Indonesia. Evacuation simulation of sister villages Tamanagung and Ngargomulyo, Magelang District, in collaboration with National Agency for Disaster Management.
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Indonesia
The Sister Village Program
for Disaster Preparedness

1. Context

Indonesia's Mount Merapi is one of the most active volcanoes in the world. Consequently, the densely populated communities that circle its base to benefit from its fertile agricultural land and tourism also face a high level of disaster displacement risk. In late 2010, a major eruption affected over 300 villages, completely destroying some, in three districts in the province of Central Java (Boyolali, Klaten and Magelang) and one district in DI Yogyakarta (Sleman). The following January, cold lava flows, called lahars, led to a second disaster affecting eight districts.[1]

The Regional Disaster Management Agency (BPBD) ultimately registered almost 400,000 people in IDP camps, with other estimates suggesting up to 1 million people evacuated from the danger zone.[2] Local contingency plans had been unprepared for a disaster of this scale, resulting in a chaotic evacuation and people uncertain where to go.[3] Notably, most deaths occurred in areas more than 10 kilometres from Merapi's summit, where communities were less prepared[4] and lacked information on the designated evacuation sites, which were few. People were also reluctant to leave behind their cattle,[5] which impeded safe evacuation. Some evacuees were subsequently killed when they returned

to care for their livestock before the danger had passed.[6] Many people first evacuated to nearby villages and then scattered across different districts, resulting in separated families. In the absence of systems to identify IDPs and track their movements, it took some village leaders two to three weeks to locate community members. In addition to these challenges, government aid distribution was further delayed by village data records that were out of date, inaccessible or damaged.

Learning from this experience, in 2011 the Regional Agency for Disaster Management for Magelang District and the UN Development Programme (UNDP) initiated the Sister Village Programme,[7] with the support of the Federal Government and NGOs, as a model to prepare for and manage internal disaster displacement and strengthen community-based resilience in Central Java.[8] The programme targeted 19 villages in areas exposed to deadly hot gas and volcanic matter within a 20-kilometre radius of Merapi's summit, and was implemented in accordance with the Government of Indonesia's Action Plan for Rehabilitation and Reconstruction.[9]

2. Description of the practice

Javanese villages with kinship ties traditionally cooperate and support one another, particularly in times of crisis or disaster. The sister village system enhances this practice by systematizing cooperation between villages in high risk areas with those located in safe "buffer" zones. Villages facing a risk of disaster displacement initiate their participation in the programme, with government authorities then facilitating the process of matching them with other villages that could potentially receive displaced people.

To pair two or more villages, individual village assessments were undertaken across potential villages. Local government officials worked closely with UNDP to develop demographic profiles of the disaster-prone villages and an initial assessment of the capacity of partner villages. With a small team covering three districts in two provinces, UNDP engaged local NGOs and civil society organizations (CSOs) at village level to conduct participatory resource mapping exercises in consultation with community representatives. Through field observation visits, the capacity of each household, public buildings and spaces in buffer villages were documented in detail. The capacities of volunteer groups and CSOs were also mapped, including their support for older persons and persons with disabilities, communal kitchens and the provision of health services. Finally, the teams noted pre-existing social ties and past experiences of cooperation between villages.

Informed by the resource mapping exercise, complementary villages were then matched. Standard Operating Procedures were jointly developed for the partnered villages, considering issues such as evacuation routes, gathering points, transportation vehicles, logistics management, and buffer village assets. Once procedures were in place, all relevant authorities and community members participated in evacuation simulation exercises to test their contingency plans and procedures.

A central component of the programme is the Village Information System (VIS), which allows disaster response authorities to communicate essential operational information to affected community members throughout the response and recovery phase of a disaster.[10] Developed with the support of national and local-government authorities, academia and NGOs,[11] VIS is maintained by village communities using a desktop or laptop computer, facilitated by village officials. It captures population data (disaggregated by age, disability or special assistance requirements), infrastructure information, livestock numbers, and hazard-risk information. Village-specific maps and plans are also accessible online through the system. VIS incorporates a Short Message

Service (SMS) function that allows disaster-affected people to share information or provide feedback. VIS relies on a District Information System (DIS) developed by the district government that consolidates individual VISs into a common database on a shared server. Participating villages also received internet connections, routine network maintenance, financial support for annual village budgets, and other assistance as required.

Finally, as the core of the sister village system, the district government facilitated the development of Memorandums of Understanding (MoUs) between sister villages to clarify the rights, obligations and activities of the partnered villages, tailored to each communities' capacities and priorities. For example, one buffer village might provide evacuation sites for people and livestock, while another might assist with logistical support and volunteers. In general, IDPs were assured access to land, shelter, schools, health care and updated identification cards, while a government fund was made

available for the buffer village to finance community-based development and disaster risk reduction measures. The process to develop the MoUs varied in length according to the size and historical relationships of the villages concerned. The villages celebrated the final signing of the MoUs as a social event that further strengthened relationships and awareness of the programme among community members.

3. Results for internally displaced persons and others

When UNDP's programme assistance concluded in 2014, 32 MOUs had been developed between sister villages. In Magelang, the programme was incorporated into the district's medium-term development plan. When Merapi erupted again in 2016, village DRR Platforms sent out alerts to put
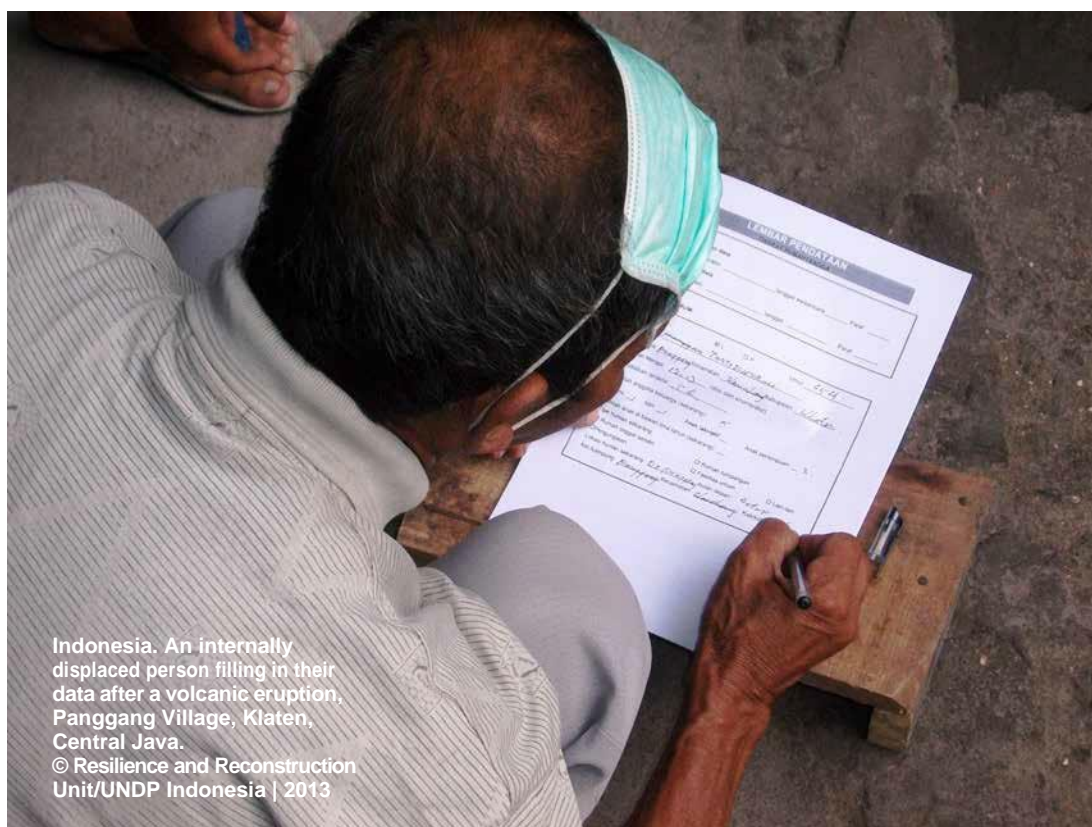
Indonesia. An internally displaced person filling in their data after a volcanic eruption, Panggang Village, Klaten, Central Java.
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villages in Magelang District on stand-by to evacuate. Although evacuation was not necessary, the district was well prepared to activate its sister village arrangements.[12] By 2018, 16 of the 19 villages in three of the highest-risk sub-districts around Mount Merapi (a population of approximately 46,616 persons) had been partnered with one or several villages in the regency.[13] As of 2020, the system covered some 20 districts in the wider Mount Merapi area. Outside Central Java, the approach has been successfully implemented in other areas of Java (East Java and Yogyakarta) and Bali as part of the disaster response to Mount Agung's eruption in 2017.[14]

In terms of durable solutions, almost one third of the people displaced by the 2010 Merapi disaster, particularly those with livestock but who did not own land in their area of origin, have stated that they want to settle in their current location. They feel they have better livelihood opportunities and have already been accepted in the village.[15] The existence of formal MoUs in the villages where these IDPs currently live may facilitate the administrative process of changing the officially registered place of residence of IDPs who choose not to return to their original home areas.[16]

The VIS has been used to inform sister village evacuation plans based on accurate numbers and information about potential evacuees, helping to keep family and hamlet members together during their displacement, enabling the tracking of evacuated family member locations and supporting coordination across, as well as within, districts. Addressing previous data gaps, the system now informs district-level budgeting and assistance delivery, both during emergencies and for longer-term resilience and development, such as for low-income family subsidies for childhood education. Further improvements to the VIS include the introduction of geographic information systems (GIS) that enable displaced people to share information and photographs from their locations.

4. IDP participation

The sister village programme primarily relied on participatory local governance structures and community volunteers at village, sub-village and hamlet levels to engage village residents.[17] During the initial stages of the project, programme staff held periodic informal meetings to engage community members.[18] The discussions included disaster preparedness and response plans related to Merapi eruptions, including information about early warning and evacuation procedures, as well as how the sister village programme intended to address challenges such as those that arose during the 2010 eruption. Once support for the programme had been fostered, community representatives were then invited to contribute to a participatory resource mapping exercise to develop demographic profiles of disaster-prone villages and an initial assessment of the capacity of partner villages. Through facilitated discussions, community members identified their needs, capacities and gaps with respect to facilitating safe and timely evacuations and receiving IDPs in the sister villages. Community members were also invited to participate in subsequent village-level planning, development and budget setting with village leaders, including the annual Village General Assembly.

Participants included representatives from each hamlet, religious and community leaders, as well as voluntary groups representing farmers, fishermen, artisans, women, children, youth, older persons, and persons with disabilities. When needed, UNDP helped bridge interaction between the community and government outside formal meetings, particularly on issues related to policy, advocacy, dialog and awareness raising. Building relations with elderly, women and less literate persons in rural areas was especially important since they had less confidence to convey their opinions or concerns in formal forums.

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> *"The sister village is a very good idea, so we are preparing for this idea to be used in other regions nationally"*

BNPB spokesperson, Sutopo Purwo Nugroho, 26 November 2018.[1]

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1   Syarief Oebaidillah, "Disaster Mitigation, BPDM Magelang Pioneering Sister Village", 26 November 2018. Media Indonesia.

Local, multi-stakeholder Disaster Risk Reduction (DRR) Platforms likewise played an important role in mobilising community volunteers' participation in the programme. Created as part of Indonesia's national DRR strategy and established in some 33 provinces and almost 400 districts, the Platforms bring together civil society organizations, private sector actors and government at provincial, district/municipality and village levels. At the village level, they have a broad membership including community leaders, representatives of community groups and local NGOs.[19]

5. Challenges

Not all vulnerable villages had traditional social and kinship ties to villages in safe areas. In such situations, it took more time to build relationships and finalize MoUs between villages. For instance, in one case, a vulnerable rural village was partnered with an urban buffer village with which it had no prior connections. Before the communities were introduced to each other, the district government agreed to hold initial discussions with buffer villages suggested by the vulnerable community. Given the absence of social ties, considerations focused on evacuation routes, safe locations and the availability of public buildings rather than the availability of private homes to shelter IDPs. In such situations, district government support to build or improve facilities, such as a community halls, schools, cattle markets, or public kitchens, played an important role in motivating cooperation.

The conflictive relationship between village residents and poor migrant families engaged in river sand mining also raised challenges in some villages. Sand mining families commonly live precariously on riversides, which explains why many of the deaths from the 2011 cold lava flows occurred in their communities. However, because these families do not have a formal village-resident status, they are frequently excluded from village institutions and community activities, including evacuation preparedness activities. In 2013-2014, the sister village programme sought to ensure that sand mining families' data was integrated in the VIS to help ensure their future inclusion.

6. Lessons learned

Understanding and adapting to the specific characteristics and culture of each vulnerable and receiving community was critical to the programme's success. The programme places considerable resource demands on the hosting village and relies heavily on community volunteers to provide assistance. Thus, pre-existing social or kinship ties facilitated support for the arrival and integration of IDPs and their livestock. Success also depended on the availability of land, the ability to facilitate IDPs' access to services and documentation, as well as benefits for the buffer village. However, while the sister village system proved well-suited to kinship relationships in Javanese culture, this was less the case for communities around Mount Sinabung in North Sumatra. Inter-village relationships in North Sumatra

are weaker, with hierarchical kinship relationships between villages that inhibit voluntary cooperation. Thus, the sister village programme's success required conducting a careful pre-assessment to evaluate the feasibility of the approach in each context.

A key component of the village pairing process was the programme's participatory approach that built on traditional practices in an effort to enhance, rather than replace, the central role of local, community-based institutions and social support networks in Magelang District. As the UNDP programme manager put it, *"Traditional relationships are a form of trust, a kind of social capital. And without trust the Sister Village System won't work".* While local authorities were central to the process, the participation and support of the district government was also key to the programme's success. District government authorities provided critical support including, financial resources, information infrastructure for VIS, and incentives to motivate buffer villages to cooperate in the programme.

Finally, while social relationships may drive cooperation between communities, they can also reinforce the marginalisation and vulnerability of groups or households, in this case, landless migrant families. Special attention is required to ensure programmes include all people that require protection and assistance, regardless of their social, economic and migration status.

7. Why this is a good example to share

The Sister Village Programme in Indonesia shows how community-led disaster preparedness, early warning and response initiatives can be facilitated and supported by government authorities. In particular, it highlights how to utilise and enhance traditional practices to improve protection and assistance for IDPs while also ensuring the needs of receiving communities are addressed, building on similar backgrounds, livelihood opportunities and available community resources. The approach not only improves disaster preparedness in the event of an evacuation, but also helps minimize losses by facilitating IDPs' access to livelihoods, land, shelter and services during displacement.

GP20 | Country Examples

Indonesia. Planning Sister Village evacuation in the event of a disaster.
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Endnotes

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2   D Grancher and others, 'Crisis Management During the 2010 Eruption of Merapi Volcano' [2011] Proceedings of the Regional Geographic Conference - International Geographical Union, Santiago, Chile 14.

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4   Grancher and others (n 2) 8.

5   'Submission of the Government of Indonesia to the High-Level Panel on Internal Displacement' (Permanent Mission of the Republic of Indonesia 2020) 6.

6   Grancher and others (n 2).

7   In the local Javanese language, the term subsequently adopted for this approach is *paseduluran desa- or "friendship village."*

8   'Submission of the Government of Indonesia to the High-Level Panel on Internal Displacement' (n 5) 5.

9   Elizabeth Ferris, 'Institutionalizing Post-Disaster Recovery: Learning from Mentawai Tsunami and Merapi Eruption, Recovery Framework Case Study' (GFDRR, UNDP, BNPB 2014) <https://gfdrr.org/sites/gfdrr/files/Indonesia%20Post-Disaster%20Recovery%20Institutionalization.pdf> accessed 24 June 2020; BNPB, 'Action Plan for the Rehabilitation and Reconstruction of the Mount Merapi Eruption Region in Yogyakarta and Central Java Provinces in 2011-2013 (in Indonesian)' (2011) 2011–2013 <https://bnpb.go.id/buku/rencana-aksi-rehabilitasi-dan-rekonstruksi-wilayah-pascabencana-erupsi-gunung-merapi-di-prov-diy-dan-prov-jateng-tahun-2011-2013> accessed 24 June 2020.

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15   GP20, 'Summary: 6th Steering Group Meeting International Displacement in the Context of Disasters and the Adverse Effects of Climate Change: Prevention, Protection and Solutions' (GP20 2020) <https://www.globalprotectioncluster.org/wp-content/uploads/GP20-Steering-Group-disaster-climate-change-displacement-summary-final.pdf>.

16   Interview with Ministry of National Development Planning official.

17   Village heads are elected government officials, normally from the local area. Leaders are also elected at sub-village level and receive payment in-kind in the form of access to cultivable land, while informal hamlet leaders are volunteers who receive per diems for their participation.

18   'Submission of the Government of Indonesia to the High-Level Panel on Internal Displacement' (Permanent Mission of the Republic of Indonesia 2020) 8.

19   Bina Swadaya Konsultan, 'Ngargomulyo Disaster Risk Reduction Forum: Building Resilience to Disasters' (*CBDRM*, 2019) <https://cbdrm.org/case-studies/ngargomulyo-disaster-risk-reduction-forum-building-resilience-disasters/> accessed 5 November 2020.