The Prevention of Sediment-related Disasters in Japan
(Sabo Department, Ministry of Land, Infrastructure and Transport)

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Recent occurrence of sediment-related disasters and victims of natural disasters
Present state of sabo works and prevention measures: about 210,000 hazardous areas

Structural Measures

Priority investment items

Non-structural Measures

Installation rate: about 20%

measures

Measures for the protection of disaster-vulnerable people

Where is dangerous?

Dissemination of disaster information

• Preparation and distribution of hazard area maps
• Designation of sediment-related disaster hazard area based on the Sediment-related Disaster Prevention Law

When is dangerous?

• Development sediment-related disaster forecast system
• Collection and communication of sediment-related disaster information

What to do?

• Establishment of a warning and evacuation system (conditions, evacuation route, and evacuation place)
Debris flow disaster on July 20, 2003 at Minamata, Kumamoto
Debris flow disaster in 2003 at Minamata, Kumamoto Pref.
Debris flow disaster on July 18, 2004 at Miyama, Fukui Pref.

Half collapsed houses
Debris flow disasters by Typhoon No. 23 on Oct. 20, 2004 at Kagawa Pref.
Sediment-related disasters by Typhoon No. 23 on Oct. 20, 2004 at Miyazu, Kyoto Pref.
Slope failure disaster by Typhoon No. 14 on Sept. 6, 2005 at Takeda, Oita Pref.
Debris flow disaster by Typhoon No. 14 on Sept. 6, 2005 at Tarumi, Kagoshima Pref.
An example of the effect of erosion control works (Sabo)
Volcanic disasters caused by pyroclastic flows & debris flows
After the eruption of 1990-94, Mt. Unzen and drainage of the Mizunashi River
Flow of information provided by the new collaboration and cooperation

- The red color shows the flow of information provided by the new collaboration and cooperation.
Warning information on sediment-related disaster

Joint announcement by Prefecture and Meteorological Observatory
Municipality under warning: ○ ○ City, ××Town
Within two hours from now, the risk level of a sediment-related disaster will increase significantly due to heavy rain. Take every caution in and around the sediment-related disaster hazard area. The maximum hourly rainfall within three hours from now will be 60 mm at some locations in these municipalities.

For more information:
(Sabo Division of □ □ □ Prefecture)
(□ □ Meteorological Observatory)

An example of sediment-related disaster warning information
Establishment of a warning & evacuation system utilizing IT

- Early evacuation
- Landslide
- Slope failure
- Debris flow
- GPS satellite
- TV camera
- Optical fiber cable network
- Relay station
- User of the Internet
- User Monitor station
- Disaster information from users
- Mutual information system
- Internet network
- User of cellular phone terminal

User of the Internet
Designation of sediment-related disaster hazard area

- Promoting the public awareness of sediment-related disaster hazard areas
- Developing of warning and evacuation systems

Designation of special sediment-related disaster hazard area

- Control of housing land development projects
- Control for building structures
- Recommendation of removal of existing houses from hazard areas
- Financing and founding for those who remove their houses
Debris flow
Slope failure
Landslide
Hazard map on sediment-related disaster, in Hikone, Shiga Pref.
Slope Failure Disaster damages
Evacuation Place
Debris flow flowing into a social welfare facility in Fukushima Pref. Aug. 26, 1998; Dead 5
A volcanic hazard map is prepared and publicized for 30 active volcanoes (As of June, 2004)

If a major eruption like the Tenmei Eruption (18th century) occurs…
Plan of urgent disaster mitigation measures for volcanic eruption (new plan)

- Monitoring of volcano
- Establishment of a buffer zone on the volcanic mountain slope
- Unmanned construction
- Installation of information equipment at the volcanic disaster prevention station
- Storing of materials for urgent disaster response
Input of data

- Location information of the crater
- State of eruption, etc.
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