## Japan

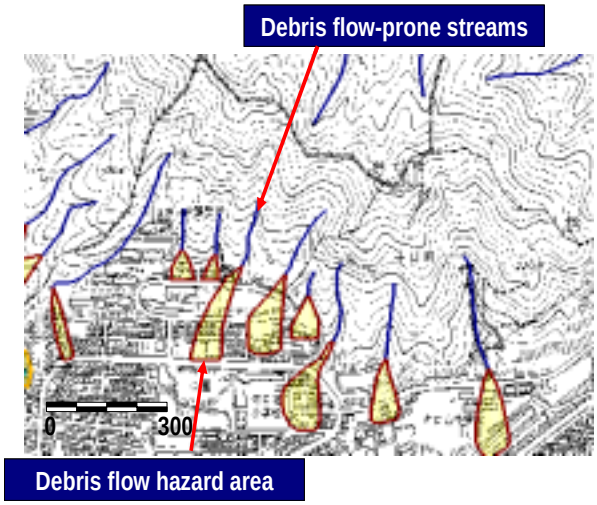
# Applications and Advantages of Hazard Maps for Sabo in Japan

"Sabo" is a Japanese term which means erosion and sediment control. In Japan, around 1,000 sediment-related disasters occur annually. Between 1967 and 2000, 5,890 lives were lost due to natural disasters (excluding the Great Hanshin-Awaji (Kobe) Earthquake of 1995), 54% of which were owing to sediment-related disasters. In the 1960s to 1980s, urban development progressed and residential areas in particular were developed on hills in the vicinity of major cities because of rapid economic growth, thus increasing the number of disaster-prone areas. (Hilly and mountainous areas cover 70% of the total land area of Japan, and many people must live on hillsides and foothills.) The Japanese government recognized the necessity of identifying sediment-related disaster-prone sites and notifying the public of these sites. After decades of strenuous efforts since the 1960s, 44% of all municipalities which have sediment-related disaster-prone sites had made their hazard maps public as of 2002.

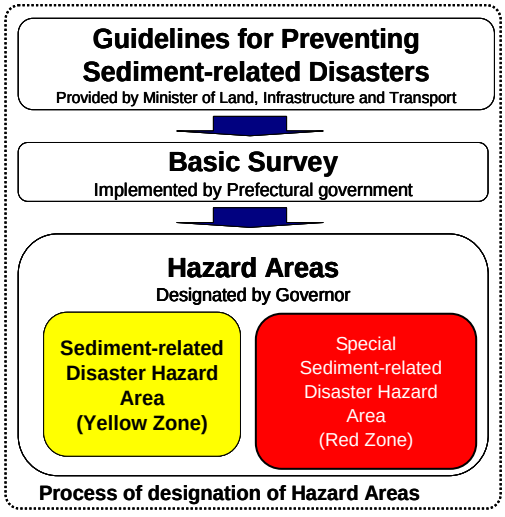
In 2001, the Sediment-Related Disaster Prevention Act was enacted in order to restrict new development for housing and other purposes, promote relocation of existing houses, and develop early warning systems for residents within hazard areas. Under the Act, an area prone to sediment-related disaster shall be designated as a Sediment-related Disaster Hazard Area (Yellow Zone). An area where there is a serious risk of damage to buildings and threat to residents shall be designated as a Special Sediment-related Disaster Hazard Area (Red Zone). If an area is designated as a Yellow Zone: (1) early warning systems shall be established, and (2) steps to raise the awareness of local people about sediment-related disasters shall be taken. If an area is designated as a Red Zone: (1) a license is required for land development for housing, etc.; (2) building certification is required for buildings; (3) relocation of buildings that are vulnerable to serious damage in case of a sediment-related disaster is recommended; and (4) those who move their residence to a safe area as the result of a recommendation can receive grants. There are three categories for sediment-related disasters in Japan: (1) debris flows, (2) steep slope failures, and (3) landslides. Each category has its own definitions of the Yellow or Red Zones.

Hazard maps have two major functions. One is to increase people's awareness of sediment-related disasters. The other is to improve co-operation among emergency responders.

Regarding the former, people should be kept informed about hazard maps by every possible means, such as the Internet, mail, etc., because most people do not pay attention to hazard maps during non-disaster times and may lose their copy. Some prefectural governments put hazard maps on Web sites, and some municipalities send direct mail to each family living within hazard areas to inform them that they are living




An Example of a Hazard Map for Sabo
(Available on websites)




Process of Designation of
Sediment-related Disaster Hazard Areas

in such an area. On the other hand, hazard maps are also very important for organizations responsible for emergency response, because a hazard map provides a common scenario when the organizations create emergency response plans. If there are no hazard maps, each organization must identify hazard areas by itself, and so ten organizations might identify ten different hazard areas, resulting in an uncoordinated disaster response. If there is a common hazard map, each organization can create its own disaster response plan based on a common scenario. Such coordinated disaster response plans lead to cooperative and more effective disaster response activities.

Furthermore, hazard maps should be revised when the situation of disaster-prone sites, such as the situation of vegetation, volcanic eruptions, big earthquakes, wildfires, etc., has changed. Disaster response plans should also be revised in order to respond to the disaster quickly and effectively.

**Summary**:

- Hazard maps should be created as early as possible for all sediment-related disaster-prone sites.

- If possible, the hazard maps should be created under the law in order to restrict the development of housing, etc. within hazard areas.

- People should be kept informed about hazard areas by every possible means.

- Hazard maps are necessary to respond effectively to disasters.

- Hazard maps should be revised when the situation of disaster-prone sites has changed. Information about hazard maps should be shared with every organization responsible for emergency management in order to create cooperative disaster operation plans.

- **Background**
  Japan is a country prone to sediment-related disasters.

- **Objective**
  Identifying sediment-related disaster-prone sites and notifying the public of these sites.

- **Activities Undertaken**
  A new Act was enacted in order to restrict new development for housing and other purposes, promote relocation of existing houses, and develop early warning systems for residents within hazard areas.

- **Major Achievements**
  44% of all municipalities which have sediment-related disaster-prone sites had made their hazard maps public as of 2002.
  Some prefectural governments put hazard maps on Web sites.

- **Contact Details**
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