



Ministry of Land, Infrastructure, Transport and Tourism
National Institute for Land and Infrastructure Management

NILIM



—— Research Institute that creates
the society of the future ——

2019



<http://www.nilim.go.jp/>

Mission of the National Institute for Land and Infrastructure Management (NILIM)

As the only national research organization in the public capital/housing field, our goal is to use technology as a driving force to create an attractive society that is safer, more secure, and more vigorous, both now and in the future.



NILIM research policy (excerpt)

Basic stance

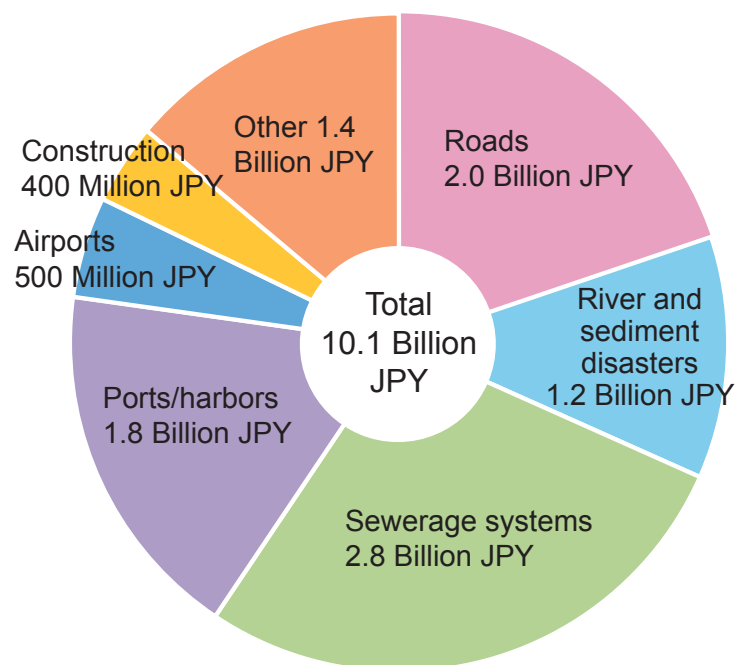
- Participate in policy development of the Ministry of Land, Infrastructure, Transport and Tourism as a technical specialist taking into account the administrative perspective
 - Participate as a party involved not only in forming and planning technical policy, but also in spreading and establishing that policy
 - Fulfill accountability through clarification of necessity and validity of technical policy using verified data
- Return advanced, comprehensive technical capabilities cultivated by research activities to practical work fields
 - Present solutions based on the situation in the field, and flexibly support advanced emergency response in the event of a disaster
 - Accumulate individual case examples, generalize and provide them widely, and reflect these lessons in research
- Connect to the creation of new policy by insight of the future image of national land/society and promotion of technology development
 - Take a larger view of national land/society, accurately understand the changes, and see into the future issues
 - Widely cooperate and fuse technology with industry, academia and government, and aim for new technology development

Activities forming basis

- Research and development that supports planning, drafting and spreading policy for land, infrastructure, transport and tourism (p. 5–14)
 - Systematically present, implement on-site, and continuously improve the technical standards and approaches that support important policy development to be faced
 - Identify issues to be addressed in the future and propose policy direction
 - Analyze trends of national land/society continuously and on a long-term basis, and accumulate knowledge
 - Support international expansion of Japanese technology through strategic international standardization and engineer cultivation in developing countries
- Advanced technical support for response to disasters/accidents and improvement of countermeasure techniques (p. 15–17)
 - Dispatch researchers immediately after disaster and support on-site response regarding secondary disaster prevention and emergency measures
 - Provide technical advice on investigation of the cause, consideration of recovery and reconstruction plans, and implementation of measures
 - Accumulate knowledge and lessons learned from disasters and reflect them in further research on disaster prevention and reduction measures
 - Technical support in case of large-scale disaster overseas as a country with developed disaster response
- Support for improvement of field technology of regional development bureaus (p. 18)
 - Transfer technological capabilities through guidance and advice from experts in the practice, regarding issues to be faced in the field
 - Host and train personnel to become local core engineers who have both administrative knowledge and specialization
- Collection, analysis and management of data forming technical basis of policy formation, and return to society (p. 19)
 - Collect and manage large amounts of field data as a State-run institute while ensuring objectivity, accuracy and reliability
 - The accumulated data is analyzed by us, reflected in research, and properly disclosed to society

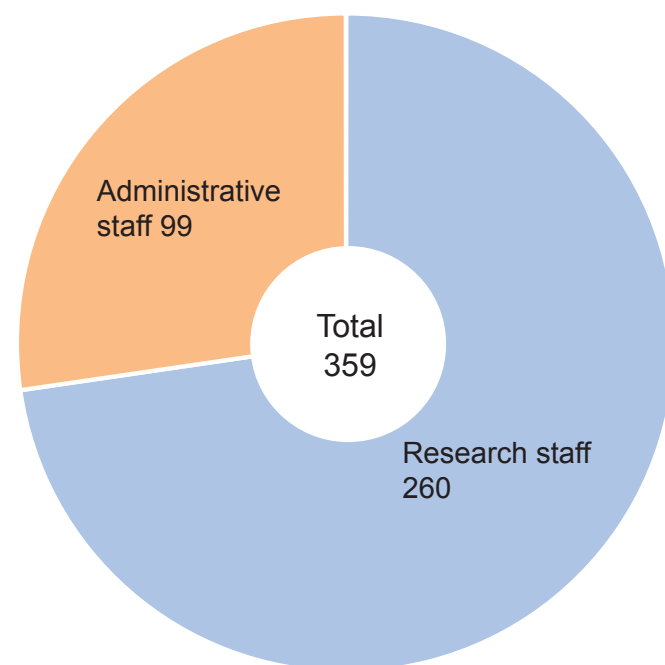
Research budget and employees

Research budget



Structure of research budget (initial budget for FY 2019)

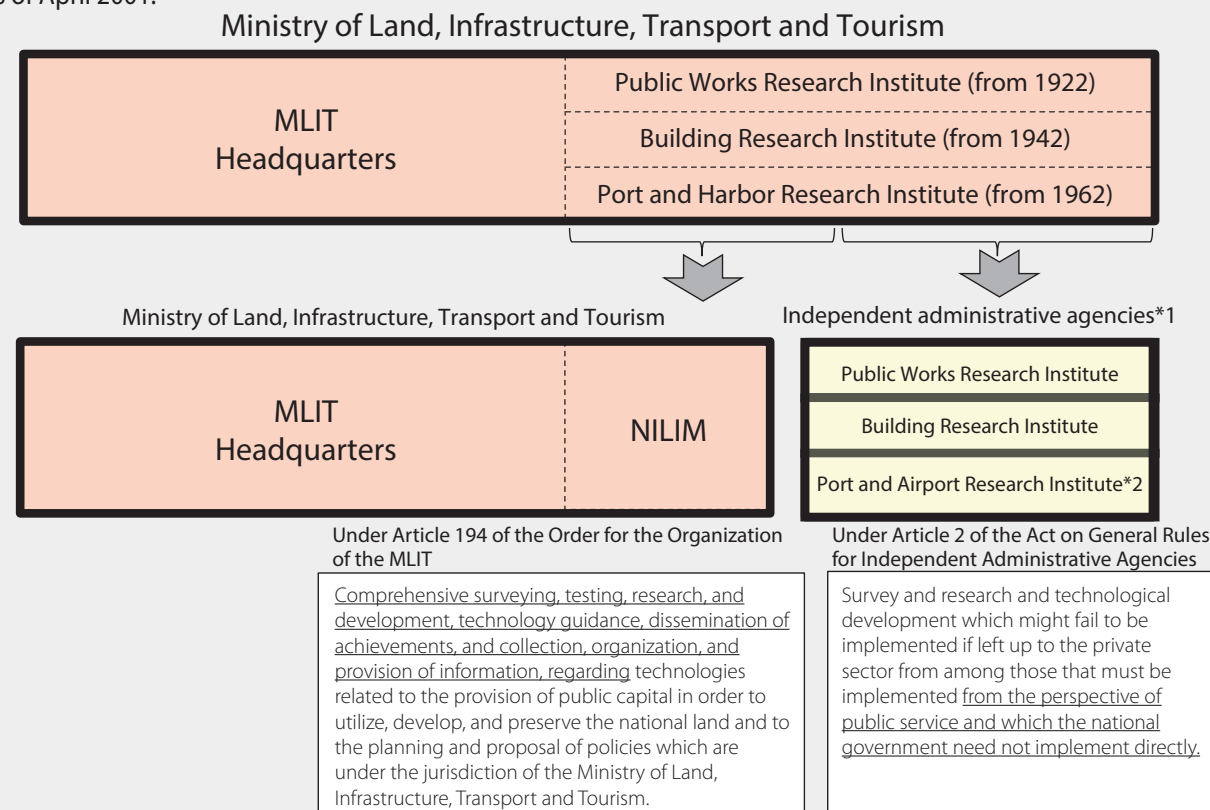
Employees



Structure of employees (April 2019)

Establishment of the NILIM

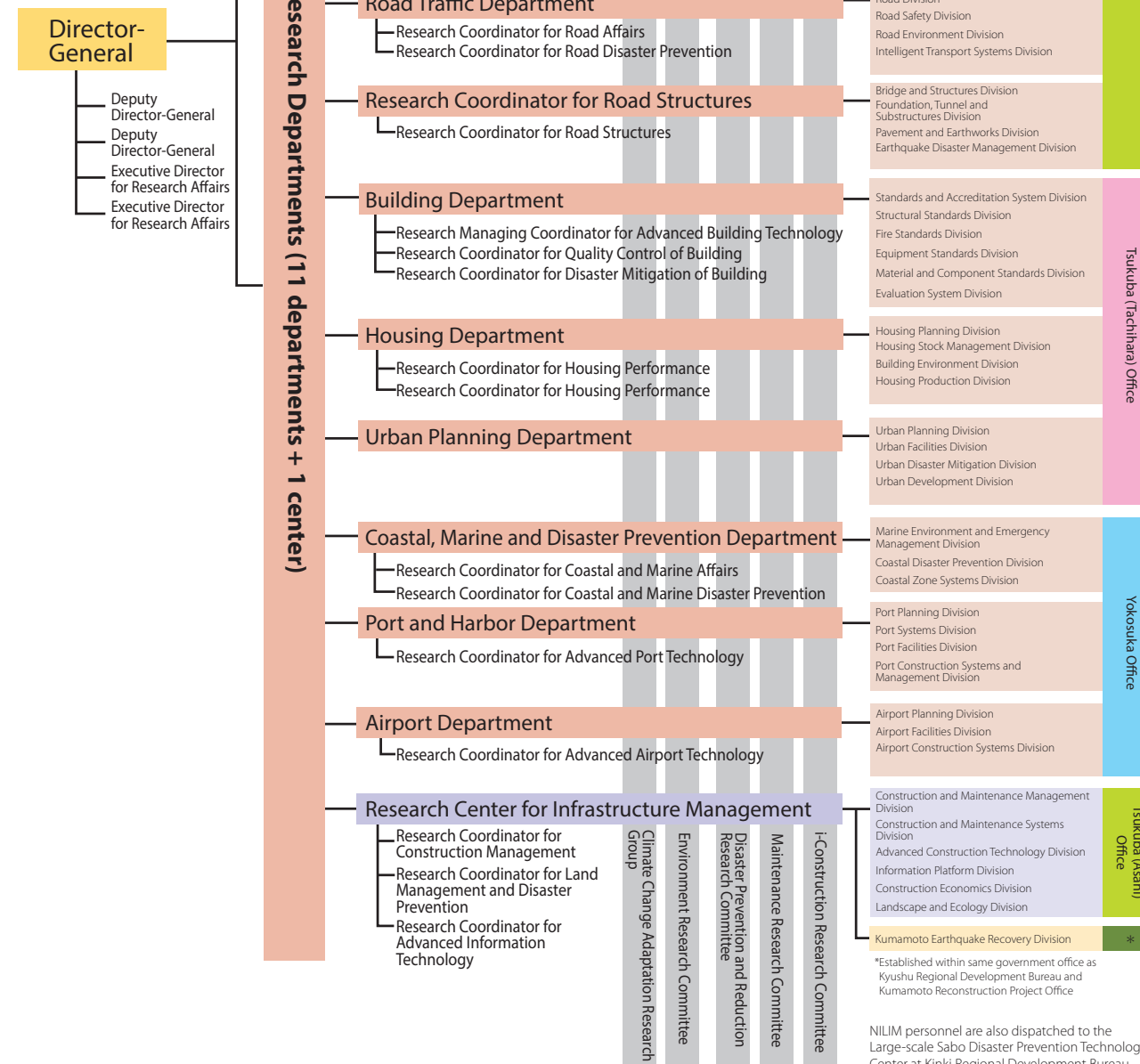
- As part of the establishment of the independent administrative corporation system following on from the reorganization of ministries and agencies in January 2001, departments conducting work in close and inseparable cooperation with the Ministry of Land, Infrastructure, Transport and Tourism were integrated into one organization as of April 2001.



*1 With the April 2015 revision to the Act on General Rules for Incorporated Administrative Agencies, the Public Works Research Institute, Building Research Institute, and the Port and Airport Research Institute became National Research and Development Agencies.

*2 In April 2016, the National Maritime Research Institute and the Electronic Navigation Research Institute were merged, forming the Port and Airport Research Institute.

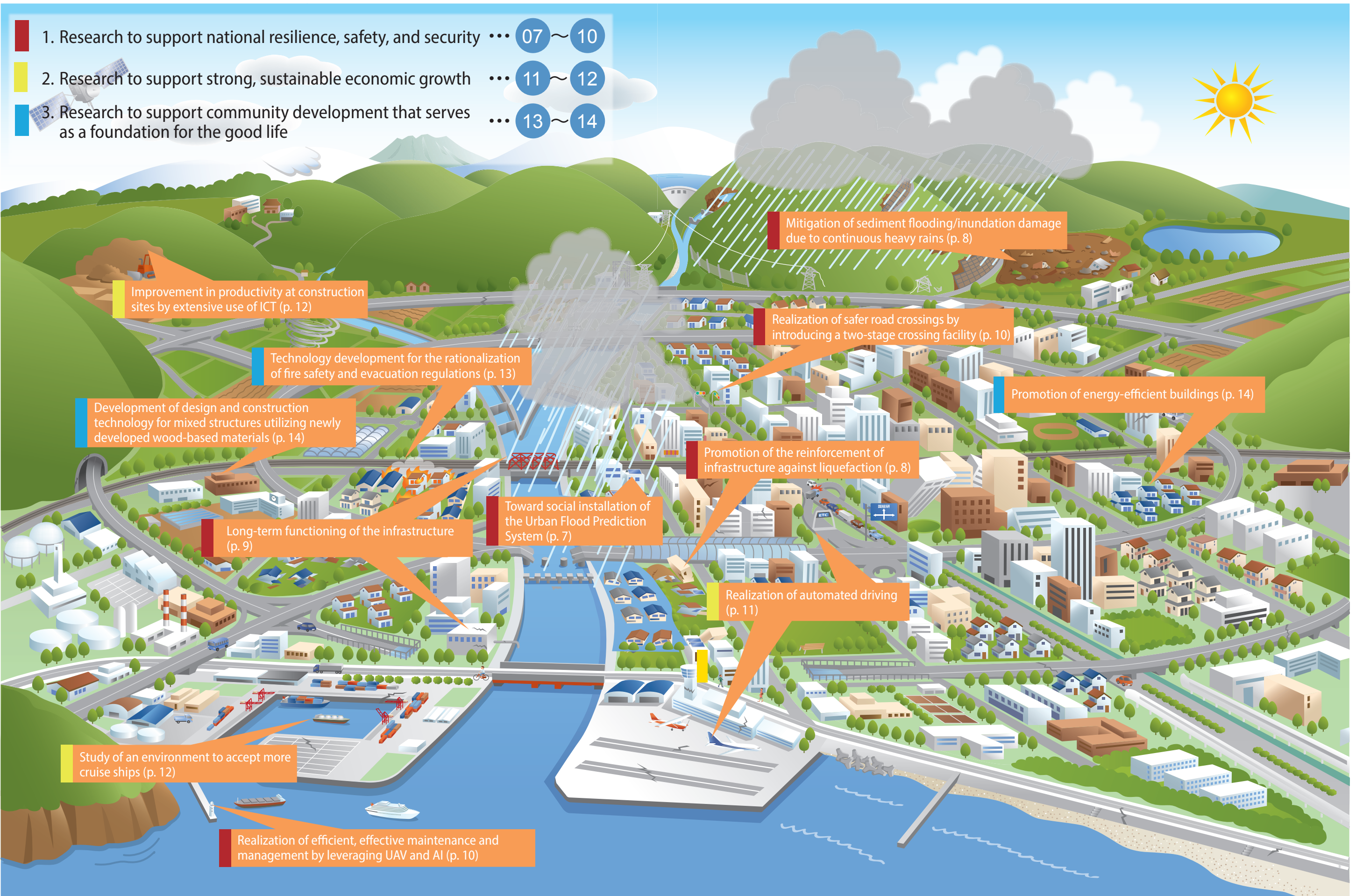
Organization



Research and development that supports the planning, drafting, and spreading policy for land, infrastructure, transport, and tourism

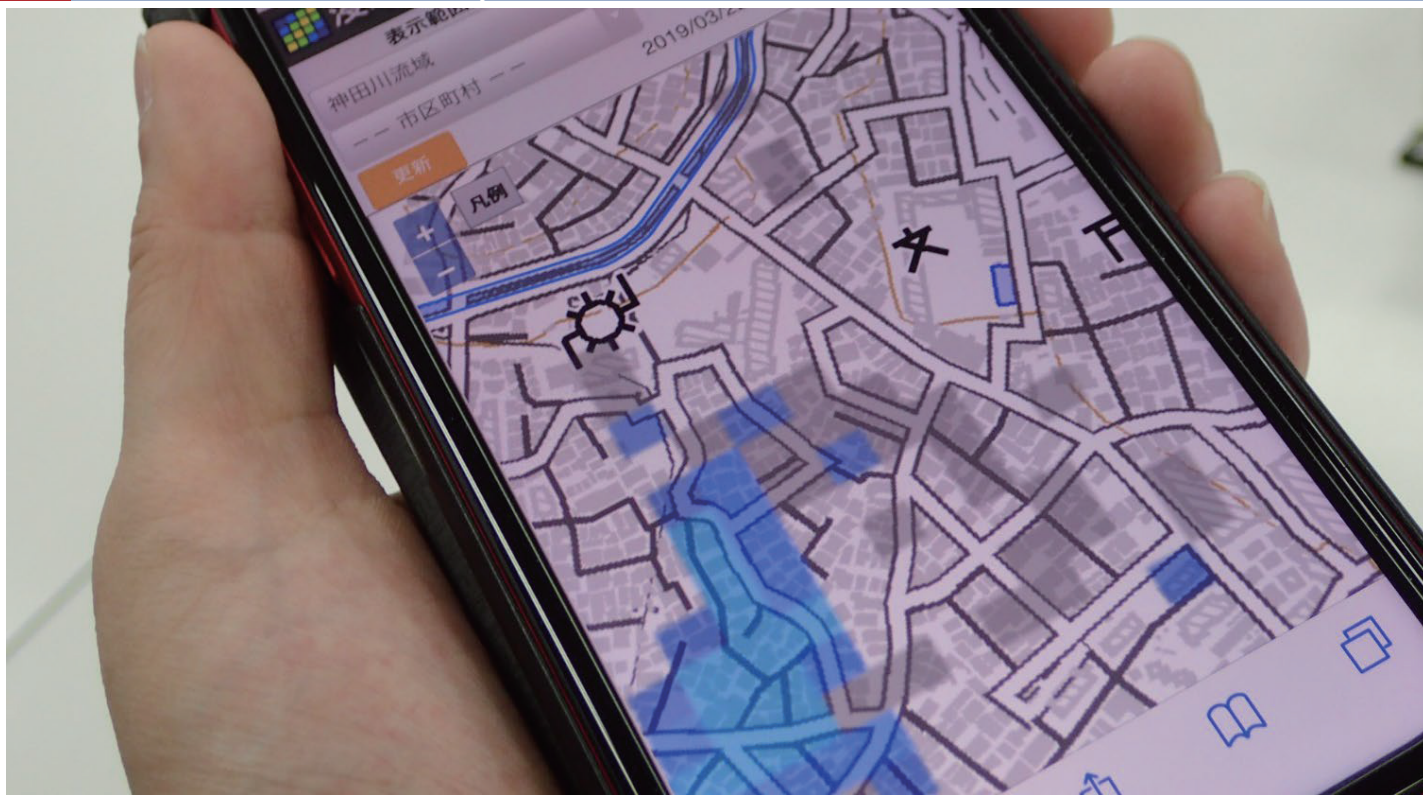
The main research themes of the NILIM in FY 2019

- 1. Research to support national resilience, safety, and security ... 07 ~ 10
- 2. Research to support strong, sustainable economic growth ... 11 ~ 12
- 3. Research to support community development that serves as a foundation for the good life ... 13 ~ 14



1. Research and development to support national resilience, safety, and security

1 Reduces flood damage in the event of heavy rains: Toward social installation of the Urban Flood Prediction System



By developing a system to distribute flood prediction information 40 to 50 minutes prior to a flood, we contribute to the appropriate evacuation and unerring response to floods.

Development of Urban Flood Prediction System

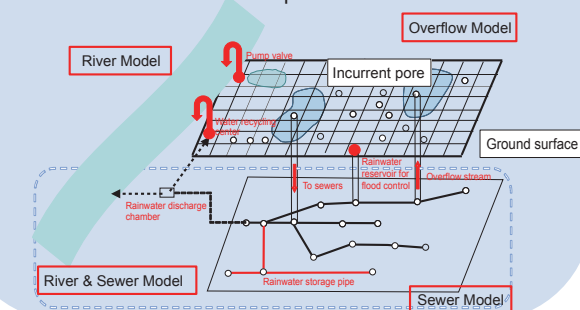
- An urban flood prediction calculation model was developed from the reality of the target area, such as the sewage network.
- Prediction and observation data, such as XRAIN, are obtained, and flood prediction information is delivered 40 to 50 minutes prior to a flood.

<Underground flooding during the Fukuoka Flood Disaster (June 1999)>



Photo provided by the Kyushu Regional Development Bureau

<Overview of the urban flood prediction calculation model>



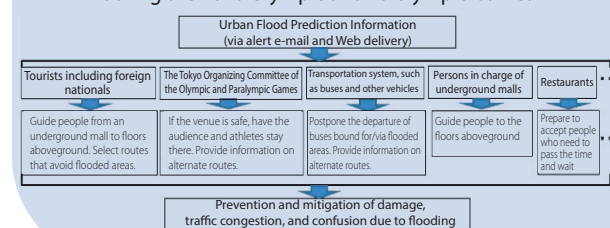
Social experiment with the urban flood prediction system

- A social experiment was conducted in the Kanda and Shikujii River basins in Tokyo (March 2019)
- With an eye toward the delivery and use of information during the 2020 Tokyo Olympic and Paralympic Games, the NILIM continues research via social experiments.

<Information to be distributed>



<Conceptual diagram for system use during the 2020 Olympic and Paralympic Games>



(Water Quality Control Department, River Department)

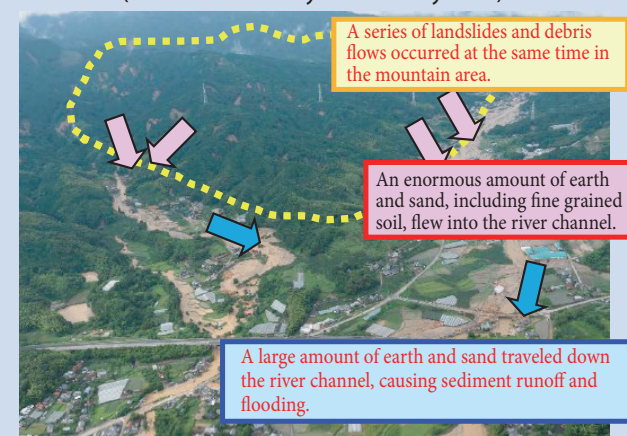
2 Mitigation of sediment flooding/inundation damage due to continuous heavy rains

By developing a sediment runoff prediction method with a focus on the behavior of fine-grained soil from the upper to lower reaches of a river, the NILIM contributes to the development of effective facility installment plans against widespread damage due to sediment flooding/inundation.

Improvement in accuracy of the sediment runoff prediction method

- Cases have occurred where the fine-grained soil that was produced upstream accumulates from the upper to lower reaches of a river, causing widespread sediment flooding/inundation
- A sediment runoff calculation method that can track the behavior of fine grained soil is required
- Development of a sediment runoff calculation method based on the behavior of fine-grained soil that changes with the gradient along the river

<Sediment flooding/inundation (2017 Northern Kyushu Heavy Rain)>



Verification of reproducibility of the prediction method

- The reproducibility of the method for the Northern Kyushu Heavy Rain was verified, and its adaptability was confirmed.

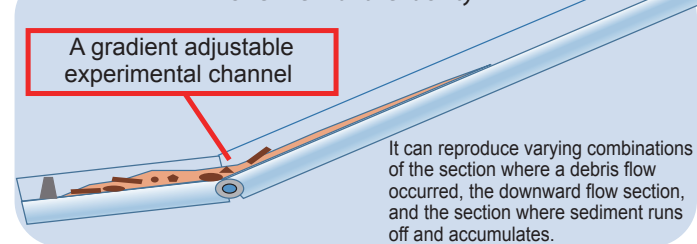
<Experiment on sediment flooding/inundation>



Development of an experiment facility that can reproduce a variety of sediment movements

- Development of an experiment facility that can reproduce the complicated process from the start of a debris flow to sediment runoff and flooding

<Overview of the facility>



(River Department, Sabo Department)

3 Promotion of the reinforcement of infrastructure against liquefaction

By developing a method to create a 3D model that can assess the liquefaction risk of infrastructure facilities and a high-accuracy liquefaction risk assessment method, we contribute to the promotion of the reinforcement of infrastructure against liquefaction.

Development of a liquefaction damage assessment method via 3D model

- Development of a high-accuracy liquefaction map based on the form of liquefaction damage to the grounds surrounding an infrastructure facility

Development of a liquefaction risk assessment method for infrastructure facilities

- Identification of factors leading to damage due to a disaster, such as the liquefaction of road structures
- Summarize the results of risk assessments, including risks due to the surfacing of sewer pipelines

(Planning and Research Administration Department, Water Quality Control Department, Road Structures Department, Research Center for Infrastructure Management)

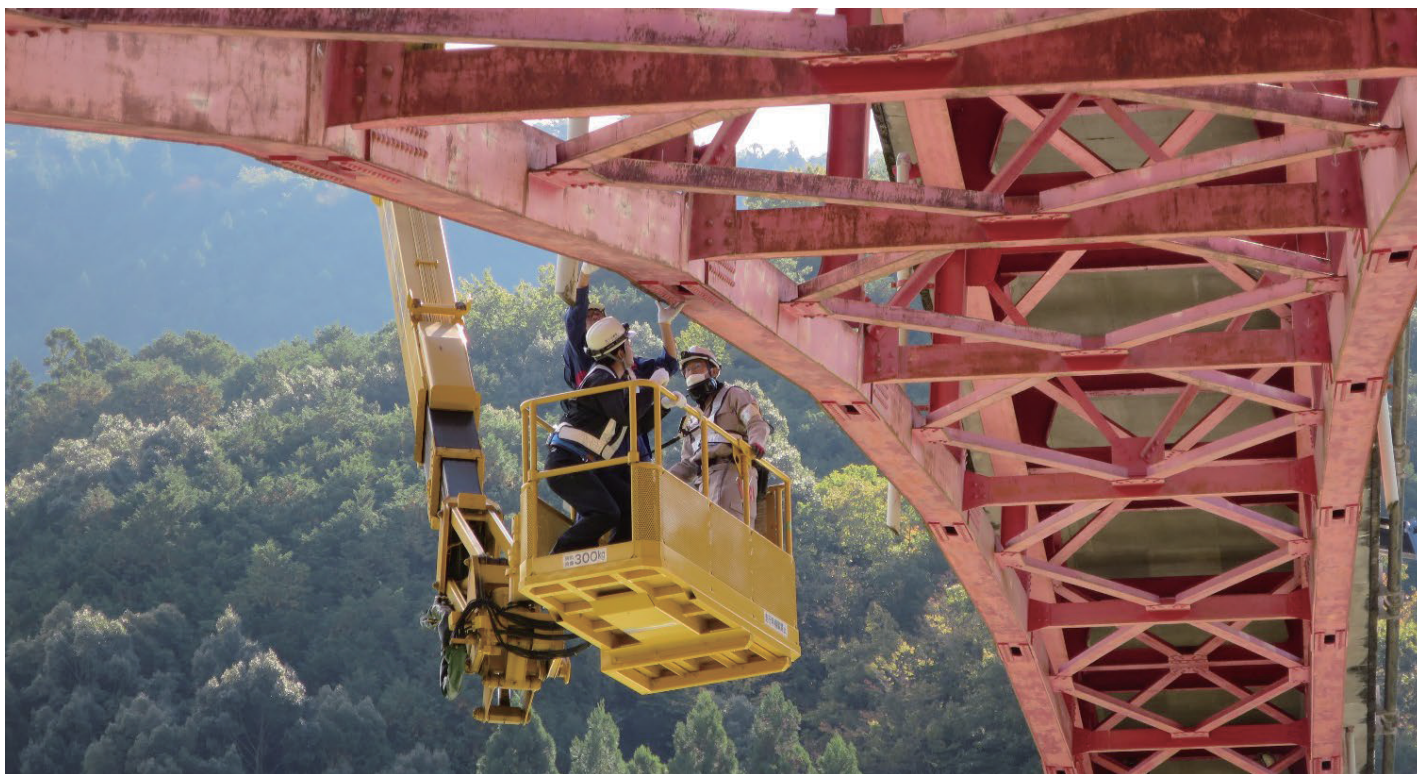
<Damage to infrastructure facilities due to the Hokkaido eastern Iburi earthquake>



Three-year Emergency Plan for Disaster Prevention, Disaster Mitigation, and National Resilience

- Serious disasters occurred frequently in recent years, such as heavy rains in July 2018 and the Hokkaido eastern Iburi earthquake
- In September 2018, an emergency inspection was conducted on important infrastructures for disaster prevention, national economy, and people's lives to ensure proper functioning in the event of a disaster.
- Based on the inspection results, measures that should be implemented immediately were compiled and implemented by the government as the Three-year Emergency Plan for Disaster Prevention, Disaster Mitigation, and National Resilience in December 2018.

4 Long-term functioning of infrastructure! Realization of efficient and effective inspections and repairs



By developing a method to select the inspection technique according to the purpose and circumstances and standardizing rational repair and reinforcement design methods, we contribute to the realization of efficient and effective inspections and repairs.

Study of design for repair and reinforcement work of highway bridges

- The deterioration of members for road bridges varies widely and so does the deterioration of repaired/reinforced members.
- We sorted out and standardized the points to consider concerning repair and reinforcement methods to make road bridges last as long as possible.
- We devised ways to make the structure hard to collapse even when deterioration proceeds further.

<Deterioration of members for repair and reinforcement>



<Load Test>



Total management of sewer pipelines

- Inspections of pipelines and steps to take in the event of an abnormal situation were made obligatory.
- There are no specific standards for selecting an inspection or survey method.
- If a technical judgment cannot be made, it is difficult to implement inspections in an efficient manner.
- We developed a method to select the optimal inspection technique according to the circumstances of each city.

<Accidents due to the aging of pipelines>



<Cleaning test of hard bitumen pipes>



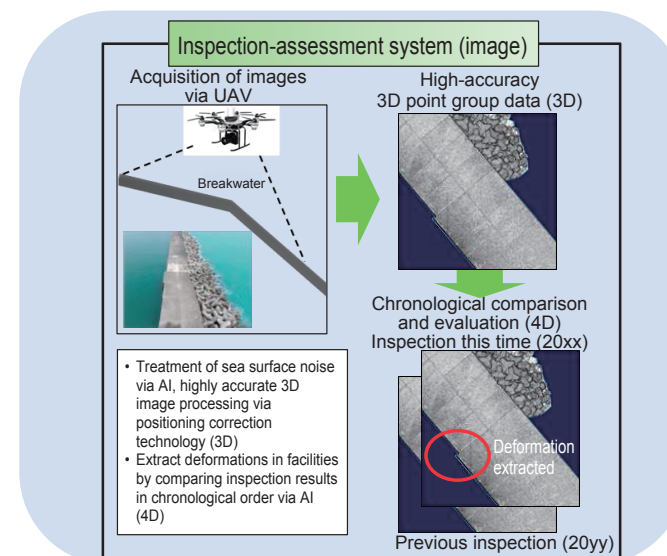
(Water Quality Control Department, Road Structures Department)

5 Realization of efficient and effective maintenance and management via UAV and AI

By developing technology to obtain maintenance and management data on port facilities via UAV and an AI-based inspection-assessment system, we contribute to the realization of more efficient and effective maintenance and management.

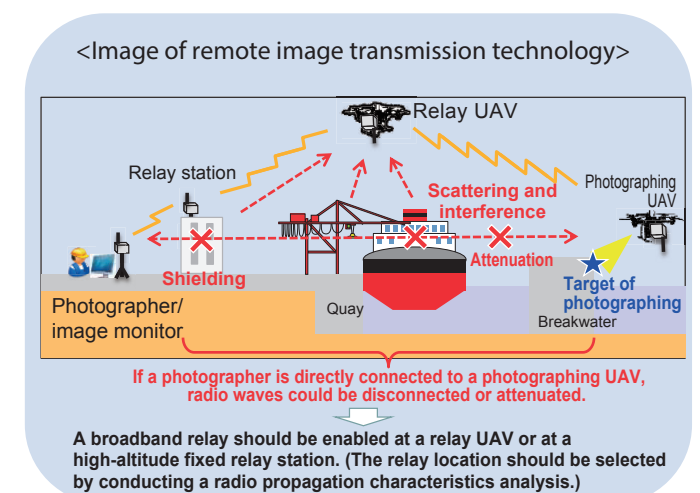
Development of the inspection-assessment system

- We developed an AI-based system that could obtain highly accurate image and location information via UAV for a prompt and accurate assessment of deformations in facilities.



Development of remote image transmission technology

- Development of a system that smoothly transmits images in real time while minimizing the effects, such as radio attenuation and shielding, in a port environment.



(Coastal, Marine, and Disaster Prevention Department)

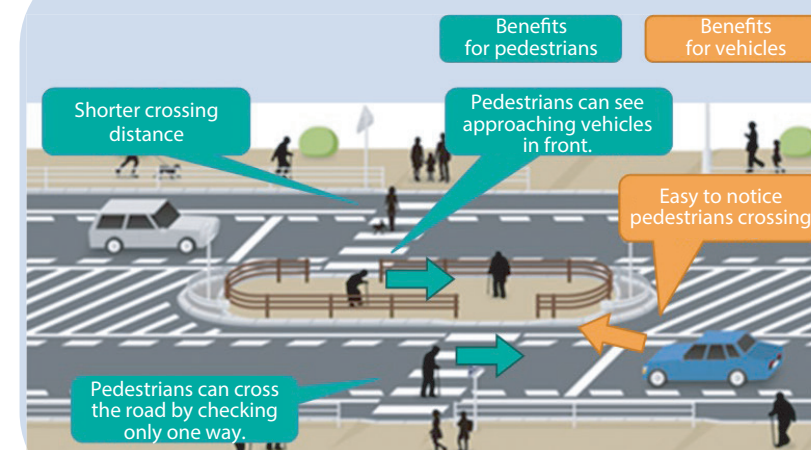
6 Realization of safer road crossings by introducing a two-stage crossing facility

In an effort to prevent pedestrian accidents while crossing a road, we contribute to the introduction of two-stage crossing facilities by making a technical standard proposal, including traffic conditions to which two-stage crossing facilities can be applied and desirable geometric structures.

Making an examination of introducing a two-stage crossing facility to the field site

- Through an on-site experiment, we examine the structure of a safe two-stage crossing facility from the perspectives of both pedestrians and vehicles and the road shapes for the sections ahead and behind traffic islands.
- Based on the waiting time of pedestrians and that of vehicles, which were obtained through traffic simulations, we examine and identify the optimal traffic conditions for the introduction of the two-stage crossing facility.

<Image of two-stage crossing using a traffic island>



<On-site experiment related to the introduction of a two-stage crossing>



(Road Traffic Department)

2. Research to support strong, sustainable economic growth

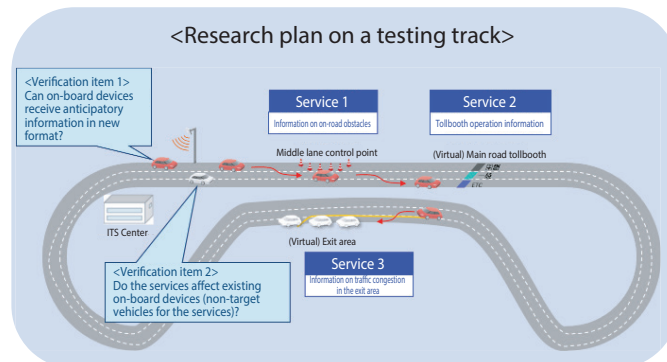
1 Realization of automated driving: Providing support from an infrastructural perspective



By conducting demonstration experiments through public-private partnerships in hilly and mountainous areas and airports and developing a mechanism to provide information to vehicles, we contribute to the realization of automated driving.

Technology development toward the practical use of next generation cooperative ITS

- Information ahead that cannot be detected by a car sensor needs to be provided.
- Traffic information on the main road needs to be provided at road junctions.
- We conducted demonstration experiments and developed a mechanism to provide information concerning on-road obstacles from the roadside.



Demonstration experiments on a testing track

Car navigation systems and ETC that are currently in wide use have also been implemented after conducting demonstration experiments on a test track.



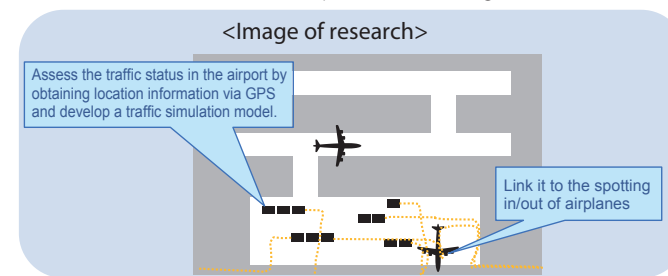
ETC demonstration experiment (1996)

Research toward the promotion of automatization of vehicles that support airport operations

- An increase in demand for air transportation due to increased inbound tourists
- Shortage of labor associated with a declining productive-age population
- Promote the automatization of vehicles that support airport operations**

Development of traffic simulation models for airports

- Safety and efficiency assessment
- Examination of facilities required
- Examination of the rules to operate self-driving cars, etc.



Demonstration experiment on automated driving at airports

In 2018, demonstration experiments on automated driving were conducted at four airports, including Tokyo International Airport.



Demonstration experiment at Tokyo International Airport (2019)

(Road Traffic Department, Airport Department)

2 Examination of an environment to accept more cruise ships

By promoting the examination of the size of port facilities that can meet the needs of larger-scale cruise ships and research on the spatial formation of a port, we contribute to the realization of a tourism-oriented country and regional revitalization that are associated with cruise ships' port calls.

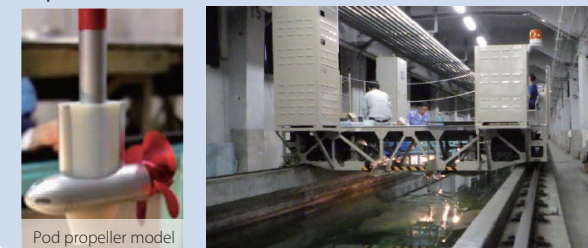
Response to larger-scale cruise ships

- An environment that can accept larger-scale cruise ships needs to be developed.
- Examination of the size of facilities around water to meet the needs of large cruise ships with high operability

<Example of a track chart when a cruise ship is coming into port (based on AIS data)>



<Experiment to obtain a method to calculate the channel width>



(Coastal, Marine, and Disaster Prevention Department, Port and Harbor Department)

Analysis of economic effects of cruise ships' port calls

- We estimate economic effects in a quantitative and accurate manner while considering consumption differences by the nationalities of passengers and the number of ports of call.

<Example of an estimate>

A port call by a cruise ship with 4,600 passengers

→ Economic effects:
400 million yen

<Passengers heading to sightseeing in the port of call>



Spatial formation of a port viewed from a cruise ship

- By summarizing the points to note concerning the spatial formation of ports viewed from cruise ships, we contribute to attractive community development.

<A port town viewed from a cruise ship>



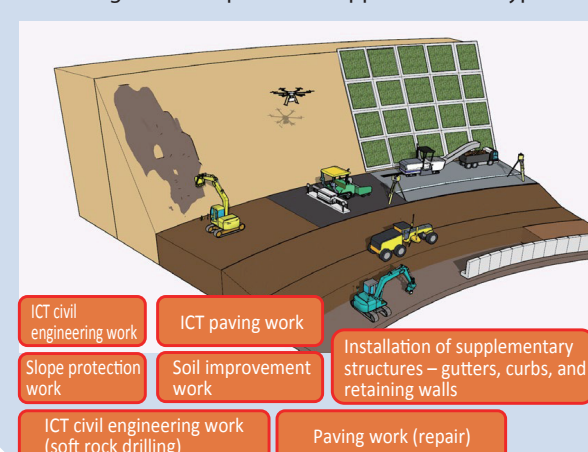
3 Improvement of productivity at construction sites by extensive use of ICT

By promptly preparing an environment to promote the introduction of ICT to expand applicable work types, we contribute to the achievement of a productivity increase by 20% at construction sites and the realization of more attractive construction sites.

Expansion of applicable work types

- By expanding the application of standards, such as ICT-based work progress control, to a variety of work types, we plan to realize the consistent use of ICT in most of the road and river improvement projects.

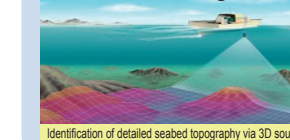
<Image of the expansion of applicable work types>



Streamlining of surveying and construction work via multi-beam sounding

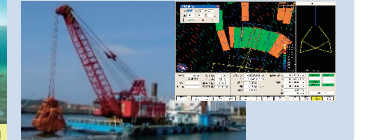
- In order to streamline surveying and construction work, we proposed the revision of standards, such as a sounding manual.

<3D sounding>



Identification of detailed seabed topography via 3D sounding

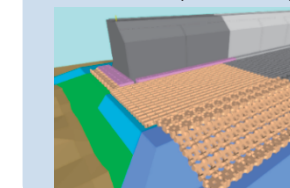
<Visualization of sections constructed>



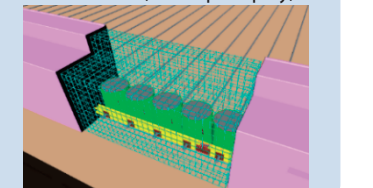
Development of CIM introduction guidelines (port)

- We developed a draft of the CIM introduction guidelines (port) and created drawings of the CIM models for the breakwater and quay (sheet-pile type) as port facilities following the pier.

<CIM model (breakwater)>



<CIM model (sheet-pile quay)>



(Research Center for Infrastructure Management, Port and Harbor Department)

3. Research to support community development

1 Effective use of historical buildings: Technology development to rationalize fire safety and evacuation regulations



* A full-scale compartmental fire was produced on a wooden structure to experimentally assess the fire characteristics and the effects of firefighting activities.

By developing technology that contributes to the rationalization and smooth operation of fire safety and evacuation regulations, we contribute to the effective use of existing and historical buildings via alternative applications and repairs.

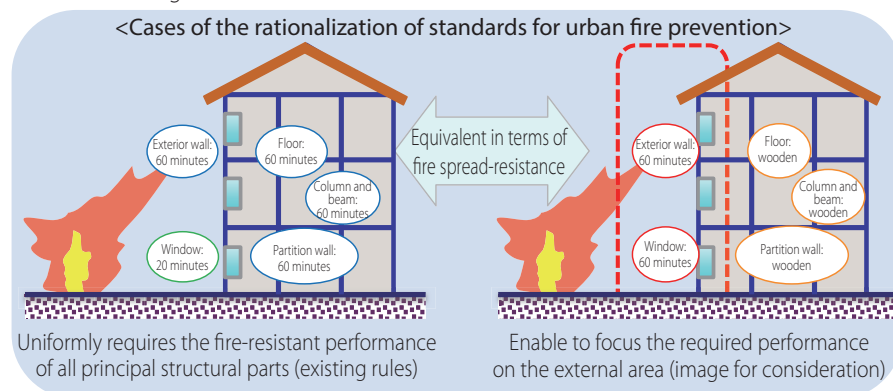
Rationalization of standards concerning the evacuation and safety of people inside buildings

- Conditions to ensure the safety of people in a three-storied building with an area of less than 200 m² in the event of a fire:
 - An emergency alarm system should be installed in the buildings for sleeping.
 - Fences around pits for the safety of evacuating elderly people.

- Rationalization that does not require a collapse prevention capability (fire-resistant structure)

Rationalization of standards concerning urban fire prevention

- Verify urban fire prevention measures that are based on the improved fire safety performance of exterior walls and openings to enable the flexible use of wooden materials inside buildings.



Rationalization of standards for wooden buildings

- Through a full-scale compartmental fire test, the characteristics of the compartment when water was sprayed, such as a temperature decrease and carbonization of members, were grasped.

- In an effort to prevent buildings from collapsing during a fire, we developed a method to evaluate the principal structural parts and sorted out specification conditions.



(Building Department, Urban Planning Department)

that serves as a foundation for the good life

2 Design and construction technology of mixed structures utilizing newly developed wood-based materials

We develop technology for the design and construction of mixed structure buildings between wooden buildings where large wooden panels are used, such as CLT, and reinforced-concrete buildings, steel-framed buildings, or other types of wooden buildings and thereby contribute to the promotion of wooden material use in buildings.

Study of a structural design method for buildings that use CLT

- Development of a prototype for medium-rise, wooden, mixed-structure buildings that require minor refractory coating
- Preparation of technical data through experiments and analyses

<Prototype of a medium-rise, mixed-structure building (RC + CLT)>



Study of a design method for cladding joints

- Development of a pullout resistance evaluation method for use when applying steel cladding directly to the laminated beam.

<Verification of an analysis model via full-scale experiments>



A full-scale static force test was conducted on a framework made of CLT columns and laminated beams to obtain data to develop an analysis model.

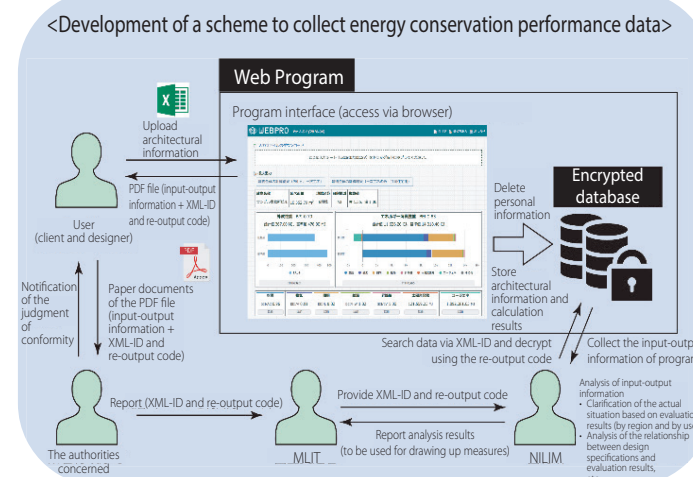
(Building Department)

3 Promotion of energy-efficient buildings

We build a scheme to collect and analyze big data in the cloud concerning the energy conservation performance of buildings and thereby contribute to the efficient provision of data useful in drawing up energy-saving measures and policies.

Development of a data collection scheme

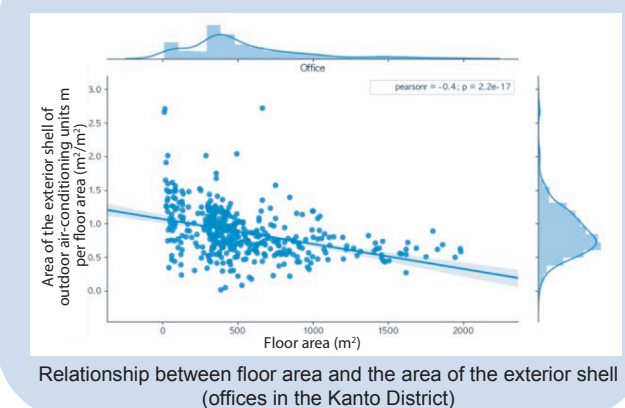
- Collect data in the cloud by expanding the functions of the energy conservation standards conformance judgment program (Web program).
- Encrypt and store the data of 18,000 non-residential buildings each year.



Trial implementation of data analysis

- As a trial, obtain data of about 6,000 buildings and analyze their energy conservation performance.
- Provide basic data that will contribute to the revision of the Act on the Rational Use of Energy.

<Example of a trial analysis of energy conservation performance data>



(Housing Department)

Advanced technical support for response to disasters/accidents

Results from dispatch of TEC-FORCE by the NILIM during the past three years

When a disaster occurs, in response to requests from the disaster region, the NILIM sends its own research personnel with advanced technological expertise in various fields to the disaster region. When a particularly severe disaster has occurred, it sends TEC-FORCE*, etc., to give stronger support for measures to prevent secondary disasters and to reconstruct the region.

In recent years, we dispatched experts to the areas devastated by the Kumamoto earthquake in FY 2016, by the northern Kyushu heavy rains in 2017, heavy rains in July 2018 and by the Hokkaido eastern Iburi earthquake in 2018.

* Technical Emergency Control Force: Team dispatch system established in 2008 by the Ministry of Land, Infrastructure, Transport and Tourism in order to respond to a large-scale natural disaster by surveying disaster damage and providing regional governments, etc., in the disaster regions with technical assistance.

Dispatch history

2018: 15 disasters,
215 person-days

2017: 11 disasters,
91 person-days

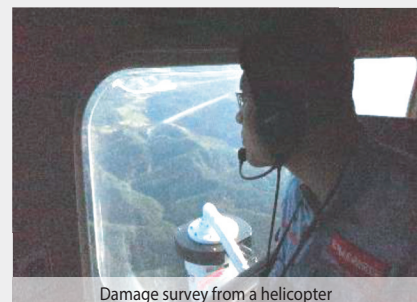
2016: 9 disasters,
391 person-days

Heavy rain in Northern Kyushu
(Jul. 2017)
Asakura City, Fukuoka Prefecture, etc.



Survey of Kagetsu River

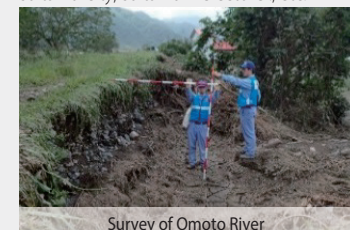
2018 Hokkaido eastern Iburi earthquake
(September 2018)
Atsuma-cho and other areas in Hokkaido



Damage survey from a helicopter

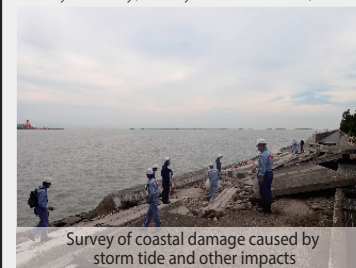
Legend
Solid line: Disasters to which the NILIM dispatched the TEC-FORCE
Dashed line: Disasters other than those mentioned above

Typhoon disasters (Aug. 2016)
(Typhoon nos. 9, 11, 10, 13)
Hokkaido: Biei, Kamikawa, Iburi coast Takase River, Aomori Prefecture.
Omoto River, Iwate Prefecture.
Tone Town, Numata City, Gunma Prefecture.
Saitama City, Saitama Prefecture, etc.



Survey of Omoto River

Typhoon Jebi (Sept. 2018)
(Typhoon no. 21)
Osaka City, Osaka Prefecture, Kobe City and Nishinomiya City, Hyogo Prefecture, Wakayama City, Wakayama Prefecture, etc.



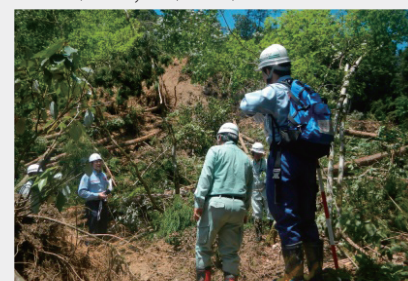
Survey of coastal damage caused by storm tide and other impacts

Heavy rains in July 2018

Fukuchiyama, Kyoto; Kurashiki, Okayama; Hiroshima-shi, Hiroshima; Matsuyama, Ehime, and other locations



Damage investigation of an inundated water treatment facility



On-site investigation of a landslide dam

Kumamoto Earthquake (Apr. 2016)
Minamiaso Village, Mashiki Town, Kumamoto City, Kumamoto Prefecture, Oita City, Oita Prefecture, etc.



Explanation of emergency inspection results to municipality

and improvement of countermeasure techniques

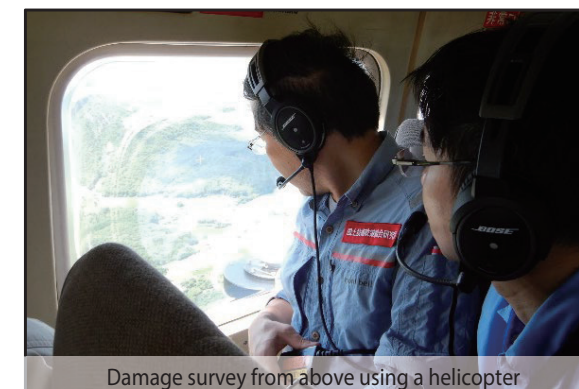
Technological Support for the Heavy Rains in July 2018

From June 28 to July 8, 2018, the 2018 July heavy rains occurred. Upon requests from the Chugoku Regional Development Bureau; Shikoku Regional Development Bureau; Kyoto, Hiroshima, and Okayama prefectures; and Kurashiki City, Okayama, we dispatched staff to the disaster-stricken areas immediately after the disaster and provided emergency technical support until December 26:

- Investigations on damage caused by floods and landslides and damage to banks and sewage facilities
- Implementation of a secondary disaster risk assessment and report of the results to organizations involved, and the development of a warning and evacuation system
- Participation in the technique exploratory committee where recovery work methods were explored.



Investigation of deformation in the cut slope



Damage survey from above using a helicopter



Investigation by the technique exploratory committee of places where the banks collapsed



Give warning and evacuation counsel to the mayors of municipalities

Technical Support for the 2018 Hokkaido Eastern Iburi Earthquake

On September 6, 2018, the 2018 Hokkaido eastern Iburi earthquake occurred. At the request of Hokkaido, we dispatched staff to the disaster-stricken areas immediately after the disaster and provided emergency technical support until November 29:

- Investigation of damage due to landslides and liquefaction
- Technical support for measures to prevent a secondary disaster



On-site investigation of liquefaction



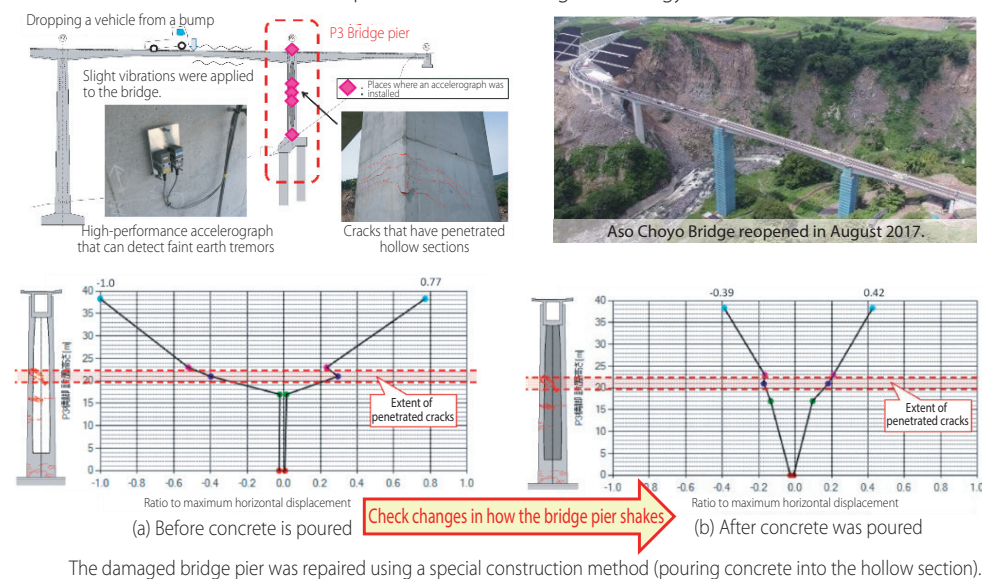
Report of the status of natural damming to the mayor of Atsuma Town

Initiatives of the Kumamoto Earthquake Recovery Division

When implementing restoration work, we promptly solve problems on-site that cannot be handled based only on technical standards and that require advanced expertise and thereby contribute to early recovery.

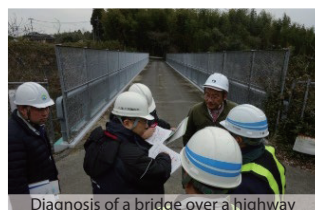
High-level technical support for early, high-quality restoration

Confirmation of the effect of repair via ICT monitoring technology

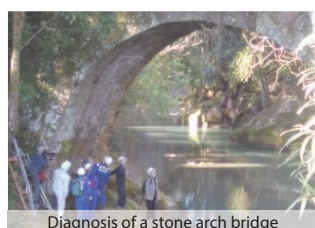


Technical Support to Prefectures and Municipalities

- We provided technical support upon request from Kumamoto Prefecture and other local governments or communities.



Diagnosis of a bridge over a highway



Diagnosis of a stone arch bridge

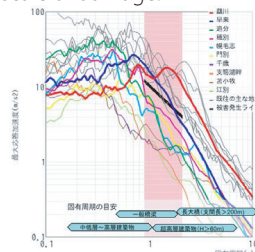
Minimization of Information Gap Immediately After an Earthquake

In the event of a large-scale earthquake, we make effective use of existing facilities, such as CCTV cameras and satellites, and thereby contribute to the prompt and extensive acquisition of information. We contributed to grasping the overall situation during the northern Osaka earthquake in June 2018 and the Hokkaido eastern Iburi earthquake in September 2018.

Estimation of Damage to Infrastructure

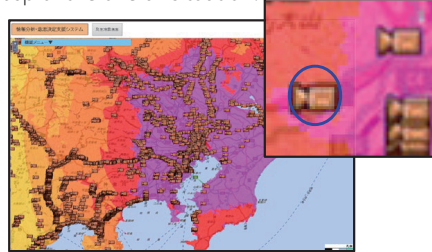
Spectrum analysis information

By comparing with the damage line, we contribute to the estimation of the scale of damage.



List of CCTV cameras

By extracting cameras in areas with high seismic intensity, we contribute to the prompt grasp of the overall situation.



Interpretation of SAR Images to Grasp the Extent of Damage

SAR image interpretation support system

We contribute to investigations via helicopter by narrowing down the damaged area based on the interpretation results.

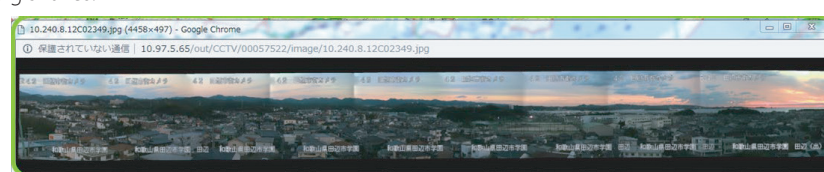


The northern Osaka earthquake on June 18, 2018

Damage detection from CCTV camera images

Panoramic image creation system

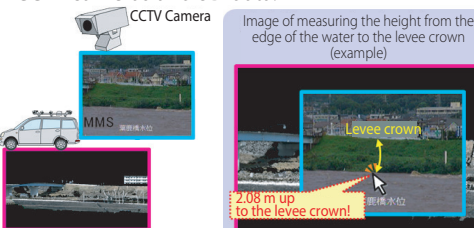
We created panoramic images by automatically panning CCTV cameras when an earthquake occurred and thereby contributed to grasping the situation in areas hit by big shakes.



Example of a panoramic image created
(An earthquake occurred in Wakayama at 4:53 p.m. on November 2, 2018)

Image measurement system

The system contributes to prompt damage measurement by combining images taken by CCTV cameras and 3D data.



Support for improvement of field technology of regional development bureaus

Hosting of personnel

Improving technological capabilities of regional government bodies and private enterprises

The NILIM is aiming to improve technological capabilities through acceptance of exchange researchers from regional government bodies and private enterprises, experience of research activities, and lectures, etc. (42 exchange researchers have been accepted as of April 2019.)

Hosting personnel from regional development bureaus

We accept staff members from regional development bureaus who have realized field issues through their work as researchers or staff holding two posts for a certain period to help improve their skills. Personnel who have acquired technical skills are active as core technicians in each region after returning to their regional development bureaus.

Support for local issues

In order for NILIM researchers to work together with the Regional Development Bureau to resolve issues that occur locally, the Kumamoto Earthquake Recovery Division was established in the area affected by the Kumamoto Earthquake disaster. Personnel are also being dispatched to the Large-scale Sabo Disaster Prevention Technology Center at Kinki Regional Development Bureau.

Completing and strengthening training

The NILIM holds training sessions and lecture courses, and sends out lecturers in order to spread and establish its technical policy and improve the technological level of society as a whole. (389 lecturers dispatched in FY2018, as of end of March 2019)
(40 training courses with 807 participants held in FY2018 (Yokosuka Office No. 2))



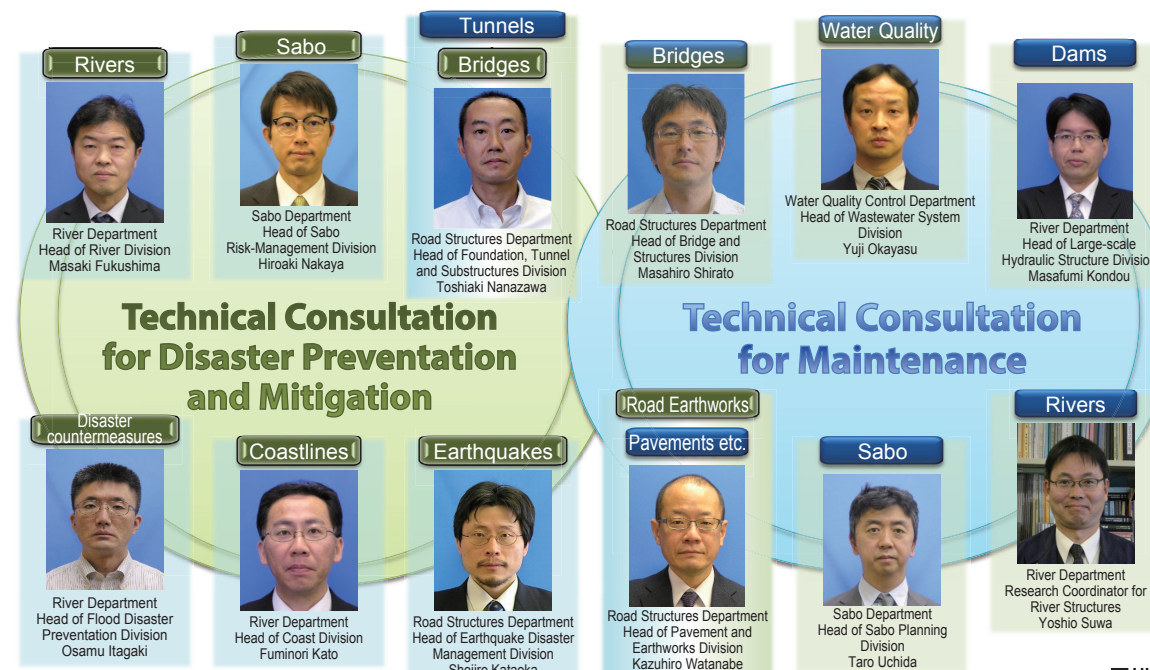
Port facilities maintenance and management course

Technology consultation

The NILIM constantly provides national government agencies and regional government bodies, etc., with technical support of various kinds for policy implementation and project execution. For example, the Coastal Disaster Prevention Division looks after a technical support counter for high-tide flooding simulation necessary for preparation of maps, which show areas likely to be affected by high-tide flooding as created by prefectural governors based on the Flood Control Act.

Technical Consultation Office

In December 2014, the NILIM Technical Consultation Office was established. Covering all fields over which the NILIM is in charge, this is a one-stop service that accepts consultations regarding all fields and facilities.



■ Contact (E-mail: nil-soudan@ml.mlit.go.jp)
Senior Researcher, Planning Division, Planning and Research Administration Department (TEL: 029-864-4090)

■ Website address
<http://www.nilim.go.jp/lab/bbg/tec-soudan>



Collection, analysis and management of data forming technical basis of policy formation, and return to society

Support for the promotion of the stock management of sewers

● Sewer pipe deterioration database

- Database that collects survey results of local governments' information on deterioration judgment results such as type of pipe, elapsed years, corrosion and slacking
- Data of about 250,000 spans of 56 local governments has been disclosed (as of June 2017)

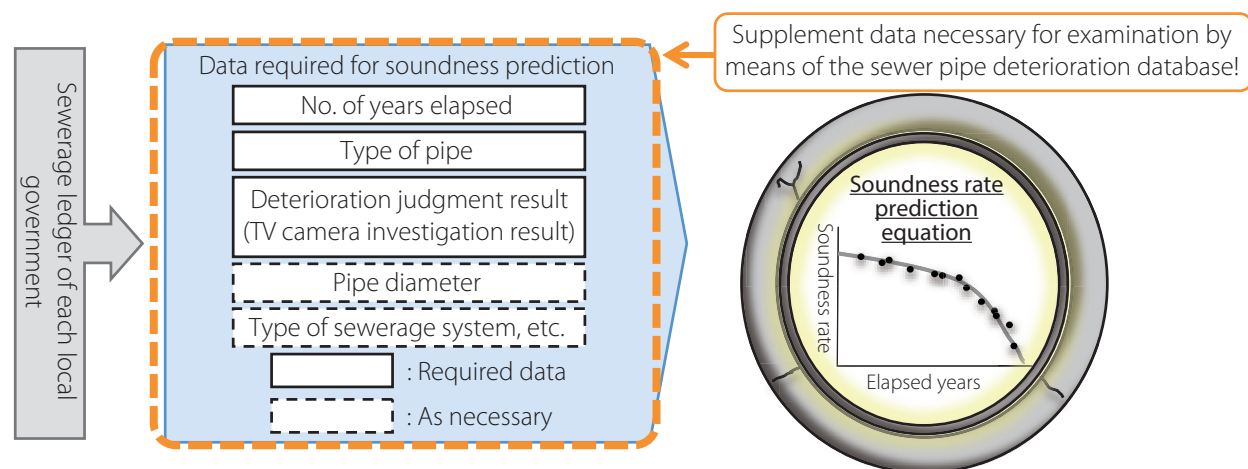


Fig. Utilization of sewer pipe deterioration database

<Announcement URL> <http://www.nilim.go.jp/lab/ebg/rekka-db.html>

Support for the Development of a Road Bridge Maintenance Cycle

● Official announcement of deterioration analysis data obtained from periodic bridge inspections

- From the enormous amount of detailed road bridge inspection results that the government has accumulated, we sorted out deterioration characteristics according to 272 conditions of different damage types, member types, and environmental conditions.

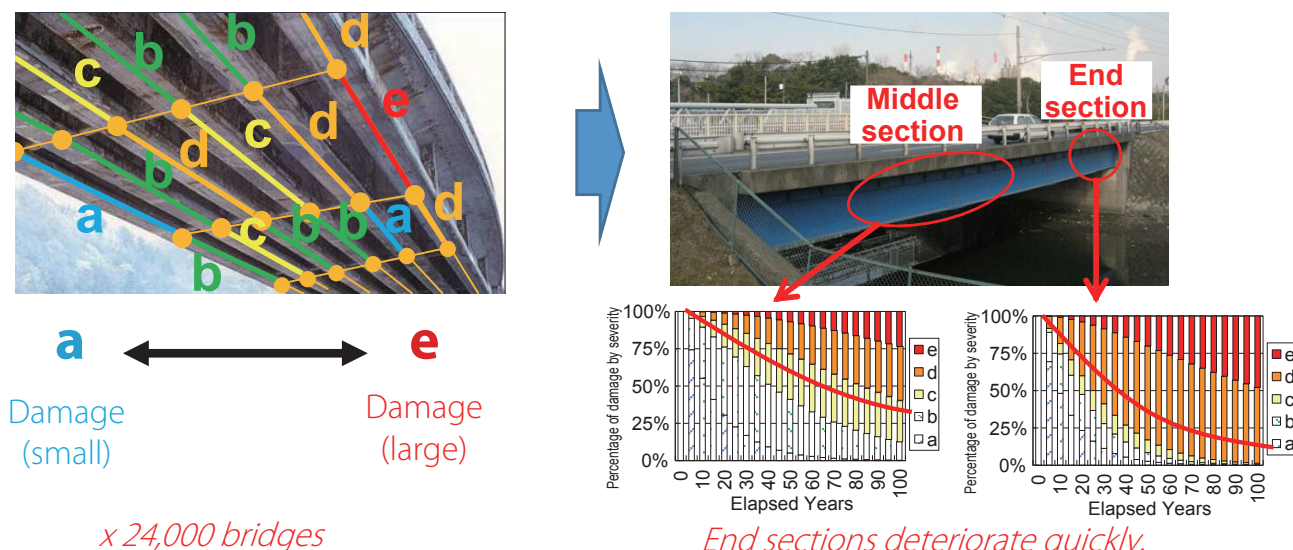


Image of inspection data of 24,000 bridges managed by the government

Example of the characteristics of predicted deterioration (corrosion of main steel girder)

<Announcement URL> <http://www.nilim.go.jp/lab/bcg/siryuu/tnn/tnn0985.htm>

International research activities

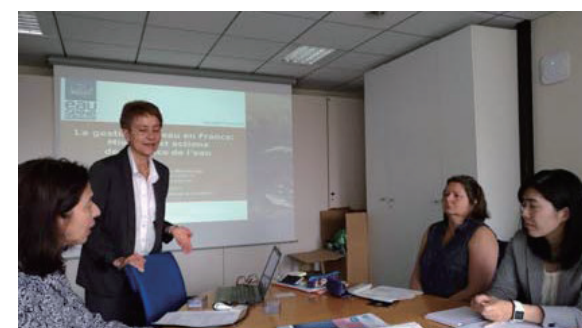
The NILIM promotes international research activities from the following three perspectives: Improvement of the quality of research results, exportation of infrastructures and systems, and international contribution.

Meetings on Measures Against the Aging of Sewer Systems (France)

- In France, a pioneer in dealing with aging sewer systems, we held meetings with water management bureaus, sewer management associations, and urban communities to collect information concerning the status and future direction of measures against the aging of sewer systems, including a subsidy system.



Control Center in Bordeaux



A meeting with the Seine-Normandie Water Agency

Joint Research with the Institute of Road Engineering (IRE) in Indonesia

- The IRE and NILIM have conducted joint research for about 10 years.
- In 2018, research fields and contents were renewed in light of past achievements and changing needs, and the new arrangements were concluded.



Signing Ceremony



Exchange of a memorandum

Cooperation with Vietnam in Developing National Port Standards

- Based on the memorandum concerning cooperation in developing national technical standards for port facilities between the Ministry of Transport of Vietnam and the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) of Japan, we cooperated in examining the standards.
- In 2018, we jointly edited the standards for materials, foundation work, soil improvement work, mooring facilities, and maintenance and management through six workshops.



Workshop

Dispatching Experts to the Disaster Risk Reduction Training Program for Latin America and the Caribbean

- The NILIM cooperates in human resource development training for Latin America and the Caribbean based on the request from JICA.
- In 2018, for ways to deal with recent issues in building structural design, Japanese cases were introduced at the PUC-KIZUNA seminar organized by Pontificia Universidad Católica de Chile (PUC).



PUC-KIZUNA seminar

Management initiatives supporting high-quality research

Cooperation with external organizations

By implementing joint research, contract research, calls for technologies, and social experiments; concluding agreements; and leveraging technologies provided by industry and academia, as well as knowledge of different fields, such as social science and the humanities, the NILIM strives to improve the efficiency and quality of its research.

Contract research

Research aiming to get better results efficiently by entrusting to other organizations

Joint research

Research aiming to get better results by collaborating with other organizations

Call for technologies

It aims to promote the use of superior technologies by inviting technologies from the public, which will be tested on-site by the MLIT.

Social experiment

This is an experiment on the implementation of research results with a local government.

Domestic cooperation

The aim is to develop education and research on the university side and to contribute to the activities of the NILIM through coordination and cooperation between universities and the NILIM.

Tsukuba University, Kansai University, Tokyo University of Science, etc.

International cooperation

The aim is to improve the quality of research results of the NILIM and to give technical support to other countries (international contribution) through joint research, as well as regular information exchange between overseas research institutes and the NILIM.

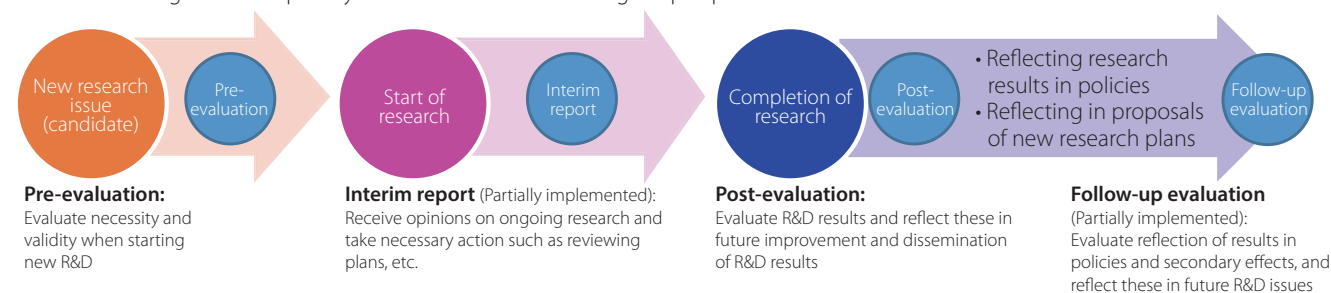
Indonesia Department of Public Works and Department of Citizen Housing Road Research Institute, Korean Research Institute for Human Settlement, Sri Lanka Ministry of Disaster Management National Building Research Organization, etc.

Research evaluation

Internal evaluations and external evaluations of individual research challenges, achievements, and operation of institutions are performed based on General Guidelines on the Evaluation of National R&D to build an independent individual management cycle, promote and improve the quality of research activities.

External evaluation of individual research challenges

The NILIM strives to improve the quality of research results by introducing systems allowing external experts to evaluate individual research challenges that are priority researches from a wide range of perspectives.



External evaluation of R&D organization (Implemented in June 2018)

Outside experts evaluate research activities as a whole at the NILIM, as well as environment improvement initiatives that support the research activities, and the NILIM strives to improve its operation based on these results.

Internal training

Research Departments and Administrative Departments cooperate and work on developing young personnel systematically by combining Off-JT and OJT effectively. The NILIM holds internal presentation meetings for young researchers who have little presentation experience and a study group by young personnel aimed at enhancing development.

"Experience and Know-how Transmission Lectures" are held in order to make use of accumulation of research, experience, and know-how of predecessors for improving the skills of each personnel member.



Internal presentation meeting for young researchers

Compliance

We conduct compliance activities according to the promotion plan for the current fiscal year while giving due consideration to the monitoring results and advisory opinions of the Compliance Advisory Committee (External Expert Committee).

Response to misconduct in research

In addition to establishing "NILIM Guidelines for Responding to Misconduct in Research", the NILIM makes efforts to prevent misconduct (fabrication, falsification, and plagiarizing).

To create deeper understanding of civil engineering and building construction

Website

The site actively provides information including an outline of NILIM, direction of research activities, research subjects, results, event information and so on. (URL: <http://www.nilim.go.jp/>)

Visit this site to view information about lecture meetings, open houses, and open experiments and other PR information.



E-mail service

We make simple and timely introductions of the activities and research achievements of the NILIM. We normally send it out twice a month. You can register to receive e-mail service from the QR code on the right.



Publications

NILIM Report

NILIM Report is published annually, introducing and explaining research trends and the reflection of research results in policy, and presenting recommendations concerning technology policy challenges (the full report is published on the NILIM website at the beginning of each fiscal year.)



Comprehensive Research Report of NILIM

A "Comprehensive Research Report of NILIM" is a report of a research result which has academic value or contributes to the planning and enactment of policy, or results of surveys, testing, observations etc. which are deemed to be valuable enough to be released to the public. (The full report is published on the NILIM website.)



Presenting papers

The NILIM announces approximately 700 papers per year, and receives awards for papers in many fields, both from inside and outside of Japan.



A researcher from the NILIM won the Award of Presentation Excellence at the 15th Japan Association for Earthquake Engineering Symposium (December 2018)

Lectures

NILIM Lectures

The NILIM holds a "NILIM Lecture Meeting" every year and introduces its activities, announces research results and makes recommendations for resolution of technical policy issues. Approximately 800 people attend every year. It also holds specialist lecture meetings and symposiums in each field whenever necessary.



NILIM Lecture Meeting (Dec. 2018)



Joint Research Results Report Meeting

The 2018 NILIM Lectures will be held on December 3rd at Japan Education Center.

Lectures on demand

Lectures on demand are held with the aim of having NILIM researchers go directly to schools, etc., to explain research contents and answer questions while holding open communications with people. (61 lectures on demand were held in FY2018.)



View of a lecture on demand at an elementary school in Tsukuba City

Open house

Open house is provided to introduce research facilities while explaining the NILIM's research contents. (3,903 people visited in FY2018.)



Contest for making bridges out of cardboard (productions on display at open house)



Tour of a testing facility

Facility Tour

We conduct facility tours where we introduce our research facilities while introducing research cases.



Facility Tour

Introducing research departments, etc.

Director-General

- Deputy Director-General ●Deputy Director-General
- Executive Director for Research Affairs ●Executive Director for Research Affairs

General Affairs Department

- Deputy Director of General Affairs Department ●Senior Officer for Welfare
- Senior Officer for Contract and National Property

Personnel and Welfare Division General Affairs Division
Accounting Division Head Officer for General Affairs (Asahi, Tachihara Office)

Planning and Research Administration Department

- Research Coordinator for Evaluation ●Research Coordinator for Codes and Standards
- Coordinator for Research Planning

Planning Division Research Administration and Evaluation Division Research Facilities
Division International Research Division Senior Officer for Cyber Security and Information

Administrative Coordination Department

- Research Coordinator for Information and Construction Systems

Administrative Division Planning and Coordination Division Technological Information
Division Cost Estimation System Division International Coordination Division

Water Quality Control Department

- Research Coordinator for Water Quality Control ●Research Coordinator for Wastewater Energy Management and System Restoration

The Water Quality Control Department researches technical standards and management methods for sewerage facilities in order to protect hygienic living environments and beautiful water environments, reduce flood damage in cities, and at the same time, to conserve the global environment and form a recycling society.

Wastewater System Division

The Wastewater System Division conducts research to support stock management, earthquake countermeasures for wastewater facilities, mitigation of urban stormwater damage, and wastewater system planning using low cost methods in order to appropriately manage sewer networks.

Wastewater and Sludge Management Division

The Wastewater and Sludge Management Division conducts research on the effective use of resources, energy, and stocks of wastewater systems, building a sound water cycle and conserving the water environment through wastewater treatment, and improving hygienic safety through river system water quality risk measures, and global warming countermeasures for wastewater systems.

River Department

- Research Coordinator for River Structures ●Research Coordinator for Irrigated Water Disaster Management ●Research Coordinator for Water Environment

The River Department conducts research on technologies to plan, design, manage, and perform crisis management concerning facilities on rivers, coastlines, and at dams to ensure the safety and peace of mind of the people of Japan against floods, tsunamis, and other natural disasters and increasingly severe conditions caused by climate change. The department also works to maintain beautiful national land by preserving rivers, coastlines, water cycles, and sediment systems in good condition.

River Division

The River Division researches river management for socially safer and environmentally better rivers, and to systematize and standardize technologies that promote policies based on these researches.

Coast Division

The Coast Division is involved in research initiatives that have to do with preservation of the coast in order to protect the coastal areas from high tides, tsunami and erosion with consideration given to the environment and use.

Water Cycle Division

The Water Cycle Division researches methods of advanced control of the water cycle using technologies, facilities, etc. to clarify and to predict the state of the flow of water during floods and at normal times, and ways to link these to disaster prevention, environmental conservation, and ensuring water resources.

Large-scale Hydraulic Structure Division

The Large-scale Hydraulic Structure Division conducts research to systemize and standardize technologies to clarify the state of, improve the functions of, and maintain, manage, and renew large structures such as dam reservoirs which play key roles on a river basin scale.

Flood Disaster Prevention Division

The Flood Disaster Prevention Division conducts research on flood risk evaluation technologies and methods of reflecting them in disaster prevention planning, the use of hazard maps or information sign boards, and flood mitigation countermeasures integrating hard and soft measures by establishing both self-help and mutual assistance.

Sabo Department

- Research Coordinator for Sediment Disaster Prevention

In order to protect human lives and property from sediment disasters in the face of the frequent occurrence of large-scale sediment disasters caused by torrential rain, earthquakes, and so on, the Sabo Department's mission is to study ways to monitor the occurrence of large-scale sediment disasters and predict their damage, and to more quickly and more effectively issue sediment disaster warnings and carry out evacuations.

Sabo Planning Division

The Sabo Planning Division's mission is to study the establishment of high precision sediment disaster occurrence prediction methods, and methods of estimating and responding to damage caused by deep layer failures. It also prepares drafts of technology standards for debris flow countermeasures.

Sabo Risk-Management Division

The Sabo Risk Management Division's mission is to study methods of applying remote sensing to monitor large-scale sediment disasters and more advanced disaster information systems to support warnings and evacuation.

(11 research departments, 1 research center, and
3 administrative departments)

Asahi Office Tachihara Office Yokosuka Office

Road Traffic Department

- Research Coordinator for Road Affairs ●Research Coordinator for Road Disaster Prevention

Roads have transportation functions that support the movement of people and transport of goods, plus space functions: forming the backbone of cities, accommodating lifelines, and providing disaster prevention spaces. The Road Traffic Department researches technologies that clarify, evaluate, and improve these functions and the use of ICT (information communication technologies).

Road Division

The Road Division conducts research into road traffic survey/road traffic management techniques to implement initiatives making smart use of roads, analysis of effects of road network maintenance, and road geometry construction for smooth road traffic, etc.

Road Safety Division

The Road Safety Division conducts research into acceleration of road traffics safety measures management by applying big data, safety improvement policies for community roads, ensuring safe and pleasant bicycle routes, risk assessment/countermeasures for snow damage to roads, etc.

Road Environment Division

The Road Environment Division conducts research in order to realize better road spaces/road environments through research into cost reduction for removal of electricity poles, road scenery improvement, roadside environment conservation such as atmosphere/noise pollution countermeasures, natural environment conservation such as protection of rare plants and animals/soil pollution countermeasures, etc.

Intelligent Transport Systems Division

The Intelligent Transport Systems Division conducts research to achieve Smartways that comprehensively incorporate ITS (Intelligent Transport System) technologies that are used to build systems to integrate people, vehicles, and roads using information communication technologies.

Road Structures Department

- Research Coordinator for Road Structures

The Road Structures Department conducts research on better design, execution and maintenance and maintenance methods for road structures and technological standards that achieve these, so that road networks can appropriately perform their functions, such as ensuring safe and smooth traffic and supporting social and economic activities of all kinds plus emergency response to disasters etc.

Bridge and Structures Division

The Bridge and Structures Division conducts research on design standards and ensuring quality of execution in order to create good quality highly durable road bridges, and rational road bridge maintenance methods to economically prolong the service lives of bridges.

Foundation, Tunnel and Substructures Division

The Foundation, Tunnel and Substructures Division conducts research on the required performance, rational design, execution and management methods of road structures such as road bridge substructures and foundations in particular, and also tunnels, large culverts, retaining walls and others structures that are greatly impacted by the action of soil.

Pavement and Earthworks Division

The Pavement and Earthworks Division conducts research on the required performance, rational design, execution and management methods of road structures such as embankments in particular, slope countermeasures, paving, and soft ground countermeasures and others that ensure safe road functions.

Earthquake Disaster Management Division

The Earthquake Disaster Management Division conducts researches on improvement of disaster management plans and disaster information systems as well as earthquake ground motions and tsunami actions for design of road structures.

Building Department

- Research Managing coordinator for advanced Building Technology
- Research coordinator for Quality control of Building ●Research Coordinator for Disaster Mitigation of Building

In an effort to ensure the safe and pleasant use of buildings where living and economic activities are carried out, we conduct research on standards for structures, fire control, equipment, materials, and members of buildings in compliance with the Building Standards Act, systems for standards and certification, and performance assessment.

Standards and Accreditation System Division

We conduct investigations and research on building standards and certification systems and help facilitate general coordination with the MLIT.

Structural Standards Division

We engage in research on building structures, the grounds, and technology and performance assessment methods concerning seismic force to secure and improve the safety of buildings etc.

Fire Standards Division

We conduct research on the assessment of evacuation and safety performance of buildings etc. in the event of a fire, a fire suppression system to prevent fire from spreading, and the securing of the fire-resistance performance of structures.

Equipment Standards Division

We conduct surveys, testing, and research concerning the building equipment of buildings etc. and the maintenance, management, and protection of the building equipment.

Material and Component Standards Division

We conduct surveys, testing, and research on materials and members of buildings etc.

Evaluation System Standards Division

The Evaluation System Division surveys and researches technologies for evaluating the performance of buildings etc.

Housing Department

- Research Coordinator for Housing Performance ●Research Coordinator for Housing Information System

Aiming to realize quality residential living for the people, it is necessary to take measures such as the formation of good housing and housing environments, adjustment of the condition of the housing market and provision of residential stability for the people. The Housing Department is involved in research concerning technology and methods for 1) extending the useful lives of houses, 2) renewal/utilization of existing housing stock, 3) housing for the aged and a residential safety-net and 4) measures for environmental performance and energy conservation.

Housing Planning Division

The Housing Planning Division is involved in the analysis of trends in residential living and housing construction, and in research concerning the proposal of national housing plans etc. based on such analysis, and measures to secure safety and security of housing, and a residential safety-net.

Housing Stock Management Division

Housing Stock Management Division is involved in research initiatives that have to do with the rationalization and improvement of the management and circulation of housing that are useful in the formation of a high quality housing stock.

Building Environment Division

The Residential Environment Planning Division conducts research on evaluation and management methods for residential environments, and research to improve thermal environments and to reduce environmental loads surrounding housing.

Housing Production Division

The Housing Production Division is involved in research initiatives that have to do with the improvement of the reliability and transparency of the total production process upon housing production from design to construction, administration and demolition.

Urban Planning Department

The Urban Planning Department researches evaluation methods and technologies for the reconstruction of urban structures, improving the safety of cities, and forming urban environments needed to create low carbon cities, in order to create sustainable cities in the face of changing social conditions such as a falling birthrate and aging of society, and spreading global environmental problems.

Urban Planning Division

The Urban Planning Division is involved in research initiatives on advanced administration standards of urban land use planning such as performance zoning codes for quality of environment, to promote such land use patterns that compatible with functional activities and sound residential environment.

Urban Facilities Division

The Urban Facilities Division is involved in research on integrated urban facility management. We improve survey methods through new technologies, in urban traffic management for example.

Urban Disaster Mitigation Division

The Urban Disaster Mitigation Division is involved in research initiatives on disaster prevention measures in built-up areas by developing advanced technologies such as proactive mitigation methods of spreading fire, planning of disaster prevention programs in urban areas, and evaluation measures of greenery and open space planning in terms of disaster prevention performance.

Urban Development Division

We conduct research concerning urban development and improvement methods toward the formation of safe and pleasant urban environment and the appropriate location of urban functions, such as restructuring and renewal of built-up areas and efforts that contribute to the development of compact cities.

Coastal, Marine and Disaster Prevention Department

- Research Coordinator for Coastal and Marine Affairs ●Research Coordinator for Coastal and Marine Disaster Prevention

The Coastal, Marine and Disaster Prevention Department researches development of ocean environment regeneration techniques, tsunami/flood tide damage assessment/disaster reduction policies, and methods of utilizing coastal regions in a balanced manner with regions and societies, in order to make smart use of the land and sea areas of coasts and enhance disaster prevention properties.

Marine Environment and Emergency Management Division

The Marine Environment and Emergency Management Division develops techniques for conservation, regeneration and creation of marine environment ecosystems, research into the implementation and value of environmental monitoring, and research regarding how to perform crisis management and continuous functioning in harbors.

Coastal Disaster Prevention Division

Our research includes damage assessments due to tsunami and high tides, disaster prevention and mitigation measures via hardware and software, measures against climate change, and the maintenance and management of shore protection facilities.

Coastal Zone Systems Division

The Coastal Zone Systems Division conducts support and research on regional revitalization using local resources in coastal regions, facility maintenance techniques harmonizing with disaster prevention, convenience and scenery, etc., and maintenance of marine environments.

Port and Harbor Department

- Research Coordinator for Advanced Port Technology

The Port and Harbor Department meets the need for ports and harbors to strengthen international competitiveness and support the more enriched and safer lives of people, by conducting research on improved port and harbor planning methods and designs, ensuring the quality of and maintaining public works projects.

Port Planning Division

The Port Planning Division conducts research on analyzing worldwide maritime trends and port planning method based upon such analysis, and analyzes ship movements using AIS.

Port Systems Division

We conduct research on seaborne cargo demand trends, the development of an international marine container cargo flow model, and cruise ship demand trends.

Port Facilities Division

The Port Facilities Division conducts research on advancing technology standards for necessary port and harbor structures such as breakwaters and quay walls, and the internationalization and international expansion of related technology standards.

Port Construction Systems and Management Division

The Port Construction Systems and Management Division conducts research relating to improvement of productivity by applying ICT, etc., in the port field, effective maintenance and management of port facilities, quality control of public works in the port field, and the use of environmental goods, etc.

Airport Department

- Research Coordinator for Advanced Airport Technology

The Airport Department conducts research to facilitate policy-making to strengthen Japan's international competitiveness and revitalize local economies, standards to ensure risk management, safety, and security, and efficient maintenance methods etc. in the midst of the process of deregulation of aviation.

Airport Planning Division

The Airport Planning Division conducts research on policy simulations, such as demand prediction methods, analysis of aviation networks and demand trends, airport risk management, effect of airports on local communities, and the introduction of advanced technology into airport operations.

Airport Facilities Division

We conduct research related to the development of outlines for the design and repair of runways and taxiways etc. to contribute to high-quality airport operations that ensure safe, on-time air transport.

Airport Construction Systems Division

The Airport Construction Systems Division conducts research on estimation and execution standards and operation support systems in an effort to streamline and sophisticate construction projects for the improvement, maintenance, and management of airports.

Research Center for Infrastructure Management

- Research Coordinator for Construction Management ●Research Coordinator for Land Management and Disaster Prevention ●Research Coordinator for Advanced Information Technology

The Research Center for Infrastructure Management researches all construction production processes, from the roles/effects of social capital maintenance through to design/construction/ inspection/maintenance and management/renovation, and the way in which these are to be supported by information bases, based on changes to the conditions of society around social capital maintenance.

Construction and Maintenance Management Division

The Construction and Maintenance Management Division conducts research into policy-making and guideline maintenance, etc. relating to suitable and efficient service of public utilities, including consideration of optimum bidding contract formats and business execution format in survey/design work and supply of public works.

Construction and Maintenance Systems Division

The Construction and Maintenance Systems Division conducts research into optimization/ acceleration of standards and systems relating to public supply processes in design/ estimates/supervision/inspection required in proceeding with social capital maintenance and the management thereof, as well as evaluation/reduction of construction cost, etc.

Advanced Construction Technology Division

The Advanced Construction Technology Division conducts research into acceleration of the building of construction machinery and other construction in order to achieve labor-saving, optimization and precision improvement of construction production systems, focusing on the construction stage in the construction production processes necessary for social capital maintenance.

Information Platform Division

The Information Platform Division conducts research into base technology relating to information compilation, processing and application through survey, design, construction and inspection towards optimization and acceleration of social capital maintenance and management.

Construction Economics Division

The Construction Economics Division conducts research in order to clarify the roles and social economic effects of housing/social capital supporting society/economy/living, based on grasping circumstances and trends surrounding housing and social capital.

Landscape and Ecology Division

The Landscape and Ecology Division conducts research into environmental fields, etc. for realization of society in harmony with the environment, from dealing with global environmental problems such as global warming countermeasures and conservation of biodiversity, through to qualitative enrichment of familiar societal foundations and conservation/creation of greenery to produce rich living for citizens.

Kumamoto Earthquake Recovery Division*

The Kumamoto Earthquake Recovery Division conducts research into organization/standardization of expertise obtained at each stage (advanced technical support, surveys, design and construction) in recovery projects in the wake of the 2016 Kumamoto Earthquake.

*Government office building established at the site of recovery/restoration in the wake of the Kumamoto Earthquake

Inter-departmental Organizations

At the same time as each department conducts its specialized research, inter-departmental organizations have been established to contribute to organizational flexibility and undertake comprehensive inter-departmental activities.

Climate Change Adaptation Research Group

The Climate Change Adaptation Research Committee conducts crossover research from the perspectives of flood control, irrigation and environment in relation to plans for adaptation, in order to deal with changes such as floods and water shortages, etc. resulting from future climate change.

Environmental Research Committee

The Environmental Research Committee conducts interdisciplinary environmental research concerning information sharing of research on the environment.

Disaster Prevention and Reduction Research Committee

The Disaster Prevention and Reduction Research Committee conducts interdisciplinary disaster prevention and mitigation research concerning information sharing of research on disaster prevention and mitigation.

Maintenance Research Committee

The Maintenance Research Committee conducts interdisciplinary maintenance research concerning information sharing of research on maintenance.

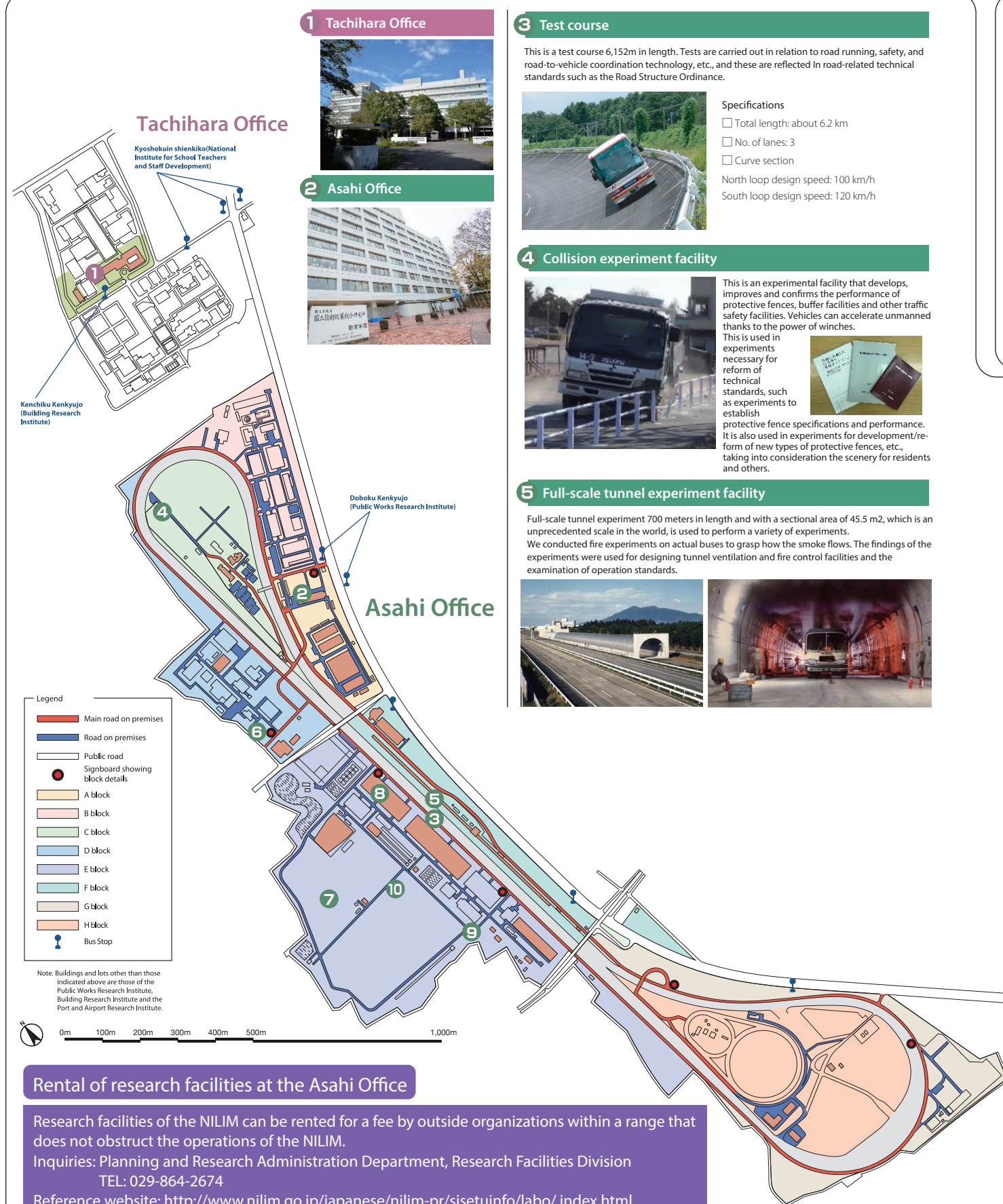
i-Construction Research Committee

The i-Construction Research Committee aims to promote research/development, etc. regarding i-Construction and spread i-Construction in the construction field.

Introduction to facilities

Asahi Office Tachihara Office

Asahi Office and Tachihara Office are in Tsukuba city and numerous experimental facilities are deployed in the enormous compounds.



Yokosuka Office

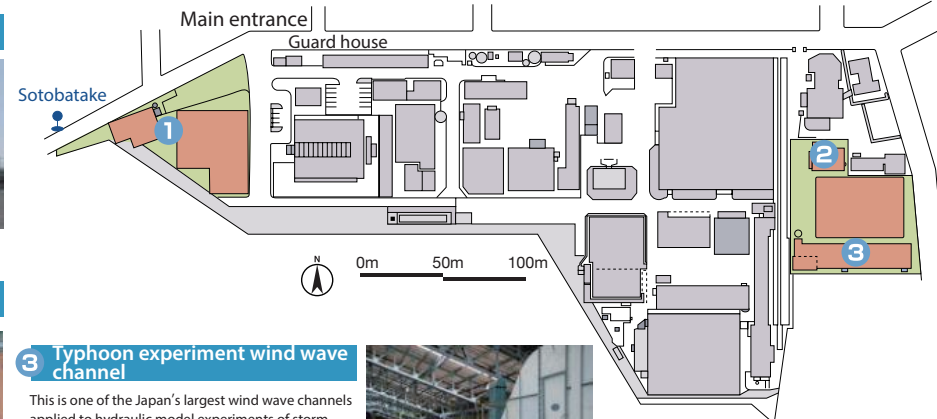
1 Yokosuka Office

The main building that was completed in April 2004, is installed with a patio with a vaulted ceiling to allow natural ventilation and natural lighting to enter the research laboratory and other features that give consideration to protection of the earth's environment such as solar energy generation and greening of the rooftop.



2 Aircraft load simulator

Aircraft load simulator which has one set of 4-wheeled landing gear as same size as that of B747-400 aircraft is an apparatus for evaluation of bearing capacity and durability of airport pavements such as runway, taxiway and apron.



3 Typhoon experiment wind wave channel

This is one of the Japan's largest wind wave channels applied to hydraulic model experiments of storm surges etc. Equipped with a blower to produce the wind of a typhoon, and a pipeline system to create the circuit flow, it is used for researches on ways to protect large cities from storm surges, high waves, and tsunamis.



6 Dismantled bridge members

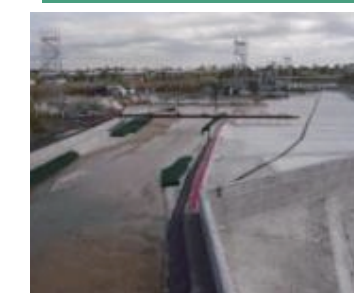
Parts of bridges which have actually been used are used for research conducted to study road bridge maintenance standards and design and execution technology standards.



For example, the effect of repair and reinforcement work can be obtained by examining the strength of a bridge reinforced with cover plates.



7 River model experiment facility



This is an enormous facility with area of 15 ha that is outdoors. In the site, it is possible to install a maximum of 15 models of rivers. For example, in the river model experiment facility in the Katsuragawa-Arashiyama District and the hydraulic phenomena in the Arashiyama District, where it is difficult to obtain data on hydraulic phenomena due to complicated land features and whose observation data are very limited, are grasped via hydraulic model experiments and used for flood measures.

● Overall view of the facility (Katsuragawa-Arashiyama District River Model Experiment Facility)

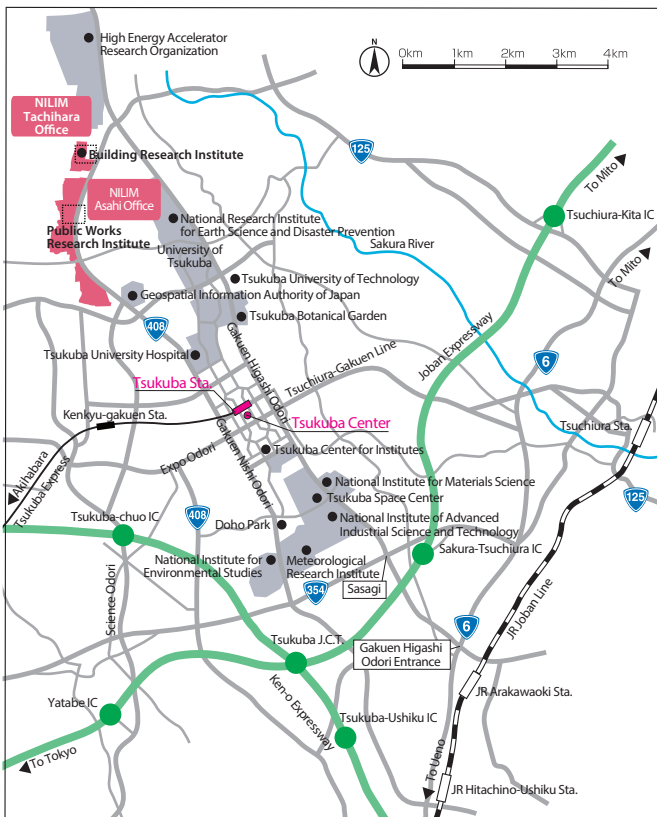


● Experiment (Togetsukyo Bridge)



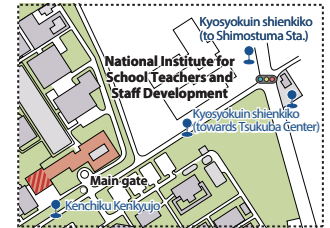
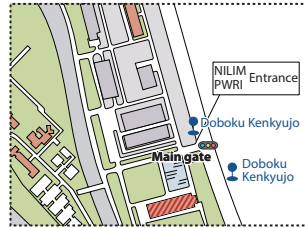
*We also have a river hydraulic model experiment facility, a high flow velocity test channel, and a full-scale aeration test system.

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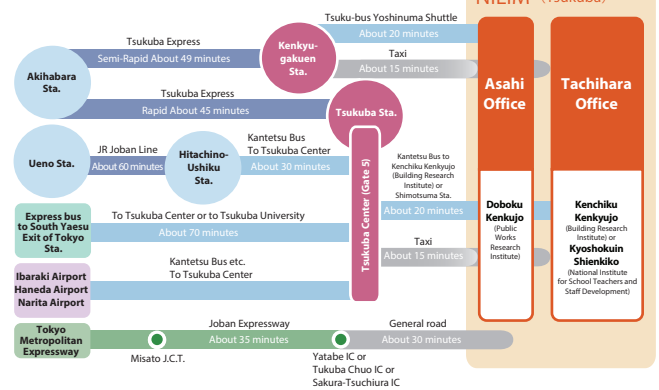


Asahi Office
1 Asahi, Tsukuba City,
Ibaraki Prefecture, Japan 305-0804
Tel: +81-29-864-2211

Tachihara Office
1 Tachihara, Tsukuba City,
Ibaraki Prefecture, Japan 305-0802
Tel: +81-29-864-3742

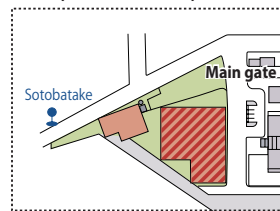
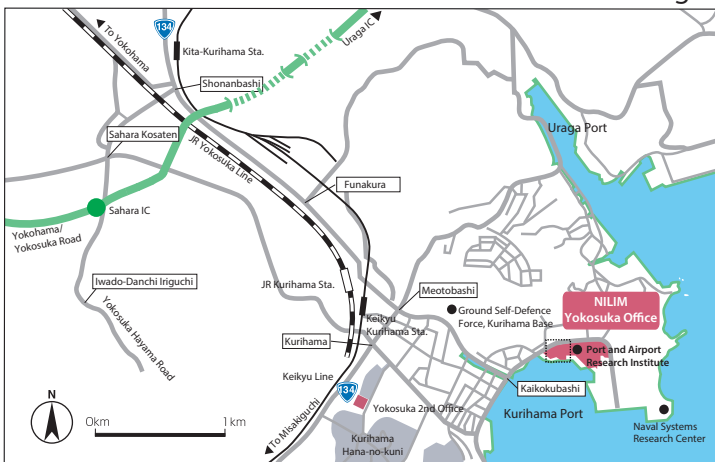


Transportation guide to NILIM (Tsukuba)



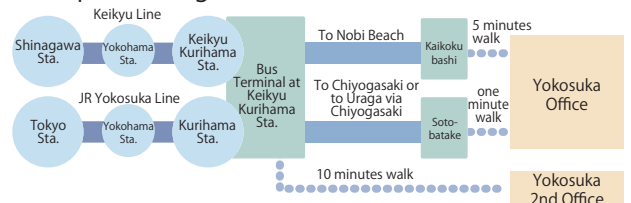
Timetable for the Tsukuba Express: <http://www.mir.co.jp>
Timetable for the Kanto Railway: <http://www.kantetsu.co.jp>
Tsuku-bus (Tsukuba City): <http://www.city.tsukuba.lg.jp>

National Institute for Land and Infrastructure Management (Yokosuka)

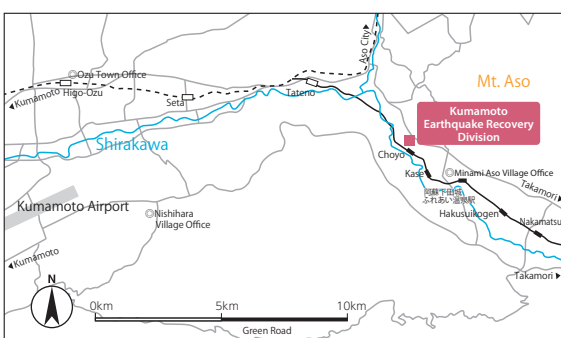


Yokosuka Office
3-1-1 Nagase, Yokosuka City,
Kanagawa Prefecture, Japan 239-0826
Tel: +81-46-844-5006

Transportation guide to NILIM (Yokosuka)

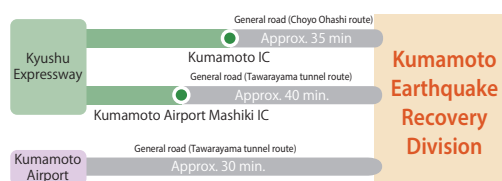


National Institute for Land and Infrastructure Management (Kumamoto Earthquake Recovery Division)



3574 Kawayo, Ooaza, Minamiaso Village, Aso County,
Kumamoto Prefecture, Japan 869-1404
Tel: +81-967-67-2039

How to get to the NILIM (Kumamoto Earthquake Recovery Division)



Public transportation (Bus: starts in front of JR Higo-Ozu Station)

- Minamiaso Yurutto Bus: 5 minutes on foot from the front of Minamiaso Junior High School
- Nango Liner: 12 minutes on foot from Choyo Station

Sanko Bus Portal Site
<https://www.kyusanko.co.jp/sankobus/>

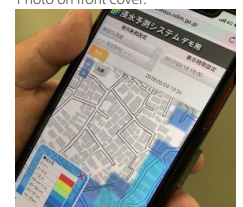
NILIM's Emblem



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National Institute for Land and Infrastructure Management

NILIM is the English acronym for the National Institute for Land and Infrastructure Management.
The triangle indicates that the former rivers, roads and related fields, the city, housing etc. and related fields, and ports, airports and related fields are linked to bear integrated, housing and public capital provision.
The orange color represents our expectations that the National Institute for Land and Infrastructure Management will make many contributions to national land policy and create a bright Japan in preparation for the coming age of the 21st century.

Photo on front cover:



Urban Flood Prediction System
Created in May 2019.