

Local and popular folklore and culture on hazard and vulnerability meets geographical information system for the risk reduction preparedness of the people of the Barrio San Antonio of Naiguatá, Estado Vargas, Venezuela

Location:	Naiguatá, Estado Vargas, Northern Coast of Venezuela
Date:	2003
Sector focus:	Flood, landslide, first responders, planners and Community
Spatial focus:	Municipal Level

Bibliographical reference

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Abstract

In the Vargas State of Venezuela and in other parts of the country, risk management principally consists of responding to "unforeseen" emergencies and disasters. Responders do not utilize tools to reduce risk, nor are there robust systems to prevent, mitigate, prepare or alert against natural catastrophic events. Extant risk models do not account for local cultural experience of risk, or local response systems. It is, therefore, difficult to establish working relationships between first responders and vulnerable communities. A two-way dialogue was established between community and experts by integrating common sense knowledge extant in the locality with historical and other data entered into a GIS system. Data collection was thus harmonized, and the basis for a continuing dialogue between community and planners/ responders was laid -- democratizing disaster planning. Secondary school teachers and students emerged as critical to the continuation of this system.

Technical description

Hazard/risk type: Flooding, Landslides and Seismic activity.

Type of assessment: Hazard mapping using GIS, combining technical-scientific data and “Common Sense Knowledge” collected in structured interviews.

CRA process

Methods used: Researchers based their work on ethno-methodology, taken from anthropological research, and GIS modelling. They held consultations with diverse risk planners and first responders (in cooperation with the Corporation for Recovery and Reconstruction of Vargas State, the Civil Protection Institute for Vargas State, the Naiguatá fire fighters, and Naiguatá Civil Protection); consolidated existing technical and scientific data into a GIS-based risk analysis program; conducted interviews among experienced community leaders of the Naiguatá parish to extract “Common Sense Knowledge” (CSK) of risk; coded data according to “sensory” knowledge (capacity to perceive or predict hazards), “practical” knowledge (regular or routine behaviour with respect to hazards) and “formulaic” knowledge (linguistic and ritual ways of apprehending hazards); created GIS layers that spatially represented CSK along 5 themes (historical memory of risk, concepts associated with risk, susceptibility to flooding, susceptibility to landslides, and susceptibility to seismic events); combined technical-scientific data representing all natural events between 1900 and 2000 with risk CSK to determine the spatial distribution of disasters, their frequency and their degree of severity; and researchers determined shelter zones, lifelines, strength of land-use restrictions, coverage capacity of public institutions (responders and medical services), and historical damage to people and infrastructure.

Beyond simply comparing the opinions and perspectives of risk experts and community leaders, researchers produced a replicable system for harmonizing planners, responders and the community with respect to the various ways in which each perceives and negotiates risk. Events were planned to disseminate the model and sensitize the community to disaster risk management.

Was livelihood analysis used? No.

Was external specialist knowledge introduced? Yes. Vargas State Statistical Data. Geographic data from the Simon Bolivar Venezuelan Geographic Institute and the Central University of Venezuela. the expertise of Carmen Luisa Ferris and Diana Vilera – anthropologists, and skills of Migel Angel Ortega, Geographer.

Vulnerability analysis

A GIS model was constructed to provide a picture of vulnerability that accounted for perspectives of various stake holders. Vargas State statistical data (from 1881 to the present, including measures of demographic composition, health, education and housing) and data from the Simon Bolivar Venezuelan Geographic Institute (on flooding, landslides and seismic activity) provided technical-scientific perspectives of risk. Data collected from structured interviews with community leaders added cultural, folkloric perspectives of risk. Together these data give a more multi-dimensional analysis of local vulnerabilities.

Capacity analysis

Resources available: *Institutional resources:* Simon Bolivar Venezuelan Geography Institute, Mercy Corps International, Corporation for Recovery and Reconstruction of Vargas State, the Civil Protection Institute for Vargas State, the Naiguatá Fire Fighters, and Naiguatá Civil Protection, and Diego Osorio Secondary School. *Financial support:* TOTAL Oil Company and Via Tecnologia (donors of computer equipment). *Human Resources:* Diana C. Valera (Project Advisor), Carmen Luisa Ferris and first responders from the Naiguatá Fire Fighters and personnel from Naiguatá Civil Protection.

Limitations to capacity: The limitations of this project are endogenous to the capacity limitations of local first response and planning institutions. For example, first responders and planners were specifically trained to undertake and follow through with this project; however, the project will be frustrated if those persons are re-assigned to different locations by their superiors. Furthermore, at the partner institutions, there were budget limitations and limitations imposed by lack of computers. The researchers attempted to minimize these limitations by training local fire fighters with an interest in community education and by setting up a program to acquire two computers with donations from TOTAL Oil company and a non-profit called Via Tecnologia.

Action planning and implementation

What actions were actually planned? Researchers planned sensitization workshops with first responders; survey interviews; GIS model design; the preparation of a GIS manual; agreements with responders about the maintenance and use of data; awareness-building workshops at local schools; and a commemoration of the 4th anniversary of tragic mudslides in which fire fighters presented the project to the community and students presented risk maps of areas of Naiguatá.

What actions were actually carried out? All of the above.

Have these actions turned out to be sustainable? Yes. Commitment was obtained to maintain and update thematic layers and data. Two local secondary schools committed to holding risk management workshops for their students. The Naiguatá Fire Fighters have begun to use GIS to solve other technical problems, such as permits and zoning and have obtained funding from the state government and CORPOVARGAS to pay for office space, computers and office supplies in order to carry on the project. Two computers were donated in 2004 to continue the project. Researchers obtained funding by ProVention to replicate the project in Guárico, and plan on replicating the project in the states of Monagas and Anzoategui.

Were there any unanticipated additional benefits of the actions? The project presentation generated broad interest in the subject of risk management. Among other things, the involvement and commitment of local secondary schools spun off from community interest in the project. As students become more involved this will have positive consequences for risk planning and response outcomes. Also, there has been more general interest in GIS as a problem-solving tool.

Were there any unanticipated negative consequences of the actions? N/A

Limitations on action/sustainability of actions: According to the interview results, the community of Naiguatá is generally much more concerned with threats such as crime, unemployment and drugs than natural events. Furthermore, a general sense of futility exists in the community regarding natural events, that nothing can be done to predict, prevent or mitigate floods, landslides or earthquakes. Therefore, community members are unlikely to change their land use behaviours vis-à-vis their own vulnerability. Moreover, the study reveals that folk opinions about natural events resist rapid change, in spite of new information or data that may conflict with experience.

Indicators

The measure of success of this project is the extent to which planners and responders have appropriate information about the community to jointly reduce risk and prepare for natural events. The GIS program gave them that information. Maps are an important way to understand the environment. While integration is difficult to measure, there has been an increase in formal and informal linkages between relevant organizations and actors in Naiguatá.

Contextual notes

Existence/role of prior or contemporaneous conflict? N/A

Role of displacement/relocation. Immediately after the 1999 flooding, nearly the entire state's population was displaced temporarily.

Role of prior disaster & prior recovery attempts? On December 15th, 1999 massive rainfall led to flooding and landslides in the Vargas State and in other marginal urban areas of coastal Venezuela. Official estimates concluded that some 50,000 persons were either dead or missing. The township of Naiguatá was especially hard-hit. The North Coast of Venezuela encounters seasonal heavy rainfall, periodically at flood levels.

Significant historical, geographic, economic, political, or cultural issues that influenced this instance of CRA and its consequences? Naiguatá, a traditional community situated between the Caribbean and the Avila mountains, used to be an agrarian community very close to Caracas, but has increasingly based its economy on fishing and tourism. The fertile mountainous valley has become urbanized with lower- and middle-income housing. Camurí Grande is situated to the east, and Carmen de Uria, a community destroyed in 1999 result of a mudslide, to the west. People in Naiguata enjoy being close to the capital for proximity to basic services, to the principal airport and to the Port of Venezuela.

Strategic notes

How has this practice of CRA influenced change in policy and practice at the national level?

The CRA work undertaken in Naiguatá extended from a community preparation and risk management program that took place from 2000 to 2002 under auspices of Mercy Corps International in marginal urban areas throughout Venezuela. During this initial project, researchers learned that responders were disabled by a lack of information about their communities, a problem consistently present throughout the nation. This project is being replicated in Guarico state and then later in two other Venezuelan states, perhaps more in future iterations.

How has this practice of CRA influenced change in policy and practice at local level?

The main goal of the project was to orient risk planners (Naiguatá Civil Protection) and first responders (Naiguatá Fire Fighters) toward risk reduction, prevention, mitigation and preparedness by providing them with tools for risk assessment that include technical-scientific data, as well as "common sense knowledge" originating from the affected communities. The project has influenced local policy and practice in two ways. First, the dissemination of information has had a democratizing effect on risk reduction and response in Niaguata. , A feedback mechanism has been put into place, through which the community is informed and routinely queried for input to future planning activities. Secondly, risk planners, first responders and community members, as a result of two-way communication are, above all, more acquainted with the nature of their vulnerability to risk. Clearer, more multi-dimensional data puts risk priorities into sharper relief, and ultimately streamlines risk reduction and response planning at the local level.

How has this practice of CRA influenced the level of organization and solidarity in the locality where it was carried out?

Personnel from Naiguatá Civil Protection and Naiguatá Fire Fighters are using the same models and data, which are also being shared and updated among the community, including at local secondary school risk reduction workshops. A sense of solidarity has been created around a shared awareness of vulnerability and a common stock of data for addressing that vulnerability.

Less divided along class, gender, age, ethnic lines?

Yes. Survey respondents were selected purposively to reflect different types of accumulated experience with natural events. Both women and men were equally surveyed. Older community members were preferred for selection under the assumption that their years represented greater experience. Other community leaders (local political leaders, educators, ecclesiastical leaders, fishermen) whose work intrinsically provided exposure to natural events were also interviewed. Primary school children were invited to participate in a commemoration event. Secondary school students took part in risk assessments. Researchers noted that involving a representative cross section of Naiguatá was fairly simple since the area is quite socio-economically homogenous.

More divided along these lines? N/A

Are the people living in this area more able to speak out on issues that concern them? Yes. The program was specifically designed to provide community members with a platform for shaping risk and response planning. Risk planners from three local institutions (Henry Iriarte, Alejandra da Silva and Felipe Quintero) committed to update thematic layers in the GIS system and transmit this information to the area's schools and "to the community as a whole." One of the critical outcomes of this project involved the incorporation of risk reduction critical thinking workshops into local secondary school curricula. . It is assumed that education empowers communities to democratically influence outcomes.

Have new civil society organizations been created directly or indirectly because of this practice of CRA? Yes. Informal networks were created between educators and the risk planning community. In fact, the link with schools is becoming an important component to the sustainability of the project. If first responders relocate, for example, then some schools that continue to manage the database allow continuation of the project.

Lessons learned

- Common Sense Knowledge results from accumulated observations of one's geographic space. Cultural life experience allows survival in a given space, and should therefore be foundational for recommendations or actions with respect to the environment.
- A constant exchange of information is necessary to generate effective strategies for preventing or mitigating natural disasters. Two-way dialogue highlights real social vulnerabilities and helps planners and responders understand community motivations and decisions.
- Common Sense Knowledge is formed by direct experience with natural events. This type of knowledge resists change, except through ongoing direct comparisons with successive events. Because natural events do not occur frequently, people rely on the same knowledge that has been transmitted from generation to generation.
- Common Sense Knowledge lacks explanatory power. Relying on folk knowledge to demonstrate causation – e.g. why did this flood happen? – can be problematic.
- A community's threat priorities may differ from the priorities of planning and response institutions. For example, drugs, crime and unemployment may be more immediate and imposing threats than flooding. Nevertheless, severe vulnerabilities may exist and sensitizing communities to these risks may be difficult.

Keywords

Flooding, Landslides, Seismic activity, GIS-based risk analysis, the Vargas Tragedy, Venezuela, Local knowledge, Perception, "Common Sense Knowledge", Secondary school involvement, Tapping older people's knowledge.

Resource persons

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