

# Application of disaster management examination support tool kit

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## 1. Introduction

Japan often suffers various natural disasters, such as earthquakes, typhoons, and floods. The onset of significant damage is also expected in an earthquake that directly hits Tokyo and the Nankai trough earthquake, which are expected to occur. The National Institute for Land and Infrastructure Management (NILIM) developed a disaster management examination support toolkit (hereinafter “the toolkit”) as a collective tool containing various methods to estimate disaster damage, evaluate risk, and implement management measures in a series of processes. After testing and evaluating the toolkit at regional development bureaus, the toolkit has been used in the training at the College of Land, Infrastructure, Transport and Tourism and disaster drills at local governments since 2016. The following is the report of how the toolkit was used in Ibaraki in FY 2017.

## 2. Outline of the toolkit

The toolkit is designed to perform the following: [1] to expect natural disasters, such as earthquakes, typhoons, and flooding, and list the expected damage to infrastructures on maps such as duct maps; [2] to establish a natural disaster scenario that organizes the effects of damage to infrastructures to social and economic activities; [3] to perform risk assessment based on the likelihood of the risk of damage to infrastructures and the seriousness of effects on human lives and the economy; and [4] to examine measures to manage individual damage.<sup>1,2</sup>

## 3. Use of the toolkit

The prefecture of Ibaraki has installed the Civil Engineering Disaster Management Working Team to plan and examine the reinforcement of disaster management systems, and the team has been examining various disaster management measures. In FY 2017, the toolkit was used in disaster response drills at two civil engineering offices in Tsuchiura and Chikusai and the prefectural government building (including staff who were outside of the building). Photo 1 shows the scene of the drill, and figure shows the evaluation outcome as the tool for disaster management drills. More than 90% of the participants responded that the toolkit was effective as a disaster response training tool. Specific effects were as follows: [1] the ability to conduct comprehensive examination

based on maps, [2] the ability to identify priorities of recovery work based on damage levels, [3] the ability to examine the damage spreading process and risks of disasters, and [4] the ease of using the toolkit as it is written on pieces of paper. In addition to disaster response drills, the proposed scenes of using the toolkit included [1] when transferring work, [2] to determine the priority of repairing management facilities, [3] when sharing the information of high-risk areas, and [4] when notifying information to residents. A challenge is that risk assessment tends to produce a variety of results depending on the experience and knowledge of those who participate in drills, which means information on specific cases is needed. In addition, some of the tools need to be simplified so that participants can use them within a limited timeframe, such as during a disaster response drill.

## 4. Summary

The NILIM is going to use the toolkit at various opportunities and facilities to promulgate it while making necessary



Photo: Uses of the toolkit (presentation of outcomes)

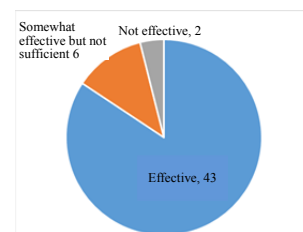


Figure: Outcome of evaluation done by participants

improvements based on the outcomes of its uses to make it more useful.

## [Reference]

- 1) Nobuhiro Imanaga, Takakaki Kusakabe, Hiroyuki Ito, Yuko Karasawa, Shojiro Kataoka: Use and evaluation of disaster response examination toolkit –Through the risk management training at College of Land, Infrastructure, Transport and Tourism, Civil Engineering Technology Reference, Vol. 59, No. 3, pp. 20-25, 2017.3.
- 2) Nobuhiro Imanaga, Ken Kokaki, Toru Kobayashi: Use and evaluation of disaster response examination toolkit, Japan Association for Earthquake Engineering Conference -2017 outlines 4p, 2017.11.