



DISASTER CASE REPORT

Agency for
International
Development

Washington D.C.
20523

INDONESIA - Volcanic Eruption

Data

Date: April 5, 1982 (FY 82)

Location: Mt. Galunggung, Tasikmalaya District, West Java Province.
Districts affected: Tasikmalaya, Garut, Ciamis, and Bandung; subdistricts most seriously affected: Indihiang, Singaparna, Leuwisari, Salawu, Wanaraja, Cisayong, Cigalongtang, and Tawang

No. Dead: 30

No. Injured: Not reported

No. Affected: Approximately 300,000

Damage: Hundreds of homes destroyed; extensive damage to other dwellings, public buildings (mosques, schools), roads, bridges, communications, agriculture (rice fields, plantations, irrigation systems, fish ponds, livestock); material loss from volcanic eruptions and mudflows estimated at \$160 million as of March 1983.

The Disaster

A series of violently explosive eruptions in Mt. Galunggung, Tasikmalaya District, West Java, began on April 5, 1982, the first activity in the 2,168 meter volcano since 1920. The eruption was preceded by earth tremors on April 4 and explosions in adjacent mountains in the Galunggung range. Although not among the most active of the 128 Indonesian volcanoes being monitored by the Volcanological Survey of Indonesia, Mt. Galunggung's potential for disaster was recognized (4,000 people were killed in an 1822 eruption), and hazard maps had been drawn up and recently revised. After the initial eruption, involving the vertical emission of ash and lava flows, the populations of the areas identified as most vulnerable were hastily evacuated, thus keeping the death toll relatively low. During subsequent eruptions on April 8 and 25 and on May 6, glowing avalanches (dense clouds of red hot ash and lava boulders suspended in escaping gases and capable of traveling at speeds of several hundred kilometers per hour) swept down the open southeast flank of the

mountain to distances of five kilometers, devastating much of the recently evacuated zone. Lahars (volcanic mudflows), created by periods of heavy rain during and between eruptions, added to the thick deposit of volcanic debris on the valley floor and to the destruction of houses, fish ponds, rice fields, and roads. The Cikunir and Cibangaran rivers were polluted with lava and sulfur during the early eruptions.

Volcanic activity continued intermittently over a period of several months. A total of 410 eruptions, 50 of them considered major, were recorded between the first eruption and the last reported tremors in early February 1983. Some eruptions were accompanied by earthquakes or lava flows, others by spectacular fireballs and thick smoke clouds rising high above the crater (7,000-8,000 meters on occasion). The heavy down-pour of ash and sand following the explosive eruptions blanketed an area within 15-20 km of the crater. Depending on prevailing winds, various subdistricts in Tasikmalaya, Garut, Ciamis, and Bandung districts were affected by ash fallout. Tasikmalaya City, 17 km southeast of Mt. Galunggung, experienced several days of darkness at noon, and its streets were covered with five centimeters of dust after the May 18 eruptions. On some occasions, ash even reached Jakarta, 300 km northwest of the volcano. Besides causing serious respiratory problems in humans, the thick concentration of ash disrupted road and air traffic and added to the damage to homes and farmlands.

As the monsoon season approached (October-February), concern grew that the accumulation of volcanic debris (estimated in October at 200 million cubic meters and varying in depth from 30 meters near the crater to three centimeters 15 km from the crater) would result in disastrous mudflows and flooding in rivers. Hydrologists estimated that at least three million cubic meters of lahar/mud would be carried to low-lying areas, possibly affecting as many as 300,000 people in 210 villages and parts of Tasikmalaya City. Various measures taken by the government prior to the rainy season are credited with preventing large-scale destruction; however, considerable damage and new evacuations of threatened populations were reported during periods of heaviest rainfall. (See Action Taken by the Government of Indonesia.) Lahar flooding on November 26 resulted in two deaths and widespread damage in Tasikmalaya and Garut Districts. On December 13, volcanic mudflows in the Ciloseh River reached Tasikmalaya City, inundating the main streets up to two and a half meters and causing heavy damage. Landslides in Sukarsari Village, Sulawu Subdistrict, five kilometers west-northwest of Tasikmalaya City, followed two days of heavy rains on January 19-20 and deposited mud up to 508 mm deep on 12 hectares of rice fields and 24 fish ponds. By March 1983 the daily average rainfall had dropped below the level to trigger mudflows (100-400 mm), but the threat of lahar flooding will be renewed each rainy season for the next four to five years.

An estimated 300,000 people were affected by the volcanic eruptions and mudflows. The number of evacuees peaked at about 82,000 after the first two eruptions and fluctuated over the period of volcanic activity. With the homes and farmlands of more than 8,000 displaced people totally destroyed, and those of several thousand others in vulnerable locations, the government undertook a relocation program that eventually moved more

INDONESIA - Volcanic Eruption

than 22,000 people to safer areas. While awaiting resettlement, the evacuees were housed initially in public buildings, then in specially constructed barracks. At least 30 deaths were attributed to the volcanic activity, the majority from respiratory and digestive ailments. As of March 1983, material damage was estimated at \$160 million.

Action Taken by the Government of Indonesia (GOI), Local Governments, Local Voluntary Agencies, and Private Companies

Within hours of the first eruption, the GOI began distributing food and relief supplies to the evacuees whose numbers had grown to about 82,000 by April 15. President and Mrs. Suharto visited the stricken area on April 12. After the second, more violent eruption, Dr. Harun A. Alrasjed, Director General for Social Assistance (DEPSOS), convened a meeting on April 14 of international and voluntary agencies and representatives of several embassies and GOI ministries. At that time he declared that a disaster situation existed and appealed for international assistance. The Disaster Emergency Board (BAKORNAS) had responsibility for disaster management at the national level.

The local government of Tasikmalaya operated relief stations at the beginning of the emergency, assisted by officials of the GOI Departments of Health, Home Affairs, and Social Affairs, the Regional Planning Board, and the Armed Forces. A program to relocate the displaced persons whose villages were no longer habitable was initiated by the GOI, and the first 50 families to be resettled left for South Sumatra on April 26. The GOI built 330 temporary barracks throughout Tasikmalaya District to accommodate as many evacuee families as possible until such time as they could return home or be relocated; however, many of the displaced persons found refuge with families or built their own simple shelters. Communal kitchens, sanitary facilities, and handpumps were constructed near the barracks. Total cost of the shelters was expected to be \$400,616 (\$308,167 to be made available from the President's Aid Fund and \$92,449 from the West Java Administrative Fund). The evacuees received basic health care, clothing, mats, and kerosene stoves. DEPSOS supplied each person with 400 grams of rice daily (reduced to 300 grams after 40 days) and a small allowance for supplemental food. A chronic water shortage proved to be the major problem in the barracks.

The number of people living in the temporary shelters fluctuated between 30,000 and 40,000 over several months. New evacuations became necessary even as some families were being relocated. By the end of January 1983, 5,165 families (22,832 persons) had been resettled in new areas (South Sumatra, Bengkulu, and Riau provinces). Each family received land, a house, and free food for a year. Another 9,000 people remained in the barracks, engaged in labor intensive operations of the Department of Manpower/Improvement of Roads, Dikes, and Irrigation Systems and in food for work projects.

The GOI appealed to the United Nations, the United States, and others in the international community for technical assistance in monitoring the volcano and analyzing hazards. A special workshop on volcanic risk management was convened in September at the request of the GOI president.

The Provincial Coordination Board for Dealing with Disasters (SATKORLAK) announced in April 1982 that \$1,076,923 would be made available for the construction of dikes in the disaster area in an attempt to divert lava flows. As the monsoon season approached, efforts were stepped up to protect low-lying areas from lahar flooding. BAKORNAS identified threatened areas and evaluated evacuation routes. A checkdam intended to hold back five million cubic meters of debris was constructed 10 km from the crater and another was built as a back-up. Four dams were built across the Ciloseh River, which divides Tasikmalaya City. In the expectation that the Ciloseh River would carry an estimated 1.5 million cubic meters of lahar downstream to the Citanduy River, the local population and civil defense units were organized to clear and dredge the river. Military relief teams conducted training in evacuation procedures.

With food shortages anticipated during and after the monsoons in the Mt. Galunggung area, the GOI transported rice from central stocks to the affected districts and requested food assistance from the World Food Program (WFP). The DEPSOS Director General and the West Java Vice Governor met in January 1983 with members of BAKORNAS and SATKORLAK to coordinate the use of 17,500 MT of wheat allocated by the WFP for food for work projects. The GOI Department of Agriculture planned to provide seeds, fertilizers, and farm tools for recultivation. DEPSOS gave 1,000 MT of rice, and President Suharto pledged \$36,231 to the WFP program.

The Indonesia Red Cross (PMI), involved in disaster relief activities from the beginning of the emergency, had provided \$15,384 in rice, skimmed milk, noodles, stoves, clothing and cash as of August 14. Charged with responsibility for sanitation, medical, and food aid in the shelters and for managing area clinics, the PMI appealed on June 3 to the League of Red Cross Societies (LORCS) for assistance. The PMI conducted the GOI's mass feeding program and administered the evacuation centers from the first of August until the program was closed out at the end of December. The National Society also erected 40 tents on high ground to house displaced persons during the rainy season. Red Cross volunteers served on a 15-day rotational basis, with a number of evacuees integrated into the program.

Disaster relief assistance was also reported from the following local voluntary agencies, government entities, and private associations and companies:

- Bank Bumi Daya (Women's Association of) - contributed \$7,692 in cash.
- Dharma Wanita Association from the Department of Foreign Affairs - gave \$2,000 in cash. Department of Foreign Affairs - donated \$22,761 in cash.
- Dharma Wanita Association from the Department of Information - provided 120 sleeping mats, 720 plastic containers, 1,440 sets of kitchen utensils, and \$3,852 in cash.

INDONESIA - Volcanic Eruption

- Dharma Wanita Association from the Department of Trade - provided 10 tons of rice and 1.5 tons of sugar.
- GOI House of Representatives - donated \$3,076 in cash.
- Harapan Kita Foundation - contributed \$15,384 in cash.
- The Indonesia Commerce Association - provided 5,600 pieces of clothing, 200 blankets, 16 containers of noodles, medicines, vitamins, and a cash donation (\$1,692), all valued at \$10,923.
- Indonesia Council of Churches - gave \$10,000 in cash.
- The Indonesia Lawyers' Association - gave \$2,007 in cash through DEPSOS.
- Kompas newspaper - with donations from readers totaling \$187,615, purchased water trucks for the Tasikmalaya District government.
- P.T. Dwi Satria Utama - donated \$15,174 in cash through the Red Cross.
- P.T. ICI Paints Indonesia - provided \$19,933 in cash through the Red Cross.
- P.T. Nurtanio (a domestic airline company) - donated five tons of rice.
- Sinar Haripan newspaper - with donations from readers totaling \$195,384, constructed 12 units of emergency shelters in Sukasukur Village (Cisayong Subdistrict) and another 12 in Cigadok Village (Leuwisari Subdistrict).
- Yayasan Dana Social, Bandung - gave 60 tons of rice.

As of July 1, 1982, \$664,615 had been received in additional donations from companies, factories, schools, women's organizations, members of Parliament, private individuals, and organizations.

Assistance Provided by the United States Government (USG)

In view of the GOI declaration of disaster, the number of displaced people, and the long-term effort required for their relocation, the U.S. Chief of Mission, John C. Monjo, determined on April 14 that the eruption of Mt. Galunggung constituted a disaster situation warranting USG assistance. Accordingly, he declared his intention to grant up to \$25,000 from his disaster assistance authority to care for the displaced people.

INDONESIA - Volcanic Eruption

The Mission requested that CARE personnel operating in the area conduct an assessment to determine emergency requirements. After consulting with local authorities, CARE presented a plan to build nine units of shelter (each 15 X 16 m with 10 compartments), two MCKs (public sanitary facilities) each with one tubewell and one handpump, three community kitchens, and three additional tubewells and handpumps, all in Argasari Village, Leuwisari Subdistrict. USG funding for the CARE-implemented program amounted to \$24,514.

A shipment of equipment (an electronic distance measuring device and radio telemetry seismographs), already approved under an AID/GOI Science and Technology project for Merapi Observatory, was expedited for Galunggung. The assignment of a U.S. Geological Survey volcanologist, John Dvorak, at the Indonesian Volcanological Institute was extended two months to allow time for additional technical assistance.

Two USGS volcanologists, John P. Lockwood and Dr. Kayanagi, from the Hawaiian Volcano Observatory, visited Indonesia in late July and conferred with Indonesian officials on the need for continued seismic monitoring and the danger of future lahar flooding.

On August 3, Tasikmalaya District officials requested U.S. Mission assistance in locating and obtaining the digging, dredging, and dike building equipment needed to help avert disaster during the monsoons. Since most items required were not in the USG-maintained Singapore stockpile, A.I.D.'s Office of U.S. Foreign Disaster Assistance (OFDA) approved the purchase in Singapore and airlift to Jakarta of the following tools/materials: 416 D-handle shovels; 51 crowbars; 150 sledgehammers (10 lb. weight); 50 sledgehammers (6 lb. weight); 175 handles for sledgehammers (24 in. length); 75 handles for sledgehammers (14 in. length); 50 chisels (14 in. length); five gas-driven chain saws; three hand-operated winches; 100 small axes (14 in. length); 60,000 recycled polypropylene bags; 40,000 new polypropylene bags; and 440 rolls of string.

In addition, the following items, with a total estimated value of \$5,600, were taken from the Singapore stockpile for the Indonesia volcanic eruption disaster, but were not charged to that account: 20 felling saws and 40 handles; 250 D-handle shovels; and 99 wrecking bars. The equipment, the first 15 tons of which were transported free of charge, arrived in Indonesia on September 2 and 3, by Singapore Airlines.

With the need for strengthening embankments, dikes, and bridges in the Ciloseh River growing critical in late October, GOI officials again submitted a request to the U.S. Mission for assistance in procuring sandbags. In response to the request, OFDA approved the purchase in Singapore of an additional 100,000 polypropylene bags and 440 rolls of string. Singapore Airlines airlifted the 13,104 kg of bags and string to Jakarta free of charge on November 9.

INDONESIA - Volcanic Eruption

Summary of USG Assistance

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| Ambassador's authority donated to CARE..... | \$24,514 |
| Tools and plastic bags purchased in Singapore (including air freight over the amount provided free of charge by Singapore Airlines)..... | \$44,447 |
| Additional plastic bags purchased in Singapore (airlifted free of charge by Singapore Airlines)..... | \$36,190* |
| Total International Disaster Assistance (IDA) funds..... | \$105,151 |
| USAID Science and Technology equipment and extension of volcanologist's assignment..... | \$239,000 |
| Total USG Assistance..... | \$344,151 |

* Expended from FY 83 accounts.

Assistance Provided by U.S. Voluntary Agencies and Other U.S. Organizations *

American Chamber of Commerce and American Women's Association (in Indonesia) - gave \$6,637 in cash.

American Embassy, Jakarta (local and U.S. employees) - provided 30 bags of rice, ten cartons of noodles, and three cartons of clothing, all valued at \$588.

CARE - constructed nine temporary shelters, two sanitation units, and two emergency kitchen units in Argarsari Village with a grant from the U.S. Ambassador's disaster assistance authority. (See USG Assistance.)

Catholic Relief Services (CRS) - provided 20 MT of powdered milk, valued at \$8,380, and 5,000 sandbags, value not reported.

Church World Service (CWS) - gave 900 blankets, valued at \$2,743.

World Vision International - donated \$14,385 in cash for the construction of three barracks and sanitation units, and for the purchase of mats, pillows, blankets, and cooking utensils.

TOTAL \$32,733

Assistance Provided by the International Community *

International Organizations

Food and Agriculture Organization (FAO) - conducted land rehabilitation studies in the disaster area.

International Labor Organization (ILO) - assisted the GOI in developing public works and emergency employment projects to be carried out in conjunction with a food for work program.

League of Red Cross Societies (LORCS) - issued an appeal to member societies on behalf of the Indonesia Red Cross and sent three delegates to help draw up a plan of action and budget and to assist with evacuations; released \$306,122 from the Disaster Relief Emergency Fund. (Since at least part of this amount may have been reimbursed from the contributions to LORCS listed below, it is not included in the international total.)

Office of the United Nations Disaster Relief Coordinator (UNDRO) - at the request of the GOI, issued an international appeal on April 27 for relief assistance for the victims of Mt. Galunggung's eruptions. UNDRO sent a relief coordination officer/volcanologist in May 1982 and another coordination officer in August to assist with pre-disaster planning; donated \$30,000 from its disaster assistance account for the construction of barracks; and provided fuel lamps and megaphones for warning and evacuation operations, value not reported.

United Nations Development Program (UNDP) - provided \$30,000 for the construction of 14 barracks.

UNESCO - assisted in a scientific evaluation of the volcanic eruptions and, with UNDRO, planned and partly financed a mission of volcanological experts who visited Mt. Galunggung between August 7 and September 5.

UNICEF - contributed 200 tents valued at \$253,000 through LORCS; with the World Health Organization (WHO), provided technical assistance in water supply, sanitation, and the design of temporary shelters.

World Council of Churches/Commission on Inter-Church Aid, Refugees, and World Service (WCC/CICARWS) - gave \$10,000 in cash in response to a request from the Indonesia Council of Churches.

World Food Program (WFP) - donated 17,550 tons of wheat, valued at \$3,738,200, for a food for work program.

INDONESIA - Volcanic Eruption

World Health Organization - gave \$10,000 in cash for technical assistance in water supply and sanitation; maintained contact with the Indonesia Red Cross which managed area clinics treating up to 1,000 patients a day (mostly respiratory ailments).

Governments

Australia - through UNDRO, gave \$106,700 in cash for the construction of barracks, schools and educational supplies.

Canada - donated \$42,857 in cash through UNDRO for the purchase of volcanological equipment and the fielding of two experts; and gave \$42,857 in cash through LORCS.

France - gave \$14,492 in cash through UNDRO.

Germany, Federal Republic of - gave \$37,530 in cash through LORCS.

Italy - donated \$16,151 in cash through UNDRO.

Japan - contributed \$20,000 for water pumps and the construction of barracks and \$250,000 in cash through LORCS; provided a radar rain gauge and lahar movement sensing unit and the services of three experts to operate and maintain the equipment, all valued at \$300,000. The University of Hokaido donated seismographic equipment to the Volcanological Survey of Indonesia.

Luxembourg - gave \$12,955 in cash through UNDRO and assisted with the provision of fuel lamps and megaphones.

Malaysia - donated \$107,759 in cash through UNDRO.

Netherlands - provided \$118,615 for the construction of barracks and made cash donations totaling \$109,092, part through LORCS and part for the purchase of emergency communications equipment.

New Zealand - donated \$26,960 in cash through LORCS.

Norway - provided \$49,976 in cash through LORCS.

Philippines - contributed \$5,000 in cash through UNDRO and assisted with the provision of lamps and megaphones.

Sweden - contributed \$137,799 in cash through LORCS.

United Kingdom - provided 250 water pumps, value not reported, and three spirometers, valued at \$5,645.

Voluntary Agencies and Private Organizations

Australia Red Cross - through LORCS, provided \$4,273 in cash and the services of a liaison officer and a delegate valued at \$9,267.

Belgium Red Cross - contributed \$1,999 in cash through LORCS.

Brazil Red Cross - gave \$1,020 in cash through LORCS.

Canada Red Cross - donated \$8,348 in cash through LORCS.

Denmark Red Cross - gave \$6,264 in cash through LORCS.

Finland Red Cross - donated \$59,740 in cash through LORCS.

Greece Red Cross - donated \$946 in cash through LORCS.

Indonesian citizens in West Germany - gave \$2,333 in cash.

Italy Red Cross - gave \$7,393 in cash through LORCS.

Japan Red Cross - provided \$41,818 in cash, 2,896 kg of biscuits valued at \$19,261, and the services of a delegate, value not reported, all through LORCS.

Korea (Rep. of) Red Cross - gave \$3,000 in cash through LORCS.

Kuwait Red Crescent - donated \$946 in cash through LORCS.

Luxembourg Red Cross - donated \$1,966 in cash through LORCS.

Netherlands ESTEC - gave \$2,804 in cash through LORCS.

Netherlands Red Cross - provided \$19,106 in cash through LORCS.

New Zealand Red Cross - contributed \$3,781 in cash through LORCS.

Norway Red Cross - donated \$75,839 in cash through LORCS.

Oxfam (U.K.) - gave \$13,900 in cash through LORCS and 2,000 cooking stoves valued at \$6,311.

Plantagon A.G. (Subsidiary of Swiss company in Indonesia) - gave \$15,174 in cash.

Siemens A.G. (Subsidiary of West German company in Indonesia) - contributed \$7,587 in cash through DEPSOS.

Singapore Airlines - transported more than 28 tons (two deliveries) of USG-donated tools/materials from Singapore to Jakarta; services valued at approximately \$22,000.

INDONESIA - Volcanic Eruption

Singapore Red Cross - gave \$460 in cash through LORCS.

South Africa Red Cross - contributed \$348 in cash through LORCS.

Soviet Union Red Cross - provided medicines valued at \$50,536 through LORCS.

Sweden Red Cross - provided services of two delegates through LORCS, at a total cost of \$6,495.

Switzerland Red Cross - gave \$49,151 in cash through LORCS; operated 40 kitchens with 300 volunteer workers.

Thailand Red Cross - gave \$500 in cash through LORCS.

Turkey Red Crescent - gave \$1,000 in cash through LORCS.

U.K. Red Cross - gave \$8,652 in cash through LORCS.

TOTAL \$5,927,806

* Please note: the listings of assistance provided by U.S. Voluntary Agencies and the International Community are compiled from reports submitted voluntarily to OFDA. It is not always possible to verify the accuracy of these reports, nor the dollar value of in-kind contributions. As a result, the total dollar values indicated in these sections should be taken as representative figures.