Reinforcing data collection, analysis, and application
Toward achievement evaluation of policy objectives

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1. Introducing policy objective-oriented project evaluation

Immediately following the change in Japan's government, the Cabinet adopted a plan on "reform of budget compilation, etc." in October 2009. One of the main pillars of this plan is "introduction of a system for clear presentation of policy objectives." This system will clearly present the objectives of priority policies and provide for objective verification of their achievement based on established indices.

In response to this decision concerning all aspects of government, MLIT has decided to introduce policy objective-oriented project evaluation. By doing so, MLIT will strive to improve evaluation in the form of comparative evaluation that is based on concrete data after clarifying policy objectives and presenting alternative proposals. It will also implement comparative evaluation-based project evaluation beginning from the project planning stage. It began planning-stage evaluation on a trial basis for certain MLIT-controlled projects during FY2010, and in November 2010 it announced projects in the rivers, roads, and ports and harbors fields to be included in the trial.

2. Enhancement and application of increasingly important basic data

Given today's tight fiscal constraints, evaluation of the policy achievements and thorough explanation of the necessity and effects of projects and measures are demanded in all areas, not just the kind of project evaluation mentioned above. Thus, as part of this approach, MLIT will proceed with "management that leads to positive results" in the roads field. Such management will prioritize items through selection and concentration, and simultaneously seek to comprehensively explain priorities and expected effects based on objective indices.

More than ever before, this approach requires the resolution of various technical issues, among them "how to set objective evaluation indices" and "how to efficiently enhance data that will provide the basis for evaluation."

3. The 3 roles NILIM will be expected to play

NILIM's roles in supporting government administration through technical policy research toward addressing such policy needs can be largely classified into the following three areas:

(1) Establishment of efficient data collection methods

Questions that must be answered regarding basic data include how to efficiently collect "useable" data having the required accuracy, and how to appropriately supplement missing data. Although the work of providing answers here may not be very glamorous, it forms the foundation for everything thereafter and requires considerable effort. Another extremely important aspect is "arranging data to match application strategies." In cooperation with MLIT, regional development bureaus, local governments, and other concerned bodies, NILIM is moving forward with studies for envisioning application in actual operations—specifically road construction, construction, and policy management—from the data collection stage.

(2) Effective strategies for use of data by project implementers

If data are set, the next question becomes how to apply them to actual operations. In the same manner described above, NILIM is working with project implementers from the data collection stage to study and propose concrete application strategies and application templates.

(3) Technical policy research (policy support)

Finally, as a research institute engaged in technical policy research, NILIM is identifying new issues and illuminating phenomena in the road policy field based on scientific data analysis, and advancing research on its own function as an organization that provides policy support.

4. Specific approaches

Typical examples of specific approaches that NILIM is pursuing in accordance with its roles are summarized below.

(1) Efforts to realize smoother road traffic flow

By themselves, conventional road traffic censuses that are conducted every five years do not provide the data needed to carefully select locations having major traffic congestion or other problems and to implement priority countermeasures. To address this situation, NILIM is working to ascertain traffic conditions,

formulate relevant measures, and analyze the effectiveness of countermeasures based on data collected 24 hours a day, 365 days a year. Here, NILIM is focusing its attention on data obtained from constant traffic volume measurement using vehicle detectors and data concerning probe travel time using car navigation systems.

Thus far, NILIM has verified the density and precision of data gathering, and confirmed that the data have extremely high application potential. Accordingly, it is now beginning full-scale data gathering and application. Examples here include data application in efforts to ascertain effectiveness (e.g., improvement of travel time on ordinary roads, etc.) in a pilot project conducted to make expressways toll-free ,which started in June of last year, and to determine effects realized by the Daini Keihan Road, which was opened in March of last year. At the same time, NILIM is formulating various proposals. One involves the presentation of new performance indicators that are arrived at by contrasting periods of congestion with periods of no congestion and then calculating lost time. And another seeks to get a picture of lower speeds caused by snow and ice during winter and then apply the results to evaluations.

An example of policy support-related research by NILIM itself is development of methods for evaluating travel time reliability. Here, NILIM will develop methods that focus not only on average travel time, which is the conventional marker, but also on reliability (accuracy) of travel time by taking fluctuations in travel time into account. It also seeks to make permit estimation of travel time reliability impacts in order to evaluate individual projects.

(2) Road traffic safety

Countermeasures that focus on arterial road sections having high accident rates are effective. Thus, just as it is in seeking to realize smoother road traffic flow, NILIM recognizes that it must continuously accumulate data on traffic accidents and the implementation of safety measures, as it also simultaneously selects locations for countermeasure implementation, formulates countermeasures, and evaluates their results. Thus, it is accumulating accident data and safety measures data that will form the foundation for the above-mentioned activities with a fairly high degree of accuracy compared to the effort to realize smoother road traffic flow that was presented in (1) above.

By analyzing such accident data, NILIM is preparing methods for extracting zones deemed to have high urgency due to frequent accidents, and analyzing candidate countermeasures (i.e., a “countermeasures menu”) that may be effective in dealing with the characteristics of each zone. NILIM uses the results to provide road managers with tools that help them formulate traffic safety measures. NILIM recognizes that it must further fine-tune these tools based on continuing data accumulation.

At the same time, NILIM knows that ordinarily data must be accumulated for around four years in order to properly ascertain accident conditions for evaluation of countermeasure effectiveness. This makes the work of accumulating data a long-term endeavor. Thus, NILIM will study methods to enable evaluation of countermeasure effectiveness in a shorter period of time by grasping changes in traffic behavior (e.g., conditions that inhibit speed, vehicle convergence, etc.). Moreover, it will continue its studies on methods for scientific ascertainment and analysis by applying travel speed data, etc., obtained from video images (i.e., image processing technology) and car navigation systems. These methods will be in addition to ordinary onsite survey methods.

(3) Bridge maintenance

Regular inspections (taking place once every 5 years) of MLIT-controlled roads that are in accordance with a proposed bridge inspection standard prepared by NILIM began in 2004. Taking the results of these inspections, NILIM also proposed a standard for collection of road bridge inspection data that has greatly prioritized and simplified content for use by municipalities. This standard is already being applied by many municipalities. Moreover, by analyzing the characteristics and advancement of deterioration and damage, NILIM is drafting a standard for specific inspection of ancillary structures as well as for inspection and survey of fatigue in steel plate decks. These items are being used as reference materials in bridge management.

Given that a round of detailed regular inspections of MLIT-controlled roads has been concluded, NILIM is moving forward with an analysis of the accumulated data. It is using the results to revise the inspection standard in order to make it more efficient and rational, improve the accuracy of degradation predictions for concrete slabs and pre-stressed concrete structures, and formulate a new specific inspection standard for steel component fatigue and bridge pier scour. It is also reinforcing the foundation for appropriate response to the aging of road bridges, which is expected to accelerate in the future.

5. Conclusion

This article presented an outline, within the scope allowed by space limitations, of representative approaches being taken by NILIM. For details, please visit the website of the relevant NILIM department. In policy support-related research, reciprocal linkage with actual fields is essential. Specifically, such linkage involves trial application of the achievements of ongoing development to the front lines of actual operation, and then feeding

back the results to further research and development. The author wishes to thank MLIT, regional development bureaus and offices, local governments, expressway companies, and all else concerned for their consistently valuable cooperation, and humbly requests their continued support and guidance in the future.

References

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