

# Research Trends and Results

## Promotion of research in environmental field

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### 1. Introduction

The departments and center of the NILIM are promoting activities related to the environment, along with research on land management. The Environment Research Committee is promoting information sharing and external information transmission in all environmental research fields, conducted by NILIM, and is also helping to promote cross-cutting surveys and

studies.

### 2. Research in environmental field

NILIM has conducted a broad array of environmental studies. Recently, it is promoting research on policy issues related to energy, global warming, habitats, land use, residential environments, and waste (see figure).

### 3. Research promotion

The Environment Research Committee is working on demonstrations of the environmental studies conducted by NILIM, based on their individual characteristics. In November, the Symposium on Environmental Research was held. It had the theme "Earth and lives in 2050 - Environmental technologies and global tasks," and representatives from thirteen environmental research institutes, including national institutes, independent administrative agencies, and national university corporations, gathered in a hall. NILIM presented lectures and released posters during the symposium (see photo).

In addition, in order to exchange information about environmental research, extend the network of researchers, and promote the research more effectively, we are preparing numerous exchange meetings for the researchers. In FY2015, we exchanged opinions from the "Perspective of environmental research in the land, infrastructure, and transportation administrations" and the "Use of hydrogen energy," and promoted mutual exchanges among researchers working in the

<b>Total environment</b>	[Environment Research Committee] Overview and progress of environmental research in the context of land management
<b>Energy</b>	[Water Quality Control Department] Effective use of sewage heat (B-DASH Project)
<b>Renewable energy</b>	[Water Quality Control Department] Use of hydrogen energy, produced by sewage bio-gas [Building Department] Utilization technology of low-carbon hydrogen energy [Research Center for Land and Construction Management] Research on utilization of energy, produced by plant waste materials in urban areas
	[Water Quality Control Department] How much energy consumption for treated water usage systems can we reduce?
	[Road Traffic Department] Consideration on effective energy utilization of road facilities [Building Department] Development of energy consumption performance forecast tool, inducing energy-saving design of buildings [Building Department] Actual energy consumption conditions of nonresidential architectures, and countermeasures for energy saving
<b>Energy</b>	[Housing Department] Creation of evaluation method for housing performance, based on the revised energy-saving standard
<b>Energy-saving, heat</b>	[Housing Department] Program for energy-saving standard, as a house design tool [Housing Department] Heat island countermeasures analysis system [Urban Planning Department] Three-dimensional data of green space in urban areas, and effect of environmental improvement of green space [Port and Harbor Department] Basic analysis on energy-saving transportation of domestic marine unit load
	[Road Traffic Department] The volume of carbon dioxide emissions in the road traffic field, derived from automobile performance data
<b>CO<sub>2</sub> emission and fixation quantities</b>	[Road Traffic Department] Understanding the quantity of carbon dioxide fixed by concrete structures [Research Center for Land and Construction Management] How much CO <sub>2</sub> do trees around us fix? [Airport Department] Calculation of the volume of carbon dioxide emissions from airports, and estimation of reduction effects
	[River Department] Deepening our understanding of flood systems, and climate change adaptation
<b>Climate change adaptation</b>	[River Department] Reduction of flood damages with the existing dams [River Department] Practical environmental management of rivers [Sabō Department] Changes to prepare for climate change-Soil avalanche and countermeasures [Coastal, Marine and Disaster Prevention Department] What is the long-term change in the average water level along Japan's coasts?
	[River Department] Effect of river environmental improvement by middle-scale flash discharge of dams
<b>Habitat</b>	[Research Center for Land and Construction Management] Evaluation of living environment of creatures in wide areas with GIS and proper habitat models, and mapping trial [Coastal, Marine and Disaster Prevention Department] Patterns based on habitat usage characteristics of enclosed bay fish, and consideration of habitat design [Coastal, Marine and Disaster Prevention Department] Making the popular Bay of Tokyo into a bountiful sea [Building Department] From a structure to "save lives" to a structure "allowing long-term use"
<b>Land use and residential environment</b>	[Urban Planning Department] Technology development to support sustainable cities, corresponding to population decline, aging, etc. [Research Center for Land and Construction Management] Natural environment of cities, supporting future society-Afforesting planning technology, corresponding to population decline and urban restructuring
<b>Waste</b>	[Coastal, Marine and Disaster Prevention Department] Linear response features of coasts against the amount of new ocean debris

(Based on the titles of posters, etc. presented at the Symposium on Environmental Research)

Figure: Environmental studies conducted by NILIM

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environmental research field.

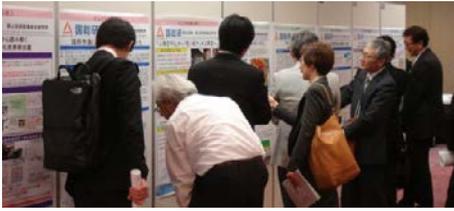


Photo: Exhibit of NILIM studies at Symposium on Environmental Research

Additionally, we are preparing a list of environmental researchers' names, and showing information on the web site.

#### 4. Future deployment

Comprehensive studies in the environmental research field may individually progress to make direct contributions to actual operations, as a result of synergistic effects with the extension of the economic base and disaster prevention and reduction. The Environmental Research Committee is seeking out and promoting a future ideal research system related to the environmental field, and is also widely dispensing information about the latest environmental research results from NILIM to other researchers, administrative organs, and the public.

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☞Detailed information:

Web site of Environment Research Committee

[http://www.nilim.go.jp/english/org/e\\_committee/eecommitee.htm](http://www.nilim.go.jp/english/org/e_committee/eecommitee.htm)