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# What Are the Strengths of the NILIM?

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*(Key words) comprehensive strength, Noto Peninsula Earthquake, disaster prevention and reduction, maintenance, infrastructure DX, green society, satellite data*

## 1. Response to the 2024 Noto Peninsula Earthquake

The year 2024 for the NILIM started with response to the Noto Peninsula Earthquake. All of the sections including 10 divisions and 2 centers in the research departments were involved in on-site damage investigation and technical support for recovery and reconstruction, and 3 departments in the administrative departments provided support for such activities.<sup>1)</sup>

The Disaster Management Headquarters meetings were held every day from January 1, the status of the damaged areas and the status of response of each section was shared, and the activity policy hereafter was checked whenever necessary.

Dispatch of researchers to the damaged areas (the emergency disaster management dispatch team) also started in the early morning on the next day, and 549 person-days in total were dispatched to the site by the middle of June. Also, 34 person-days were dispatched to the site during the heavy rainfall disaster in September as well. Altogether, the number of dispatched personnel reached an historical high, being nearly equal to that at the time of the Great East Japan Earthquake.

In the response to damage to water supply and sewerage facilities, based on the fact that the water supply administration would be transferred to the Ministry of Land, Infrastructure, Transport and Tourism on April 1 and thereafter, and since preparations were under way to rename the Sewerage Department to the Water Supply and Sewerage Department and to newly establish the Water Supply System Division, the Sewerage Department was engaged in damage investigation and support for recovery and reconstruction of the water supply and sewerage facilities.

In particular, due to the topographical features of a peninsula, it was difficult to recover and reconstruct the water supply and sewerage facilities. Consequently, as a destination organization of the NILIM, the Noto Water Supply and Sewerage Reconstruction Support Division was established in Nanao City in the damaged areas, thereby providing a system of support for local governments at the front line.

Furthermore, the Port, Coastal and Marine Department checked the statuses of damage to ports and harbors, and by presenting the usable range. As a result large vessels were able to dock alongside the piers in the Nanao and Iida Ports within 2 days following the disaster.

In addition, a matter worth noting is that the Road



Photo A scene of a Disaster Management Headquarters meeting (January 25)

Traffic Department provided new support taking into consideration the needs at the site. This was made possible by taking measures such as calculating the time required for movement between major cities and towns by the time zone every day, by utilizing the ETC2.0 probe data, and providing information on a website for various organizations engaged in activities in the damaged areas.

Thus, researchers in various fields with varied expertise demonstrated "comprehensive strengths" in a unified manner.

In terms of human resource development, the staff of the Hokuriku Regional Development Bureau who had participated in training held by the Sabo Department as concurrent work performed simplified simulation calculation that they had learned in the training. They presented the range where inundation could occur in blocked river channel areas as a rapid assessment report. The staff who had worked for the Road Structures Department on loan from the Bureau provided technical guidance at the site regarding emergency recovery of road structures that had been damaged. They utilized their experiences while they worked on loan, thereby providing support for the road recovery and reconstruction activities. The fact that the experienced staff that had worked at the NILIM played important roles in the disaster response at the site can be said to be one of the "comprehensive strengths" possessed by the NILIM.

We also are proceeding with several studies, based on the findings obtained from the disaster and problems that were identified in light of the current technical standards, about how the findings and problems should be utilized in the technical policies hereafter. For details, refer to the videos of the FY 2024 NILIM Lecture Meeting on the NILIM website.<sup>2)</sup>

We recognize these as "comprehensive strengths" in a time series in which the NILIM tries to reflect the

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findings and problems that have been identified through the Noto Peninsula Earthquake in the technical policies hereafter, based on the knowledge and experiences that were accumulated by our predecessors in disasters in the past.

## 2. Cross-functional activities

The NILIM established Research Committees regarding the cross-functional 4 subjects for the promotion of policies according to the needs of society: "Disaster Prevention and Reduction," "Maintenance," "Infrastructure DX" and "Green Society Realization," and engages in reporting the preceding cases in each Division.

Regarding Disaster Prevention and Reduction, we discussed sharing of the findings and problems obtained in the Noto Peninsula Earthquake and the strengthening of equipment and systems, and put them into practice.

Regarding Infrastructure DX, we are proceeding with "Project DX," in which staff will acquire DX literacy, in order to proactively utilize DX and realize efficient research activities and fulfillment of work.

Regarding Green Society Realization, the Research Center for Infrastructure Management created and publicized the "draft of the GHG emissions calculation manual during construction in the field of infrastructure" for quantitatively evaluating the effects of greenhouse gas emissions reduction. Then we implemented it in the Regional Development Bureaus as a trial, and vigorous research was pursued by the Building Department to further propagate the introduction of wooden structure in medium- and large-scale buildings and medium- and high-rise buildings, as well as by the Port, Coastal and Marine Department concerning the growth technology of blue carbon ecosystems.

Regarding Maintenance, more than 10 years have elapsed from 2013 named by the MLIT as the First Year of Infrastructure Maintenance Era, and attention is focused on measures to combat infrastructure deterioration due to the large-scale road subsidence that occurred in Yashio City, Saitama Prefecture in the end of January 2025, which is believed to be caused by a broken sewer pipe. Discussions need to be deepened hereafter as to how infrastructure management ought to be.

In addition, we promoted research on the utilization of satellite data that is considered to be effective in common with all the Research Committees. In particular, as the efforts adopted in BRIDGE of the Cabinet Office, we were engaged in the development of data analysis technology such as rapid awareness when disasters occur and the creation of standard specifications, guides and guidelines for the promotion of on-site implementation of such technology. Also, regarding the utilization of a small SAR satellite constellation, utilization of ALOS-4, trial of the Japanese version of the Disaster Charter, we seek collaboration with the Space Development Strategy Headquarters of the Cabinet Office, the Japan

Aerospace Exploration Agency and the National Research Institute for Earth Science and Disaster Resilience, to put such projects into practical use.

Thus, "comprehensive strengths" are also important that utilize cutting edge technologies such as satellite data as well as generative AI, and robots for the optimization, advancement, and increase in efficiency of a series of technologies related to housing and infrastructure improvements.

## 3. Collaboration with other institutes

The NILIM is closely collaborating with the Public Works Research Institute, the Building Research Institute and the Port and Airport Research Institute, etc. in research activities when a disaster occurs as a matter of course even in ordinary times.

Furthermore, the NILIM conducts joint research concerning subjects with which it can be expected to obtain excellent results efficiently by collaborating with other institutes. In 2024, it collaborated with 76 institutes in total in 21 research projects. Collaborating institutes include many institutes in fields other than housing and infrastructure such as information-related and robot-related, and research focused on protecting lives and living, supporting economic activities, and protecting comfortable living, through collaboration with institutes in many fields.

In addition, the NILIM also accepted 55 visiting researchers from construction consultants, construction businesses, manufacturers, local governments and public interest corporations, with an increase of one researcher over the previous fiscal year.

The visiting researchers have a wide range of experience, such as on-site investigation including that on disaster sites and site visits to the experimental sites of other Divisions.

Collaboration with institutes in many fields such as these can also be said to be one of our "comprehensive strengths."

## 4. Conclusion

Through the efforts in 2024, I have touched upon the topic of "comprehensive strengths" that are the strengths of the NILIM. These "comprehensive strengths" are the strengths of the NILIM, which are considered to be the motive force that realize safe and secure national land and society, as the unique national research institute in the fields of housing and infrastructure.

We would like to show the presence of the NILIM in future as well, by sustainably developing the strengths that have been inherited generation after generation by adapting to the times.

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☞ For more detailed information, visit:

1) Statuses of activities of the NILIM in the 2024 Noto Peninsula Earthquake

[http://www.disaster.nilim.go.jp/saigaitaiou/R601jishin/saigai\\_R601jishin.html](http://www.disaster.nilim.go.jp/saigaitaiou/R601jishin/saigai_R601jishin.html)

2) FY 2024 NILIM Lecture Meeting

<https://www.nilim.go.jp/lab/bbg/koen2024.html>