

A Case Study on Natural Disaster Prevention and Reduction by Green and Open Spaces

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1. Foreword

Following the Great Hanshin-Awaji Earthquake, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) published the Guideline for Planning and Designing Disaster-Prevention Parks (Draft) (hereinafter referred to as the “Draft Guideline”) in 1999, and in line with this Draft Guideline, MLIT has been promoting the construction of disaster-prevention parks, which can serve as an evacuation site, as well as a base for disaster-prevention activities, among other things, if a fire breaks out in built-up areas as a result of an earthquake.

On the other hand, new roles that disaster-prevention parks should play, as well as issues with disaster-prevention parks in performing disaster prevention and mitigation functions, have been identified as a result of recent disaster events such as the Great East Japan Earthquake. It is essential to ensure that these lessons learned will be fully incorporated when planning and designing disaster-prevention parks going forward. For the purpose of this study, we collected, through literature searches and other means, and analyzed the case examples of recent large-scale disaster events in which a disaster-prevention park’s green spaces played an effective role in preventing or mitigating the impact of the disasters. Accordingly, in cooperation with MLIT’s City Bureau, we revised the Draft Guideline.

2. Collection and Organization of Materials

We collected published research papers and materials published by local governments and other documents with the primary focus on the Great East Japan Earthquake. From case examples of utilization of disaster-prevention parks and their issues at the time of an earthquake, we organized information related to the green spaces of disaster-prevention parks. To collect the necessary information, in addition to ordinary literature searches, we also utilized databases such as the regional disaster prevention plan database (held by the Fire and Disaster Management Agency of the Ministry of Internal Affairs and Communications) and the NDL Great East Japan Earthquake Archive *Hinagiku* (held at the National Diet Library).

3. Revision of Draft Guideline

Based on our findings through the collection and organization of information as described in 2 above, we revised the Draft Guideline. The key point of the revision is to assign the following new roles to disaster-prevention parks, that is, to serve as an emergency evacuation site for tsunami evacuees and as a base for providing assistance to evacuees who are stranded and unable to return home at the time of a tsunami (hereinafter referred to as “stranded evacuees”) (see **Photos 1 and 2**).

In terms of the function of a disaster-prevention park to serve as an emergency evacuation site for tsunami evacuees, we clarified the key points that need to be taken into account in designing disaster prevention parks to ensure prompt and safe evacuation by presenting our way of thinking on the location of disaster-prevention parks with a focus on elevation and accessibility and by defining a miniature hill that could provide

emergency safe havens to tsunami evacuees as one of the disaster prevention facilities of disaster-prevention parks (see **Photo 3**).

In terms of providing support to stranded evacuees, we defined a *place of support to help stranded evacuees go home* as one class of the disaster prevention parks and presented our way of thinking on the location and facilities of such disaster prevention parks.



Photo 1. Example of Upland Providing Safe Haven for Tsunami Evacuees (Hiyoriyama Park in Ishinomaki City, Miyagi Prefecture)
Source: Geospatial Information Authority of Japan’s (GSI) Website



Photo 2. Example of Accommodating Stranded Evacuees in Disaster-Prevention Park Facilities in the Wake of the Great East Japan Earthquake (Hibiya Park in Chiyoda-ku, Tokyo)
Source: The College of Midori to Mizu (Green and water) for Citizens



Photo 3. Example of Miniature Hill Created to Provide Safe Haven for Tsunami Evacuees (Central Park in Kamisu City)

4. Conclusion

The Draft Guideline is available for viewing on NILIM’s website (<http://www.nilim.go.jp/lab/bcg/siryou/tnn/tnn0857.htm>). We encourage park and community renovation-related departments and agencies of local governments, as well as construction consultants among other related parties, to fully utilize the Draft Guideline to further promote the effective development and improvement of disaster-prevention parks.