Day". The purpose of this event is to provide the general public including children with understanding and outreach of our institution's role, research result and research themes that we are correctly working on.

Every year each team displays unique exhibition and visitors can enjoy and play with hand-on exhibits. We also have the section dedicated to the professional civil engineers.



Model experiment of snowstorm



Experience section to touch creatures of the sea



Test drive experience of the snow removal vehicles



Facility tour quiz rally

## Aqua Restoration Research Center

In the Aqua Restoration Research Center (Kakamigahara, Gifu Prefecture), guided tours are conducted according to appointments through the year. The purposes of the tours are to propagate knowledges of studies on preservation and conservation of river environment and to advise river management methods.

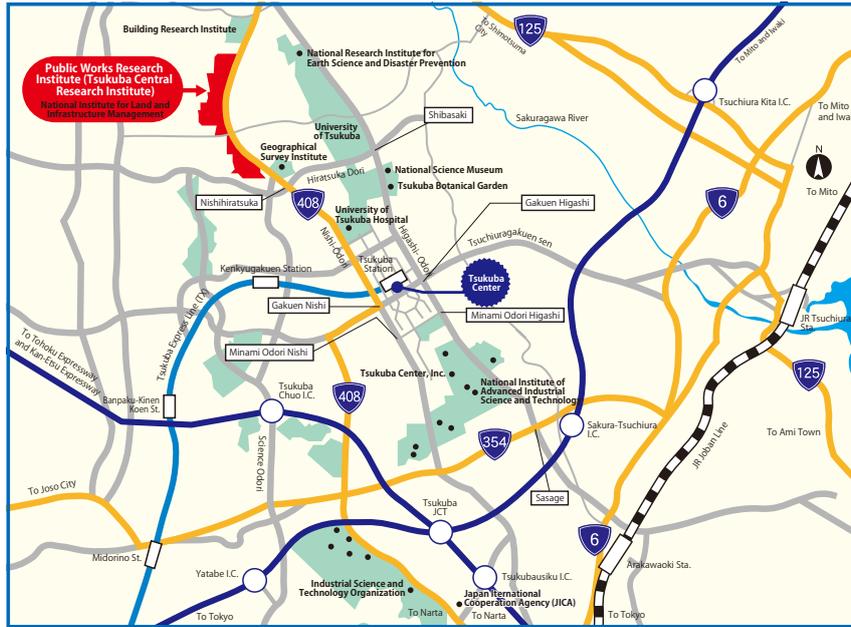
The tours help you learn practical contents related to the nature-oriented river management, such as importance of river morphology and flow and sediment regimes for riverine organisms, some points in selection of revetment blocks to consider river landscape, and installation methods of crossing structures to consider physical environment in rivers.



Tour of the experimental river held for engineers



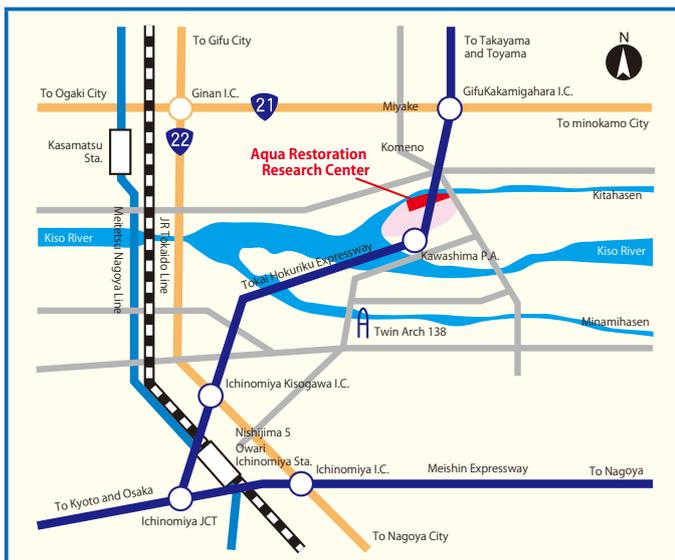
# Map and Access to PWRI (Tsukuba) (ICHARM, CAESAR, iMaRRC)



Train	Akihabara Sta.	Tsukuba Express Line (about 50 minutes by semi-rapid)		Kenkyu-Gakuen Sta.	Tsuku-bus [Yoshinuma Shuttle] (about 25 minutes)	Doboku Kenkyusho Mae (PWRI)
		Tsukuba Express Line (about 45 minutes by rapid) Tsukuba Sta.				
Ueno Sta.	JR Joban Line (about 60 minutes)	Hitachinouchiku Sta.	Kantetsu Bus bound for University of Tsukuba (about 25 minutes)	Tsukuba Sta. (Tsukuba Center)	Kantetsu Bus, Gate No. 5 bound for Shimotsuma Sta. or Kenchiku Kenkyusho /Building Research Institute (about 25 minutes)	
	JR Joban Line (about 60 minutes)	Arakawaoki Sta. (West Exit)	Kantetsu Bus bound for University of Tsukuba (about 25 minutes)			
	JR Joban Line (about 70 minutes)	Tsuchiura Sta. (West Exit Bus Terminal 2)	Kantetsu Bus bound for University of Tsukuba (about 25 minutes)			
Highway Bus	Tokyo Sta.	At Tokyo Station, go to bus gate No. 5 Yaesu South exit. Take Tokkyu (express) Tsukuba-Go bound for Tsukuba Center or University of Tsukuba (about 70 minutes).				
Car	Tokyo	Shuto Kosoku (Metropolitan Expressway)	Misato I.C.	Joban Expressway (about 30 minutes)	Yatabe I.C. or Sakura-Tsuchiura I.C.	Suitable route (about 20 minutes)

Public Works Research Institute (Tsukuba Central Research Institute) 1-6 Minamihara, Tsukuba-shi, Ibaraki-ken 305-8516 Phone: +81 29-879-6700

## Aqua Restoration Research Center



Kan-yuchi-mubanchi Kawashimakasada-machi, Kakamigahara-shi, Gifu-ken 501-6021  
Phone: +81 586-89-6036

### [Train]

- Meitetsu (Nagoya-Kasamatsu) About 30minutes
- Taxi (Kasamatsu-ARRC) About 10 minutes

### [Car]

- About 10 minutes from Gifu Kakamigahara I.C. on the Tokai Hokuriku Expressway (Use the west parking area in the Water Eco Park)
- The ARRC is also within waking distance from Kawashima P.A. on the Tokai Hokuriku Expressway

## Snow Avalanche and Landslide Research Center



2-6-8 Nishiki-cho, Myoko-shi, Niigata-ken 944-0051  
Phone: +81 255-72-4131

### [Train]

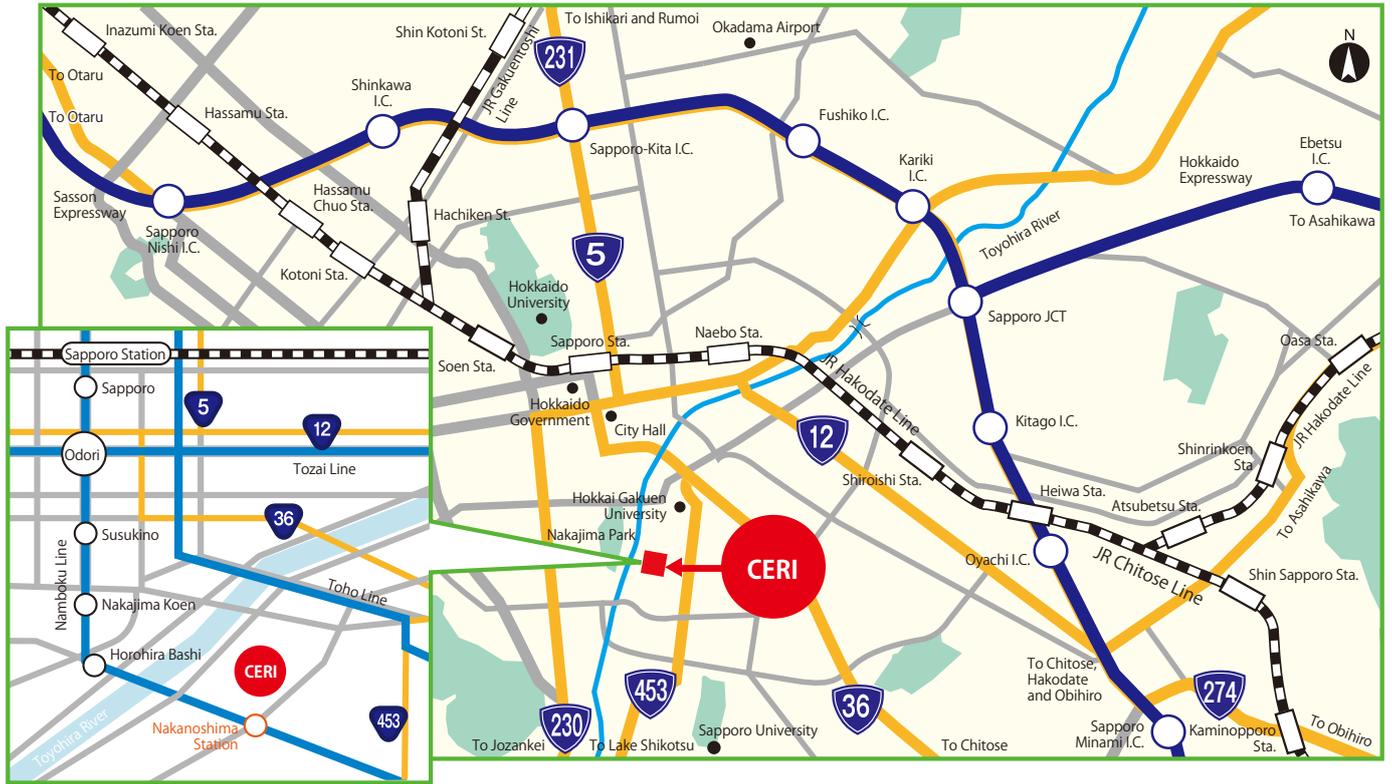
- Hokuriku Shinkansen (Tokyo-JoetsuMyoko) About 2 hours
- Echigo-Tokimeki Line (JoetsuMyoko-Arai) About 10 minutes
- Total ..... About 2 hours and 10 minutes
- Niigata-Naoetsu-Arai..... About 2 hours and 30 minutes
- Five minutes (about 2 km) by taxi from Arai Station

### [Car]

- From Arai Smart I.C. on Joshin'etsu Expressway ..... About 3 km 7 minutes
- From Nakago I.C. on Joshin'etsu Expressway ..... About 4 km 10 minutes

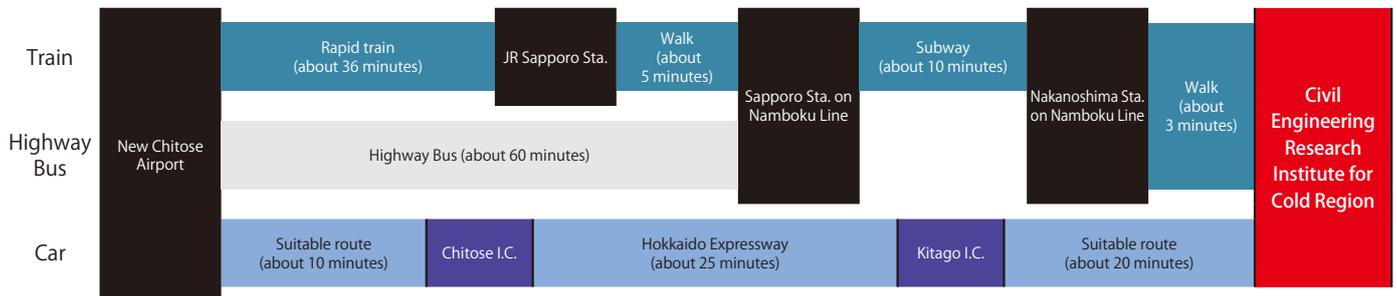


# Access to Civil Engineering Research Institute for Cold Region



## Access

CERI is located on the eastern side of the Toyohira River that goes through the center of Sapporo City, in an area called Hiragishi in Toyohira-ku. The institute is about 200 meters north of, or 3 minutes walk from, the Nakanoshima Station on the Namboku Line of the Sapporo City Subway System.



Civil Engineering Research Institute for Cold Region 3-1-34 Hiragishi Ichijo, Toyohira-ku, Sapporo-shi 062-8602 Phone: +81 11-841-1624

## Public Works Research Institute



**Tsukuba Central Research Institute**  
**International Centre for Water Hazard and Risk Management**  
**Center for Advanced Engineering Structural Assessment and Research**  
**Innovative Material and Resource Research Center**

1-6 Minamihara, Tsukuba-shi, Ibaraki-ken 305-8516  
Phone: +81 29-879-6700  
<http://www.pwri.go.jp/eindex.html>  
e-mail: [www@pwri.go.jp](mailto:www@pwri.go.jp)



**Civil Engineering Research Institute for Cold Region**

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