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- "2004 Annual Report of NILIM" is now on our website (in Japanese only, for the time being)

No.8
March 2004

N I L I M

News Letter

ISSN 0389-4150

■ Development of Strategic Stock Management

The social capital of Japan has displayed dramatic progress in terms of both quality and quantity. In particular, the stock of social capital that was formed during the period of high-level economic growth will enter the renewal phase in the period from 2020 to 2030, and renewal and maintenance investment is expected to increase greatly from now on. In consideration of harsh fiscal conditions in future, assuming that total investment in social capital remains more or less the same after 2002, it is estimated that renewal and maintenance investment will come to account for approximately 50% of the total investment amount in 2025 (Figure 1).

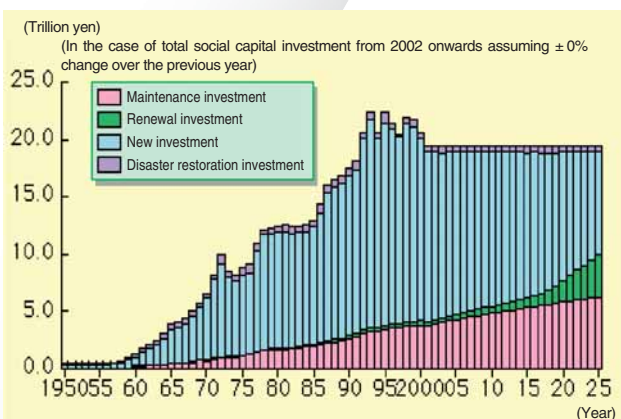


Figure 1 Estimating investment in social capital

Meanwhile, ongoing renewal generates increased quantities of solid waste products, and this situation is leading to a shortage of final disposal sites.

When fiscal and environmental issues such as these are taken into account, the maintenance and renewal of the

massive quantities of social capital constructed so far takes on added importance.

For this reason, while utilizing technology to extend the service life of individual facilities, it is necessary to develop technology in order to control the service life of each element of social capital and to disperse service life peaks. The National Institute for Land and Infrastructure Management, with the aim of developing a strategic stock management system for carrying out the planned and strategic maintenance, control, operation and renewal of multiple units of social capital, is currently engaged in a research project for the Development of Asset Management Technology for Housing, Infrastructure and Building Stocks (2001-2004). In this research project, research and development are being advanced from the dual viewpoints of developing management and operation technology for individual items of social capital stock, and developing technology for realizing strategic management.

Before constructing a strategic stock management system, it is first necessary to gauge the condition of individual facilities and to carry out control using appropriate methods. Thus, in order to enable the selection of appropriate maintenance technologies according to the state and functions of facilities, research is being advanced into methods for assessing the characteristics and effects of each individual technology.

Strategic stock management system development, which targets multiple units, i.e. a group, of social capital in a certain area, aims to develop management and operation technology that, 1) utilizes service life extension technology, repair technology, functional upgrading technology and use conversion technology, and 2) takes into general account social characteristics such as financial conditions, asset values, local environmental impacts, ripple effects on local communities, historical features and landscape.

■ New Main Projects

1. Research for sophistication of consensus-building method in infrastructure management ~ aiming to promote common understanding and to raise satisfaction ~

In the current situation where implementation of public works with greater transparency and equity is being demanded, it is necessary to develop a consensus-building system that is even more appropriate and ensures greater satisfaction than before. This research aims to conduct examination into consensus-building processes and communication skill in infrastructure management, and to construct a knowledge sharing system for systematically accumulating and utilizing know-how and research findings obtained from past consensus-building cases in a wide range of sectors throughout the country. Information collected in this way will be utilized in actual consensus-formation in projects supervised by the Ministry of Land, Infrastructure and Transport, and newly derived ideas will be fed back into the information sharing system once again.

Realization of such a cycle will contribute to the construction of a consensus-building system that is both appropriate and satisfactory as a knowledge management system.

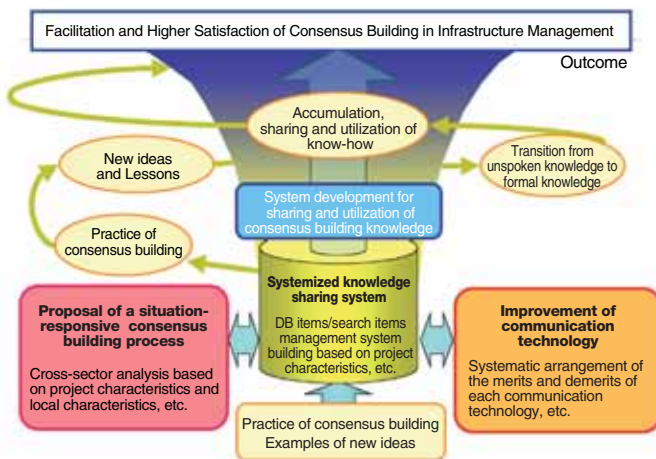


Figure 2 Construction and Application of Consensus-Building System

2. Development of Techniques for Assessing and Controlling Overall Cost Reduction Effects in Public Works

With a view to reducing the overall cost of public works projects, including not only work costs but also social cost and construction time, etc., the government has been advancing work based on the Action Guideline for Addressing Cost Reduction of Public Works (September 2000) and the Cost Structural Reform Program (September 2003). However, due to the fact that methods of converting social cost such as mitigation of environmental impact, etc. into monetary value have not been established, this has so far been omitted from calculations of overall cost reduction rates in the Cost Structural Reform Program. This research aims to develop techniques for assessing overall cost reduction effect based on the conversion of social costs, etc. into basic units giving consideration to convenience on sites and controlling the cost and time of public works. By reflecting the outputs of this research into measures for cost structural reform, etc., measures for reducing overall cost including social cost, will

be promoted, thereby leading to the construction and maintenance of high-quality social capital at low cost.

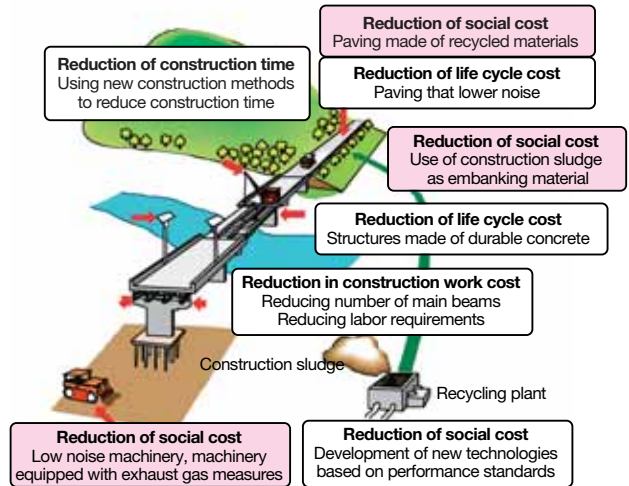


Figure 3 Overall Cost Reduction (Example)

3. Research into the Influence of Soil and Groundwater Contamination on River Water Environment

While various chemical substances indispensable to our modern society are produced and used increasingly in watersheds, those are not incorporated sufficiently into watershed and river management. As a result, the concern about their possible influence on river water environment is growing, and people begin to claim for an extended management system of a watershed and its rivers that includes the behavior of chemical substances as a primary target.

This research project launches as a three years project in order to respond such needs, and is aiming to provide with a foundation of implementing the extended management system through the linkage to "Study on Risk Evaluation of Chemical Substances in Water Environment", which has already started and deals with chemical substance transport through surface water.

To achieve the purpose, it is necessary to clarify the actual condition of soil and groundwater contamination and the dispersion process of contaminants, and to interpret this information so that government in charge of managing a river and people can take proper actions collaboratively in a prevention, risk management and restoration stage. The

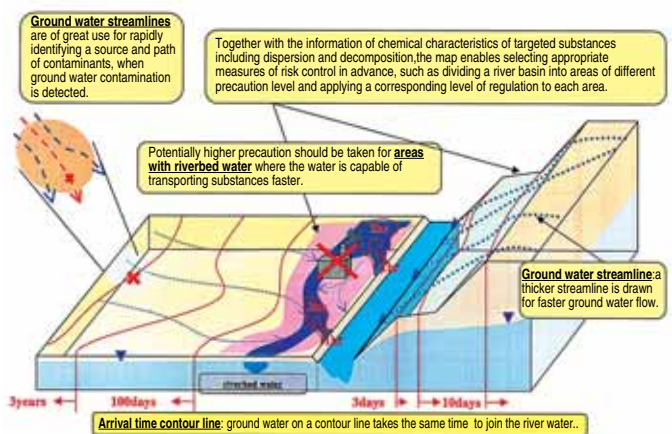


Figure 4 River Basin Map of Soil and Groundwater Contamination Behavior

followings are the major parts of the research: 1) gauge actual conditions, 2) clarify mechanisms and assess impact, etc. by using models, 3) prepare a "river basin map of soil and groundwater contamination behavior, and 4) propose methods for utilization of this.

This research also takes advantage of related institutional systems now being evolved: for example, the system of PRTR (Pollution Release and Transfer Register), and the soil contamination countermeasures law.

4. Research into Measures for Promoting International Tourism Based on Networking of Local Resources and Transportation Hubs, etc

Last year, the government embarked on a new policy to build a tourism-oriented nation, while at the same time the Ministry of Land, Infrastructure and Transport compiled the Broad Outline of Policies for Development of a Beautiful Nation. This project research, which aims to contribute to the deployment of technical measures for the promotion of international tourism, entails analyzing the attribute-separate tourist behaviors of visitors to Japan and the tourism characteristics of local resources, etc. and implementing examination into the following areas: 1) techniques for networking local resources, 2) techniques for networking transportation hubs, 3) techniques for raising the value of gateway spaces, 4) techniques for compiling databases of, and transmitting, tourism resource information, and 5) preparation of guidelines for the approach of local governments and other related organizations working to promote tourism.

5. Development of Building Performance Assessment and Countermeasure Technologies for a Sustainable Society

Since buildings consume large amounts of energy and resources in the various stages of at their lives such as construction, operation and demolition. They also generate carbon dioxide and C&D waste. In order to build a sustainable society, it is essential to deal with such environmental problems in the building sector promptly.

This research aims to contribute to the dissemination and promotion of buildings that have low environmental loads in terms of global warming and C&D waste processing through developing and establishing 1) measurement and assessment technologies for gauging environmental loads accurately in

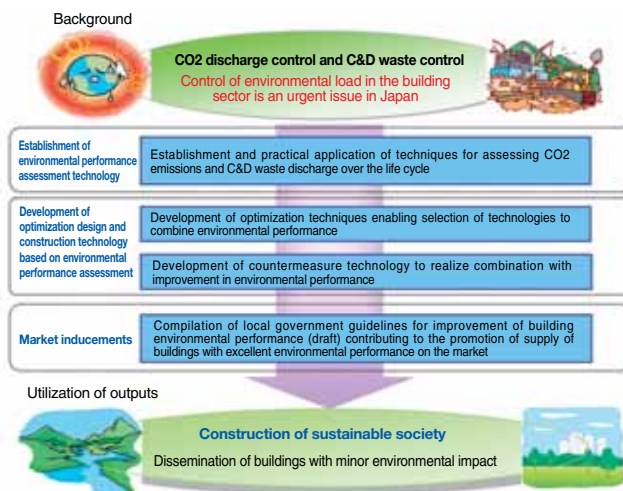


Figure 5 Outline of Project

each stage of building life, 2) countermeasures technology for efficiently realizing these, and 3) optimization technology for supporting the rational selection and combination of these countermeasures.

Moreover, it is planned to compile and effectively utilize local government guidelines for improvement of building environmental performance (draft), etc.

6. Development of Technologies for Thermal Environmental Assessment and Countermeasures in Urban Spaces

In order to improve the thermal environment of urban spaces typified by the heat island phenomenon, it is intended to develop techniques for gauging and assessing urban thermal environments while utilizing geographical information, etc., as well as developing techniques for setting improvement measure target levels and technology for forming effective urban environments that will contribute to thermal environmental improvement in line with local characteristics. Doing this will enable quantitative assessment of composite countermeasures such as urban greening, securing of water surfaces, etc., improvement of water-retentive pavements, improvement of thermal performance of building exteriors, improvement of the shape of urban areas, and so forth. In addition, it will become possible for local public authorities, etc. to set target levels for the thermal environment according to local characteristics and to implement heat island countermeasures in an effective and planned manner.

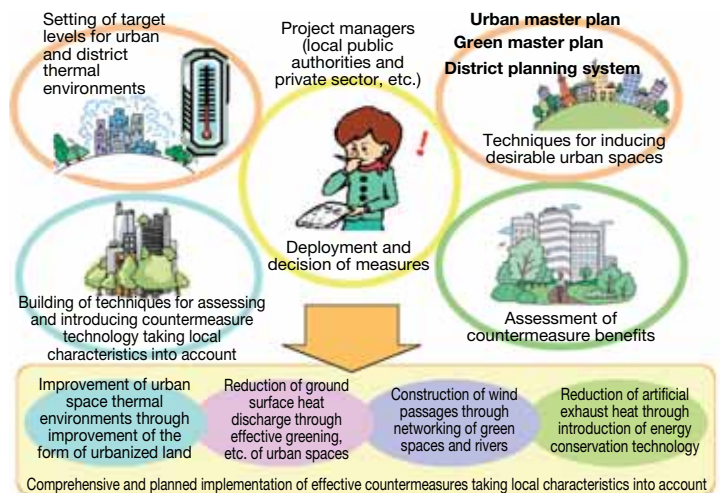


Figure 6 Image of Urban Planning Techniques as Heat Island Countermeasures

18 Other Main Projects

Title of Project
Measures against Global Warming
Technologies for Zero Emissions and Recycling Oriented Society
Stock Management System of Housing and Infrastructure
"Toward a Pleasant, Beautiful Tokyo Bay"
Sound Hydrological Cycle and Sediment Transport System
Watershed/Urban Regeneration in Accord with Nature
Minimizing natural disaster risks in urban areas
Improving the safety and amenity of road-space
Health - conscious Built Environment
Renaissance of the Urban Area
Advanced Assessment Methods for Public Works Projects
Advanced Cruise-Assist Highway System(AHS)
National Land Management Technologies Using IT
Water control technologies to deal with global-scale fluctuations of water cycle
Integrated risk management of chemicals in water body
Building standard and technology systems for intelligent buildings and houses
Policies for airports development suitable to a future air service network in East Asia
Enhancement of a multi-modal transportation system

■ The 5th Japan-U.K. Workshop on Advanced Technology in Highway Engineering

The 5th Japan-U.K. Workshop on Advanced Technology in Highway Engineering was held at the National Institute for Land and Infrastructure Management and Kyusyu Regional Development Bureau on November 10 to 14, 2003. The series of the workshops has been held alternately between Japan and U.K. based on the Implementing Agreement between Japan and U.K. on Highway Science and Technology, and the theme this year was road safety.

Six members from the U.K. side, including Mr. Dennis Roberts, Director of Roads and Vehicles Directorate of the Department for Transport and Mr. Alan Pickett, Director of Safety and Information Division of the Highways Agency, participated in the workshop. From the Japanese side, more than 40 members were in attendance including Mr. Okuno, Director-General of the National Institute for Land and Infrastructure Management and other representatives of NILIM, the head office and the regional development bureaus, of MLIT, and the Civil Engineering Research Institute of Hokkaido etc. In the workshop, presentations and earnest discussion

were carried out into analysis of accidents etc. and planning and implementing of road safety measures.

With a view to realizing even greater research cooperation and information exchange between both countries, on November 10 the extension of the Implementing Agreement between Japan and U.K. on Highway Science and Technology for a further 6 years was signed.



Photo 1 Workshop Participants

■ RESEARCH REPORT of National Institute for Land and Infrastructure Management (July-September, 2003)

No.	Title of Paper	Names of Divisions
11	Study on the Regulations for Base Buildings : Some proposals of the Building Standard and the Property Law for the new type of buildings which consist of the public or semi-public Base Structures and the private Secondary Structures	Housing Planning Division
12	Larval Abundance, Distribution, and Size Composition of Planktonic Larvae of the Clam <i>Ruditapes philippinarum</i> in the Fall Season in Tokyo Bay	Coastal and Marine Department
13	A Model for International Maritime Container Movement and Scenario Analyses on Investment for Container Terminals with Deeper Berths	Port Systems Division

■ TECHNICAL NOTE of National Institute for Land and Infrastructure Management (July-September, 2003)

No.	Title of Paper	Names of Divisions
57	Report of comparison test with test vehicles for skid resistance	Traffic Engineering Division
91	Evaluation of Cut-off Performance for the Seawalls of Waste Disposal Landfill by Seepage & Advection/Dispersion Analysis	Port and Harbor Department
108	On the Watershed/Urban Regeneration in Accord with Nature —Human, Water, Earth and Environment—	Environmental Department
110	Design Standard for Fairway in Next Generation (Interim Report, Ver.2)	Port and Harbor Department
111	An Analysis on the Flow of North American Containerized Cargo in East Asian Region (2003)	Port Planning Division
112	The System of Airport Development and Arguments about that of 21 st Century in The United States	Airport Planning Division
113	Application of Precast High Strength RC Slab Pavements in Airports	Airport Facilities Division

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We publish "2004 Annual Report of NILIM" to show our research activities and accomplishments, and you can see its contents on our website, www.nilim.go.jp. English version will be available in the future.



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No.8
 March 2004