

ROLE OF TECHNOLOGY  
IN MANAGING VULNERABILITY TO NATURAL DISASTERS,  
WITH CASE STUDIES  
OF VOLCANIC DISASTERS ON NON-INDUSTRIALIZED ISLANDS

by

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**Abstract**

Technology is one tool used and misused for managing society's vulnerability to natural disasters. Many of the difficulties encountered result from neither technical problems nor the specific natural disaster event, but manifest because society errs in applying technology or in assessing the natural hazard's severity. This study examines, critiques, and suggests improvements in this area.

One of the most challenging steps for an engineer is defining the design criteria which should be used to anticipate a system's response during a natural disaster, because the design load input from a natural disaster is difficult to predict and select properly. An examination of non-technological influences, preventive engineering, and relevant boundaries and scales illustrates how to prevent vulnerability to natural disasters.

The concepts and models developed are applied to case studies of volcanic hazards on non-industrialized islands. The eruptions of Mount Pinatubo in the Philippines (initial eruption in 1991) and Soufrière Hills in Montserrat (initial eruption in 1995) are examined.

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