



Saving Lives, Destroying Livelihoods: Emergency Evacuation and Resettlement Policies

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THE TWENTIETH CENTURY HAS BEEN REFERRED TO as the age of displaced persons and refugees. According to the United Nations High Commission on Refugees, the number of people who are forced out of their homes through life-altering events such as geophysical disasters (volcanic eruptions, floods, and earthquakes), political conflicts, ethnic warfare, or economic crises has increased annually. In 2003, one estimate placed the number of refugees at 15 million (*New York Times* June 2, 2003). While people have been forcibly removed from their homes throughout history, only recently has the study of the process and its results been carefully analyzed. In the following chapter, we argue that emergency evacuation and resettlement policies unfairly hurt the most vulnerable populations, the poor and the disenfranchised. Such policies are unhealthy because they make it more difficult for families to recover economic losses, separate them from their kin and support networks, and cause their children to suffer more illnesses than children who are not resettled. The chapter is based on our four years of research following the eruption of Mt. Tungurahua in Ecuador and the subsequent evacuation of 26,000 people living in the shadow of the volcano (Tobin and Whiteford 2002a).

In 1999, Mt. Tungurahua showed every sign of an imminent, potentially catastrophic explosion. In response to professional assessments of the increasing seismic activity, the order to evacuate was given, and in 36 hours the community of Baños and the surrounding villages were emptied. People were forced to flee with a minimum of their belongings, cattle and livestock were sold for a fraction of their worth, homes were boarded up, and chickens, goats, sheep, and other animals were turned loose to fend for themselves. Families desperately tried to stay together and find shelter for what might be a week, a month, or six months.

Military-enforced evacuations usually occur when governments attempt to move populations away from land in dispute or from potential disasters. While there is no uniformly accepted definition of disaster (Shaluf, Fakharu'l-razi, and Said 2003), a major volcanic explosion in a populated area would certainly constitute a disaster. According to Chan (1995:22), there are four common policies used to protect populations from disasters: (1) protection by preventing or modifying the disaster, (2) accommodation through changing human use to avoid the disaster, (3) redirection through population resettlement, and (4) no action. Even though the literature on natural hazards and disasters provides ample evidence to suggest that there are significant political, economic, social, and physical consequences to resettlement policies (Chan 1995; Hansen and Oliver-Smith 1982; Harrell-Bond 1986; Tobin and Whiteford 2001a, 2001b, 2002a, 2002b; Whiteford, Tobin, Laspina, and Yepes 2002a, 2002b), resettlement remains a "popular solution to hazard and disaster management" (Chan 1995:22).

Given the known and often untoward consequences of resettlement policies, the question is why such a policy continues to remain a "popular solution." Our research with some of those evacuated and resettled from around the slopes of the Tungurahua volcano will be used to illustrate the policy and its effects, as we attempt to understand why a policy known to destroy peoples' livelihoods, damage their health, and separate families continues to be employed.

Methodology

An extensive research project was undertaken in several communities around Mt. Tungurahua in Ecuador. This site was selected because of its historical record of disasters and because of the researchers' previous experience in the area (Tobin and Whiteford 2001a; Whiteford et al. 2002a). For this study, two structured questionnaires, one undertaken in June 2000 (131 respondents) and the other in January 2001 (171 respondents), were administered to collect information from evacuees who had resettled in the small community of Quimiag (Tobin and Whiteford 2002a). The survey was also given to permanent residents of Quimiag for comparison purposes. In addition to the structured questionnaires, community leaders, politicians, government officials, and members of the civil defense were consulted, and in-depth interviews with two focus groups were also undertaken to collect further information. Additional research was undertaken in 2002 and 2003 (Whiteford et al. 2002b). Table 12.I shows the number of children under five years old in both the resettled and local Quimiag samples.

Table 12.1. Population and Number of Children under Five Years of Age

	<i>Number of People</i>	<i>Mean Number per Household</i>	<i>Number of Children</i>	<i>Mean Number per Household</i>
Quimiag				
Resettlement	108	4.91	18	0.82
Quimiag Locals	137	4.15	16	0.45

Mt. Tungurahua is an active volcano located 120 km south of Quito. The volcano has had four periods of intense activity prior to the current eruptive phase: 1641–1646, 1773–1781, 1886–1888, and 1916–1918 (Hall, Robin, Beate, Mothes, and Monzier 1999). The 1773 eruption produced a large debris flow that descended the Vazcún valley, and the town of Baños narrowly escaped destruction on that occasion. During the 1916–1918 eruptive period, pyroclastic flows moved down both the northwest and north flanks of the volcano. Similarly, in 1886 and 1916, lahars moved through the Vazcún and Ulba valleys (Hall et al. 1999). The volcano then remained relatively dormant until 1993, when seismic activity gradually increased with more violent venting of gas and ash in September 1999. Since then, the volcano has continued to be active, periodically showering ash on the surrounding landscape, initiating lahars, and generating mudslides, while pyroclastic flows remain an ever-present threat.

Quimiag is a small community of approximately 1,700 residents, located in the canton of Riobamba in Chimborazo Province, about 3,000 meters above sea level. Although Quimiag is laid out on fairly level ground, the terrain rises relatively steeply toward the east. There is communal land on these higher slopes, which is used primarily for cattle grazing and growing potato crops. The population is mostly mestizo with some indigenous groups who speak a dialect of Quechua. It was in this community that at least 35 families had resettled after evacuating the agricultural settlements around the town of Baños.

As Singer (1995:81) and others have pointed out, a critical medical anthropology perspective focuses on ways in which international and global forces shape national economies and policies, which in turn shape and are shaped by regional and local history, class structure, and institutions. While evacuation and resettlement policies may appear to be similar, whether they are written for the United States, Canada, or Ecuador, in practice they become very different. Differences in socioeconomic class, access to resources, ethnic identity, and levels of support all shape the local context in which evacuation and resettlement occur. Furthermore, structural forms of power and its distribution are embedded in local as well as international history and perceptions (Farmer 1992, 2003; Kim, Millen, Irwin, and Gershman 2000). Levels of professionalism, decentralization from the central

government, and financial support, and even the organization and coordination of bodies responsible for enforcing the evacuation and resettlement policies, reflect distinctive politically defined national priorities (Oliver-Smith 1986b).

In Ecuador, disaster preparedness and management are planned primarily by the country's civil defense system, which at the national level is staffed by paid professionals, while local and regional levels are composed of volunteers who are often retired military personnel. Ecuador is a relatively small country with limited economic resources but seemingly unlimited natural hazards. A country straddling two mountain ranges with numerous active volcanoes, endless lahars, mudflows and landslides, earthquakes, and floods, Ecuador faces significant geophysical threats to its population. Even with the assistance of the U.S. Geological Survey, the European Union, and the U.S. Southern Command, the Ecuadorian government must triage its resources, delegating much to its work to unpaid volunteers.

Recently, researchers have begun to study large-scale population evacuations, particularly of urban areas, in greater detail (Zelinsky and Kosinski 1991). Statistical accounts appeared in the middle of the twentieth century with reports from World War II of the evacuation of cities in Europe and Japan (Zelinsky and Kosinski 1991). In addition to these early descriptions of forced and voluntary evacuations, population movements engendered by disasters have also been documented.¹

While some social and natural scientists have studied disasters and their social and economic consequences,² few have paid specific attention to the history, policies, or processes of evacuations. According to Zelinsky and Kosinski (1991:13), "There has been a deafening silence in the demographic community on the subject of emergency evacuations." Recent concern with disaster preparedness and disaster mitigation, however, has focused attention on these procedures and the consequences of evacuations. As Cernea (2000), Lindell and Perry (1992), Tobin and Montz (1997), Tobin and Whiteford (2001a, 2002a), and Whiteford et al. (2002a, 2002b) have demonstrated, evacuations may produce a series of untoward effects, such as social disruption, increased domestic violence, prolonged economic losses, and increased rates in communicable and stress-related illnesses.

Of the four options identified by Chan (1995:22) to protect populations from hazards, resettling populations is one of the most common even though it is often not successful. If the danger cannot be removed or its potential effect mitigated, then the common option is to move the population away from the hazard zone. However, this can often be accomplished only through the application or threat of military force. Thus, several characteristics combine to make resettlement following forced evacuation due to natural hazards worth our discussion.

Military Involvement and the Threat of Force

Evacuations frequently follow military models, with military personnel brought into a community to force people to leave. This can divide a community into dif-

ferent political camps, frighten some people, and precipitate a level of resentment. Furthermore, those with the fewest resources, the poor, and the disabled can be unfairly targeted by the military forces brought in to move them. This situation transpired in Ecuador.

In October 1999, government authorities in Ecuador, in consultation with the director of the Geophysical Institute in Quito (H. Yepes, personal communication 2000), decided that the danger of an eruption and the possible consequential loss of life necessitated an immediate evacuation of the communities surrounding Baños. Some residents who were being affected by ash or threatened by mudflows had already voluntarily evacuated (UN Office for the Coordination of Humanitarian Affairs [OCHA] 1999). The evacuation became mandatory on October 15, 1999. People residing in the hazard risk zone were given approximately 36 hours to leave the area, after which the military enforced the evacuation (CNN 1999) because the civilian civil defense force was unable to force their friends and neighbors to leave. In the 36 hours from when the evacuation was announced to when the community was closed, people left, resisted, hid, were found, and were forced out. Those least able, as well as those least willing, to leave felt the greatest effect of the military force. An estimated 26,000 people were moved to over 60 locations, including private homes, hostels, and government shelters in the provinces of Tungurahua and Chimborazo, where some remained for more than a year. According to the Ecuadorian Red Cross, the Civil Defense set up 125 sites as temporary shelters, and the official count of evacuees in shelters rose to 2,443 early in November (Cruz Roja Ecuatoriana 1999a, 1999b).

Class and Evacuation Strategy

The presence of a potential disaster does not necessarily imply that either the political authorities or local populations will take the threat seriously, particularly in terms of planning to leave their homes and belongings. Therefore, when an evacuation is enforced, people are often in a state of shock, frightened, disbelieving, and ultimately unprepared to leave. During the 1999 evacuation, people first sought to find their family members so that they could evacuate together, then they tried to find family or friends living outside of the evacuated areas to whom they could go for shelter. They piled into cars, stuffed their belongings onto trucks, locked up their houses, and moved in with family members in Ambato, Riobamba, or even as far away as Quito—that is, if they had cars, trucks, and families who would let them live with them. Many of the middle- and upper-class Bañenos left in the first 24 hours of the evacuation because they could locate their family members by telephone, they could contact friends and families in other cities to ask them to take them in, and they could move their family and belongings in their own private cars and trucks.

Others were not so fortunate; their family members may have been day laborers working away from home and not accessible by telephone. Thus, in order to evacuate together, families had to wait until they each heard about the evacuation and came home. If they could find others to take them in and public transportation to get there, then they went to stay with friends in other cities. More often than not, by the time the family was reunited, the evacuation was well underway and public transportation was not available. Private trucks rented for the trip went back and forth along the single narrow road between Baños and Ambato (an hour journey each way) ferrying people and their few belongings. Within hours, the road was clogged with people and transportation with few means of travel still available. In the last hours before the military closed the road, military trucks picked up those who were still in and around Baños. Many could not find family or friends to take them, and some were evacuated to government shelters; others were resettled. Official records of the number of people relocated, in shelters, and resettled are unclear regarding how many people went to each place, but in the most rural areas it appears that the poorest just went further into the countryside. They were not found in either the government shelters or the resettled areas.

Structural Violence against the Resettled

While the government made an attempt to resettle people where their children could continue their schooling, the resettled individuals were away from the temperate and lush ecological zone of Baños. Quimiag is in the high sierra, where it is cold, damp, and moist for most of the year. Local Quimiag families contributed housing to the evacuees, but the resettled families had little furniture, no heat, and few blankets. Also, the resettled families had lost their household gardens and chickens, as well as their neighbors and extended families—traditional means of support in times of crisis. Their children got sick more often than those of local families who were not resettled, and local resentment gradually grew. Local Quimiag residents came to believe that the resettled families were receiving “unfair” amounts of support from international and national aid societies, while the resettled families became suspicious of their nonresettled neighbors.

Resettled families had no recourse to settle disputes, a situation epitomized by the apparent generosity of an absentee landlord who offered the resettlement group his land on a steep hillside to plant in potatoes. The resettled families called for a community workgroup (*minga*), and men, women, children, pregnant women, women with babies on their backs or at their breasts all worked the hillside. After several weeks of cultivating the mountain slope and terracing the fields, they planted the potato crop. They were successful. The crop came in, and the families anticipated food for the winter and potatoes to sell. However, before they

could harvest the crop, the landlord took back his land and the crop. The community had nothing to harvest, nothing to eat, and no seed potatoes for the following year. They were on borrowed land with no rights and no official paper to support their claims. Sadly enough, the story is neither apocryphal nor unique to this resettled group.

Agricultural practices in the area were also seriously compromised by hazardous events including volcanic ash. For example, the water supply for agriculture is usually taken from a local canal. However, in January 2000, flow of water in the canal was interrupted due to a landslide. The evacuees were told by agronomists that there would be no water from this source for at least six months, so they collected rainfall and were determined to find water from another source, by whatever means: “*Tenemos que encontrar agua de cualquier manera.*”

Health Outcomes and Resettlement

Resettled families from Baños suffered greater health problems than families from the local community. In virtually every category of illness for which we investigated, incidence levels were much higher for the evacuees (Table 12.2). Two other features stand out. Females invariably experienced higher illness levels than males, and resettled children under the age of five recorded more than twice the percentage of

Table 12.2. Health Statistics: Percentage of Cases per Total Population

	Quimiag Resettlement (N = 108)	Quimiag Locals (N = 137)
Males	16.7	20.4
Females	30.6	32.1
Total	47.2	52.6
Males:		
Resp/Cold/Flu	13.9	10.2
Eye/Skin/Throat	13.9	11.7
Stomach/Diarrhea	9.4	2.2
Other Problems	8.3	10.2
Females:		
Resp/Cold/Flu	20.4	21.2
Eye/Skin/Throat	22.2	17.5
Stomach/Diarrhea	13.9	1.5
Other Problems	14.8	13.1
All:		
Resp/Cold/Flu	34.3	31.4
Eye/Skin/Throat	36.1	29.2
Stomach/Diarrhea	23.2	3.7
Other Problems	23.2	23.4

illnesses than local children of the same age group. In particular, resettled children experienced twice as many cold, flu, and upper respiratory infections, and almost three times as many episodes of stomach problems and diarrhea compared to the children from the local community (Table 12.3). These children often suffered from nightmares and other sleep disturbances while their parents struggled to generate income and provide food for the families. While the government resettled the families, they did not provide jobs for them in the community. Families without access to their home gardens, their little group of chickens, and their cow or two found it very difficult to keep their children healthy. Isolated, marginalized, and vulnerable, the children and women's health suffered.

Increased Vulnerability and Marginalization

People in resettled areas are often in limbo; they belong neither there nor somewhere else. Even those communities whose resettlement experience is more successful than what we found in Quimiag find themselves with divided loyalties—belonging to two communities at once, the old and the new. Their marginalization is furthered by not being members of the communities to which they have been resettled, and the resentment from both the resettled group and the local group often further exacerbates the sense of isolation. They are excluded from local and regional politics, marginalized from the quotidian politics of daily life, and fail to share history or families with the local community, and most of the resettled community wants to return home. They are vulnerable because they have no official standing in the community and no external support for being there.

Quimiag evacuees expressed concern about their precarious economic situation especially since they were not generating any income at their new location. Another major problem for some respondents was that they had been forced to sell their land and houses around Tungurahua and hence could not return. Parts of the volcano slopes had been declared too dangerous because of ash and further potential eruptions, so property was sold at often very low prices. Since many of

Table 12.3. Health of Children under Five Years of Age—June 2000

	<i>Quimiag Resettlement</i>		<i>Quimiag Locals</i>	
	N	%	N	%
Respiratory, Colds, Flu	5	27.8	2	12.5
Eye, Skin, Throat	3	16.7	—	—
Stomach, Diarrhea	3	16.7	1	6.3
Other Symptoms	4	22.2	2	12.5
Sick Children	7	38.9	3	18.8
Total Children	18	100	16	100

these people rely on agriculture for their livelihoods, this action effectively eliminated any immediate chance of economic recovery.

While 50 percent of the people in the resettlement group had evacuated voluntarily, over 50 percent of the Quimiag resettlement group (52.6) thought that the government had done little or nothing to help in the evacuation. In contrast, 47.4 percent reported receiving shelter, food, clothing, money, or seeds for planting, demonstrating a commitment on behalf of the government to some degree. Most of this group had not returned home because of the volcano (63.6 percent) and because of health risks (4.5 percent). In addition, 27.3 percent reported that they remained in Quimiag because there were either limited resources available at home or better resources currently available at the resettlement area.

The economic status of the resettled group is problematic. If members of the resettled community appear to be doing too well, the local community resents it. Our data suggest that the resettled families in the community suffer significantly more economically than do others—both others who were evacuated elsewhere as well as local residents who were never evacuated (Table 12.4). However, it is apparent that both resettlers and locals experienced severe economic crises during this period due to ongoing problems throughout the country. For instance, median monthly income amongst the resettled group fell to only 48 percent of pre-evacuation rates, whereas Quimiag locals were still at 78 percent. In addition, 68 percent of the resettlement group recorded agricultural losses, 84 percent economic losses, and 72 percent environmental losses. This compared with 53, 59, and 59 percent respectively for locals. Thus, the ability of resettlers to recover was compromised by diminished economic opportunities.

What emerges is a picture of the poor bearing the greatest burden for a social policy that unfairly targets them because of their relative inability to resist. The resettlement policy so favored by emergency planners is not equally distributed amongst various groups of the affected population, but rather is concentrated amongst the working poor. It is the poor who, because they were dependent upon

Table 12.4. Context of Crises: Problems Faced by Households (%)

<i>Crisis</i>	<i>Quimiag Resettlement</i>	<i>Quimiag Locals</i>
Loss of Home	40.9	N/A
Loss of Crops or Livestock/Inability to Plant	86.4	16.2
Loss of Money/Economic Crises	77.3	63.6
Political Turmoil	68.2	42.4
Disasters—Volcano, Floods, Landslides	68.2	39.4
Family Problems—Illness, Death	59.1	42.4
Theft of Possessions	13.6	3.0

public transportation, had to rely on the military moving them from their homes to a government-sponsored alternative shelter. It is they who find themselves being resettled rather than staying with friends or even in shelters. And it is they whose children suffered the most negative health consequences. Even compared with children in shelters, children whose families were relocated were sick more often.

Furthermore, children in the resettled communities did not have the same access to health care as did children in shelters. The Provincial Health Directorship in the two states to which families were evacuated in 1999 took active responsibility for health in the government-sponsored shelters, particularly that of children. In contrast, those families resettled in small communities scattered throughout the two states did not receive the same level of attention. They were left to visit local clinics, health posts, or other places if they were sick enough and someone could be found to take them.

Resettling families following an emergency evacuation are removed from their extended kin, from schoolmates, and from their routines. They are put into situations where their families are experiencing extreme stress as they struggle to settle into somewhere new, find economically productive ways to support their families, and adjust to new surroundings, people, and expectations. Our data strongly suggest that resettlement is an unhealthy policy for children in many aspects. They fall between the various systems established to protect the youngest and most vulnerable. With scarce resources available, the public health system focuses its attention on the concentration of people evacuated into shelters, leaving those scattered families resettled to fend for themselves.

In this chapter, we have suggested that emergency evacuation and resettlement policies have unhealthy consequences and, furthermore, that they exacerbate already existing social cleavages. Not all people are resettled; usually only those without other resources are identified for resettlement. The identification of the poor and working poor for resettlement is consistent with the cultural values, rooted in history, of using the poor for social experimentation.

Conclusion

Singer (1995:90) has called for “system-challenging praxis” concerned with “unmasking the origins of social inequity” that we find particularly appropriate for this discussion. It is clear that disasters will continue; some argue that they are increasing with the increased human occupation of previously unoccupied hazardous areas (Murphy, Baker, Hill, Perez, and Norris 2001). If we accept as a given that the world has become a more hazardous place in this regard, then the question is “How do we protect those who are most vulnerable?” The unmasking of

social policies that reify class-based discriminations while masquerading as aid is one way. Emergency evacuations will continue; resettlement policies will continue to be enforced. But by making public the experiences and stories of those resettled and by demonstrating the unequal and untoward effects of those policies, the basis for their failure is made clear and not obfuscated.

Our research also suggests that there are ways to improve the resettlement experience that are generalizable to the larger hazard preparedness and social science communities. They are aimed at improving the health of those resettled by reducing the stress associated with the experience, and rather than having resettlement be a punishment for those without access to other resources, resettlement could be a positive option. To make it such an option, the following steps could be taken. First, town meetings and discussions should be held to inform community members of hazard risks and the remedial options available, including the resettlement of families in the event of disaster. Second, resettlement strategies should be made available to all members of the community at risk, especially when they are confronted with the potential of catastrophic disasters. Third, resettlement sites should be found that are similar to the site being vacated so that lifestyle, agricultural practices, and so on are transferable. Fourth, resettlement policies should include specific attention to the ongoing health care of the families after they have been relocated. Fifth, resettled families should be provided legitimate ways to own the land on which they are resettled. Finally, government protection should be provided to those families after they have moved.

In short, the process must be anticipated, legitimated, and equally available. Community-based practices and relationships must be transferable. In the case described in this chapter, most families eventually left the resettlement community. Some returned to the volcanic hazard site; others were lost to follow-up and we do not know where they went. Many families tried to make it work; they had already disrupted their families, lost most of the possessions, and committed to the resettlement. However, they could not stick it out. Their children were sick; they had no sense of community, history, or future; and they left. There are many needless losses in this story: those who moved back are still at great risk, they still worry about their children being harmed by the volcano, they have lost faith in their government to help them, and they are worse off than before they were resettled. Not surprisingly, they will fight any new attempts by the government to evacuate them.

The lessons learned from this analysis are applicable to medical anthropologists and other social scientists, as well as to disaster mitigation planners, civil defense authorities, and others in the field of emergency preparedness. The lessons are to situate our research in the larger political and economic context as well as in the lived realities of daily life, to understand the social and cultural cleavages in

the fabric of the society being studied, and to document the distribution of power in the society. Failure to recognize and be cognizant of the constraints and possibilities imposed by these contexts limits the efficaciousness and applicability of any recommendation. Unhealthy policies can be transposed into healthy policies, but not until they are identified, documented, and communicated. In the case described in this chapter, the authors have worked with and shared the results of the research with local, regional, and national politicians and policy makers in Ecuador and in the international field of disaster management; with the authorities in Ecuadorian Civil Defense, Geophysical Institute, and the Ministry of Health; as well as with our colleagues in our professional disciplines. We continue to hope and work for the transformation of evacuation and resettlement policies, in the words of one resettled woman, “*Por los niños.*”

Notes

1. For instance, evacuations caused by tropical storms and floods (Belize City, 1961; Darwin, 1974; or the U.S. Gulf Coast areas, 1953–2002), earthquakes (Managua, 1972; India, 2002; Turkey, 2003; or Algeria, 2003), volcanic explosions (Mt. Etna, 2003; Popocatepetl, 2002; Nevado del Ruiz, 1985; Montserrat, 2000–2003), and industrial accidents (such as Three Mile Island, Bhopal, and Chernobyl) evoke memories for many still alive today.

2. See geographers Gilbert F. White (1974), Heinrich Muller-Miny (1959; cited in Zelinsky and Kosinski 1991), and Kenneth Hewitt (1983, 1997); anthropologists Anthony Oliver-Smith and Suzanne Hoffman (1999, 2001), Oliver-Smith (1986a, 1986b, 1996), and Perry and Mushkatel (1984); and sociologists Drabek (1986), Mileti, Bolton, Fernandez, and Updike (1991), and Quarantelli (1998).

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