

Disaster preparedness and regional training on nine Caribbean islands: A long-term evaluation

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This paper presents an analysis and evaluation of emergency preparedness and regionalized training on nine Caribbean islands during the period of 1980 to 1985. Preparedness on the islands is measured in numerous ways, including the existence and comprehensiveness of the disaster plan; existence and adequacy of district organizations; existence of an emergency operations centre; frequency of drills; adequacy of communications; and various other indicators. The regionalized training, which was provided out of a small, internationally-funded unit in Antigua, is evaluated in terms of the contribution it made to Caribbean preparedness during the period. Various management difficulties are analyzed and recommendations made for future, similar programs.

Key words: Caribbean; Disaster preparedness; Regional training.

INTRODUCTION

The islands of the Caribbean are vulnerable to numerous forms of disasters, including hurricanes, floods, earthquakes, tornados, droughts and oil spills. Historical records dating back to the 16th century attest to the vulnerability of the islands. For example, since 1526 the Dominican

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Republic has suffered eight earthquakes, and in the last century it has been hit by 139 major hurricanes. Haiti has been struck by five hurricanes and five droughts in the last twenty years. The total number of deaths in the Caribbean in the last twenty years attributed to disasters is about 4,400, and the total number of affected people was about 4.8 million. This latter figure represents about 15% of the region's population.

In response to this problem, the Pan Caribbean Disaster Preparedness and Prevention Project (PCDDPP) was established in 1980. Other factors leading to the founding of the project were a particularly severe series of hurricanes and floods in 1979; a growing feeling that disaster *prevention and preparedness* rather than just relief should be provided and assisted by AID; a desire to experiment with a multi-lateral approach; and a desire to mitigate the economic setbacks and social unrest sometimes brought on by disasters.

A conference of representatives of twenty-eight Caribbean countries, plus the U.S., other donor countries and numerous international and regional organizations was held in May, 1980 in Santo Domingo, to plan and begin the project. As part of this conference a self-assessment questionnaire on disaster preparedness was administered; a re-administration of this questionnaire formed the major part of the data collection for this current study.

The project actually got under way in June 1981 when staff began work at the headquarters office in Antigua. Funding was received from numerous sources, especially the U.S., Canada and the European Economic Community (EEC).

A crucial early decision was to avoid creating a large new organization. Instead, a minimal staff was to be hired to "co-ordinate" the activities and pass through funds to the three existing organizations active in this area: the UN Disaster Relief Organization (UNDRRO), the League of Red Cross Societies (LORCS), and the Pan American Health Organization (PAHO).

Since 1981, the project has undertaken several hundred assistance activities. These fall into four major categories: technical assistance; training of island nationals; surveys and assessments; and preparation of training materials.

The history of the project can be divided into two phases — from inception through April 1983 and from April 1983 to the present. In phase 1 UNDRRO took the lead in appointing a project co-ordinator, obtaining funds, and managing cash flow. Severe problems in all these areas led to a reorganization in phase 2 in which the role of project co-ordinator was strengthened somewhat, and CARICOM took over project leadership from UNDRRO.

The balance of this paper can be divided for ease of presentation into four parts:

- Study methodology
- Organization and effects of PCDDPP
- Status of Caribbean country preparedness
- Conclusions

STUDY METHODOLOGY

The study methodology involved five major tasks. In task 1 a team of five senior analysts familiar with emergency management and Third World projects was gathered and briefed. Interviews with all actors familiar with the PCDDPPP who were located in Washington were undertaken, with the focus being on PCDDPPP history and organization. In task 2 the project manager visited Antigua and interviewed all present and past employees of the PCDDPPP. He also gathered copies of all relevant project documents for later review. In task 3 all PCDDPPP documents gathered in D.C. and Antigua were reviewed in order to form an accurate picture of the PCDDPPP's history, goals, objectives, logic, finances and successes. In task 4 site visits to eight island nations were undertaken. Here the focus was on assessing current disaster preparedness, comparing current preparedness to the situation in 1980, and attempting to see if any differences were attributable to PCDDPPP. As part of these site visits the national disaster co-ordinator was interviewed extensively, other ministries and offices contacted, the local AID Mission Disaster Relief Officer interviewed, relevant international organizations contacted, and district disaster organizations inspected. The final task involved analysis of the data collected, report writing and briefing the client on the team's findings.

ORGANIZATION AND EFFECTS OF PCDDPPP

For clarity of presentation this section can be divided into five subsections:

- PCDDPPP inputs
- Ideal organization :
- Actual organization and its problems
- PCDDPPP activities
- Cost-benefit analysis

PCDDPPP inputs

Funding was the major input received by PCDDPPP. Funding was received from so many sources that accounting for the funds, meeting donor requirements, and filing required reports became a major headache for PCDDPPP staff (and for the evaluators). However, after about three person-weeks of effort at reconstructing and analyzing records, a reasonable estimate of total project receipts was produced. This is shown in Table I. Here we see that slightly over \$3 million was received between September 1981 and January 1984, or about \$77,000 per month. A sizeable portion of the funds was received but unspent, apparently due to slow cash flow, staff turnover and management problems. Primary donors were the U.S. Agency for International Development — Office of Foreign Disaster Assistance (44% of the total); the Canadian International Development Agency (19%) and the EEC (15%).

Other inputs included several staff seconded to or loosely attached to PCDDPPP, whose time was donated by

international organizations or European countries.

No funds or staff were received from the twenty-eight target countries, although the original expectation was that these countries would eventually take over the cost of PCDDPPP.

Ideal organization

Drawing on hindsight, common sense, experience and the "principles" of public administration, one can specify a number of desirable characteristics for an organization such as PCDDPPP. These would include the following:

- A clear definition of role and place in regional preparedness
- Clear goals and objectives
- Suitable headquarters
- A full-time project manager with adequate authority
- Clear structure of organization
- Critical level of staff
- Good financial records
- Reasonable cash flow
- List of activities, accomplishments and ultimate impacts.

In reality, there were substantial problems in all these areas. To be fair, it should be noted that in *any* new, struggling organization one can expect problems in some of these areas. PCDDPPP did do better in many areas than many development projects. PCDDPPP's problems are discussed in the next section.

Actual organization of PCDDPPP and its problems

PCDDPPP's organization is discussed in terms of the desirable characteristics listed above.

Clear definition of role and place in regional preparedness. PCDDPPP had considerable difficulty in defining its role in Caribbean disaster preparedness and relief. For the first year or two of the project, staff felt that PCDDPPP's goal was to evolve into a "nerve center" and actual disaster relief organization and headquarters for the region. It only gradually became clear that the target countries would not and should not cede this role to an outside organization — that the vast bulk of relief would be provided *internally* by each country and must be managed internally.

Thus the conception of PCDDPPP's role eventually changed to its current idea, that PCDDPPP should be a regional training and technical assistance organization focused almost entirely on prevention and preparedness. Its role in disaster relief would be limited to responding to requests from member countries for specific skilled personnel, consultants and grants.

The problems with the earlier conception of the PCDDPPP role were demonstrated when PCDDPPP tried to become directly involved in and manage disaster relief for a drought

Table 1. PCDDPP funding (\$'000's)

Donors	Phase I: 1st Sept. 1981 — 31st March 1983			Phase II: 1st April 1983 — 31st Jan. 1985			Totals
	UNDRRO	PAHO	LORCS CARICOM	UNDRRO	PAHO	LORCS CARICOM	
OFDA	\$250.0	\$175.0	—	\$563.5	\$384.2	—	\$1,372.7
CIDA*	—	—	—	\$537.8	\$46.7	\$10.0	\$594.5
EBC	\$189.9	—	—	—	—	—	\$442.4
UNDRRO	\$74.0	—	\$106.0	\$113.0	—	—	\$187.0
PAHO	—	\$61.0	—	—	\$183.0	—	\$244.0
SIDA	—	\$110.0	—	—	—	—	\$110.0
CRC	—	—	\$50.0	—	—	—	\$50.0
NETH.	—	—	—	—	\$88.0	—	\$88.0
Totals	\$513.9	\$346.0	\$50.0	\$1,214.3	\$701.9	\$10.0	\$3,088.6

* At the beginning of Phase 1, CIDA committed \$5.5 million to PAHO, any amount of which could be used for PCDDPP. In 1983, \$85,000 was earmarked for PCDDPP but not spent. In 1984, \$85,000 was earmarked and \$8,800 spent. In 1985, \$179,000 was earmarked and \$37,900 spent to mid-March.

on the HQ island of Antigua. By all accounts the PCDDPP staff were overwhelmed by this task and results were not satisfactory.

Clear goals and objectives. At the original planning conference in 1980 in Santo Domingo, numerous goals and objectives for PDCPPP were drawn up and agreed upon. Unfortunately, there were so many goals, so many islands, and the goals were so ambitious, that a prioritization by staff was needed. This was never done, instead the focus was on "getting going." It is unclear why this type of priority ranking was not done, but the political nature of such ranking, the press of time, and the lack of staff were probably key factors.

Suitable headquarters. A suitable headquarters for this type of organization needs to have adequate space for staff, a library and small training sessions; excellent communications; and preferably be donated or reasonably priced. Such a facility was originally offered by the Antiguan government free of charge, and this was one of the main reasons PCDDPP located there instead of on an island with more communications links and air connections, such as Barbados. Unfortunately, the government of Antigua never delivered the promised building, and PCDDPP was forced to lease expensive space elsewhere on the island.

Project manager. An ideal project manager slot for this type of effort would be full-time, loyal primarily to the project, and with adequate authority to manage the project's components. PCDDPP's project manager has usually been half-time, with his (or her) other half devoted to managing one of the components. Since the project managers have

usually been drawn from the ranks of one of the component units, their loyalties have usually been to those units and their parent organizations (such as UNDRRO or PAHO) rather than to the project itself. The project manager's authority has always been a source of friction within the project. The three component agencies have generally viewed him as a mere co-ordinator, with little or no authority to direct them to do anything. As a result, record-keeping, planning, reporting, budgeting and almost all other functions have been done separately and in different formats and ways by the three component units.

Clear structure of organization. The organization structure of the PCDDPP is shown in Table 2. Here we see that a management committee composed of national disaster co-ordinators and donor officials provides guidance to the project. Central project management oversees the activities of the three components, and these components actually provide most of the services to the target countries. A major problem with the structure is shown by the arrow linking the donor organizations with the three component units. These units naturally look to their own headquarters in Geneva or Washington for guidance on procedures, reporting, priorities and other matters, rather than to central management staff. Numerous "turf battles" have resulted from this arrangement.

Critical staff level. On Table 2 the number of staff in each component is shown in parentheses. At first blush these numbers appear reasonable, with five central project management staff. However, the reality has generally been that only one or one and one half *professional* slots have existed — one half of a project manager and a full-time Administrative Officer. The other three slots are filled by two secretaries and a driver. Thus what might be called a "critical level" of staff has never been achieved. At various

times full-time technical consultants have been attached to the project, but that is not the same as having adequate, full-time professional staff.

Turning to the related matter of turnover, PCDPPP has suffered from a high rate of staff turnover. There have been three project managers in five years, numerous other staff changes, and numerous unfilled vacancies for long periods.

Good financial records. As mentioned earlier, financial records for the project were confused.

Reasonable cash flow. Although funding for the project was adequate, cash flow was already a problem, especially for the first two years. Delays in obtaining funds from what was called the "cumbersome" UN payment system was a major factor in dropping UNDRRO as the lead organization in the project. Some respondents reported that the whole project almost failed entirely during phase 1, for this and related reasons.

List of activities, accomplishments and ultimate impacts. PCDPPP did not have any form of internal management or reporting system to keep track of its activities, accomplishments and ultimate impacts on its target populations. However, the evaluation team was able to reconstruct some of these items. The results of this reconstruction are presented in the next section.

PCDPPP activities

From interviews and documents it was possible to arrive at an estimate of the number of short technical assistance visits to target countries undertaken by component staff or consultants; the approximate number of nationals trained during short training courses offered in-country and elsewhere; and the number of "multiplier" instructors trained under project auspices. (These latter are nationals who are expected to use their training *and* to train others.) These figures are shown in Table 3, broken down by component unit and project phase. Here we see that a grand total of 643 nationals were trained, while 220 technical assistance visits took place. The figures here are probably underestimates, due to reporting problems.

Table 4 takes the figures from Table 3 and makes them more meaningful by describing the benefits resulting from

the training and technical assistance provided, as reported by the nine islands visited by the evaluation team. Here we see that benefits varied dramatically from island to island. At one extreme was Jamaica, which reported numerous trainees and a substantial "multiplier effect." At the other extreme was the government of Guadeloupe, which received no aid from PCDPPP and actually provided technical assistance to PCDPPP on occasions. While the lack of aid provided to Guadeloupe (which is really part of metropolitan France and is highly developed) is understandable, the lack of assistance given to the Dominican Republic is less acceptable. Spanish-speaking members of the PCDPPP Management Committee have long complained that the project has been of little use to non-English-speaking countries; this Table lends credence to their complaints.

Finally, Table 5 provides detail for interested readers on exactly what types of training were provided to participants on the most-benefitted island, Jamaica. (For reasons of space, this type of detailed information could not be included for all islands.) Here we see that the government of Jamaica, Office of Disaster Preparedness (ODP) cooperated with PCDPPP in training over 600 nationals. Expenses picked up by ODP in connection with this training amounted to about U.S.\$32,000. Most of the PCDPPP assistance to Jamaica was in the form of sponsoring Jamaicans to attend short courses and conferences in the U.S., and in putting on short courses in-country.

In summary, it appears that PCDPPP managed to surmount its many organizational and design difficulties, and actually provided valuable training and technical assistance to target countries.

Cost-benefit analysis

A formal cost-benefit analysis of PCDPPP is clearly impossible, given the inadequacy of the data. However, it is possible to raise a few questions in this area and discuss a few indicators.

First, given that about \$77,000 per month was flowing into the project, it does not seem unreasonable to expect that the essential "critical level" of core staffing could have been assembled.

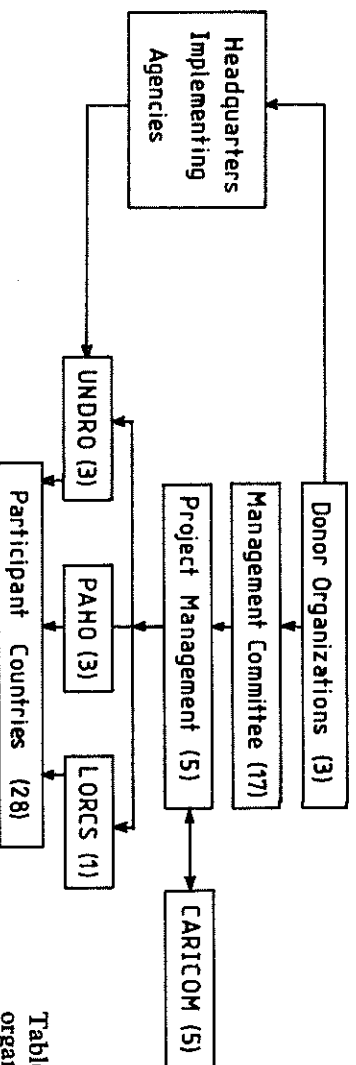


Table 2. PCDPPP functional organization chart.

Table 3. PCDPPP activity outputs: 1981—1984

	Phase I			Phase II			Totals		
	Country visits	Trainees	Instructors	Country visits	Trainees	Instructors	Country visits	Trainees	Instructors
UNDRO									
Technical assistance	32	—	—	46	—	—	78	—	—
Training	—	54	—	—	304	4	—	358	4
Miscellaneous*	5	29	—	7	15	—	12	44	—
Total	37	83	—	53	319	4	90	402	4
PAHO									
Technical assistance	14	—	—	45	—	—	59	—	—
Training	—	44	70	—	10	—	—	124	70
Miscellaneous*	15	—	—	—	—	—	15	—	—
Total	29	44	70	45	10	—	74	124	70
LORCS									
Technical assistance	23	—	—	21	—	—	44	—	—
Training	—	85	1	—	32	28	—	117	29
Miscellaneous*	10	—	—	2	—	—	12	—	—
Total	33	85	1	23	32	28	56	117	29
Grand totals	99	212	71	121	361	32	220	643	103

*Primarily PCDPPP staff attendance to international conferences, seminars, etc.; also included development of training materials and planning services.

Summarized from Management Committee Meeting reports and interviews with Project staff.

Table 4. Summary of benefits provided to islands by PCDDPPP, 1980—1985

Islands	Major benefits	Relative ranking of PCDDPPP effectiveness
Jamaica	23 ODP staffers and 687 other Jamaicans trained in disaster preparedness; High all current/future health professionals trained in preparedness (ultimately benefitting thousands of Jamaicans); shelter management upgraded; ODP developed capacity to put on drills; health disaster plans formulated/ upgraded; \$U.S.32,000 in-kind contribution by GOJ.	High
Dominican Republic	Some commo. gear provided; brought DR disaster staff together with other islands staff; helped somewhat with public awareness; 5 national-level staff trained.	Low
St. Lucia	Some public awareness increase; training of top level staff; training of 500 Red Cross volunteers in First Aid*; training of building contractors in sound building techniques; simulations of hospital and airport plans.	Medium
Antigua	Public awareness via TV, radio, print, drills at airport (annual); drills at hospital, fire service, police, Red Cross, 2 U.S. bases, St. John's Brigade; upgrade hospital and national plan; all sector needs assessment; workshop for contractors; drought assistance; helped establish NDC and subcommittees.	High/medium
Dominica	Increased awareness among top-level management; workshop for 14 construction contractors in proper techniques; workshop for school shelter superintendents; preparedness planning for 80 district personnel.	Medium
Barbados	Training of 22 national and 190 local staffers in preparedness and shelter management; increased some public awareness; CERO head views PCDDPPP as having made significant contributions	Medium
Guadeloupe	No major benefits (in fact, GOG has provided TA to PCDDPPP).	Low
St. Kitts/Nevis	Assisted with completion of national plan; assisted with search and rescue workshop (only independent since 1983).	Low/medium
St. Vincent	Training of top staffers; common equipment; assist with national plan	Low/medium

* It is not certain that this large Red Cross project was funded/sponsored by PCDDPPP.

STATUS OF CARIBBEAN COUNTRY PREPAREDNESS

Secondly, staff salaries, which were apparently related to the extremely high UN pay schedule, were very high. Project managers often made as much as U.S.\$75,000 plus expenses.

Thirdly, an analysis of the cost of "expert-years" purchased by the three components revealed that the average cost for one "expert-year" (for a long-term expert consultant) was about U.S.\$237,000. While international projects are by their nature expensive, this amount does seem to be on the high side.

Fourthly, the amounts spent on entertainment and other amenities at Management Committee and other meetings seems high.

As will be shown in the next section, PCDDPPP often received more in a month than many of the target islands spent in a year on disaster preparedness. Thus this perception of lavishness at the PCDDPPP level led to resentment at the level of the national disaster co-ordinators, who were most frequently in touch with the project.

In this section the status of preparedness on the surveyed islands will be discussed. However, before this discussion it is essential to say a word about preparedness in a less developed country. To an emergency manager in a local jurisdiction in the U.S., the lack of infrastructure in many less developed countries (LDCs) is almost inconceivable. Three examples should make the point. In Dominica the police substations on one side of the island have no means of communication with the (nominal) police headquarters on the other side of the island, only thirty miles away, except for runner or Land Rover-messenger. This method of communication could easily be cut during one of the frequent mudslides. In Jamaica a rural parish (county) the size of Fairfax County, Virginia has only three firetrucks. At the time of the 1985 inspection, one of these three had been broken down for three years, and one for eight months. The one working truck was actually a pick-up truck with a 150

Table 5. PCDPPP-related fellowships, overseas training, conferences, familiarization and study tours/consultancies

Item number	Technical area	Title/item date/location	Sponsors	Number of		Cost to Government of Jamaica (in \$J)*	Benefits
				Jamaican participants	Other		
1.	PPT	Comprehensive Emergency Management for local Officials, San Juan, Puerto Rico (February 1982)	PCDPPP/Govt. of Puerto Rico	—	1	600.00	Participant was able to assist disaster committee (Trelawny) formulate plans for emergency operations
2.	PP	FEMA/Florida Workshop on Development of simulation exercises and observation of Tampa Bay, Florida Drill (April 1982)	OFDA/PCDPPP	1	1	800.00	ODP developed capacity for creating training simulation/drills
3.	PP	Mass Casualty Workshop/Simulation (January 1983) (Kingston)	PCDPPP/PAHO	3	42	11,250.00	Min of Health officers concerned with mass casualty management formulated guidelines for such operations which have since been used in Antigua and Latin America
4.	PP	1983 Disaster Management Conference Orlando, Florida (February 1983)	PCDPPP	1	3	1,500.00	Fire dept., health serv., Red Cross, ODP officials gained experience in state-of-the-art disaster management
5.	PP	1983 Disaster Control Course St. Augustine, Florida (May 1983)	PCDPPP/OFDA	1	—	500.00	ODP officer gained from exposure to emergency response management systems
6.	PP	Shelter management and Evacuation Procedures (February 1984) (in Jamaica)	PCDPPP/ODP	5	32	25,000.00	Parish officials responsible for shelter programs reviewed experiences in region and formulated guidelines for local shelter management
7.	PP	1984 Disaster Management Conference Orlando, Florida (February 1984)	PCDPPP	—	1	500.00	Health officer in hospital emergency planning learnt of techniques in use
8.	HE†	Management of Geological Hazards, USGS, Denver, Colorado (March 1984)	OFDA/PCDPPP	—	2	8,000.00	Officers of geological survey and town planning dept. were able to absorb and apply techniques for identifying and controlling land use in geologically hazardous areas
9.	PP	1984 Hazardous Materials Management Course St. Augustine, Florida (March 1984)	PCDPPP	—	1	500.00	Fire department training officer exposed to techniques, since applied in fire service
10.	PP	Role of Jamaican Media in Disaster Management (May 1984) (Kingston)	PCDPPP/ODP/CARIMAC/PRESS ASSN of JA	3	20	4,000.00	Sensitization of and guidelines for media personnel; Action plan for media/ODP collaboration

11.	PP	Oil Spill Regional Plan Development Seminar, St. Lucia (May 1984)	IMO/PCDPPP	1	—	2,000.00	ODP and coast guard officers participated in development of regional plan for a major incident
12.	PP	WMO Regional Meeting (National Coordinators Meeting) Barbados (May 1984)	WMO/PCDPPP	1	—	500.00	Review of national/regional hurricane plans and priorities for co-ordinators meeting
13.	PP	Oil Spill Simulation, Puerto Rico (June 1984)	PCDPPP/U.S. Coast Guard/OFDA	—	1	500.00	Coast guard officer learnt containment of spills at sea (by simulation techniques)
14.	PP	Simulated Emergency Test of Amateur Radio Capacity (June 1984), including 4 days short-term consultant; in Jamaica	ODP/JARA/ PCDPPP	4	40	500.00	Simulated test of amateur communication system allowed a realistic evaluation of the capability of HAMs' radios in crisis conditions
15.	P&M§	Building Inspection Procedures for Reducing Disaster Losses (July 1984); also 4 days short-term consultant (Jamaica)	PCDPPP	3	42	2,500.00	Improvements in building inspection procedures islandwide
16.	PP	Providing telecommunications equipment (SW, HF SSB) (May 1984)	PCDPPP	—	—	1,500.00	SSB range of 250 miles, can contact other islands (but not yet Antigua)
17.	PP	Provide NCR word processor, with mailing list and DB management software 64K, 16 bit machine (Kingston)	PCDPPP/UNDRRO	—	—	100—500	More office efficiency in (training of staff, ODP, put National Plan on surge protectors) word processor
18.	PP	Technical assistance in upgrading hospital and GOJ Min. Health disaster plans (Nov. 1983—Dec. 1984) (Jamaica)	PAHO/GOJ Min. Health/PCDPPP	—	70	\$100,000	Hospital and Min. Health professionals established disaster plans in the Min. and 3 large hospitals; better disaster health care for hundreds (thousands) of Jamaicans
19.	PP	Workshop in training the trainers in triage patient transport, other medical disaster skills (April 1984 (Kingston))	PAHO/ODP/ PCDPPP/GOJ Min. Health	—	30	?	Greater awareness among Jamaican medical trainees; better disaster medical care for hundreds of Jamaicans
20.	PP	Courses in disaster preparedness and relief for health professionals (1984-on) (Kingston)	PAHO/U. of the West Indies/ PCDPPP/OPD	—	400/yr	?	Medical trainees (MOs, nurses, PHIs, dental and med. techs., etc.) given at least 1 course in disaster preparedness. Also 1st aid and CPR. Should provide better medical disaster mgmt for thousands of Jamaicans
Total				23	687	\$1160,650+ \$U.S.32,130+	

*Roughly, divide these figures by five to get the U.S. dollar equivalent.

†Preparedness planning.

‡Hazard evaluation.

§Prevention and mitigation.

Table 6. Disaster plan 1980/1985

Island	Up to date?	PCDPPP assist?	For all disasters?	PCDPPP assist?	Only for hurricanes?	PCDPPP assist?	Permanent EOC?	PCDPPP assist?	District organization?	PCDPPP assist?	Periodic updating?	PCDPPP assist?	Periodic testing?	PCDPPP assist?	Warnings / advisories?	PCDPPP assist?	Search and rescue?	PCDPPP assist?	No. of yes/possible yesses (PCDPPP assist)
Jamaica	Y/Y	Y	N/M	Y	Y/N	Y	Y/Y	B	Y/Y	B	Y/Y	N	N/B	Y	Y/Y	N	N/N	N	6/9
Dom. Rep.	N/Y	N	Y/N	N	N/N	N	Y/Y	B	Y/Y	N	N/Y	N	N/N	N	Y/Y	N	N/Y	N	1/9
St. Lucia	Y/N	N	N/Y	N	N/N	N	N/Y	Y	N/Y	Y	Y/Y	N	N/Y	N	Y/Y	N	N/Y	N	2/9
Antigua	Y/N	Y	N/Y	Y	Y/N	Y	Y/N	Y	Y/Y	Y	Y/Y	Y	N/Y	Y	Y/Y	Y	N/Y	Y	8/9
Dominica	Y/Y	Y	N/Y?	Y	Y/N	Y	N/N	Y	N/Y	Y	Y/Y	Y	N/N	N	Y/Y	N	N/Y	N	6/9
Barbados	Y/Y	N	N/Y	N	Y/N	N	Y/Y	Y	Y/Y	Y	Y/Y	N	Y/Y	N	Y/Y	N	Y/Y	N	1/9
Guadeloupe	Y/Y	N	N/Y	N	N/N	N	Y/Y	N	Y/Y	N	Y/Y	N	Y/Y	N	Y/Y	N	Y/Y	N	0/9
St. Kitts/ Nevis	Y/Y	Y	Y/N	Y	Y/Y	Y	Y/P	B	Y/Y	Y	Y/Y	Y	Y/N	N	Y/N	N	Y/Y	Y	7/9
St. Vincent	N/Y	Y	N/Y	Y	N/N	Y	N/N	Y	N/Y	Y	N/N	Y	N/B	Y	?/Y	N	?/N	Y	8/9
No. of yes; or average	7/7	5	2/7	5	5/1	5	6/6	7	6/9	7	7/8	4	3/4	3	8/8	1	3/7	3	4.3/9

Y = Yes; N = No; M = Most; B = a Bit; P = Police; A = Assessment.

gallon drum of water on the back. Third, in Jamaica and in many islands, disaster relief agencies are reluctant to give out tents because they are so expensive. Instead, sheets of plastic or tin are given out after a disaster, so the people can repair their own houses, which are often made out of tin sheets to begin with!

Given the lack of economic development which results in this lack of infrastructure, all statements and comparisons made below are made with reference to reasonable standards of preparedness for LDCs, not with reference to U.S. or European standards.

The balance of this section can be conveniently divided into six subsections:

- Planning and preparedness
- Staffing and resources
- Disaster relief
- Prevention and mitigation
- Regional linkages
- Ultimate impacts on population.

Planning and preparedness

Table 6 presents an analysis of the disaster plan and related indicators for the nine islands surveyed. For each indicator the status in 1980 is shown above the slash within the box, and the 1985 status is shown below. Also for each indicator the question of whether PCDDPPP helped in that area is asked and answered. (Thus for example the column on "permanent EOC?" means "Does the country have a national Emergency Operations Center?" and the column to the right of that asks the question, "Did PCDDPPP help establish or equip the EOC?")

It is not claimed that the indicators used here (or in the later Tables) are the ultimate in this field. In fact they are rather crude. However, they have the merits of being quickly discernable, easily understandable, consistent across all islands, and available for two points in time.

An analysis of this Table and related materials reveals the following:

- All islands now have disaster plans; most are up-to-date; most are periodically updated; most cover only those disasters typical of the country.
- PCDDPPP assisted five of the nine islands with a review of their plans.
- Most islands now have an EOC, but the quality varies widely. PCDDPPP assistance has consisted mainly of providing communications equipment, but there are problems with much of it.
- Testing and disaster simulation vary widely. Some islands do not conduct any true simulations (e.g. Dominica). Others have full-scale simulations regularly. Airport

simulations are the most common. Only four of the nine islands have regular drills or simulations in at least some areas.

- Local and/or district disaster organizations now exist on every island surveyed. Their activity varies from virtually none to fully prepared. Local level (and national level) apathy has noticeably increased in the last two years due to a lack of disasters.

- Disaster equipment other than for communications (e.g. vehicles, office equipment, maps, etc.) ranges from virtually none to fairly adequate. PCDDPPP has provided no assistance in this area.

- The level of economic development clearly has a major impact on the level of preparedness. However, other factors also seem to play a part. Such factors include whether the country has recently suffered a major disaster; the personality and drive of the National Disaster Co-ordinator (NDC); grantsmanship ability and close links with donor agencies; and personal and organizational links between the Prime Minister and the NDC.

- Only one of the LDC islands has a fairly good disaster library. It was created at almost no cost, simply by writing to numerous U.S. federal, state and local organizations, and asking for disaster-related publications!

Staffing and resources

Table 7 presents information on the nine islands in terms of staffing, resources and major organizational needs. Analysis of this and related material reveals the following:

- In three of the nine islands surveyed, PCDDPPP helped found the national disaster organization. In three others PCDDPPP helped the organization grow and mature.

- Current full-time disaster planning and preparedness staff range from nine professionals to zero. Increases in staff since 1980 have occurred, but have been mostly due to heightened local awareness due to disasters in 1979-1980, not due to lobbying by PCDDPPP.

- Staff training is inadequate on the majority of islands; surprisingly, this situation has improved only somewhat since 1980.

- Communications equipment is a high priority on almost all islands; other needs are varied.

- Most islands have established strong links with other ministries (police, fire, military, health) and could draw on their resources. A few, such as Dominica, could not. Links with private voluntary organizations and "ham" radio clubs were generally in place.

- All twenty-eight target countries have now identified an individual as the National Disaster Co-ordinator. Prior to 1980 only a minority had done so.

Table 7. Disaster preparedness and relief (1980/1985)

Island	Organization exists?	Full-time local staff (prof/tech)	Part-time local staff (prof/tech)	Voluntary (prof)	Staff trained?	Org. ready for immediate effective response?	Commo. type	Commo. quality	Did PCDPPP help found the organization?	Did PCDPPP help the organization grow?	Organizations major needs (1985)
Jamaica	N/Y	0/6	0/0	All/0	N/S	No experience /Y	VHF/VHF	A/F	N	Y (training)	Drills; commo. equip.; fill vacant slots; activate committees; mitigation
Dom. Rep.	N/Y	0/9	0/4	All/40	N/Y	Y/Y?	NA/VHF	P/F	N	N	Commo. equip.; better EOC; search/rescue exercises; hazard analyses
St. Lucia	N/Y	0/0	2/1	Many/0	N/N	Y/Y	VHF/VHF	A/G	N	N	Shelter upgrading; reverse public indifference; emergency supplies/equipment
Antigua	Y/Y	?/1	0/0	30%/0	Not recent/ Y	Y/N	VHF/none	I/P	Y	Y	Complete commo. system; locate EOC; current office is inadequate
Dominica	N/Y	0/1	0/0	All/only in emer.	N/N	N/N	VHF/VHF	L/P	N	Y	Commo. gear; simulations; training
Barbados	Y/Y	0/3	CS/1	None/only in emer.	Y/N	Y/Y	VHF/VHF	E/G	N	Y	Staff training; reverse public indifference; emergency supplies & equip.; building codes; shelter upgrading
Guadelope	Y/Y	1/2	0/0	0/0	Y/Y	Y/Y	All/All	G/G	N	N	Need help in preparing oil spill plan
St. Kitts Nevis	Y/Y	0/0	CS/1CS	Y as needed /emer.	Y/N	Y/N (except police)	UHF/VHF	G/G	Y	Y	Expand disaster plans beyond hurricanes; sign Geneva Convention; establish regional working links
St. Vincent	N/Y	0/0	0/2	0/0	N/S	N/S	?/VHF	?/P	Y	Y	Integrate police and health plans and operations; need better commo. equip. and trained personnel
Mean No. of	5/9	0-1/2-6	0-5/1	NC	3/3	6/5	NC	NC	3	5	

N = No; Y = Yes; S = Some; CS = Civil Service; A = Adequate; F = Fair; P = Poor; G = Good; I = Inoperable; L = Limited; E = Effective; NC = Not calculable.

Annual budgets for calendar 1985 for the NDC and his disaster office range from U.S.\$10,000 to \$150,000, as follows:

Island	1985 Budget (U.S.\$)
Guadeloupe	\$100,000
Jamaica	\$150,000 (estimated)
Dominican Republic	\$67,000
Barbados	\$55,000
Antigua	\$15,000—\$20,000 (estimated portion of one person's salary: no other funds spent on preparedness)
St. Lucia	\$10,000—15,000 (as Antigua above)
Dominica	\$10,000 (as Antigua above)

Disaster relief

The evaluation team attempted to estimate the extent of readiness of the disaster organization on each island to provide immediate, effective disaster relief. This was quite difficult to do, since such readiness is probably a continuum, not a dichotomous variable, and since no major disasters have occurred since 1980 to test the relief capabilities of the organizations. However, an effort was made in this area and the results were as follows:

- In three of the nine islands rated, it was the team's opinion that the national organization was not ready to provide immediate, effective disaster relief. Of the other six islands, only the island of Guadeloupe appeared to have a truly satisfactory capability.
- Even in Jamaica, one of the best-prepared islands, recent small oil spills and light plane crashes revealed that response was fast but that on-site communication was a major problem.
- It was hoped and expected that PCDDPPP would help create national organizations that were strong and ready to provide immediate disaster relief. This did not happen in any of the surveyed islands with the possible, partial exception of Jamaica.
- It is quite likely that the situation in the non-surveyed islands, especially the small and poor ones such as the Turks and Caicos and Haiti, is worse in all respects than in the surveyed islands.

Prevention and mitigation

Table 8 presents information on the islands' activities in the area of disaster prevention and mitigation. A summary of the results is as follows:

- The majority of islands have done little or nothing in the areas of risk assessment, land use mapping, zoning, hazard analysis, disaster area mapping or designation of safe areas. The exceptions are Guadeloupe, where mitigation measures are part of the building permit process, and St. Lucia, which is part of a special OAS project on mitigation and development.
- PCDDPPP has helped support a regional building code project underway in Jamaica, Trinidad, Guadeloupe and Martinique. However, the primary source of funds was unilateral grants from AID-OEFA.
- In general, the majority of PCDDPPP activity was on setting up seminars and workshops on disaster preparedness, not prevention and mitigation.

Regional linkages

Regional co-operation and regional funding for PCDDPPP were top priorities early in the project. However, analysis of site visit data revealed the following points:

- None of the islands are likely to contribute to a regional disaster organization. Most provide very little cash for their own organizations.
- Inter-island informal networking has occurred as a result of PCDDPPP activities. A few informal aid pacts have also resulted. However, no formal agreements exist.
- The regional building code project is the only major regional mechanism assisted by PCDDPPP.

Ultimate impacts on the target population

The ultimate intended beneficiary of all the planning and work by PCDDPPP and the NDCs is the population of the islands. However, measuring these ultimate impacts is extremely problematical, especially when no major disasters have occurred. A few things can be said in this area, as follows. First, the awareness of the population has definitely increased on most islands since 1980. Prior to this time most islanders seemed to have a fatalistic, "do-nothing" attitude about preparedness and what to do just prior to an impending disaster. Due to an aggressive series of public service announcements played on TV and radio, now most islanders do have a much better idea of what they can personally do to prepare for a disaster. Most of this increased awareness centers on hurricanes and how to prepare for them; other disasters are much more unfamiliar. Secondly, none of the islands surveyed has a

Table 8. Disaster prevention/mitigation 1980/1985

Island	Risk assessment?	PCDPPP assist?	Land use mapping?	PCDPPP assist?	Regional/International projects?	PCDPPP assist?	Food surveillance?	PCDPPP assist?	Disaster area mapping?	PCDPPP assist?	Meteorological research?	PCDPPP assist?	"Safe areas?"	PCDPPP assist?	No. of yesses/possible yesses (for PCDPPP assistance)
Jamaica	N/Y	Y	N/N	N	N/N	N	N/Y	N	N/Y	N	N/N	N	N/Y	N	1/7
Dom. Rep.	N/N	N	Y/N	N	N/Y	N	N/Y	N	N/S	N	Y/Y	N	Y/Y	N	0/7
St. Lucia	Y/Y	N	N/Y	N	N/N	N	N/Y	N	Y/S	N	Y/N	N	N/Y	N	0/7
Antigua	N/N	N	Y/N	N	N/Y	Y	0/N	N	N/N	N	N/N	N	N/N	N	1/7
Dominica	N/N	N	N/N	N	Y/Y	Y	Y/Y	N	Y/N	N	Y/N	N	N/N	N	1/7
Barbados	FS/N	N	N/N	N	Y/N	N	Y/Y	N	Y/Y	N	Y/N	N	N/Y	N	0/7
Guadeloupe	Y/Y	N	Y/Y	N	Y/Y	Y	Y/Y	N	Y/Y	N	Y/Y	N	Y/Y	N	1/7
St. Kitts															
Nevis	N/N	N	N/N	N	N/Y	Y	N/N	N	N/N	N	Y/N	N	N/?	N	1/7
St. Vincent	N/S	Y	N/S	Y	N/S	Y	N/N	N	N/S	Y	N/N	N	N/Y	Y	5/7
Average: or No. of yesses	3/3	2	3/2	1	2/5	5	3/6	0	4/3	1	6/2	0	2/6		1-1/7

S = Some; JS = Just Started; 0 = Outside surveillance; FS = For Storms only.

modern disaster law creating the national disaster organization, outlining its functions, and enjoining other ministries to co-operate. Most islands operate under an old "Riot Act," Civil Defense law, Presidential decree, or general emergency powers. PCDPPP has not lobbied for passage of such laws, fearing to get involved in local politics. Thirdly, the implicit top priority beneficiaries of PCDPPP activities are NDCs and their immediate staff. Second priority beneficiaries are district level disaster staff. Lowest priority beneficiaries are members of the general public. As seen above in Table 4, a substantial number of first and second priority staff have been trained. However, the major PCDPPP impact on the population has been increasing awareness through the dissemination of the radio and TV spots mentioned above.

CONCLUSIONS

Conclusions can be drawn in four areas:

- Organizational set-up of regional training programs.
- Possible accomplishments of such programs.
- Improvements in LDC preparedness.
- Future trends in this area.

Organizational set-up of regional training programs

If any future programs similar to PCDPPP are set up elsewhere in the world, they will have to make the same basic choice that PCDPPP did — whether to act as a

co-ordinator of existing programs, or create a new and independent organization. Favoring the former approach are the arguments that existing services should not be duplicated, only co-ordinated; and that existing organizations will have a lot of clout and will thus oppose creation of a "rival" organization.

Favoring a new organization are the arguments that the PCDDPPP model hasn't worked very well; that costs can be held down if the local LDC civil service pay scales are used as a reference, rather than high-priced international organizations; that internal "urf battles" and confusion can be avoided; and that the loyalty of the manager and staff will be solely to the project.

On balance, the weight of the evidence is in favor of an independent organization. While existing disaster-related organizations may resent a new actor on the scene for a while, it seems likely that after a time acceptance and contractual and positive working relationships will emerge. If we can make an analogy with domestic U.S. politics: the creation of a new public interest group like the National Association of Towns and Townships may not have been favored by the existing National League of Cities, but they get along well now.

Possible accomplishments of such programs

Despite its problematic organizational structure, PCDDPPP did manage to supply a substantial amount of much-needed training and technical assistance to a number of countries. The project raised the public's awareness and educational level about disaster preparedness; helped found several national disaster organizations and helped several others mature; and trained hundreds of national and district level disaster staff. Thus the public concept of a regional training program seems promising, even if execution in this instance was not 100% successful.

Improvement in LDC preparedness

Despite generally poor economic conditions in the Caribbean during the period under study, the countries studied did manage to improve noticeably their disaster planning and preparedness. Part of this improvement can be attributed to aid from PCDDPPP, but probably the crucial factor was the series of disasters that occurred in 1979. The key lesson to be learned here is that LDCs can make substantial strides in improving preparedness, using very limited resources, if the will is there and the time is ripe.

Future trends in this area

It would seem to be an opportune time to expand the PCDDPPP concept, although in different form, to other

disaster-prone areas of the world. The U.S. public and Congress have watched with horror and sympathy the media reports from numerous recent Third World disasters. Perhaps this sympathy could be translated into funding. On the other hand, the Gramm-Rudman-Hollings cutbacks threaten to reduce or eliminate many AID programs, including PCDDPPP. One thing is certain, however. Aid for Third World disaster preparedness may stop, but the disasters will not.

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