

MONTSERRAT: POST VOLCANO RECONSTRUCTION AND REHABILITATION – A CASE STUDY.

Ian Jardine Young*

Department for International Development, Montserrat, West Indies

Abstract

A series of continuing volcanic eruptions on the small Caribbean island of Montserrat began in 1997. These events have required the evacuation of nearly two thirds of the landmass, the emigration of more than half the population to Britain and neighbouring islands and the development of new physical and social infrastructure for the 4500 remaining inhabitants now occupying the more hostile northern third of the island.

A further dome collapse in July 2003 has exacerbated recovery efforts depositing further deep layers of ash in key residential areas, taking eight months to remove.

The initial emergency procedures to save lives and sustain the population have been superseded by a more measured developmental approach to the medium and long term sustainable development goals and the majority of funding for this ongoing exercise has come from HMG through the Department of International Development. Management of change from Emergency to Developmental procedures has been particularly challenging.

This Paper highlights the problems encountered and the chronological attempts to solve them satisfactorily with reference to the main Conference Themes.

The actual Conference presentation will be pictorially based with the emphasis on clear definition of how well or indifferently various problems were addressed.

Keywords: Disaster planning, relocating entire communities, transition from emergency to development relief aid, planning for natural catastrophes.

* Address: Department For International Development, Manjack, Montserrat, West Indies; e-mail: i-young@dfid.gov.uk

INTRODUCTION

The Soufriere Hills volcano that dominates the Southern parts of Montserrat has been dormant for hundreds of years but in 1995 it started erupting again and has been classified as a continuously active volcano ever since.



With no history of volcanic activity since the first European settlers arrived 400 years ago, no account of possible reawakening was made in selecting the best settlement areas and the island's principal developments are all close to the volcano.

The subsequent damage inflicted on the island by the series of eruptions has severely damaged an economy only recently recovered from the effects of major Hurricane Hugo and forced the evacuation or relocation of 90% of the population.

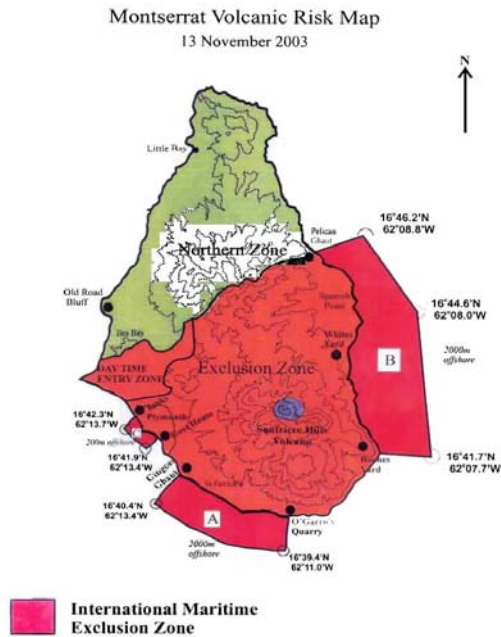
With the volcano continuing to show signs of recurrent activity the task of redeveloping the island can be described as challenging.

The population at time of the first eruption was approximately 10,000 and after a series of fluctuations has now settled at 4,500 with modest growth forecast.

HISTORY OF MONTSERRAT

Montserrat is part of the Leeward Islands in the Caribbean at a latitude of approximately 16 degrees North of the equator enjoying an equitable tropical climate. The mountainous terrain measures 102 square kilometres of which only 33 square kilometres are now safely habitable. The majority of this residual area is too steep for development and land for agricultural and domestic use is at a premium. The Centre Hills in the safe zone are covered with rainforest which forms the catchment for the island's spring fed water supply and other than tourist walking trails cannot be used for development.

The island was first colonized by European settlers, in particular Irish immigrants escaping religious prosecution, which has led to the tourist description 'Emerald Isle of the Caribbean'. In the past exports have included tobacco, indigo, cotton, sugar and limes. Emancipation, earthquakes, hurricanes, competition from burgeoning third world markets and crop diseases wiped out the value of such exports. Immediately prior to the volcano however Montserrat was able to balance their internal Budget by developing residential tourism, offshore banking, services to resident medical schools and modest industrial activity in the rice processing and electronic assembly fields.



The volcano resulted in a total change in Montserrat's financial status turning a balanced budget into a significant annual deficit. Expenditure of funds to meet the immediate needs of the crisis was closely followed by the impact of a total collapse of the industrial, tourism and financial sectors on which Montserrat's tax revenues were reliant.

Responsibility for Montserrat, as a British Overseas Territory, remains with the British Government (HMG) and the Department of International Development (DFID) was charged with the responsibility of securing the appropriate funds and assisting in the development and implementation of emergency responses and redevelopment plans.

At the time of presentation of this Paper, scientists cannot say with certainty that the volcano has reverted to a dormant phase and all development issues are coloured by this uncertainty.

It is important to review the natural hazards facing Montserrat that any Development planners must take into consideration. This volcanic island appears to have experienced five major eruptions in the last 30,000 years. It has recently been dormant for 400 years despite a recorded 30-year cycle of increased activity that prior to this current phase did not result in any eruptions. Venting is on record in 1897/98, 1933/37 and 1966/67 and as a precursor to this current devastating series of eruptions, earthquake swarms of significant size started up in 1992.

Full phreatic eruption, ash venting and mudflows began in 1995. In 1997 very fast moving pyroclastic flows spread out in most directions along the flanks of the mountain engulfing the capital city of Plymouth and destroying most of industry and agriculture. There have been a series of volcanic events since that time, the most recent being in July 2003 when a large dome of material that had been growing steadily for two years collapsed covering the island populated areas with 1.5 million tons of ash and sending clouds of material high into the air affecting local air traffic for several days.

Montserrat has encountered earthquakes in its recorded history, particularly in 1692 and 1843 and the ruins of massive stone built sugar windmills scattered around the island are testimony to this.

Hurricane Hugo in 1989 had a category 5 strength when passing over the island and structural damage was reported to over 90% of all building structures.

POST DISASTER ACTIVITY

The initiative for dealing with initial crisis had to be led by HMG. The resident Governor was vested with Emergency Powers and DFID were asked to head up the emergency reaction team and to take over responsibility for post crisis redevelopment.

The official evaluation report, with 100% hindsight stated that complex institutional arrangements, unclear responsibility and fragmented authority hampered progress in the resettlement and reconstruction programme. There were constant differences of opinion between HMG and the Government of Montserrat (GoM) regarding divergent specifications and standards throughout the implementation period that delayed crucial decision-making and sent mixed signals to the teams on the ground attempting to 'get on and do the work'.

Experienced professionals are used to dealing with the ensuing post disaster chaos that is an inevitable consequence of such events but this particular post volcano case is unusual and the idiosyncrasies are worthy of study.

Montserrat was a middle-income country with admirable sturdy housing stock, little unemployment and an economy that was in fair shape. As such, although it freely acknowledged its debt to HMG and had rejected the opportunity to become an independent island nation, it was used to the idea of self-government with benevolent oversight and assistance with good governance from Britain. It had in place efficient mechanisms for dealing with the occasional hurricane that had been recently tested in the Hugo aftermath and such phenomena were part of the local culture. One was more likely to hear for example a particular date specified as 'two years before Hugo' than 1987 anno domini. There were no cultural or administrative precedents for such volcanic catastrophes and in fact the Authorities, for fear of alarming the population unnecessarily, played down early minor volcanic activity.

Due to its previous inactivity and the consequent absence of detailed monitoring data it was particularly challenging to the scientists to predict the nature of the volcanic activity. Plymouth was evacuated a first time, residents were allowed to return and then had to be evacuated a second time. Most residents were convinced that after a relatively short hiatus period they would be allowed to return to their houses and places of work, endure a messy clean up period and then get on with their lives. This conviction was shared by some local politicians and others in authority and this attitude of disbelief was to be proven to be totally incorrect. HMG emergency phase staff with more worldwide experience of disasters in general became very frustrated with the indecision and attempts at profiteering by some in authority on island. They decided on many occasions to proceed with humanitarian activities with a minimum of local consultation and this left a legacy of deep anti DFID feeling, which their more development orientated personnel inherited when these later activities were introduced to the programme.

THE IMMEDIATE AFTERMATH



The final evacuation was called at 48 hours notice. The main capital, Plymouth, was the seat of Government and most Government Departments were located there. Also in harms way were the power station, the fuel reserves, the port main jetty and warehouses, schools, the main newly built hospital and most commercial, banking and industrial buildings. The airport on the opposite side of the volcano was also badly affected by the pyroclastic and subsequent mud flows.

The inbuilt attitude of disbelief was evident but, understandably most employees, both government and private, put the safety of their own families first before reporting to work to assist with the transport of Government records, furniture and equipment out of Plymouth to safer areas in the North.

The first priority was shelter and the authorities moved rapidly to temporarily close all schools and to assess the availability of alternative housing. As far as possible people with dwellings in the safe zones took in additional displaced families but there was the inevitable fraction of the population with nowhere to go and the school classrooms were in great demand as temporary shelters.

The decision was made to offer free passage and support to those islanders wishing to leave Montserrat to settle in UK or nearby islands and more than half the population responded positively. This has left the island with a population more manageable in numbers but showing a skewed distribution with a lack of key middle-aged families and too many elderly single people.

POST VOLCANO ACTIVITY

Tending to the needs of a population displaced by an active volcano has particular challenges. Other natural disasters such as hurricanes, earthquakes and tsunamis pass over a small island leaving a trail of destruction that can be rectified in the knowledge that a repeat event, in the short term, is unlikely. A persistently active volcano, subject to rapidly moving pyroclastic flows, represents a constant danger with sufficient time between events to allow residents to assume (wrongly) that normality has been restored. This makes forward planning extremely difficult. Evacuated residents prefer to assume that life will soon return to normal after a hiatus period when areas previously under threat can be re-occupied. This is particularly prevalent amongst those with property assets in vulnerable areas and inevitably such persons are amongst the political decision makers or have access to them.

Post-volcanic disaster planning inevitably takes place in an atmosphere of chaos. It could be suggested that two sets of administrators are needed, one to deal with 'quick and dirty' humanitarian requirements and another set to step back from the immediate disaster and start the necessary steps of proper community consultation, donor discussions and the like to pursuit the rapid reestablishment of the economy. In many cases one set of individuals are asked to carry out both tasks more or less simultaneously. Multi-skilled staff capable of such double thinking are few and far between and medium to long-term recovery efforts suffer accordingly.

In order to re-shape the lives of those affected by the mass evacuation HMG has been active in the following areas: -

TRANSPORTATION



A new Emergency Jetty and Port structures have been built.

A 300-passenger ferry has been chartered for subsidised twice-daily shuttles to nearby Antigua.

A regular helicopter service has been chartered and a new heliport has been constructed to supplement the ferry service.



A new 600-metre runway airport is under construction.

INFRASTRUCTURE



A new temporary power station has been built using portable generators supplying 1.5 megawatt of power to the island.

A new bulk fuel depot has been built with storage tanks for petrol, diesel and LPG together with offshore tanker delivery links has been built.

Major upgrades to the island road systems have had to be introduced.

New water storage tanks, reticulation upgrades and exploratory drilling for new supplies have been built for the Utility Authority.

Housing



Over 250 new houses have been built as government housing stock.
Over 200 site and service plots are under construction for private houses
Self-Build Housing projects with a partial materials grant facility are under way.

Good Governance



Office accommodation for Government departments has been built, initially with temporary units and now more permanent solutions are in hand.
A new Police station complete with holding cells has been built
A new Prison facility is under construction.

Health



A 40 bed hospital has been built converting a primary school complex and adding operating theatres, mortuary etc.
Elderly Care homes and warden assisted housing have been built.
Three Primary Health Care clinics have been built

Education



The secondary school has been completely refurbished and upgraded after its use as a shelter complex.
A pre-school and nursery day care centre has been built
A tertiary education centre is under construction.

Volcano and Disaster Preparedness



A purpose built state of the art Volcano Observatory has been built which has world recognition.

A new Emergency Operation Headquarters has been built.

A new hurricane proof emergency warehouse has been built and filled with appropriate inventory.

Temporary emergency accommodation for 200 has been supplied and kitted out ready to receive evacuees.

THE WAY FORWARD

It is HMG's goal to complete the island's development and to encourage private sector investment to a level where the economy is once again self-sufficient. Supplying the basic infrastructure listed above is an essential process but until such time as the commercial confidence returns for inward investment some form of support will be necessary.

REFERENCES

Fox, Andrew P. (2002) "Montserrat: A case study in the application of multiple methods to meet "

DFID. (2003). "Montserrat: Country Policy Plan 1999/2000 – 2002/2003". London.

DFID. (1999a). "An Evaluation of HMG's Response to the Montserrat Volcanic Emergency", Vol. 1. London.

DFID. (1999b). "An Evaluation of HMG's Response to the Montserrat Volcanic Emergency", Vol. 2. London.

Government of Montserrat. (1998). "Sustainable Development Plan". Brades, Montserrat.

Government of Montserrat. (2001). "Montserrat Investors Guide", Brades, Montserrat.

Montserrat Volcano Observatory. (1997a). "Chronology of the Eruption of Soufriere Hills Volcano from January 1992 to Early July 1997". Montserrat.

Montserrat Volcano Observatory. (1997b). "Assessment of the Status of the Soufriere Hills Volcano and its Hazards", Montserrat: 18 December.

Montserrat Volcano Observatory. (1998). "Preliminary Assessment of Volcanic Risk on Montserrat", Montserrat: January.

Norton, Gill. (2001). "Monitoring Soufriere Hills Volcano, Montserrat". Earthworks Journal, Issue 12. British Geological Survey

Rozdilsky, Jack L. (1999). "Disaster Recovery in an On-going Hazard Situation on Montserrat: The July 20, 1999, Volcanic Dome Collapse". Natural Hazards Observer. Quick Response Report # 121, Colorado.