

## Earth and sand disaster management in urban areas and proposals for improvement

1. With the outbreak of local torrential rainfalls, as well as typhoon and localized torrential downpours during summer, caused by abnormal weather, damages from earth and sand disasters are on the rise
2. As education and medical facilities, small industrial facilities, and large-scale housing complexes are located in mountainous areas at the outskirts of cities, disaster risks are rising further, and thus there is an urgent need to come up with urban planning measures.
3. Earth and sand disasters occur in mountainous areas, and then are inclined to affect urban centers. Although damages are concentrated in the boundary between mountainous areas and cities, different managing bodies are impeding systematic management.
4. To prevent earth and sand disasters in urban centers, the central government should select target areas for intensive management in urban centers against earth and sand disasters, and lay out countermeasures in the phase of urban planning.

### Summary

1. With cities spreading to the area where mountainous areas and urban centers converge, landslide, an avalanche of earth and rocks, and the collapse of the surface of the slope, which occur in a small valley, have the potential to claim lives and bring property damages.
2. As for urban planning to prevent earth and sand disasters, measures should be mapped out by considering the risk level of earth and sand disasters, as well as urban conditions including the size and type of the city, the characteristics of land use, and urban types.
3. To make earth and sand disaster measures efficient for urban planning, it is critical to interconnect the risk levels of earth and sand disasters, with land use regulations, disaster preventive facilities and designing tools.
4. It is recommended to gradually expand the targeted areas for intensive management in urban centers against earth and sand disasters. Also, continued support and management at the central government level is required.

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