Empirical study on B-DASH Project (Stormwater management technology for local torrential rain in urban area)

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(Key words) B-DASH, urban inundation countermeasures, self-help and mutual help, small radar

1. Urban inundation countermeasures required for sewerage

In response to the recent increase in the risk of inundation damage in urban areas due mainly to the frequent occurrence of local heavy rain, advanced land utilization, and concentration of population and assets resulting from urbanization, there is pressing need for urban inundation countermeasures.

In order to undertake countermeasures promptly, maximum utilization of the facilities that have been improved for inundation control and exist in urban areas in a certain number is also important, as well as structural improvement measures, which require a lot of cost and time. Further, it is also important for mitigating inundation damage to promote self-help and mutual help among residents. [1)]

2. Outline of empirical study

As one of the means for implementing these countermeasures effectively, it is possible to provide supporting information actively that is necessary for facility managers and local residents to take appropriate responsive actions.

This study is focused on the technology (the "Technology") for providing supporting information on real time including inundation forecast by analyzing the data obtained from observation of rainfall in target areas with a radar smaller than the conventional X band radars, such as XRAIN, and the data collected concerning water levels etc. in sewage pipes. This study also demonstrates the effect of mitigating inundation damage by applying the Technology and choosing some part of Fukui-shi and Toyama-shi as field. Figure shows the system image of the Technology.

One of the features of the Technology is use of a radar smaller than conventional ones. Since this radar, about 1 m in diameter and about 65 kg in weight, is smaller and lighter than conventional ones, has less restriction on the place of installation. Taking advantage of this feature, this study aims to install the radar at a lower place to the extent possible to detect rainfall at a lower altitude than before. This attempt is expected to detect earlier heavy rain caused by cumulonimbus that develops at a lower altitude, such as cumulonimbus in summer. Another feature is to forecast inundation in a short time. Accordingly, forecast accuracy is expected to improve by repeating short-time inundation forecast using consistently the observed water level in the pipe as initial value. Utilization of such supporting information is expected to enable facility managers to operate their facilities efficiently, and distribution of such information is expected to encourage local residents to perform self-help and mutual help activities appropriately. These are considered to lead to mitigation of inundation damage.

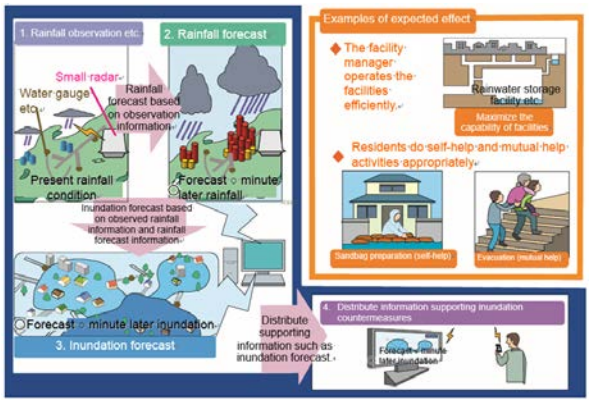

Figure: System image of the Technology

3. Utilization of empirical study result

The system has been completely established and started operation. We are going to collect data and verify the effect of mitigating inundation damage by introduction of the Technology. We are also going to prepare technical guidelines based on the results obtained in order to disseminate widely the technologies used in this study.

[Reference]

1) Working Committee for Improvement of Urban Inundation Control Function Utilizing Stock, "New Basic Concept for Improvement of Urban Inundation Control Function Utilizing Stock," April 2014