

Sabo technical development in Indonesia

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Indonesia consists of more than 13,000 islands in which the total populations are about 250 million people. Indonesia has the largest number of historically active volcanoes that is 129 active volcanoes from about 500 of total mountains. Therefore Indonesia has suffered the highest numbers of eruptions producing fatalities, damage to arable land, debris flows, tsunamis, and pyroclastic flows.

Java Island who's lived 60 % of Indonesian populations has 30 % of the volcanoes. One of the most active volcanoes in the island is Merapi volcano in Yogyakarta. In this volcano, at least 23 of the 61 reported eruptions since the mid-1500s have produced source deposits for lahars. The combined lahar deposits cover about 286 km² on the flanks and the surrounding piedmonts of the volcano. Approximately 1.1 million people are still living on its flanks which is about 200.000 people live at risk in areas prone mainly to pyroclastic flows and heavy tephra fallout (respectively the forbidden zone, and the first danger zone), and 120.000 more live along the 13 rivers draining lowlands prone to lahars.

For mitigation of the volcanic hazard, a technical cooperation between Japan and Indonesian Government was begun in 1970 with the coming of Japanese experts to Indonesia. Japanese technological transfer to the country has been made since 1982 mainly by Volcano Sabo Technical Center (VSTC), and now Sabo Technical Center (STC) takes over. Costs to mitigate problems associated with post-eruption sediment transport are very expensive. Since 1980 mitigation costs at Merapi volcano have exceeded 2.2 billion yen.

For sustainable managing and mitigating problems and hazards posed by sediment transport, a program called "Integrated Sediment Related Disaster Management (ISDM) Project for Volcanic Areas" under cooperation between The Ministry of Settlements and Regional Infrastructure (Dep. KIMPRASWIL) and the Japan International Cooperation Agency (JICA) has been performing from April 2001 to 2006. The strategies for managing and mitigating problems and hazards include: (1) dredging sediment accumulated on channel beds; (2) constructing sabo-dams to inhibit sediment migration; (3) modifying channels to facilitate sediment transport; and (4) developing warning systems to alert the downstream populace of impending debris flows.

In establishing a national guideline for the integrated sediment related disaster mitigation, four model areas has been selected; those are Mt. Merapi area, Mt. Agung area, West Sumatra area, and Central Sulawesi Area. These four models were selected based on their different physical characteristics of sediment types, which are expected to represent all types of sediment material causing disasters in Indonesia.