

Perspectives in developing and managing social infrastructure for the next generation

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(Key words) National land management, construction management, development and management of social infrastructure

1. Introduction

The Research Center for Land & Construction Management (hereinafter “the Center”) is one of three Centers set up to tackle cross-sector initiatives. Through research activities based on the key concepts of “national land management” and “construction management”, the Center’s mission is to support the planning and proposal of policies related to housing and social infrastructure development under the jurisdiction of the Ministry of Land, Infrastructure, Transport and Tourism(MLIT).

With the steady progress of population decline, falling birth rates and population aging, together with the increasing reality of limitation on resources, the target of research activities in the “national land management” sector is to consider how Japan’s national land infrastructure should be developed and utilized as a foundation that supports a safe, comfortable and vibrant national way of life.

Meanwhile, to develop and manage social infrastructure smoothly and efficiently as a means of national land management, it is vital that we constantly review all aspects of construction production systems. Only by doing so, can we ensure and improve the quality of public works, as well as gaining the support of taxpayers through a highly transparent and competitive procurement system. Research on “construction management” technology is an effort to this end.

2. National land management and social infrastructure development

As a new image of national land infrastructure, the National Spatial Strategies (nationwide plans) formulated on the basis of the National Spatial Planning Act (2005) state that “As well as building national land infrastructure in which diverse, wide-area blocks can develop independently, steps will be taken to form national land infrastructure that is beautiful and comfortable to live in”.

A major task in achieving this is to cope with the nationwide increase in settlements whose sustenance and existence is threatened by population decrease and progressive aging. In many cases, these face a variety of problems, including uncertainty over public transport, healthcare, welfare and other livelihood aspects, as well as loss of traditional local culture and

abandonment of land. Since fiscal 2006, the Center has promoted studies on the transformation of local community functions in areas facing problems of depopulation, focusing on the importance of local communities in promoting sustainable national land management¹⁾. We plan to link this to studies on future maintenance measures.

For example, encouraging the use of domestic timber (including thinnings) in housing and social infrastructure development serves to support the forestry industry and ensure the appropriate management of forests. This, in turn, ensures that forests properly play the role of retaining water and controlling sediment runoff, and that the prerequisites for flood control and water use planning in the whole river basin are maintained. This also encourages interregional collaboration between upstream and downstream areas, culminating in firmly grounded regional development. Preparing and revising standards with a primary focus on encouraging the use of timber has large potential as a trigger for the formation or maintenance of this kind of socially positive cycle.

To form safe and beautiful national land infrastructure while maintaining stable economic growth, the development of quality social infrastructure based on regional characteristics will need to be promoted efficiently as a priority issue. On the other hand, addressing maintenance and renewal accompanying the dilapidation of existing social infrastructure stock is also a pressing task. Inspections based on individual facility characteristics, along with systematic maintenance and repairs based on deterioration prognosis, will be indispensable if we are to reduce lifecycle cost by increasing longevity. They will also reduce the impact on the socio-economy caused by fatal damage under the harsh natural conditions peculiar to Japan, including earthquakes, floods, tsunamis and high tides, sediment disasters and snowpiles. To this end, based partly on the results of preliminary studies by a cross-sector stock management research group inside the Institute, we aim to tackle the development of inspection and monitoring technology for preventive conservation management of social capital in a three-year plan starting from fiscal 2010.

3. Ensuring and improving the quality of public works and construction management technology

Following the enforcement of the Act for Ensuring the Quality of Public Works (2005), the Center is responsible for analyzing issues in projects under direct jurisdiction of MLIT, and studies on necessary revisions based on this²⁾. This work is linked to various initiatives aimed at ensuring or improving the quality of public works, including the Overall Evaluation Bidding Method, the Integrated Design-and-Build Procurement Method and the Construction Management (CM) Method.

An important task is to revise the standards, guidelines and others needed for accurate and efficient supervision, testing and works performance appraisal in public works, while responding to the increased sophistication of execution management technology (such as the full introduction of IT-compatible execution). This will enable us not only to obtain reliable outcomes with a high level of quality at the individual works level, but also to establish systems whereby companies' track records and efforts are appropriately reflected in the process of selecting suppliers.

We are also conducting research aimed at appropriately deploying the unit price cost estimation method (a method of cost estimation by multiplying the price for each works unit division, including direct expenses such as material costs and labor costs, and indirect expenses by the construction volume) and expanding construction processes subject to trials. This will not only reduce the cost estimation work load on in-house engineers, but also promises effects that will help to normalize transaction prices between contractor and subcontractor in the construction market.

4. Summary

At the end of last year, the government's Council for the Formulation of Growth Strategy (chaired by Prime Minister Yukio Hatoyama) presented the framework of a new strategy for economic growth. The strategy highlighted "Environment & Energy" and "Health (Healthcare & Nursing)" as sectors in which Japan should show greater strength than other countries in future, and "Asia" and "Tourism & Regional Revitalization" as frontiers in which greater demand can be expected in future. Strategic efforts are to be made in six priority sectors, with the addition of "Science & Technology" and "Employment & Human Resources" that form the foundation for the others mentioned above. Steps will be taken to create demand and secure employment, and the aim will be to achieve real economic growth averaging more than 2% by 2020.

It would be no exaggeration to say that the work of developing and managing social infrastructure serves to underpin all of these. Tourism packages that use express coaches depend wholly on networks of expressways, while the "Super Sento" public baths now

booming as local health and leisure facilities could only exist with social infrastructure for a reliable water supply and water treatment. In many cases, social infrastructure facilities, such as beautiful bridges and dam reservoirs harmonized with surrounding environment, themselves have become tourism resources. Moreover, to enhance a region's wide-area healthcare services, it is vital that plans should also include the development of public transport infrastructure.

Social infrastructure development through public investment also plays a major role in promoting R&D in science and technology. Namely, it incorporates science and technology from almost every sector, not only in developing new materials and works execution technology, but also in monitoring and inspection technology after the construction of facilities. The result is that these are efficiently utilized for the public welfare. It should not be forgotten that social infrastructure development projects led to the concept of electronic government becoming a reality, through the electronic conversion of work processes in the form of electronic bidding, electronic delivery and others, and the provision of road services using information technology (e.g. the ETC system). These technologies have the potential to contribute greatly to social infrastructure development in Asia and all countries of the world.

Based on the problem awareness described above, the Center would continue tackling survey and research activities that support the development and management of social infrastructure for the next generation, in close collaboration and appropriate sharing of roles with the Public Works Research Institute, the Building Research Institute, the Port and Airport Research Institute and other related organizations, as well as all departments within NILIM.

References

- 1) H.Kawasaki, M.Suzuki, T.Monma, S.Ohashi: Research on the sustainability of local communities, Technical Note of NILIM No. 520, Feb. 2009 (<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0520.htm>)
- 2) A.Terakawa: Initiatives aimed at ensuring and improving the quality of public works, FY2009 NILIM Lectures, Technical Note of NILIM No. 546, pp. 135-150, Dec. 2009 (<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0546.htm>)