"DA ROOF MIGRATE WIDOUT A VISA...":

A DECADE OF INITIATIVES FOR SAFER HOUSING IN JAMAICA

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EXECUTIVE SUMMARY

During the period 1979-1989, a series of preparedness and mitigation projects were undertaken in Jamaica within a framework of comprehensive hazard management to reduce the toll of hurricane, flood and earthquake disasters on the island, its population and economy. These efforts provide an early, systematic case history of the process, the factors which in time eroded its support and commitment, and the renewed interest generated by Hurricane Gilbert in 1988.

In the early years, it appeared that such a comprehensive approach would result in a high degree of success in institutionalizing low-cost housing improvements for disaster resistance. Many of the elements that would indicate eventual sustainability were present, such as:

- early individual commitment and leadership with regard to preparedness and mitigation concepts
- donor investment in relevant support studies including vulnerability and planning analyses, across the spectrum of natural hazard management
- development of a series of training booklets specific to local building designs and techniques, after study of the housing typology, usual construction practice and appropriate media
- a period of systematic dissemination of public awareness materials -- both informational and motivational
- involvement of private sector groups in project planning
- review and testing of training aids, and initiation of builder training
- major hurricane activity both locally and regionally, increasing awareness of the need for protective actions and providing opportunities for implementation

Yet prior to 1988, the sequence of steps envisioned in the early part of the program never resulted in a major implementation project to demonstrate and accomplish safer construction practices. Some of the reasons for this failure to affect housing construction include:

1. Politically, there are benefits to be gained in the provision of a visible product such as a house or relief aid, and few gains for less visible mitigation measures. Also there has been almost no political cost for non-preparedness.

2. The guiding vision for the program evolved through a series of externally-funded projects; attempts to broaden the local base did not translate into action. Both governmental and non-governmental agencies continued to rely on ODP as the responsible agency rather than exploring ways to integrate the objectives in their own spheres. Mitigation objectives to date are not institutionalized within the line ministries, the Five-Year Development Plan, or vocational training schools.

3. The fact that the roles (financing, marketing, building, inspecting) of the various actors in the formal housing sector are blurred does not lend itself to a system of checks and balances that would create internal incentives for quality control. In addition, with the award of construction contracts owing more to political patronage than to competition, there is little incentive for construction quality.

4. The lack of support for and weakness of the building inspectorate mean that it has a negligible impact on the construction industry as a whole and particularly on the non-formal building sector.

5. The worsening economy and growing housing deficit in urban areas took priority over safety concerns as time passed. In the formal housing sector, projects to upgrade squatter settlements and provide sites and services to new areas took precedence, and major housing schemes focused on cost-cutting measures in order to extend the use of scarce funds.

6. Personnel changes at ODP resulted in a lack of continuity and varying degrees of support for the mitigation initiatives. No political constituency had been achieved overall, and this began to be reflected in a more response-oriented focus at ODP and an inability to transition mitigation activities to other relevant ministries.

Without the impetus provided by Hurricane Gilbert in 1988, the safe housing initiatives might have completely disappeared. However, a number of local NGOs and private organizations had become active in networking and developing alternative informal housing solutions just prior to the hurricane, and these groups were in a position to extend their work to community reconstruction issues. The energy fueling safer housing initiatives, which had dissipated between 1985-88, thus shifted from ODP to non-governmental and private groups. Renewed potential exists now to make real gains in convincing people that it is in their benefit to make choices for safer housing.

1. There are plans to develop a mitigation syllabus for the building trades training curriculum at the HEART Academy, and also at CAST.

2. Two local organizations -- CRDC and ADA -- have conducted short courses for Peace Corps volunteers, local building tradespeople and homeowners covering not only "how-to" instruction but also promotion of good construction practice and wind

resistant techniques. Resumption of this type of short-course would be an excellent way to reach people who build but do not have access to formal training classes.

3. In site and infrastructure provision projects, residents usually improve their houses as well; this would be a good opportunity for developers to pass on basic information on good construction practice.

4. Both CRDC and ADA have been involved in safe construction training on other islands following Hurricane Hugo in 1989, so their experiences in Jamaica are being adapted in other countries of the region.

5. The practice of hiring building tradespeople on a construction project basis lends itself to the kind of information flow that can impact low-income housing. If workers were given good training and skills upgrading during formal sector employment -- both on-the-job and via HEART courses --then their work in their home communities would reflect their knowledge of new or better techniques.

6. Once again, the use of PCVs in basic training and promotion in their communities has been very valuable and it has been recommended that this role be institutionalized by Peace Corps.

7. Both the normative (community saturation) and capacitative (community empowerment) models show potential for institutionalizing basic protective measures. Particularly in view of widespread distrust and cynicism toward government and politicians, a shift of emphasis to community-based initiatives would seem to have more potential for success in the informal sector. Both models build on traditional self-reliance and the ability of residents to mobilize resources when they feel it is to their benefit.

8. Time constraints and other donor-defined contract provisions have been problematic to date in efforts to make logical links between the work of ADA and CRDC. This is particularly apparent in the product-oriented approach of the CRDC-PADF project. Time is a limiting factor for ADA's loan scheme only in the sense that inflation eats into the remaining funds available.

9. The experience of the WCC illustrates that builder training has little value unless it is coupled with opportunity (jobs) and a clientele who desire good construction practice.

10. There is a great deal of building and renovation going on throughout Jamaica. But because the training initiatives at HEART and CAST are not yet established, much of the opportunity presented by Hurricane Gilbert will be lost. Furthermore, simply adding a "mitigation" course will not sufficiently impact current practice; safety measures will still be seen as something extra to be added if required or requested by the client. Integration of disaster-resistant construction techniques into normal building trades courses is necessary to reduce future vulnerability on a broad scale.

"DA ROOF MIGRATE WIDOUT A VISA...":[1]

A DECADE OF INITIATIVES FOR SAFER HOUSING IN JAMAICA

INTRODUCTION

The Caribbean island of Jamaica occupies a region that is subject to a wide variety of natural hazards including floods, hurricanes, earthquakes, storm surges and droughts. This fertile mix of hazards, vulnerable structures, low *per capita* incomes, and increasing development on poor sites places low-cost housing improvements for disaster resistance at a high priority among the set of basic needs of the general population. While mitigation activities -- diversification of staple food production, settlement siting changes, and use of protective housing features such as roof combs, storm roofs, steeply pitched or hipped roof shapes, and hurricane straps -- have followed each disaster event historically, most were not accompanied by any legal or regulatory measures but were considered "good practice". More recently, codes and standards, land use planning and other institutional functions existed within specific agencies, but no comprehensive program to define the relationships and give priority to the concept of mitigation was developed prior to the 1980s.

The early years of the 1980s saw the emergence of a concerted effort to develop and institutionalize disaster mitigation procedures on a nationwide basis. This effort began in a specific political and economic climate and has evolved through more than a decade of changes in priorities and administrations, not to mention a variety of disaster events including Hurricane Gilbert -- all of which created different political, economic and institutional environments through which the initiative's proponents had to navigate. While the disasters may have enhanced appreciation of housing safety, certain institutional and political factors associated with the housing sector, as well as systemic economic problems, worked against this awareness, diminishing the importance of such programs and impeding progress toward development of a broad-scale housing mitigation initiative.

THE CONTEXT

1. Environment

Jamaica is the third largest island in the Caribbean, with a maximum length of 146 miles and widths varying from 22 to 51 miles, covering almost 11,000 square kilometers (4,245 square miles) approximately 80% percent of which is mountainous. The remaining land mass is composed of interior plateaus and coastal plains. Although Jamaica is located in a seismically-active zone and has recently experienced strong tremors, current probability for a major seismic event is estimated to be moderately low.[2]

The eastern part of the island contains the imposing Blue Mountains, rising from the coastal plain to well over 7,000 feet in height in less than 10 miles, a general gradient which ranks with the steepest in the world. The Blue Mountains are heavily forested and creased by numerous steep-sided ravines. Seven major rivers, about a third of the island's total, flow down to the coasts from the mountains of this region. The mountains of the central highlands and western parts of the island are considerably lower, but less forested and of more craggy appearance over the limestone-based plateaux. The central and western regions present more varied topography and appearance, ranging from the conical limestone hills and ridges of the "cockpit country" to the long straight scarps of the western edge of the Manchester plateau. The limestone base of much of the central and western regions plays an important role in the retention of rainfall, the formation of wide swamps, and flooding in some areas. The coastal plains are low-lying areas of alluvial sands, gravels and loams, extending inland for several miles before they abut the steeply-rising limestone hills. The deltas and plains spreading out from the main rivers follow a similar pattern.

The climate of Jamaica is characterized as maritime tropical with warm trade winds generally blowing from east to east-northeast. High humidity is coupled with seasonal rainfall that varies markedly from region to region. The eastern Blue Mountain regions of the island may receive as many as 300 inches of rain a year, while southern and southwestern plains and coastal areas may experience as few as 30 inches per year. Generally, about 80% of the island can count on between 50 and 100 inches of rain per year. Localized heavy rainfall can occur during the winter months, particularly in the northern half of the island, often with serious flooding as a consequence. The capital city of Kingston, although in the south, is also vulnerable to flooding. Temperature also varies both regionally and seasonally, with the north coast enjoying cooler temperatures (between 70-80 degrees) in the winter months.

The most outstanding climatological feature of Jamaica is its central location in what is known as the Atlantic tropical cyclone basin, a region which generally experiences three or more hurricanes per year. Jamaica lies squarely in one of the six "average" tracks of hurricanes occurring in the western hemisphere.[3] Although hurricanes usually dissipate over land, Jamaica is not of sufficient size to have that effect and, indeed, the hilly topography of the island can have the opposite effect of accelerating wind velocity;[4] Hurricane Gilbert crossed the center of Jamaica east to west, yet was upgraded to a Category 5 storm the next day as it roared toward the Yucatan Peninsula. Further, the island's low-lying coastal plains are particularly vulnerable to the storm surges which often accompany hurricanes.

2. Demography

The population of Jamaica was estimated in 1988 to be 2,357,700, an increase of a scant 0.1 percent over the previous year. Jamaica's relatively slow rate of population growth is due in part to the large number of people leaving the island, which tends to offset natural

increases. Despite out-migration of significant numbers of the fertile population, Jamaica's population, like that of other nations of the region, is predominately young.

Notwithstanding moderate population growth figures, particularly in comparison with other nations of the Caribbean and Latin America, Jamaica does parallel the generalized trend toward urbanization of its region since World War II. Currently, the nation is roughly 48% urban, with the majority of the urban population and 22% of the total population (524,638) clustered in the Kingston-St. Andrew metropolitan area. If the area is extended to include nearby Spanish Town in contiguous St. Catherine Parish, the figures rise to 74% of the urban population and 26% of the total national population clustered in three parishes. The high population densities of Kingston-St. Andrew (2,000-3,000 persons per sq. mile) contrast with those of Trelawny or St. Thomas parishes (150-250 per square mile).[5]

3. Politics and the Economy

Efforts to develop a mitigation policy took place in a decade characterized by economic instability, political change and uncertainty. The housing safety initiative began in 1979-80, a period of increasing civil unrest leading up to the election won by conservative Edward Seaga of the JLP (Jamaican Labour Party) and the difficult transition from the socialist administration of Michael Manley and the PNP (People's National Party). Ideologically, the JLP espoused liberal orthodox economic theory with its reliance on the private sector and the market as the means to address Jamaica's serious economic problems, including its chronic housing shortage. Seaga's election coincided with the election of President Reagan in the U.S., and joint efforts to promote economic development and political stability led to formation of a Caribbean Basin Initiative signalling broader support for both public and private sector activities. Indeed, U.S. government assistance alone jumped from 12.7 million dollars in 1980 to 158.4 million in 1981 and to 208 million in 1982. In the same period, multilateral aid reached $302 million.[6] Particularly important for present purposes was the increase from no support to 15 million dollars in housing guaranties between 1980 and 1981. The World Bank has estimated that, in total, the Seaga government generated approximately $2,000 million from all sources in concessionary financing in the period 1981-84.

The influx of such vast resources created temporary economic growth in the initial years of the Seaga administration, including expansion in the formal housing sector, but by 1987 the nation's outstanding debt resulting from these transfers had reached 3,500 million dollars. A large portion of those funds was acquired through an IMF Extended Fund Facility agreement in 1981, and certain conditions for the local economy were attached, including an increase in interest rates, credit restrictions, a decrease in public sector spending, and eventually a large currency devaluation -- all intended to increase exports and decrease the external debt. One major impact of such conditions was a 50% decline from 1982 to 1984 in the housing construction industry due to the high cost of financing and mortgaging.[7] Further devaluations and a deteriorating economic performance in the context of world recession have done little to alleviate these problems. Public suffering from these problems

provoked major riots in Kingston and an island-wide general strike in 1985; by the time of the 1986 elections, the opposition party made substantial gains.

While the impacts of the stringent IMF conditions for the formal housing sector have been serious, the diminished purchasing power of the Jamaican dollar and spiraling cost of materials have had an equally devastating effect in the informal housing sector which is responsible for fully 65% of the residential housing construction in Jamaica. Thus, the overall economic climate for both formal and informal housing construction made it difficult to sustain any concerted programmatic effort in addressing Jamaica's housing needs, much less the issue of disaster mitigation.

A further complicating factor, particularly in the formal sector, was the growing politicization of the housing process. In the first place, the awarding of construction contracts was channeled through the political patronage system and there was consequently little control over the process of construction. In the second place, the government was interested and concerned with housing, but largely as a product: that is, interested in the construction of new housing for primarily political purposes to control or reward voting behavior. Housing construction is substantial and visible; it can be recognized in public inaugural ceremonies and represented as a concrete contribution to voter well-being. Various administrations have traditionally used housing construction to create voting blocs or, as referred to locally, "garrison constituencies" where voting is not private, but very public and controlled. What emerges in this pattern is a system of political residential camps of rewarded party constituents that often conflict, occasionally violently, with each other. Housing does get built and people do get housed, but the primary motivation is political. Unlike new housing, upgrading or retrofitting for safety does not provide a very visible product or immediate benefit for garnering or rewarding political support; thus, it does little to enhance the power of a politician.

Furthermore, the Seaga government's economic policies generally and housing policies specifically seemed internally contradictory. On the one hand, the ideological direction of the government moved toward diminishing its role in actual housing construction and placing it in the hands of the private sector. The goal of the Ministry of Construction (Housing) was seen as evolving toward setting housing policy and monitoring the building industry. On the other hand, the government's economic policies made it increasingly difficult for private developers to finance their projects and for consumers to purchase homes.

The PNP government, which assumed power in 1989, essentially has continued the policy of retreating from housing construction, but has placed renewed emphasis on the financing of a flexible program of loans for housing. The position of the PNP government is that the major problem centers around the high cost of housing relative to the income of potential owners. It is recognized that the government does not have the resources to build houses for all who need them, nor could it construct them as cheaply as the people themselves could. Therefore, the PNP approach emphasizes government support for private

financial institutions, including credit unions, to provide construction and mortgage financing for low-income projects.[8]

However, notwithstanding contradictory political and economic forces in the housing sector, particularly during the JLP administration (1980-88), the occurrence of several serious floods and hurricanes served to underscore the importance of disaster mitigation measures. The mitigation initiative was largely a product of the activities of institutions and individuals working in both formal and informal sectors to heighten awareness of the importance of disaster mitigation generally and low-cost housing improvements specifically.

THE EVOLUTION OF PROGRAMS FOR LOW-COST HOUSING IMPROVEMENTS FOR DISASTER RESISTANCE

1. The Central Role of ODIPERC

Although various activities related to protection and preparedness had taken place earlier, a more concerted attempt to develop and institutionalize mitigation efforts began following the severe floods of June 1979. The Jamaican government requested a review by AID/OFDA and UNDRO of their emergency management system which had been overwhelmed in responding to the massive long-term flooding. The impact of Hurricanes David and Frederick in the Caribbean region later that year heightened awareness of what could happen in Jamaica in the event of such a major natural hazard event, and the decision was made to establish a central government office devoted to disaster preparedness and response. In 1980, Hurricane Allen caused enormous damage to both agriculture and infrastructure even though the eye of the storm did not come ashore and wind speeds were not extreme. Not having been directly struck by a hurricane since 1951, the population evidenced little awareness of the risk and a low level of preparedness; thus Allen provided additional motivation to define the extent of structural vulnerability and measures that could be taken to reduce the destructive effects of future hurricanes.

Under the National Hazard Management Programme being conceptualized at this time, two elements were given priority: development of strategies to improve the safety of structures and development of comprehensive management strategies. Renewed attention was devoted to the building code review process begun two decades earlier and, by 1983, a draft National Building Code was produced. However, it clearly was not expected to impact the non-engineered, vernacular housing of Jamaica which comprised more than half of the country's building stock.

In order to define the scope of the problem in the non-formal housing sector, and to understand what options might be available to reduce losses, the fledgling Office of Disaster Preparedness & Emergency Relief Coordination (ODIPERC) requested funding support from USAID for a vulnerability survey. The contract statement of work called for INTERTECT, a small consulting firm of disaster specialists with some prior experience in Jamaica, to:

- review existing data on Jamaican housing types, including materials used and typical designs;

- review the use of indigenous building materials in wind and earthquake resistant designs in other countries;

- execute field studies in Jamaica including modes of failure in previous disasters, and interviews with Jamaican agencies, buildings and engineers;

- prepare a manual containing an analysis of existing shelter designs and construction methods and how they may be made more resistant to damage by modifying existing design and construction techniques and/or building materials;

- develop strategies and options for the dissemination of the information to the population for their protection. This includes the development of training and educational materials and programs, including workshops, seminars, scripts, posters, booklets, films and slides.[9]

The resulting 1982 report, "Improvement of Vernacular Housing in Jamaica to Withstand Hurricanes and Earthquakes", detailed non-formal housing types, made recommendations for low-cost and incremental strengthening of vulnerable structures, and outlined a training program intended to lead into a full-fledged housing improvement program involving numerous public and private sector organizations.

Also during 1981-83, Ralph M. Field & Associates was contracted by AID/OFDA "to analyze the present responsibilities for mitigation, identify opportunities for improvements in the mitigation system... and to recommend an optimal strategy for Jamaica".[10] The project developed a framework for selecting and implementing the appropriate hazard mitigation options available to the government, in which efforts to promote and regulate safer housing were one component.

The major approach for achieving housing improvement, outlined in the 1982 INTERTECT study, was establishment of a locally-based training program. As early as Nov. 1982, the ODIPERC Director, Franklin McDonald, discussed with the USAID Mission/Kingston possible follow-up activities, specifically activities that would involve governmental and non-governmental groups active in the non-formal housing sector (building societies, welfare agencies, institutions teaching building skills, hardware merchants, and others) in developing an "Action Plan" in which all would have a vested interest.[11] Each of the "actors" would participate in defining both the overall approach and individual roles so that the activities would be appropriate, coordinated and mutually supportive. In addition, some discussion was held with INTERTECT concerning a three-phased program: to prepare educational materials, to introduce and test the materials in a series of workshops throughout Jamaica, and to initiate a comprehensive program to promote improved building instruction

and upgrading of existing buildings to minimum standards as recommended in the 1982 report.

In April 1983, the USAID Mission/Kingston contracted INTERTECT to undertake the first step: preparation of a manual "to teach building contractors, masons, carpenters and other home-builders low-cost techniques for strengthening non-engineered houses".[12] The manual was to contain "simplified illustrated instructions on techniques for construction of new buildings and modification/retrofitting of existing buildings". Seven booklets were produced, referred to as the "Jack Hammer Series" after the main narrator who represents an experienced Jamaican builder offering explanations and technical advice for each common housing type.

Immediately following completion of these training aids, the USAID Mission contracted INTERTECT to assist ODP (shortened acronym for ODIPERC) in structuring and conducting workshops in Kingston, Montego Bay and Mandeville on the subject of strengthening non-engineered housing to withstand hurricanes and earthquakes. The workshop in Kingston, reflecting those earlier discussions between McDonald and Jones, was to "emphasize coordination and planning requirements among senior public servants and representatives of private organizations affected by housing mitigation activities". The workshops in Mandeville and Montego Bay would involve parish-level offices of the same organizations, with emphasis on local coordination and implementation.[13]

The workshops were held in June 1983. The Kingston meeting, for example, encompassed three days of presentations, discussion and work group sessions. Topics included: a review of previous housing modification experience; procedures for housing modification; discussion of needs to achieve housing modification; recommendations for upgrading housing resistance in Jamaica; presentation of training aids (including accompanying manual for the building code); discussion on training process (lessons learned from other areas); the role of financial institutions; and more. Presenters and participants included the Director of ODP, the Minister of Construction, and representatives from the Office of the Prime Minister, USAID/Kingston, Ministry of Construction (Housing), Town Planning Department, Building Research Institute (BRI), Jamaica Developers Association, Vocational Training & Development Institute (VTDI), Estate Development Company (EDCo), Victoria Mutual Building Society, Urban Development Corporation (UDC), St. Mary Parish Council, St. Thomas Parish Council, St. Catherine Parish Council, JAMAL, Sugar Industry, Master Builders Association, and INTERTECT.

In 1984 the Pan Caribbean Disaster Preparedness & Prevention Project (PCDPPP) and UNDRO supported a review of the building regulation and enforcement process, which highlighted the need to upgrade building inspection procedures and skills. The 1982 INTERTECT vernacular housing study also had identified expanded roles and responsibilities for building inspectors as local parish resources for technical assistance and training, if the inspectorate could be strengthened and professional development courses were available.

That year, INTERTECT drafted a proposal to work with ODP in a demonstration housing improvement program to begin implementation of the final step of the three-phased non-engineered housing strategy envisioned in 1982 as part of Jamaica's National Hazards Management Program:

> "The overall goals of a demonstration housing improvement program are to provide the training and demonstration necessary to establish safer building techniques in order to increase the level of safety of non-engineered houses which are vulnerable to hurricanes and earthquakes, and to promote the use of these techniques in order to reduce the effective housing demand for new or replacement housing through upgrading and maintenance of a significant portion of the existing housing stock. The specific objective of the proposed project will be to develop a housing improvement program that will demonstrate:
>
> --- what structural improvements can be made that will increase the safety of a house;
>
> --- how these improvements can be made;
>
> --- how to communicate and implement a program in housing improvement."[14]

The proposed project planned to use the information and booklets developed earlier to train local carpenters, masons and other home-builders, and to strengthen 10 existing houses as part of the training and 10 more as the new trainers instructed others. As part of the proposed scope of work, the draft emphasized future sustainability and under the heading of "Replication" proposed to "...develop a system and methodology for spreading the knowledge and for involving additional families in housing improvement on a 'pyramiding basis' so that the program can be sustained and will require few additional technical or programmatic inputs." The proposal was not funded.

Instead, in March 1985, the USAID Mission (RHUDO) contracted INTERTECT to provide technical assistance to ODP and the Construction Resource & Development Centre (CRDC) for a workshop on improving hurricane and earthquake resistance of wooden houses, as a follow-up to the work done in 1981-83. The objective was "to test workbooks and the methodology proposed by INTERTECT and to develop and refine the training material and methods to ensure that housing improvements can be effected in Jamaica".[15]

Participating organizations were ODP, CRDC, UDC, CAST, VTDI, Ministry of Construction (Housing), EDCo, BRI, and the Jamaican Institute of Engineers (JIE). During the workshop, suggested revisions to the training aids for wooden houses were discussed and field-tested, scale models were constructed to assist in teaching the disaster-resistant

construction techniques, and a house in St. Mary Parish was chosen for retrofitting. A Peace Corps volunteer participated as master builder and lead trainer for the first training program for local carpenters, together with an architect from INTERTECT, two trainees from the Women's Construction Collective, and several local carpenters. At the end, participants recommended that a pilot program should be established in a community in St. Mary Parish to serve as a model for expanding into other vulnerable communities throughout the island. A draft 5-year program (1985-89) laid out a comprehensive list of objectives for public awareness, builder training, integration of the training materials into institutional training programs, community outreach, and development of any necessary supplemental materials (e.g., use of alternative techniques).[16]

Further development of these very positive initiatives was impaired by the occurrence in May of 1986 of major flooding throughout the island, especially in Clarendon Parish. The immediate necessities of attending to the needs of flood victims and of reestablishing systems of agricultural production badly damaged by the floods tended to preempt further progress on a general mitigation strategy in the housing field. Energies were directed toward a major agricultural mitigation project involving UNDP, the Ministry of Agriculture, ODP and others, but bureaucratic delays held implementation until after Hurricane Gilbert in 1988 when massive needs in the shelter sector demanded addition of a small housing component to the project.[17]

In addition, with the departure in 1987 of its director, Franklin McDonald, to become project manager for the Pan Caribbean Disaster Preparedness & Prevention Project (PCDPPP) in Antigua, ODP began to suffer from a problem of internal discontinuity.. As founding director, McDonald had been the source of many of the preparedness initiatives pursued by ODP. He had clearly seen the interrelationships at play in disaster management and helped to guide both the conceptualization and practical implementation of a vulnerability reduction strategy. Since 1987, a series of interim directors with widely varying priorities have led the agency. The most recent director left for a new position after only a few months and her replacement, from the Jamaica Defence Force, took office in early August 1992. Thus, since 1987, the ODP has changed directors five times in as many years, creating a definite problem of continuity within the institution that had provided the impetus and direction for a housing mitigation policy.

ODP also suffered from lack of institutional identity and authority. To have the power to mobilize resources and establish guidelines and policies, ODP needed to be established legislatively rather than as an office which has been shifted around from ministry to ministry. ODP began within the Prime Minister's Office, and was subsequently shifted to the Ministry of Construction (Housing) and now the Ministry of Local Government which, according to many sources, "doesn't carry much punch". Hence, the Office has had little real authority. ODP had only a kind of "gentlemen's agreement" with the police and fire departments to perform according to ODP guidelines in the event of a disaster. There was, in fact, no real power to require conformity to a pre-determined disaster plan. ODP could not declare a state of emergency or control and channel the flow of resources according to its

informed understanding of a situation. This is especially problematic in hurricane situations when warnings offer time to prepare.

A further dimension of the lack of statutory identity involves funding. It has been suggested that, if ODP were established legislatively as a normal government agency, it could charge for some of its services such as preparing disaster plans for ministries and official institutions, thereby generating income to support its programs. So long as ODP is not legislatively created and defined, it has little political authority and no economic resources beyond its minimal budget. An act to endow ODP with formal agency status is currently in the legislative process, but it is stalled and there is little political support for getting the act voted upon.

Parallelling the politician's predilection for building new houses previously mentioned, there is a general lack of political constituency for housing safety. Public officials see no political gains to be achieved; indeed, there are few political costs to politicians for a lack of preparedness. Public officials and politicians are, however, interested in relief because it can be used for political purposes by channeling goods and services to constituents. Controlling the flow of goods and dispensing aid has a very high political profile.

Thus, notwithstanding the energy and imagination of various individuals and agencies within the disaster relief and reconstruction fields, there have been as well certain political and organizational difficulties which hampered the full development and implementation of a nationwide housing mitigation program within some of the agencies most devoted to the initiative. Similar institutional problems can be found in the formal housing sector.

2. The Institutional Context of Formal Sector Housing Provision

The formal housing provision environment in Jamaica is composed of a complex configuration of private and public sector development, finance, construction and marketing entities. Public sector agencies include, among others, the Ministry of Construction (Housing), the National Housing Trust (NHT), Estate Development Company (EDCo), and the Urban Development Corporation (UDC). These and several other public organizations compete, combine for joint projects and, in some instances, duplicate each other in the design, financing, developing, and marketing of housing projects. These public institutions are paralleled by a large number of private developers and financial institutions. Both private and public sector institutions subcontract or employ private construction companies to do the actual building.[18]

In the early years of the 1980s, when the safe housing initiative was taking shape, Jamaica's housing crisis was acute. The highest priority, particularly for the public sector, was to get as many houses built as possible, at the lowest possible cost. Between 1970 and 1986, the average production of units by the formal sector (both public and private) was approximately 3,500, only a small part of the 15,500 new units and 9,700 upgrades required

annually for 20 years that the Seaga government's National Shelter Strategy calculated would be needed.[19] More than half of the new housing units were required in the Kingston metropolitan area and approximately 85% of the upgrades were needed in the rural regions.[20]

The pressure for housing was compounded by the stressful economic climate which tended to put a premium on false economies to minimize costs at the expense of quality materials, construction and safety measures, thus vitiating the efforts of those seeking to establish a disaster mitigation program in the housing industry. In many instances the housing development strategy simply sidestepped the issue by emphasizing sites and services provision as opposed to housing construction, thereby placing responsibility for housing safety in the hands of the recipient.[21] Demand for both serviced lots and housing schemes still exceeds supply. Other forms of housing provided were core, shell and sanitary core houses, where safety measures could have been included but other -- primarily economic -- priorities intervened.

In addition, illustrating the incomplete institutionalization of the policy, involvement of professional associations such as the Jamaican Institute of Architects and the Jamaican Institute of Engineers in disaster preparedness was not achieved. During the 1980s, the JIE held some seminars on anti-seismic design techniques, but the professional engineering and architectural community paid little attention to the hurricane threat. In general, more attention was paid to earthquakes and floods than to wind forces. Jamaica had not experienced a serious hurricane since 1951, and hurricane-resistant housing was simply not a recognized priority in the industry. Moreover, much of the literature produced by ODP and other agencies to alert people to the hurricane threat and to assist them in making low-cost changes to minimize possible damage seems not to have reached the professional engineers and architects in the public housing sector. For example, the highly informative 1982 INTERTECT vulnerability study had never been seen by representatives of one formal sector housing agency. As a result, according to one engineer, Hurricane Gilbert "caught the country flat-footed". Almost everyone claimed to have no knowledge of existing studies or training materials, and thus needed to develop information from scratch after Hurricane Gilbert.

Building codes, which have followed either the British model or the U.S. Uniform Building Code (UBC), addressed hurricane safety measures, but they were generally not adhered to by builders. The proposed Caribbean Uniform Building Inspection Code (CUBIC) is similar to the British code, but with a greater emphasis on wind resistance. However, CUBIC is not formally in effect and there are still difficulties in achieving consensus among all the member nations. It was suggested that CUBIC should be used in the architecture and engineering schools of the University of the West Indies (UWI) and at the College of Arts, Sciences & Technology (CAST) in order to gain a foothold in national professional consciousness. However, the lack of a sufficient number of building inspectors with requisite authority and enforcement powers vitiates the question of CUBIC ratification and local acceptance. Until such time that codes can actually be enforced, they will have

little impact in formal sector structures and none at all in informally-constructed buildings. The National Housing Trust, for example, requires all the structures it builds directly or finances to conform to code. Yet they also say that currently only about 84% of the structures are being formally inspected, and this represents a great increase from the pre-Gilbert period.

EDUCATION AND TRAINING IN HOUSING VULNERABILITY REDUCTION

1. Training Provided in the Formal Sector

In order to institutionalize the use of building codes and their enforcement, a three-week summer workshop for building inspectors was organized at CAST to focus on building safety and enforcement. The workshop was funded for four years by USAID and is now supported by the Jamaican Ministry of Education. The course constitutes a form of continuing education and professional development for the inspectors. While the concept has thus acquired a degree of institutionalization, in practice the program will have very limited impact until construction quality becomes a priority. The staff of inspectors is too small to be able to inspect even a fraction of the construction that takes place, thus the threat of enforcement has negligible impact on the building industry as a whole.

As part of a larger effort in job creation, the Seaga government formed the Human Employment and Resource Training (HEART) and Solidarity programs in 1982, funded by US$10 million from USAID and J$10 million of state monies.[22] The HEART Trust administers the fund for delivering direct training, financed by a 3% levy on the private sector wage bill over a certain level (currently J$15,000 per month). Employers have the option of providing the training themselves or paying the 3% of the wage bill into the Trust. Operating under the Ministry of Youth & Community Development, HEART academies around the country offer training programs on three levels (pre-vocational, vocational, advanced vocational) in such areas as continuing education, cosmetology, business, agriculture, crafts, clothing, and building trades. The Vocational Training & Development Institute (VTDI) defines technical standards for accreditation for the building skills training, offered in twelve basic trades (for carpenters, joiners, plumbers, electricians, cabinetmakers, masons, steel fixers, steel benders, tilers, welders, painters and decorators), as well as support subjects such as technical drawing, blueprint reading, trade technology, civics and community involvement. There has been no specific disaster mitigation curriculum included in the building skills training.

People who attend the HEART Academy for Building Skills in Portmore are often sent by the building industry, but because the construction industry is so loosely organized, continuity and consistency prove difficult to maintain. Most contractors in Jamaica hire by the job; they do not keep regular teams of construction employees that can be trained and then consistently employed by the firm over an extended period of time. Thus, completion

of the entire cycle of HEART building skills instruction is difficult, as workers often attend only selected classes that impart specific skills needed for a particular project.

A representative of the Master Builders Association serves on the HEART training board. The task of the board is to establish standards and certification for training, grading workers by the training modules they complete and the skills level achieved. Certification provides a means for consumers to judge the abilities of tradespeople to do the work needed; it should guarantee achievement of certain minimum standards. These standards are set by the industry and become the basis for certification in the HEART program.

2. Training and Skills Upgrading Available Through NGOs and the Non-formal Sector

While government programs to train individual workers do have the potential to affect construction in the informal as well as the formal sector, the task is impressive. An estimated 65% of all housing in Jamaica is constructed outside the formal sector, whether by homeowner, donated or hired labor, skilled or unskilled. Non-governmental organizations (NGOs), working at individual and community levels, are one means of reaching householders and tradespeople with information on constructing and retrofitting for safety.

One NGO, the Construction Resource & Development Centre (CRDC), has conducted experimental training programs for adult construction workers, including the upgrading of skills in a variety of industrial trades. For example, in the 1980s, CRDC provided training for the Women's Construction Collective (WCC), whereby women were given a basic five-week masonry and carpentry course with the possibility of further upgrading of specific skills. Not only does the WCC operate as a small contracting business itself, but over thirty women trained through this program have also entered the building industry at trade level.

While the efforts of the WCC and CRDC were important and the results promising, the slowing of the national economy and construction in general meant fewer employment opportunities, and the program could not be expanded. Programs of this type and size must be replicated many times over to have any substantial impact on housing safety on the island.

Furthermore, by 1985 it was felt by some NGOs that the Jack Hammer series of manuals on housing safety, developed in 1983, needed revision because certain details were too complex or were impractical, but no one undertook a complete review or the task of modification. In 1988 CRDC published a booklet ("Hurricanes and Houses: Safety Tips for Building a Board House", referred to locally as the "pink book") that was based on some of the 1983 manuals. However, it was not used in the builder training component of the reconstruction project that year (the project initially designed following the 1986 Clarendon floods) because the funders felt that the booklet was not sufficiently targeted to a specific audience. Other materials, such as a manual prepared by UDC, were felt to be inappropriate for community use since they were developed for architects and engineers and contained a great deal of complex material not accessible to untrained people.

HURRICANE GILBERT AND THE RENEWED PURSUIT OF HOUSING SAFETY AND DISASTER MITIGATION OBJECTIVES

In September 1988, Hurricane Gilbert swept over the Caribbean and the Gulf coast of Mexico, leaving havoc and destruction in its wake. The pattern of damage inflicted by the storm varied as the characteristics of the storm changed in its journey across the Caribbean. When Gilbert arrived in Mexico, it brought torrential rains and caused severe flooding; high winds caused most of the damage in Jamaica. Highest sustained winds were reported to be 223 km/h with gusts even higher in Jamaica's mountainous regions. Damages have been estimated at approximately one billion U.S. dollars, roughly half of which were in agriculture, tourism and industry, hence drastically impacting the island's economic ability to recover. External humanitarian aid began to arrive shortly after the storm and was soon embroiled in Jamaica's endemic political problems, heightened by the coming national elections. Distribution of food, agricultural and building stamps was seen as following lines of political patronage.[23]

Hurricane Gilbert destroyed or damaged almost 55% of Jamaica's housing stock. Fourteen thousand individual houses and entire housing schemes in urban areas were totally destroyed as roofs were torn off and walls collapsed in the storm. Approximately 500,000 people, many of them among Jamaica's poorest, were left homeless, either with severely damaged houses or without any housing at all. The almost complete loss of house contents compounded the economic devastation for many thousands of people.

What immediately became apparent was the extraordinary vulnerability to high winds of much of Jamaica's housing stock. Many of the virtually new government housing schemes -- so new that some were not yet totally occupied -- such as Poor Man's Corner in St. Thomas, Hamilton Gardens in Portmore, or Charlemont in North Clarendon, suffered anywhere from 80-100% roof loss. Private individual dwellings in many areas suffered similar fates.

These facts, however, should not lead necessarily to the conclusion that the housing mitigation policy initiatives of the early 1980s had failed. Gilbert did not reveal a failed policy so much as a policy not yet completely evolved or implemented. It must be stressed that development of the housing safety policy was proceeding throughout the 1980s as evidenced earlier in this document, and that Gilbert, as disasters often do, gave new impetus to activities already underway.

1. Formal Sector Responses to Housing Safety

Changes are underway in the formal housing sector as a result of Hurricane Gilbert -- whether the changes are permanent is an open question as yet. Adherence to safety codes in both developed and underdeveloped nations tends to diminish with time following a disaster.[24] That notwithstanding, there are indications that greater attention will be paid to housing safety and hurricane mitigation by public institutions in the formal housing sector.

One noteworthy exception to this positive trend is that no mention of retrofitting or disaster resistant housing is made in the situation analysis, new policy directions, objectives, development strategies, programs and projects, or implementation plans of the housing section in the Jamaica Five Year Development Plan 1990-1995 prepared by the Planning Institute of Jamaica for the PNP administration.[25]

It is a very common opinion that the government-financed housing projects that were so heavily damaged were vulnerable largely due to faulty construction rather than faulty design. With many construction projects awarded through the political patronage system, and little control exerted by a weak, understaffed inspectorate, neither regulation enforcement nor incentive exists to ensure adherence to quality construction practice.

The National Housing Trust has repaired and retrofitted their badly damaged housing schemes such as Hamilton Gardens (with close to 100% roof loss), White House, and Oaklands. As mortgage holders and therefore partial owners, the NHT preferred to do the retrofitting and repairs themselves rather than let individuals do it because there were no guarantees that the funds would be used by people to actually carry out the needed work. Insurance funds went to the NHT, who hired an independent consultant to assess damages and check repairs, rather than relying on the building inspectorate. They contracted builders to carry out the work. As of August 1992, they believe that about 84% of all NHT-built or -financed structures have been fully inspected for housing safety.

The insurance industry may also play a crucial role in forcing public and private developers to conform to codes. There is some concern that the international insurers may pull out of Jamaica, thus shifting the burden entirely to local companies. Developers are afraid that local insurers will raise rates to cover potential losses, but that another major disaster may bankrupt them anyway. Losses in the region when a disaster hits are simply too heavy. There have been informal conversations about offering lower rates as an incentive for those who conform to standards, but this approach faces an uphill battle with insurers who threaten to withdraw insurance from buildings that do not meet minimum standards. The situation of both supply of and demand for insurance could become acute if the international companies pull out of Jamaica completely.

Interestingly, although much technical data was available in the country, some organizations in the face of massive failures in Gilbert "went back to the books to find information on wind resistant building. We are sensitized now, but it is coming from our own research." Such a situation clearly indicates that there are problems in both the exchange of appropriate information between agencies and its dissemination within an agency or company. The source of the information is very important -- for example, whether it originates from the Ministry of Construction (Housing), the Jamaican Institute of Architects, the Jamaican Institute of Engineers or ODP. One engineer affirmed this conclusion, stating that, "...if ODP is responsible (for dissemination), the information may never be distributed to the housing development people."

The formal housing development sector could be an important agent for the transfer of hurricane resistant housing information. For example, where a project involves sites and infrastructure provision, the public or private developer holds extensive meetings with residents to discuss the services they are providing. These meetings could be used as a forum for providing and discussing information on hurricane safety to squatters. As participants in services programs tend to improve their houses and usually provide their own labor, passing hurricane information on to them might motivate self-builders to include some strengthening measures as they upgrade their structures. Significant progress could be made in terms of dissemination to the wider population of the project and neighborhood.

Both formal and on-the-job training of construction tradespeople provide good opportunities to influence informal building practice. When workers are hired for formal projects such as housing schemes or public buildings, they may be given specific training to upgrade certain skills necessary for that particular job. After the job is completed, they often return to their home communities while waiting for the next big job. In between formal sector employment opportunities, they look for local business to bridge the gap in income. Tradespeople who have learned mitigation measures are able to use this training in local repair and construction jobs. Current efforts to develop mitigation courses at the HEART Academy for Building Skills and at CAST thus may be able to affect both formal and non-formal construction, and certification -- which places a value on the knowledge or skill gained -- can be used as a promotional tool to market a construction worker's skills locally.

2. Continuities and Innovations in Formal Sector Training for Housing Safety

The widespread destruction left by Hurricane Gilbert heightened appreciation in the primary training institutions of the need for disaster resistant construction. The new, post-Gilbert PNP administration has set up a National Training Agency (NTA) whose job is to develop standard syllabi for all training and to coordinate training and certification. The NTA is absorbing the HEART academies but retaining the name and personnel.

Although standards are set out quite adequately in the building codes, Hurricane Gilbert demonstrated that there was actually little attention paid to hurricane resistant construction features and not much compliance at all. The fact that Jamaica had not suffered a serious hurricane since 1951 is also frequently mentioned as a reason for the lack of compliance. Gilbert has provided a convincing argument for institutionalizing training in this regard. The NTA is presently working with CRDC to develop a disaster mitigation syllabus for their building trades training program. Similar materials are expected to be integrated into the curriculum at the new Caribbean School of Architecture at CAST.

Currently, a need is perceived to improve and update disaster construction training materials. In the aftermath of Gilbert, a variety of materials relevant to non-engineered housing were available, among them the ODP/INTERTECT Jack Hammer series, the CRDC "Hurricanes and Houses: Safety Tips for Building a Board House" (the "pink book"), and a

JIA-sponsored booklet entitled "Build It Right". However, dissemination of these materials seems to have been quite uneven.

An important training resource was developed on a small scale immediately after Gilbert's impact. In Oct. 1988, with support from Oxfam/UK, CRDC held a workshop at VTDI for Peace Corps volunteers on safe roof construction and methods to communicate this information to local residents and builders in their communities. In November a second workshop was held with support from USAID. The PCVs were also asked to keep a diary of their activities. Several small booklets were put together ("Post-Gilbert Roof Construction, Nov. 10-11, 1988 at VTDI, Papine" and "Rooftops Bulletin Number One" which focused mainly on assessing and reporting damage). The PCVs taught some basic carpentry classes and talked with builders as they repaired their houses. An evaluation of the training was done in March 1989, reporting that the PCVs worked in 45 communities with 188 households. They trained approximately 40 tradesmen and 500 residents, and they felt the program was very successful. It has been suggested that PCVs are a relatively unexploited resource and could be more involved in housing mitigation education. PCVs reside in their respective communities for an extended period of time (two years) and both know and are known by the community, thus cutting down on problems of entry and confidence which outside teams may encounter. If PCVs were given disaster management and construction training, their value to their communities would be enhanced beyond their normal project responsibilities.

3. Two Training Approaches Taken by NGOs

Hurricane Gilbert provided both the opportunity and the necessity for further development of the safe housing initiative in Jamaica. As mentioned earlier, disasters frequently accelerate changes which are already underway in a society and such a tendency may be equally visible in the realm of policy development, particularly as it relates to hazards and public safety. There was little question after the hurricane that Jamaica's housing stock was extremely vulnerable. Since 65% falls within the category of informal construction, there is also little question concerning the ability of the government to supply housing to all who need it regardless of hurricane damage and loss. Thus, the post-Gilbert reconstruction period provided a context in which varying models of technology and information transfer about hurricane resistant housing could be implemented and implicitly tested.

Efforts to impact the performance of low-income, non-formal housing were advanced in the aftermath of the hurricane in two programs by different NGOs using fundamentally different conceptualizations of information transfer and community development. In essence, these two conceptualizations or models of information transfer might be termed the "normative" model and the "capacitation" model. Each project began within a month to six weeks following Hurricane Gilbert. At several points, efforts have been made to mesh the two approaches or to link their efforts. While these projects are categorized as normative and capacitative respectively, it must be noted that both aim at capacitation. One is grounded

in the belief that saturation of a community can result in safer housing techniques becoming standard building practice, while the other focuses on developing social and economic mechanisms that will facilitate making the choice for safer housing.

A. The Normative Model

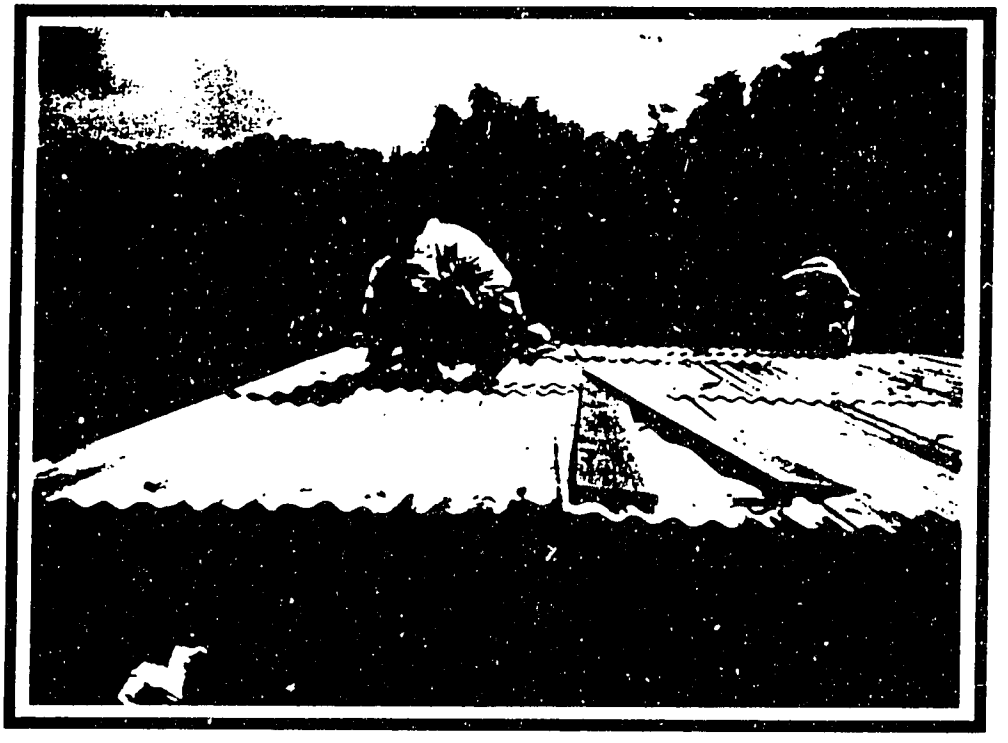
The normative model to some extent grew out of CRDC's rapid training of Peace Corps volunteers in roof construction immediately following Hurricane Gilbert. Working in the communities in which they lived, PCVs were able to assist in the building or repairing of an impressive number of houses. CRDC Director Steve Hodges subsequently designed a project aimed at training builders in their own communities who would then be paid to do safety audits, evaluating homes for retrofit, and to carry out repairs there. The project was based on the idea that there are many construction tradespeople working in rural communities who are not affected by changes in training curricula made by HEART, VTDI, etc. Therefore, training should take place with these informal sector builders in the communities where they will do most of their work. The goal was to have the trained builders retrofit all the houses in a community in order to establish housing safety as a norm within the community so that all new houses or additions would automatically include certain minimum disaster resistant measures such as hurricane straps. A goal of 200 retrofitted houses was proposed for the first year of the project.

During roughly the same time period, the Pan American Development Foundation (PADF) submitted a brief preliminary proposal to OFDA for a low-income housing retrofit project.

Instead of CRDC acquiring funding directly for their project, at some point CRDC became the primary local implementing agency within the PADF proposal subsequently funded by AID/OFDA/IDAC. The project, currently entering its second year, is designed to "introduce simple hurricane resistant building techniques to retrofit the homes of low-income owners". PADF also included the Association of Development Agencies (ADA) in the proposal to undertake promotional activities to "generate effective demand for retrofitting". The PADF contract calls for 1,500 houses to be retrofitted within the project period of two years, a goal which some at CRDC believe is unrealistic.

Under the PADF program, CRDC provides training to local building tradespeople (carpenters, roofers and others) in retrofitting techniques as well as the safety auditing process. CRDC is responsible for organizing the actual work, except for a few locations where this is done by the builders. Based on the safety audit, a resident decides whether to mobilize resources for the investment in wind resistant retrofitting. Responsibility for financing the work and materials lies with the homeowner. There have been instances where the people are initially resistant because they say they cannot afford the work; after neighbors begin to participate in the program, however, they find they are able to raise sufficient funds and become enthusiastic participants. Once work has started on a house, it generates interest from the neighbors and people begin to think about changing their own houses. Residents

CRDC team working on roof of home in Sunning Hill, St. Thomas Parish (PADF repair/retrofit project). The local team, including two women who were WCC trainees, was not only retrofitting but also repairing and reroofing.



often surprise project staff with the resources they can tap for this investment in housing if they choose to do so.

CRDC can realize cost reductions by making bulk purchases. They sell materials to the participating residents either at cost or at a subsidized price. When CRDC discovered that they could not obtain hurricane straps that fit the wood sizes used in local construction, they worked out a design for a hurricane strap which is being produced locally for about J$4.50, thereby stimulating local micro-enterprise development. The carpenters are paid approximately J$200 a day, and total expenses for retrofitting a house generally run about J$2000 (approximately US$ 100). In some communities where the project is underway, members of the WCC are participating in the training and on construction teams.

The elements of this project include training/skills upgrading, promotion, micro-enterprise development, homeowner investment, etc., within a "saturation" framework having quantifiable objectives and a limited time period.

B. The Capacitation Model

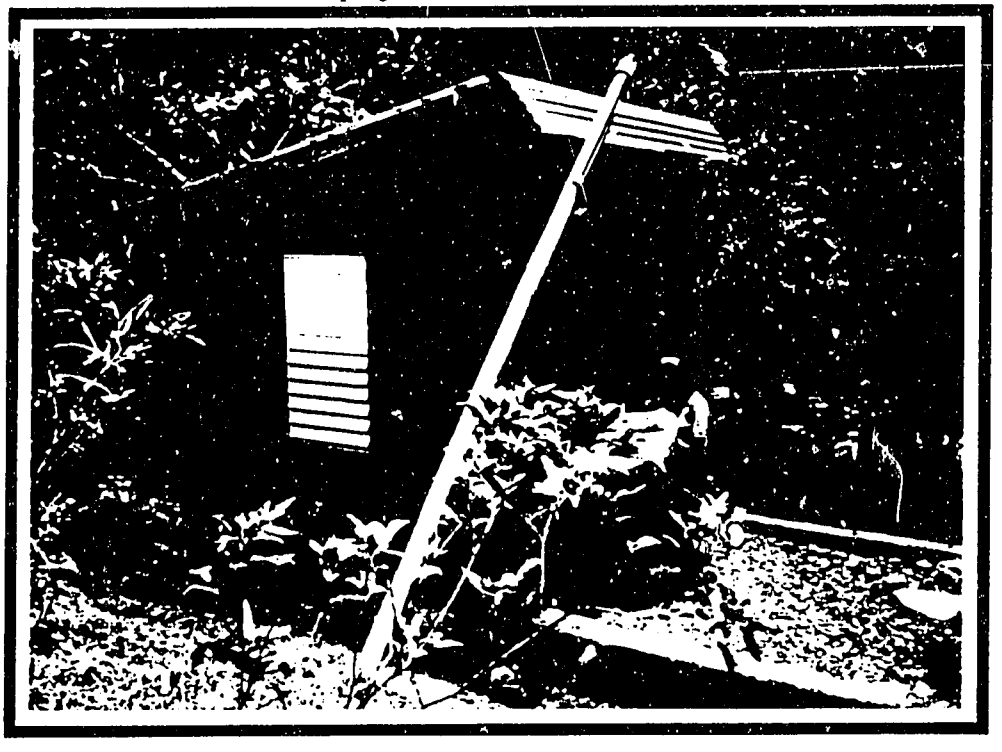
The capacitation model for housing education and mitigation is largely the product of the Association of Development Agencies (ADA). ADA serves as an umbrella organization for its 18 members, most of which are Jamaican social service and development organizations. ADA itself has no field staff, but works to coordinate the projects and goals of its member agencies. ADA also conducts research and analysis of the work of its affiliates, identifying common issues and strong and weak points in their work. ADA was originally funded by its member organizations, but most of its support now comes from a variety of NGOs (many Canadian) such as CANSAVE, CUSO, Oxfam (Canada and UK), InterPares and Christian Aid.

ADA traces its history from the 1979-80 period, evolving into more formal meetings by 1982 and incorporation in 1985. ADA sees its basic mission as community development and empowerment, emphasizing the overall social development process rather than production of a "head count" of so many jobs created, so many houses built, etc. The focus is on developing community approaches to problems which will not only bring substantial material improvement to people's lives, but will lead to greater participation, empowerment and capacitation of the population as a whole.

Before Hurricane Gilbert, ADA was already involved in housing issues with the JIA, the Caribbean Council of Churches (CCC), and the Council of Voluntary Social Agencies (CVSS). In February 1988, ADA and CVSS sponsored a workshop on "Housing: Alternative Methods for Developing Countries" in Mandeville to increase communication/networking on housing issues in both formal and informal sectors. Both CRDC and its former director were active participants as well. One product of the workshop, Initiatives in Low Income Housing: A Resource Manual (ADA and CVSS, 1989), was in process when Hurricane Gilbert struck; hence, information could be included about

Hurricane straps and braces on a bus stop shelter in Sunning Hill, used by CRDC as a simple, readily-accessible model of improved roof construction techniques, for residents of a scattered community in eastern Jamaica where roof damage was common in Hurricane Gilbert.

House built in ADA-sponsored shelter clinic, Sunning Hill. Roof was later strapped by CRDC team as part of the current PADF project.



post-disaster housing projects, and the expanded text underscored the importance of safety features in construction.

In the aftermath of the hurricane, ADA obtained approximately J$2,476,000 for disaster work from a consortium including CIDA, Oxfam/Canada, Inter Pares, CUSO, CCODP and the United Steel Workers Humanitarian Fund. There were no strings attached to use of the money. In a series of meetings with member agencies and others, it was determined that, after an initial period of relief work (6 weeks), the focus of their efforts would shift to long-term reconstruction. The funds would be utilized in four areas of reconstruction: shelter, agricultural rehabilitation, member agency staff assistance, and administration. This entry of ADA into disaster reconstruction is another example of a existing organization with other priorities and goals responding to disaster needs.

ADA realized that Hurricane Gilbert severely exacerbated Jamaica's chronic housing problem which was the major focus of the aforementioned February 1988 workshop and publication. Indeed, many of the ideas and contacts arising from the Mandeville workshop had a direct influence on ADA's post-Gilbert shelter activities. Two of the major conclusions reached in that workshop include: "NGOs should try to provide finance, and people provide labour, to improve housing" and "housing clinics should be established where people can get advice and information on how to maintain and repair their houses, on safety regulations, building techniques and so on...".[26]

Within two weeks after the hurricane, ADA and the JIA, each of which had apparently developed the idea independently, agreed to organize a collaborative series of community-based shelter clinics. The clinics would instruct householders and tradespeople in safe construction techniques, using a "hands-on" approach of actually building a demonstration unit in the community. The demonstration house -- basically a one room, 10' x 12' wood or concrete house with a door and windows -- cost roughly J$11,000 and integrated safe design and hardware in the construction. Most of the clinics were led by two architects, one from the JIA funded by ADA and one from Dominica funded by CARIPEDA, a regional NGO. The pilot shelter clinic was held in Oct. 1988 in Petersfield, Westmoreland, where an ADA member, the Social Action Committee (SAC), had a regional office. Land for the building was donated.

The architect who led the Petersfield clinic, Cosmo Whyte, is the son of an architect who had designed houses for WISCO (West Indies Sugar Company) in 1938, most of which survived Hurricane Gilbert in far better shape than those constructed in the 1970s and 1980s. The local SAC representative commented that people could see the difference in quality of construction and use of hurricane straps in these older houses as compared to the ones built more recently that suffered massive damages. The Petersfield clinic used the previously mentioned manual "Build it Right", authored by Cosmo Whyte; the SAC representative had no knowledge of any other reference or training materials in the country. The Petersfield clinic was extensively videotaped -- showing materials, techniques, sequence and skills -- and included interviews with Whyte and SAC representatives.[27]

Demonstration house built in first ADA and JIA Shelter Clinic, Petersfield. House was later shipped to the Kingston Housing Fair for 3-4 months. Loss of eave boxing, and gable and roof damage, are blamed on shipping problems. The house is currently occupied by a local family and has not been repaired. Thus the roof is vulnerable to uplift and to shredding of roof sheets in strong winds, and the building also is not anchored on its permanent site. So the demonstration house is at this point really demonstrating to local builders two fundamental features of vulnerability to high winds rather than features that could limit wind and rain damage.

Beginning in Dec. 1988, ADA and the JIA held 13 shelter clinics over the following 15 months in communities all over the island. The clinics lasted from 3 to 7 days, and about 27 demonstration houses were built on donated land in 12 parishes. The funds (approximately J$164,000) that were used to purchase materials for the demonstration houses were donated by the Caribbean Council of Churches (CCC). Two one-day builders' training workshops were also held by CRDC in collaboration with the ADA/JIA program. Eight Jamaican development agencies, including three non-ADA member agencies, also participated in the shelter clinics. More than 620 community members took part in the clinics, with participation ranging between 34 and 72 persons for individual clinics of which perhaps a fifth provided the core group. Participating community organizations and local NGO representatives were responsible for motivating and mobilizing the community. One required initial step was deciding to what use the completed demonstration unit would be put; five communities use them as community facilities and eight have donated the buildings to needy community members. Moreover, ADA placed considerable responsibility for other aspects of the clinic on the community, requiring them to select the land and giving them considerable control over what took place in the clinics.

There was some resistance to the concept among local builders, so a good deal of time and effort was required to establish rapport between the outside professionals and the communities. One of the architects explained that he did not want to call what they did "training"; rather he saw the project as an attempt to help the community groups focus on the need to provide security.

ADA saw the shelter clinic program as having four main goals:

1) to educate community members -- householders and tradespeople -- about safe building practices, especially in relation to protection against hurricanes and earthquakes;

2) to strengthen community self-help practices, community confidence and the building of local organizations;

3) to encourage networking at different levels of society, especially between community groups, development agencies and professional and other national bodies; and

4) to influence public policy on housing from the basis of the experience gathered and the lessons learned.

The degree to which the shelter clinic program met these goals is the subject of an evaluation which is in process and not yet available.

With the second goal of strengthening community self-help practices, confidence and organizations in mind, ADA also set about designing a Shelter and Development Loan

Scheme. The SDLS was designed to enable local people to put into practice in their own houses the techniques and materials they had learned in the clinics. The SDLS was based on three organizing principles, namely: that representative community groups are the best conduit for distributing scarce resources; that these groups must take the main responsibility for developing selective criteria; and that hurricane reconstruction programs should help strengthen community organizations. A revolving loan format was chosen to carry out these purposes rather than an outright grant program to avoid deepening patterns of dependency or patronage.

Funding for the loan scheme came from the remainder of the consortium money, approximately J$1.3 million. Roughly J$100,000 was set aside in a fund for each of 10 participant communities, and J$130,000 for two more-heavily damaged communities. Each community has a credit allocation committee made up of representatives of local organizations; they assess loan applications for borrower eligibility, payback ability, collateral, and also verify the repair estimate given to the resident by the builder. Loans are channelled through local community organizations or local representatives of NGOs and parish credit unions. Thus, when an individual from a participant community wants a loan to repair their damaged home, he or she must get an estimate on costs from a builder and submit it through a local community development organization such as SAC to the ADA-organized building committee for approval. The community development organization then identifies the local credit union and sends the approved application to ADA. ADA transfers the funds to the parish credit union on a revolving loan basis (with lower interest rates) and the applicant gets the approved loan. If the applicant is not a credit union member, he or she may join and the normal waiting period between membership application and loan approval is waived; the program thus also helps the parish credit union to recruit membership. The approved loan is not given to the applicant in cash, but goes directly to the hardware store for materials.

According to ADA, there is no specific requirement that the loans must be used to fund mitigation, but it is assumed that applicants will have gone through the clinics and will choose to use the money for appropriate hardware to carry out the disaster resistant construction techniques. The SAC representative in Savanna-la-Mar, however stated that applicants must satisfy the building committee that they are using proper safety techniques in order to get the money. The building advisor for their program insists that people use the techniques and inspects for them, saying that requiring the use of safety measures is just as important to the loan program as the determination of the ability to pay.

In terms of funding actual housing mitigation, the SDLS has had mixed success.[28] Some of the original community organizations have withdrawn from the program for a variety of internal reasons. Basically, institution-building is a long-term and labor-intensive strategy which rarely produces 100% success rates. To avoid encouraging a handout mentality, ADA has chosen an approach aimed at fostering the sense of community and local decision-making. Such an approach has entailed an extensive training program including special training sessions for the housing committees on credit allocation, financial counseling,

contracts, general disaster preparedness and evaluation workshops over the three years of its existence. The goal is greater independence for the housing committees as they gain greater control over the necessary skills and tools for their operations.

ADA, although not concerned with disaster mitigation or reconstruction prior to Hurricane Gilbert, has developed a series of objectives regarding housing safety policies at the national level. ADA representatives have established contacts and held meetings with some of the main institutions in the housing field including CRDC, CVSS, MEDA, the City of Kingston Credit Union, the Women's Housing Group, and USAID. Their principal goal at the policy level is to establish a formal coalition of NGOs to develop policy proposals for the provision of safe and affordable housing at the national level. However, ADA does not perceive itself as primarily concerned with disaster mitigation. Once the shelter clinics were finished, ADA knew they had neither the staff nor the money to continue the concept on a long-term basis, and they hoped another institution would come forward to use their findings and continue the project. ADA's director, Peta-Ann Baker, and Education & Research Officer, Marine Cunningham, -- both of whom serve on CRDC's board -- feel that CRDC is the natural organization to carry on the project but say that CRDC has not yet developed a clear direction for the future. This is echoed by Steve Hodges at CRDC who expresses some doubts that CRDC in its present form should try to take on this large task. The different perceptions of their identities, roles and models have somewhat complicated interaction between ADA and CRDC.

Currently, both the normative approach of CRDC and the capacitation approach of ADA to housing safety are being employed in Jamaica. Indeed, in a number of different contexts attempts are being made to combine the approaches, assigning different functions or roles to the institutions associated with each model. In the PADF-CRDC repair/retrofit project, ADA was initially requested to participate by promoting the project and mobilizing participation while CRDC would conduct the training. However, the ADA community organization process was too time-consuming for the training and construction schedule set by PADF in their AID/OFDA/IDAC contract. CRDC had to complete first-stage tasks by a certain date in order to secure funding for second-stage tasks. Between March and December 1992, CRDC originally was to retrofit 500 homes, completing an additional 1000 homes by project completion in Dec. 1993. While CRDC felt that these were overly ambitious goals, they did believe that they could target many more than the 100 that ADA estimated could be retrofitted in the first phase. ADA based its estimate on the amount of time they felt would be required (until June 1992) to do the basic community development groundwork before any retrofitting could begin. CRDC needed to start much earlier to even come close to the PADF quota. CRDC's perception is that ADA is very absorbed in questions of community and process and, for that reason, the shelter clinics are very slow and terribly methodical. ADA feels that CRDC works much too fast and, therefore, the level of acceptance in communities is low; more time is needed to explain and motivate the communities. Provisions of the contract thus have acted to constrain rather than facilitate what might have been a healthy integration of the two approaches.

Another issue reflecting the difference in approaches involves the evaluation responsibilities that ADA was asked to undertake for the PADF-CRDC project. ADA proposed to initiate the evaluations in March 1992, just three months after CRDC was to begin work in their first targeted community. CRDC insisted that the evaluations would be too soon and still has ADA on hold regarding scheduling the evaluations. The problem may lie in whether the evaluation process is perceived as an interim assessment to provide data for feedback and revision at mid-project or as a more quantified, final assessment of performance for the project.

Clearly, the degree of compatibility between the normative and capacitation models is far from established at this point in the project. The fit between an essentially community organizational approach, focusing on issues of empowerment and capacitation, and a more technological approach, emphasizing the rapid transfer of skills and hardware, continues to prove problematical in spite of the obvious potential.

SUSTAINABILITY ISSUES

1. Links through Time:

Initially, there appeared to be few direct links between efforts to achieve safer housing in the early 1980s and activities stimulated by the devastation of Hurricane Gilbert. Awareness of the existence of written materials illustrating simple low-cost methods to strengthen houses is not widespread within either governmental or non-governmental organizations, due to one or a combination of the following circumstances:

- lack of institutional memory
- failure to disseminate data within organizations
- lack of interest

While there seems to be a consensus among those who are familiar with the 1983 "Jack Hammer" training aids that they need revision in order to be useful, revision was never really undertaken; and there is almost no knowledge of the 1982 INTERTECT housing vulnerability study, which has held up well over the years and continues to be a valuable source of both background information (e.g., non-formal housing typology, traditional wind-resistant measures) and pertinent options for planning and practice. Several officials said it would have been useful to have that study in 1988 as a resource for decision-making and some baseline data, and it also should find a home in reference collections at CAST, VTDI and the various NGOs interested in housing issues. Although JIA representatives had participated in some of the early activities, several JIA members had no knowledge that work of this type had been done, so a new booklet was developed "from scratch" after Gilbert. Engineers also spoke about learning from their own post-Gilbert research since other data was not available. Interestingly, the 1989 ADA publication, Initiatives in Low Income Housing: A Resource Manual, lists as references in their Documentation Centre booklets on

low-cost housing techniques prepared for India, the Dominican Republic, Dominica and Peru, but none of the manuals and papers prepared specifically for Jamaica during the 1981-83 period. The Centre did list the CRDC "pink" book that was based on the "Jack Hammer" series. So linkage via the written materials produced is tenuous.

A better case can be made for some conceptual linkages. So long as ODP remained committed to a National Hazards Management Program, activities were pursued with a clear vision of the sequence and the eventual goal. The links in this chain may have been stretched but nonetheless there were no breaks until the period 1986-88. At that point, a combination of the passage of time since the last major hurricane, growing economic problems and shifting priorities, leadership changes within key institutions such as ODP, and a flood disaster which focused attention on agricultural rehabilitation, resulted in a gap in housing improvement activities. Strong interest and involvement in low-cost housing issues such as squatter upgrading, finance and accessibility was evidenced by NGOs in early 1988, however, so that their networking and attempts to build a resource base placed them in a position to get involved in community-based reconstruction fairly quickly after Hurricane Gilbert struck later that year. With increased awareness of structural vulnerability as an issue to be tackled by the housing sector as a whole, activities began again, particularly via NGOs, to both teach and promote safer housing measures, couched within the same conceptual framework as the post-Hurricane Allen work. The fact that there were so many activities and projects initiated in 1988-89 can only be a positive factor. Those that showed evidence of some degree of success continue.

2. Replication:

After Hurricane Hugo swept across the Caribbean in Sept. 1989, both ADA and CRDC, with an architect from Dominica, responded with shelter clinic and builder training initiatives on other islands. The builder training brought together tradespeople who had never been formally trained and had little contact with other builders, and the sessions resulted in good communication and exchange. An evaluation of training retention was purportedly conducted after 8 months or so for the Caribbean Development Bank to see whether the builders were actually continuing to use what they had learned.

In early 1990, CUSO, CCC and the Christian Children's Fund sponsored a pilot program in two communities on Montserrat conducted by the ADA Shelter Programme Officer, a WCC representative, a Jamaican builder, and the previously mentioned architect from Dominica. The group conducted shelter clinics and built 3½ model units, turning over the program to local groups. As an example of successful linking of external funding with an existing local NGO, this exchange is well-documented in a study of response and recovery by Berke and Wenger.[29]

3. Formal Institutionalization:

In the early 1980s, efforts were made to draw in all the organizations and groups involved in the formal and non-formal housing sectors. Most of the workshops were attended by administrators who expressed interest but relied on ODP to act as the lead agency; thus their respective interest never translated into implementation, particularly when funding grew scarce. So long as protective construction techniques were seen as disaster-related rather than simply a matter of proper construction, ODP would be tasked with this responsibility.

Hindsight shows that ODP lost effectiveness as the prime mover for mitigation for a number of reasons. While promoting the inclusion of disaster preparedness and mitigation activities within the line ministries is a natural role for a relief-oriented agency to play, ODP itself was shifted from ministry to ministry and never achieved sufficient organizational clout to transition the program to the Ministry of Construction (Housing) or other competent agency. Not only did the lack of statutory identity weaken its efforts, but also the overall lack of political will and commitment to mitigation goals. One former ODP official believes strongly that, had ODP instituted a regular series of seminars for elected public officials, this might have resulted in some political commitment to the program. As it was, people continued to rely on ODP to find external funding for mitigation and preparedness projects without understanding that ODP was neither a proper nor an effective agent for change with regard to the normal housing process.

To date, national objectives for housing mitigation have not been incorporated in the current Five-Year Development Plan, vocational training schools do not teach strengthening methods as a part of their regular curriculum, and such informal community efforts as the shelter clinics and one-day builder training programs have not been picked up by other permanent organizations when post-hurricane project funding ceased. On the other hand, there are positive moves underway to include disaster resistant construction techniques in formal construction curricula, and at least two NGOs continue to promote housing upgrading via a repair/retrofit program and a revolving loan scheme.

As is the case in so many countries, the role of building codes and their enforcement is negligible in the non-formal sector and problematic in the formal sector. The 1984 review highlighted the need for an expanded and well-trained building inspectorate if codes and standards were to be effective at all. And the earlier 1982 study by INTERTECT had identified the building inspectorate as the potential source of local technical assistance and trainers for parish classes in disaster resistant construction. But while a case can be made that the training element is now institutionalized -- since the mid-1980s, first USAID and then the Ministry of Education have supported the CAST professional development courses -- failure of the government to expand the staff and come down squarely on the side of construction quality means that the inspectorate continues to be generally discounted as an actor in housing safety. Adoption of CUBIC or any other codes will have little impact on even major engineered structures until the provisions are integrated into building-related

courses at CAST and UWI, implementation is linked to an expanded and well-trained inspectorate, and enforcement is demanded by insurance companies.

4. Financial Resources:

A major indicator that the strategy is not yet sustainable is the fact that, through the years, its existence has been almost completely tied to the availability of external funding. So long as outside dollars would support it, the "commitment" was there. A key lesson for this study is that commitment must be to the concept of protection, not to the money a project may attract or the costs it may incur. Particularly at a time when the global economy is struggling and many countries must devote a large proportion of their funds to debt service, any initiative that depends on project-based or line item financing is highly expendable. Too close a linkage of mitigation with cost also results in stifling initiative, the searching for alternative solutions that are viable in a low-income environment. Mitigation must be sold to the public at large and to both the government and private sector as good construction practice -- not something extra requiring an additional cost.

Both the ADA and CRDC housing projects use outside funding for start-up costs, but a key element of their work is resident investment in affordable protection. One architect suggested that Jamaicans had become accustomed to being given things without having to provide security or collateral, so there was a lot of resistance to the ADA loan scheme in several communities. A great deal of groundwork is necessary within the communities to counteract years of erosion in self-reliance and personal responsibility. There are many instances, on the other hand, where rural and semi-urban residents used their own savings and whatever other resources they could draw on to rebuild and repair, rather than wait for the government to get its assistance programs organized. One resource that played a major part in individual recovery after Hurricane Gilbert was money from the Jamaican community abroad; this may also be a source fueling the renovations, additions and new construction visible throughout the island.

CONCLUSIONS

In many respects, Jamaica has made significant progress toward the establishment and institutionalization of rational housing safety and disaster mitigation policies. The fact that such major damage to the housing stock occurred during Hurricane Gilbert was not the result of a failed policy initiative so much as an incomplete one. More to the point, what is indicated is that implementing such a policy is a protracted process, involving not only technological inputs, but also economic improvement, institutional evolution and culture change affecting long-standing practice. Change in such a complex constellation of interrelated variables requires time. The process of such change, as this report has demonstrated, was underway throughout the 1980s and is manifested in the application of programs now in the 1990s. Notwithstanding these positive signs, many obstacles still exist and much remains to be done before an effective and sustainable policy will be in place.

With such a large proportion of the housing falling within the informal sector, recent programs attempting to reach builders at the local level seem particularly appropriate. Furthermore, these programs are consistent with both government economic and social policy. The government has emphasized economic strategies that assume a greater role in financing home construction but return actual housing construction to the private sector. In addition, efforts on a variety of fronts, including local initiative, are being made to build on the tradition of community activism and self-reliance. Due to the structure of the island plantation economy which made slaves responsible for their own subsistence while they labored in the cane fields, the Jamaican people had developed a tradition of self-reliance. This tradition flowered in the aftermath of emancipation as people left the plantations for the hinterland and established self-reliant communities of ex-slaves. At least in the housing context, the self-reliant tradition has been eroded by government policies in the past.

The party presently in power originally drew much of its strength from the concept of mobilizing communities, and there is a realization that the party would do well to reawaken this historical tradition. There is an emerging movement toward "empowerment" at the community level, revitalizing traditional community structures such as the village councils which served as the institutional basis for much communal action. A clear manifestation of this tradition was the desire by community members to rebuild their schools after Hurricane Gilbert. Many communities organized work groups to repair their schools, but were told to halt their efforts because contracts for school repair had already been awarded to construction companies by the government.

Present NGO efforts to implement housing safety and hazard mitigation appear to be consistent with both this grass-roots orientation and the informal sector predominance in housing construction. Two fundamental problems are replication and measurement. In order for either or both of these programs to have any significant impact on regional or national levels, they must be replicated. At present levels of activity, only a small number of people will receive the benefits of these programs. A broader regional and ultimately national (including urban) implementation strategy for either one or both of these programs is necessary if sufficient beneficiaries are to be reached. Before that goal can be attained, these programs must be supported by an institutional base with the power to mobilize resources and action on their behalf.

Moreover, certain basic criteria need to be established to assess success or failure of these projects. Given that they employ different methods and, in some respects, have different goals, establishing such criteria may prove complex. For the normative model, it should not be difficult to establish the number of houses retrofitted over a set period of time. On the other hand, whether the project actually establishes mitigation and safe-building techniques as the norm for construction in a community can only be ascertained through long-term follow-up studies. For the capacitation model, which emphasizes community organization and empowerment over actual construction work, results will perhaps be sporadically evident earlier but overall success will also require an extended period of time for accurate assessment.

There are indications that NGOs and the churches are now taking on part of the role formerly played by the government in housing. So long as these organizations work toward empowerment and self-reliance rather than excessive dependence on their skills and services, both the NGOs and the churches may serve important brokering or ombudsman functions for furthering mitigation strategies at the local level.

Institutional support at national and international levels is also crucial for the success of these programs. As the specialist agency for disaster-related matters, ODP can play a pivotal role in providing information, promoting general awareness of the impact of disaster events and keeping these concerns on the agenda of line ministries and private organizations. But ODP is not at the present time constituted in such a way as to provide the kind of institutional direction and energy which a housing mitigation strategy requires. National implementation will require the tasking of a relevant ministry with overall responsibility for overseeing and facilitating mitigation initiatives within normal housing projects.

At the international level, declaration of the International Decade for Natural Disaster Reduction has not immediately made available significant support for specific mitigation efforts. In the case of the United States, lack of clear and consistent support for the OFDA Prevention-Mitigation-Preparedness (PMP) strategy sends mixed signals to countries otherwise ripe for investment in large-scale housing safety programs. While international institutional support and backstopping for mitigation programs remain stalled, personnel and such material resources as have been delegated to mitigation tasks are operating at the basically experimental levels described in this report or they are on hold. This is particularly true in the case of personnel who find themselves delegated to other tasks for lack of resources to carry out their missions in the mitigation field.

The knowledge base and the minimum executive and implementation personnel for a successful national program of housing safety and disaster mitigation exist in Jamaica at this moment. Training programs in both formal and informal sectors, although experimental and small-scale, represent positive steps toward implementation. Beyond the acute economic difficulties in the nation right now, serious obstacles to nationwide application of such a program also exist in the form of a lack of institutional direction and inconsistent international support.

ENDNOTES

1. In the aftermath of Hurricane Gilbert, a popular song by Lovindeer illustrated with a biting humor various reactions to the devastation caused by man and nature. One of its verses in particular plays on the high migration rate from Jamaica, commenting on the sudden disappearance of roofs supposedly attached to homes. A copy of the entire song is included in Hill et al, 1989.

2. OAS 1990: 11-40.

3. OAS 1990: 12-5.

4. OAS 1990: 12-7.

5. Statistical Institute of Jamaica 1989: 90, 95.

6. Edie 1991: 118, 121-122.

7. Edie 1991: 129.

8. Planning Institute of Jamaica 1990: 104.

9. AID/OFDA contract OTR-0000-0-00-1184-00 with INTERTECT, Aug. 1981.

10. McDonald and Ford 1984.

11. McDonald letter to John Jones, 1982.

12. PO# PRC 532-83-89.

13. PO# PRC 532-83-142.

14. Thompson draft, 1983.

15. Contract #940-1002-C-00-5046-00.

16. Robinson 1985.

17. Hodges 1992.

18. There is at present a German study underway to address the complexity of the housing environment and recommend ways to reduce the number of public agencies active in the housing field.

19. Ministry of Finance & Planning 1988: 55.

20. Planning Institute of Jamaica 1990: 104.

21. For example, USAID's work with EDCo through the Housing Guaranty Program does not deal with safe housing issues because it primarily consists of site upgrading and infrastructure.

22. Edie 1991: 126.

23. Edie 1991: 63.

24. Tobriner 1989.

25. Planning Institute of Jamaica 1990: 104-106.

26. ADA Annual Report 1989-90: 23.

27. With very little editing, this videotape could serve as a training resource for the region.

28. See ADA Annual Report 1990-91: 29.

29. Berke and Wenger 1991.

ACRONYMS

ADA	Association of Development Agencies
AID	Agency for International Development (U.S.)
BRI	Building Research Institute
CARIPEDA	Caribbean People's Development Agency
CAST	College of Arts, Science and Technology
CBO	Community-based organization
CCC	Caribbean Council of Churches
CIDA	Canadian International Development Agency
CRDC	Construction Resource & Development Centre
CUBIC	Caribbean Uniform Building Inspection Code
CUSO	Canadian University Service Overseas
CVSS	Council on Voluntary Social Services
EDCo	Estate Development Company, Ltd.
HEART	Human Employment and Resource Training
IDAC	International Disaster Advisory Committee, AID/OFDA (U.S.)
IMF	International Monetary Fund
JDF	Jamaica Defence Force
JIA	Jamaican Institute of Architects
JIE	Jamaican Institute of Engineers
JLP	Jamaican Labour Party
NGO	Non-governmental organization
NHT	National Housing Trust
NTA	National Training Agency
OAS	Organization of American States
ODP	Office of Disaster Preparedness, formerly ODIPERC
ODIPERC	Office of Disaster Preparedness & Emergency Relief Coordination
OFDA	Office of U.S. Foreign Disaster Assistance, AID (U.S.)
PADF	Pan American Development Foundation (U.S.)
PCV	Peace Corps volunteer
PCDPPP	Pan Caribbean Disaster Preparedness & Prevention Project
PMP	Prevention, Mitigation & Preparedness, AID/OFDA (U.S.)
PNP	People's National Party
RHUDO	Regional Housing & Urban Development Office, AID
SAC	Social Action Centre, Ltd.
SDLS	Shelter & Development Loan Scheme, ADA
UBC	Uniform Building Code (U.S.)
UDC	Urban Development Corporation
UNDRO	United Nations Disaster Relief Coordinator (Office of the)
USAID	[see AID]
UWI	University of the West Indies
VTDI	Vocational Training & Development Institute
WCC	Women's Construction Collective

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