



## **Traditional Societies' Response to Volcanic Hazards in the Philippines**

Authors: Gaillard, Jean-Christophe, and Le Masson, Virginie

Source: Mountain Research and Development, 27(4) : 313-317

Published By: International Mountain Society

URL: <https://doi.org/10.1659/mrd.0949>

---

BioOne Complete ([complete.BioOne.org](https://complete.BioOne.org)) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at [www.bioone.org/terms-of-use](https://www.bioone.org/terms-of-use).

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

---

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

# Traditional Societies' Response to Volcanic Hazards in the Philippines

## Implications for Community-based Disaster Recovery

Jean-Christophe Gaillard  
Virginie Le Masson

313

*Mt Pinatubo is located on the main island of Luzon in the Philippines. Its 1991 eruption is considered one of the most powerful volcanic explosions of the 20th century. The first victims of the eruption were the Aeta indigenous communities living on the slopes of the mountain. In 1999, approximately 50,000 people were still trying to resume life on the slopes of Mt Pinatubo. Their traditional way of life has been deeply affected by the disaster, which brought changes in the indigenous cultural fabric. The present article addresses the Aetas' response to the 1991 Mt Pinatubo eruption*

*and subsequent cultural changes, using the concept of resilience. It particularly focuses on the communities located within the 200-km<sup>2</sup> Pasig and Sacobia river basins on the eastern flank of the volcano, in the immediate vicinity of the former Clark American military base. The discussion relies on extensive fieldwork conducted between July 1999 and June 2000 and complemented by additional field explorations between June and September 2001. It recommends fostering community-based disaster recovery as a way to enhance community resilience.*



### The Aetas' response to the 1991 Mt Pinatubo eruption

In April 1991, initial signs of restlessness coming from Mt Pinatubo led to the evacuation of almost all of the Aeta communities living there. On 12 and 15 June, the volcano spewed some 5 to 7 km<sup>3</sup> of pyroclastic materials (Figure 1). As of 15 June 1991, destructive lahars (volcanic debris flows), triggered by typhoon-associated downpours, tropical monsoon rains and lake breakouts, flowed down the flanks and foothills of the volcano. An unknown number of Aetas who refused to leave their native area and found shelter in caves perished, buried by pyroclastic flows.

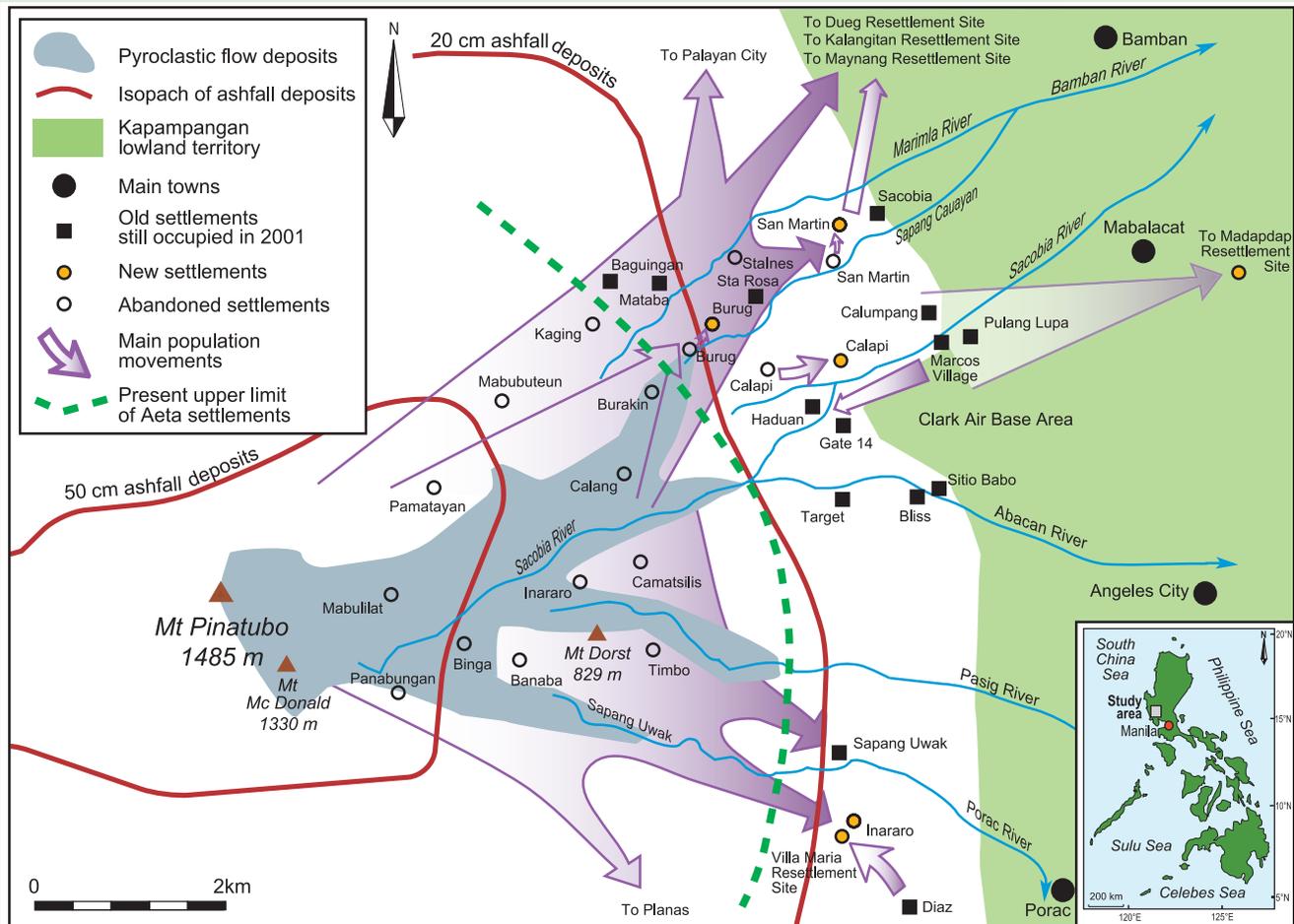
At first, those who chose to evacuate were relocated in some major surrounding towns. Eventually, with the paroxysm

of the eruption on 15 June that affected even the town inhabitants, the authorities once again had to transfer many Aeta families to evacuation centers much farther from their villages. Inside overcrowded school buildings, gymnasiums, churches, and tent camps, nutrition problems and diseases (pneumonia, measles) spread quickly, taking a heavy death toll among Aeta children. Faced with the impossibility of sending the Aetas back to their former villages, which had been buried under meters of volcanic deposits, the Philippine government eventually had to plan a permanent resettlement program. By June 1991, the authorities had created eleven upland resettlement centers intended primarily for the Aetas. In these centers, each family was allocated a lot measuring 150 m<sup>2</sup> and traditional



**FIGURE 1** View to the northeast across pyroclastic-flow deposits and a fumarole in the Marella River valley toward Mt Pinatubo. The vegetation in the foreground has been stripped and charred by ash-cloud surges of pyroclastic flows. (Photo courtesy of USGS/Cascades Volcano Observatory; photograph taken on 1 July 1991 by Willie Scott)

FIGURE 2 Spatial redistribution of Aeta villages in the Pasig and Sacobia river basins following the 1991 eruption of Mt Pinatubo. (Map by authors)



housing materials (bamboo, palm leaves). In 1995, more solid building materials ('GI sheets,' lumber) were provided. Resettlement centers were also implemented by NGOs. Other attempts at resettlement in more remote places such as the island of Palawan failed because of unsuitable conditions that pushed the Aetas back to Mt Pinatubo. In the long run, both the unsuitability of the upper flanks of the mountain and the resettlement policy implemented by the Philippine government led to a general redistribution of the Aeta population in the Pasig and Sacobia river basins.

Figure 2 shows that the present upper limit of Aeta settlements matches the lower limit of the 1991 pyroclastic deposits and the 20-cm isopach of ash fall. All the Aeta communities located on the upper flanks of Mt Pinatubo prior to the eruption had to abandon their small villages, which had been buried under these thick and hot

pyroclastic and ashfall deposits, preventing immediate reoccupation of the settlements. As shown on the map, most of these Aetas have been relocated at government resettlement sites, either on the lower slopes of the volcano or on the foothills. However, the lack of land suitable for cultivation and the inadequate housing at resettlement sites have led many Aeta families native to the lower slopes of Mt Pinatubo to return to their old villages and till their abandoned fields. Other Aetas native to the upper slopes of Mt Pinatubo who chose to leave the resettlement sites have tried to rebuild their villages on more suitable sites or near the relocation centers. It is worth noting that other Aetas maintain residences at resettlement sites and at the same time tend their fields near their former villages. All the Aeta settlements are nowadays concentrated on the lower flanks of Mt Pinatubo in the immediate proximity of lowland vil-

lages and towns occupied by the Kapampangan people, the dominant ethnic group in the southwestern part of the Central Plain of Luzon. No isolated Aeta communities are left on the upper flanks of Mt Pinatubo; all have established regular economic, social and political contacts with lowlanders.

Until Mt Pinatubo erupted in 1991, regular economic, social and political interactions between Aetas and Kapampangans were limited to the communities located on the lower slopes of the volcano, but now all the Aetas have learned to sell their produce daily, directly in the public markets of surrounding towns or at the former Clark Air Base, which has been converted into a vast industrial, tourist and commercial complex. The closer distance to school facilities and support from the government and NGOs have now led many young Aetas to share school benches with lowland children. The competition for land has also become intense between long-time downhill Aeta communities, former uphill Aetas, lowland Kapampangans, and the developers of the former US Clark Air Base, thus pressing the Aetas to engage in delicate political negotiations with their lowland neighbors as well as with government administrations.

### Cultural change and post-disaster resilience

Resilient societies are those able to overcome the damage wrought by the occurrence of natural hazards, either by maintaining their pre-disaster social fabric or by accepting marginal or greater change in order to survive. The increasing interactions with lowland neighbors brought about by the spatial redistribution of the population on the foothills of Mt Pinatubo (Figure 3) following its 1991 eruption led to obvious changes in Aeta society.

Changes have concerned components of the Aeta social fabric exposed to these interactions. Table 1 shows that these changes include settlement patterns, religion, language, medicinal treatments, clothing, diet, land tenure, and farming activities. On the other hand, some of the fundamentals pertaining to relationships within the society, notably a “communal” sense (eg groups of 2 to 3 Aeta households still co-exploit swiddens, share food, and journey together to the public markets for economic transactions) and kinship patterns (eg traditional weddings still involve a 3-stage procedure which includes the formal proposal, the very important negotiation of bridewealth, and



**FIGURE 3** The Cawag resettlement center, where Aetas who were victims of the 1991 Mt Pinatubo eruption found refuge. (Photo courtesy of the Mount Pinatubo Commission, mid-1990s)

TABLE 1 Changes observed in Aeta society following the 1991 eruption of Mt Pinatubo.

	1990		2000
	Uphill communities	Foothill communities	Both former communities
Settlement pattern	Small cluster	Varied	Larger cluster
Religious belief	<i>Apo Namalyari</i> (creator living in Mt Pinatubo) / <i>Anitos</i> (supernatural beings)	Both animist and Christian	Jesus Christ / Holy Spirits
Medicine	Plants / <i>manganito</i> (healing through spiritual assistance)	Plants / <i>manganito</i> / chemical drugs	Chemical drugs
Social leadership	<i>Apo</i> (traditional elder leader)	<i>Apo</i>	<i>Barangay</i> captain / tribal leader (both are administrative titles)
Territory demarcation	No discrete boundaries	No discrete boundaries / Western concept of ownership	Administrative boundaries ( <i>barangays</i> , ancestral domains) and Western concept of ownership
Language / dialect	<i>Mag-Aantsi</i>	<i>Mag-Aantsi</i> / <i>Kapampangan</i>	<i>Mag-Aantsi</i> / <i>Kapampangan</i>
Housing material	Indigenous	Indigenous	Foreign
Diet	Tubers / fruits	Tubers / fruits / canned foods and fastfood	Canned foods and fastfood
Clothing	<i>Lubay</i> (G-string) / indigenous dresses	Indigenous dresses / Western labels	Western labels
Christmas habits	None	None	Quest for <i>Aguinaldo</i> (Christmas cash gift)
Livelihoods	Subsistence farming	Market-oriented farming, military-related activities	Market-oriented farming, tourism-related activities

the marriage ceremony itself), have been less affected and have survived the eruption and its consequences.

Hence the Aeta social system did not disappear following the disaster. Rather, it has adapted to new physical, social, economic, and political environments while maintaining a stable core. This viewpoint is further reinforced by the perseverance of the Aetas in claiming their own ethnic identity, as manifested by their massive abandonment of the resettlement centers where access to land and resources is further limited. Thus, if resilient societies are those that are able to overcome the damage wrought by the occurrence of natural hazards, either through maintaining their pre-disaster social fabric, or through accepting marginal or larger change in order to survive, then the Mt Pinatubo Aetas of the Pasig and Sacobia river basins have been resilient.

However, a distinction has to be made between pre-1991 uphill and down-

hill communities. It is quite evident that the eruption of Mt Pinatubo and the subsequent redistribution of the population brought major and abrupt changes in the way of life of former uphill Aeta communities. Increased interactions with the Kapampangan people progressively led these communities to adopt lowland cultural frames of reference. They have also reoriented their economic activities toward market demand in the lowlands and no longer rely exclusively on environmental resources. Aetas from the upper flanks of Mt Pinatubo thus became resilient through openness and adaptability. The latitude of the social fabric was wide and permeable enough to accept great changes easily but did not lead to the loss of some fundamental features of Aeta society such as the “communal” sense. Indeed, the system was already in a precarious state, induced by increasing pressure from lowland groups.

On the other hand, the communities formerly situated at the foothills of the mountains and near the old Clark Air Base underwent fewer changes. Among these communities, acculturation had already been ongoing before the eruption, which acted as an accelerator of the trend through further cultural adjustments and diversification of economic activities. Therefore, Aeta communities from the lower slopes of Mt Pinatubo have been resilient through incremental and marginal change, due to a narrower gap or latitude between lowland and upland cultures.

### Community-based disaster recovery: a way to enhance resilience

The response of the Aetas to the 1991 Mt Pinatubo eruption was mainly influenced by 4 factors:

1. The nature of the hazard;
2. The intrinsic social condition of the particular group exposed to a given hazard;
3. The geographic setting; and
4. The post-disaster rehabilitation policy set up by the authorities.

These factors have turned out to be similarly important elsewhere in the world. Among them, government policy is most probably the easiest to adjust when aiming to enhance the resilience of disaster victims.

In the case of the rehabilitation of Aeta territory affected by the 1991 Mt Pinatubo eruption, the policy implemented by the Philippine government was very centralized and top-down in nature; few decisions trickled down to the victims. The lack of involvement of the victims at different stages of the rehabilitation process meant that they had limited control over their own fate, thus delaying the resilience process and compelling cultural change. Insensitivity and lack of cultural knowledge about the Aetas were evident among disaster managers. It was also reported that some government officials boasted of trying to 'civilize' the Aetas through the rehabilitation programs initiated in response to the disaster, especially

resettlement policy and social programs (education, health). However, the fact that many Aeta families are leaving the government resettlement sites and returning to the mountain clearly demonstrates that the victims tend to meet their own needs without any assistance from the government.

It is acknowledged today that one of the most effective ways to improve the capacity of people to cope with the consequences of disasters is through Community-Based Disaster Recovery (CBDR) programs (see Box below). Disaster victims are capable of much more than what is usually expected in time of disaster. They are neither passive nor traumatized for a long period but willing to return as quickly as possible to their pre-disaster way of life. CBDR programs draw on this observation and emphasize the participation of affected communities in both the evaluation of the latter's needs and in ways of sustaining them. CBDR programs empower communities that have inherent and culturally acceptable ways of coping with crises brought about by natural hazards. These programs should rely on a decentralized rehabilitation policy. In the case of the Mt Pinatubo eruption, the intrinsic will and capacity of the Aetas to cope and recover from the havoc wrought by the disaster were overlooked by the Philippine government, thus hampering resilience and preventing rapid recovery without much cultural change.

### The principles of Community-Based Disaster Recovery (adapted from the Asian Disaster Preparedness Center)

1. Draw on the support of the affected community;
2. Take stock to determine what the victims have and what or who is missing;
3. Restore communications to facilitate aid distribution;
4. Mitigate future risks (both psychological and material threats);
5. Recognize that physical recovery work can combine bereavement therapy with a possible source of income;
6. Regard the entire experience as a learning process.

### FURTHER READING

- Anderson M, Woodrow P.** 1989. *Rising from the Ashes: Development Strategies in Times of Disasters*. Boulder, CO: Westview Press.
- Gaillard J-C.** 2006. Traditional societies in the face of natural hazards: The 1991 Mt. Pinatubo eruption and the Aetas of the Philippines. *International Journal of Mass Emergencies and Disasters* 24(1):5–43.
- Gaillard J-C.** 2007. Resilience of traditional societies in facing natural hazards. *Disaster Prevention and Management* 16(4):522–544. DOI:10.1108/09653560710817011
- Maskrey A.** 1989. *Disaster Mitigation: A Community Based Approach*. Development Guidelines 3. Oxford, United Kingdom: Oxfam.
- Newhall CG, Punongbayan RS, editors.** 1996. *Fire and Mud: Eruption and Lahars of Mt Pinatubo, Philippines*. Seattle, WA and Quezon City, Philippines: University of Washington Press and Philippine Institute of Volcanology and Seismology.
- Seitz S.** 2004. *The Aeta at the Mt. Pinatubo, Philippines: A Minority Group Coping with Disaster*. Quezon City, Philippines: New Day Publishers.

### AUTHORS

**Jean-Christophe Gaillard and Virginie Le Masson**  
UMR Pacte 5194 CNRS, Institut de Géographie Alpine, 14 bis Avenue Marie Reynoard, 38100 Grenoble, France.  
jean-christophe.gaillard@ujf-grenoble.fr; virginelm@hotmail.fr  
Jean-Christophe Gaillard is a full-time member of the faculty of the Université Grenoble I and researcher at the Pacte CNRS laboratory in France. He has a wide interest in risk and disaster management in insular Southeast Asia. His current research focuses on disaster vulnerability and the ethnic and cultural dimensions of disasters.  
Virginie Le Masson is a graduate student in geography at the Université Grenoble I. Her thesis deals with the links between disasters, development and indigenous peoples in the Philippines.