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BUREAU FOR HUMANITARIAN RESPONSE (BHR)

OFFICE OF U.S. FOREIGN DISASTER ASSISTANCE (OFDA)



OFDA

MONITORING

&

EVALUATION

MANUAL

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MONITORING & EVALUATION MANUAL

*Evaluation Summaries
Syntheses of Lessons Learned
Recommendations for Policy and Operations
Performance Monitoring and Reporting Guidance*

PURPOSE

This manual is a work in progress, aimed at supporting OFDA's capacity to monitor and evaluate its own performance. As OFDA's experience in using monitoring and evaluation (M & E) grows, resulting in improved performance, the manual should also expand. One of its purposes is to inform OFDA managers and staffers of overall progress in the M & E effort. A second is for use of the manual by managers and staffers as background and guidance in strategy design, implementation, and in application of lessons learned for new and ongoing program and project design. A third purpose is to help OFDA and its grantees to establish results-based program management for themselves through use of guidelines for monitoring and reporting on performance.

ORGANIZATION

The manual is divided into four major parts. First are summaries of each of the evaluations and assessments undertaken by OFDA. Second is a synthesis of the lessons learned. Third are recommendations for policy and operations derived from an analysis of the individual evaluations and assessments. The fourth section is guidance to grantees on performance monitoring and reporting, as well as the "managing for results" approach. This section is aimed at improved grantee proposal submissions, periodic reporting, and overall management.

The first three sections: summaries, synthesis, and recommendations, address five separate areas. These are: (1) Disaster Response; (2) Disaster Preparedness; (3) Disaster Mitigation; (4) Special Studies; and (5) Overall Evaluation in OFDA. The fourth section, Performance Guidelines, addresses the following points: (1) Managing for Results; (2) Proposal Guidelines; and (3) Performance Reporting. For this last section to be successfully utilized, significant consultation with grantees is required.

INTENDED RESULTS FROM USE OF THE MANUAL

Several intended results from the manual's adoption and use should occur. These are:

- improved proposal design and review process
- improved design of disaster assistance strategies and approaches
- improved grantee periodic reporting
- greater use of monitoring and evaluation in decision making



Evaluation of the USG Humanitarian Assistance Strategy for Southern Sudan, March 1995

Background: Since 1956, the war between southern and northern Sudan has continued with only one break, between 1972 - 82. Recurrent severe droughts have exacerbated the effects of fighting and resultant large-scale displacements of people from their villages. Annual U.S. expenditures for this emergency have ranged between \$60-100 million, with FY 1994's effort at \$90 million. Although massive deaths have been averted, hunger and suffering continue on a large scale. However, it is nearly impossible for donors to sustain this high level of funding for an indefinite number of years.

In 1994, the USG developed a strategy to deal with Sudan's ongoing humanitarian crisis, given a declining funding base for assistance. The strategy focuses on implementing rehabilitation projects and building local capacity while continuing to provide emergency relief for populations at immediate risk. This strategy, which aims to reduce the cost of assistance and improve local accountability, is distinctive because it delivers rehabilitation assistance in the midst of civil war. In pursuit of this strategy, USAID now provides about \$24 million in grants to PVOs to implement agricultural and road rehabilitation and health care delivery programs. Through these programs, the cost of emergency assistance can gradually be reduced by replacing: (a) expatriate staff with local personnel; (b) air transport with road transport; and (c) imported food aid with locally grown surplus. These programs have been managed largely through the USAID Sudan Field Office in Nairobi, Kenya, in collaboration with the UN Operation Lifeline Sudan.

Findings: In October/November, 1994, an evaluation of USAID's strategy for southern Sudan was done. The evaluators assessed a representative sample of PVO programs in the three sectors that are the focus of rehabilitation programs. The results of these assessments include:

Agriculture: Distribution of seeds, tools, and fishing nets has greatly improved household security and stimulated agricultural productivity. As much as 5,000 tons of surplus food is available in the region to be purchased for redistribution to displaced camps, saving up to \$3 million over transporting food aid by air. Through "barter shop" programs, locally grown surplus food is procured and distributed as food aid to people in displaced persons camps at a reduced cost. These programs, which exchange basic commodities for surplus crops, are helping to jump start the local economy. However, PVOs are attempting to respond to the increased demand they have stimulated for barter items. Thus far, there is no clear means of transferring the responsibility for maintaining this system to the local population.

Health: Health PVOs are reactivating clinics and expanding the number of trained local personnel, thereby improving the availability of basic services which address short-term needs. Some Sudanese health workers have been able to take over when PVOs must evacuate. Indigenous NGOs have illustrated the potential for cost reductions and increased sustainability of health services, but limitations such as dependency on outside donors for supplies even in the event of peace still threaten self-sufficiency. The health strategy, although it represents fully 45% of OFDA's South Sudan budget, is the least developed sector.

Roads: The strategy stresses road improvement to reduce the massive expense of airlifting relief (over \$20 million in 1993). Over 300 km of dirt roads and bridges, linking the main towns and markets of Western Equatoria, have been returned to service this year by community workers, paid manual work crews, and local machinery. If these improved roads are used, instead of air transport, the cost of relief transport could drop by \$500/ton.

Recommendations

- USAID should continue to follow this strategy, which provides the best opportunity for reducing the cost of external support while strengthening the food and health security of the war-affected southern Sudanese.
- PVOs should purchase local food surplus and distribute it to the displaced.
- USAID should encourage at least three years of road maintenance support with its own funding or that of other donors.
- USAID should sharpen the focus of the health program -- emphasizing the primary health care approach -- by targeting major health problems and vulnerable groups. This requires the establishment of a health information system and greater outreach to the community. Training of health workers should continue, but with more involvement of village development committees and women's groups.



The Limon, Costa Rica Earthquake: An Evaluation of the Office of US Foreign Disaster Assistance Emergency Response. April, 1994

Background: On April 22, 1991 at 15:57, an earthquake (7.4 Richter with largest aftershock 5.9) struck the southeastern region of Costa Rica. The provincial capitol and Atlantic port city of Limon (pop. 65,000) and rural villages were affected. An estimated 52 persons were killed, 300 injured, 1,154 homes were destroyed and an additional 1,254 damaged. Economic damage included reduced banana exports due to road and transport infrastructure destruction. The relatively limited mortality was attributed to light wood construction and low density settlement patterns.

FINDINGS

- The U.S. response was rapid. Within 12 hours the U.S. committed \$25,000. Within 19 hours U.S. aircraft arrived to transport the wounded. U.S. personnel conducted 4 separate assessments over a 45 day period and were involved in aid coordination. One hundred rolls of plastic sheeting were provided from the Southcom inventory in neighboring Panama. OFDA contributed US\$323,961 and total USG expenditures were estimated at US\$2,319,961. Government of Costa Rica (GOCR) ministries and local mutual aid were the primary responders and successfully handled the emergency phase.
- The GOCR's disaster agency, the National Emergency Commission (NEC) was rebuilding its credibility after a financial scandal and was not universally recognized and supported. There was no national disaster plan at the time of the earthquake. The President bypassed the NEC and appointed an independent coordinator. The disaster management capacity within the GOCR has been negatively influenced by high turnover rates and loss of institutional memory. The limited capacity of the NEC created the need for a strong role for OFDA/LAC.
- The U.S. response capacity was greatly enhanced by the presence of the Regional OFDA/LAC office. The Mission Disaster Relief Officer (MDRO) delegated management of the USG response to the OFDA/LAC Senior Advisor.
- The disaster provided a stimulus for better national preparedness which has included completing the national disaster plan, continuing to increase the capacity of the NEC, and establishing regional and local committees - 65% of which have completed a local disaster preparedness plan.

LESSONS LEARNED

- Preparedness is critical to a timely and effective response. The availability of supplies from the Southcom warehouse, the presence and knowledge of the Regional Advisor, and effective pre-disaster relationships with government authorities all contributed to a higher state of readiness.
- Despite OFDA/LAC's support of NEC, NEC was unable to overcome management and political constraints contributing to limited effectiveness and was only one of several loci of decision making for the response. Government ministries are prone to political influence and have high turnover in rates in key personnel thus limiting capacity and institutional memory.
- The recovery period of a disaster is a fruitful time in which positive changes can occur in mitigation and preparedness.

RECOMMENDATIONS

- OFDA/LAC must continue to support and strengthen the NEC.
- OFDA should maintain its regional capacity by strengthening Mission disaster plans, supporting the OFDA/LAC presence and maintaining the Southcom inventories.



Evaluation of OFDA's Response to the Nicaraguan Pacific Coast Tsunami Disaster of 1992. March, 1994

Background: On September 1, 1992 at 19:13, a tsunami (8-15M wave height) struck over 250 km of Nicaragua's Pacific coast leaving 116 dead, 63 missing, 489 traumatized or injured, and 1,300 homes destroyed. Material damages were estimated at 25 million in the approximately 26 affected towns. Housing, commerce, tourism, and fishing were the sectors most impacted.

FINDINGS

- The acting Secretary of State issued a Statement of Intent, without benefit of an on-site assessment. Within 24 hours, OFDA delivered to Managua, 132 rolls of plastic sheeting, 980 water jugs, and 6 collapsible water tanks from the US Southcom stockpile.
- Transport and distribution of the commodities was the responsibility of the GON and the National Emergency Commission. This resulted in significant delays in delivering relief supplies to survivors. The first deliveries to affected populations occurred more than 8 days after the event and the US aid continued to be delivered to disaster sites for up to 3 weeks. OFDA assistance was estimated at US\$100,000.
- Although the customary US\$25,000 was appropriated after the disaster declaration, the funds were not expended until 29 September, almost a month later. A GON request to use the funds for emergency relief which was delivered to the US Mission 2 weeks after the tsunami was turned down. In a departure from usual policies, the funds were obligated to OAS to an income-generating project for the affected fishing community.
- OFDA's response, while timely, overestimated the need for plastic sheeting for individual residential roofs and the excess was used for walls and other less appropriate uses. Sheeting which should have benefitted 1100 families actually only reached 185 families. Most survivors met their own needs for temporary shelter within a week of the tsunami using locally available materials.
- A post-hoc analysis concluded that the GON could have handled the emergency on its own. Even so, the disaster received a generous international response. In addition to the U.S., 16 countries, UN agencies, regional bodies, and several NGOs were active.
- Evaluators were unable to identify significant indirect impact on GON disaster management practices, such as preparedness plans, as a result of this disaster.

LESSONS LEARNED

- Relying on national and local authorities may result in significant delays in delivery of relief supplies to affected areas. This will be especially true when the government is unstable or its staff is untrained.
- When relief supplies are committed to a disaster before a reliable assessment has substantiated relief needs, there is a danger that relief may be too little, too much, or otherwise inappropriate.
- Regional disaster management expertise is an important source of expertise for USAID mission response to disasters. But, missions may tend to overly rely upon regional advisors and regional offices for important services during the emergency phase of a disaster and thus not be fully prepared themselves.
- Emergency funds can be effectively used to promote recovery of affected sectors.

RECOMMENDATIONS

- OFDA should strengthen its response capacity by increasing the capabilities of the Mission Disaster Relief Officers (MDROs).
 - OFDA should not commit resources to a disaster situation until a reliable estimate of needs has been received and corroborated by local agencies such as NGOs or the Red Cross.
 - OFDA should examine how emergency funds can be used to increase or foster rehabilitation and thereby contribute to longer term economic recovery.
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OFDA Response to the Flores, Indonesia Earthquake/Tsunami Disaster of 1992. October, 1993.

Background: On December 13, 1992 at 1329, an earthquake (6.8 Richter) caused landslides and a tsunami (26.2M wave) on the Indonesian Island of Flores. These events resulted in an estimated 2,000 dead, 25,383 homes damaged and 80-90,000 homeless. Material damage was estimated at US\$100M. Total US assistance was estimated at US\$333,000 from OFDA and US\$603,000 from other sources.

FINDINGS

- The U.S. issued a disaster declaration within 24 hours of the event appropriating US\$25,000 which was transferred to the Government of Indonesia (GOI). Initial situation reports from the GOI indicated shelter was a compelling need. On December 16, an OFDA shelter specialist based in Bangkok, arrived at the disaster site to conduct an independent assessment and provide technical assistance. The assessment confirmed the shelter needs and a request for material aid in the form of plastic sheeting was made by the Mission. On December 24, did OFDA Washington authorize shipment of plastic sheeting. Five hundred rolls arrived in Jakarta on December 27 and were turned over to GOI disaster authorities who handled the distribution. The GOI delivered 80 rolls to Flores on December 31. The balance was delivered to the affected area between January 11-17 - nearly one month after the event.
- The OFDA advisor made 3 site visits over a one year period first conducting an assessment, then monitoring aid distribution, and finally reporting on the ultimate use of 200 of the 500 rolls of US provided plastic sheeting.
- The Mission concluded that it was not well prepared for the disaster and that the Mission Disaster Response Officer (MDRO) position had frequently changed. The Mission expected to continue to have a heavy reliance on OFDA Washington and regional resources.
- The delay in sending materials was partially attributed to the "response climate" at OFDA where projects needed to compete with US commitments to Bosnia and Somalia. Evaluators concluded that most survivors were able to meet their material needs for shelter before the sheeting arrived. Even so an estimated 1,500 families used the sheeting - primarily for roofing, its intended purpose. Based on a review of the use of 200 rolls, the OFDA advisor estimated that 55% was used for schools, mosques, and churches.
- The evaluators noted that US aid did not achieve OFDA policy objectives to "save lives" but did meet important disaster related needs.

LESSONS LEARNED

- Failure to deliver relief supplies so that they can be used during the emergency phase decreases the likelihood that the supplies can accomplish their intended purpose. For disasters in remote areas, it may be more expeditious to purchase supplies in local markets (when available). Relying on national or local transport may result in substantial delays.
- The standard set for OFDA assistance, i.e. "saving lives" is too narrow. Where climactic conditions are not harsh, shelter assistance will not save lives but will reduce suffering.
- U.S. assistance decisions should be coordinated with the actors in the international humanitarian assistance system including sharing assessments and coordinating relief distribution.
- Relief items should be appropriate for end-users. This may include the need to pre-cut plastic sheeting instead of distributing it as rolls.

RECOMMENDATIONS

- Design review mechanisms that foster establishment of cutoff points for determining the appropriateness of relief items.
- Whenever possible relief supplies should be delivered directly to the affected areas.
- Revise existing definitions of appropriate end-use and involve beneficiaries to determine needs and uses of relief items.
- The MDRO position needs to be strengthened and general mission preparedness for disasters should be upgraded.



Africare Emergency Water Relief Regional Project for Zimbabwe, Malawi, and Zambia. August, 1993

Background: During 1991-92 a severe drought affected ten countries in Southern Africa. USAID undertook a strategy to increase water availability. As a part of this strategy, OFDA funded an emergency water rehabilitation program and the Africa Bureau funded a water development program. Both programs were operated simultaneously by Africare. The evaluation only addresses the OFDA funded part of the project.

FINDINGS

- In May, 1992, in response to the drought conditions, Africare, a Washington based PVO active in Southern Africa, proposed a project that would increase water supplies for drought victims. USAID Washington divided the proposal into two parts, one funded by emergency response funds and the other by development funds. In September, 1992 OFDA, as its part of the project, agreed to provide US\$1,502,959 to fund a regional approach that would provide emergency water to 260,000 persons in three countries by rehabilitating 934 wells and boreholes.
- A delay in project approval resulted in a late project start-up with rehabilitation activities finally commencing in November, 1992 just before the onset of rains. Subsequent rains slowed the implementation creating inefficiencies and yet further delays.
- Administered regionally, Africare utilized its country office structure to implement the program. At the country level Africare worked collaboratively with government drought relief actors and designed its program to be implemented in line with government objectives and organizational structure. Local people were a significant part of the workforce. Government capacity alone was insufficient to implement the water relief projects, including a limited ability to provide accurate data on local conditions.
- Despite delays and other inefficiencies, Africare met and, in some cases, exceeded the targets for water rehabilitation sites ultimately benefiting the intended numbers of targeted individuals.
- Africare concentrated on increasing the availability of water sources but did not systematically address improving water quality. In some cases Africare did not have the technical expertise necessary to efficiently implement the program in each of the three countries, e.g the lack of a water engineer in one country. Africare did not always select the most sustainable equipment for well operation and did not always have the proper tools for well maintenance despite which the work was performed satisfactorily.

LESSONS LEARNED

- Rehabilitation of wells was an effective approach to providing emergency drought relief. A well rehabilitation program should address conditions of water quality.
- New well creation, in addition to rehabilitation, is an effective emergency response and demonstrates how relief projects can promote development.
- Community involvement can reduce cost and increase the likelihood that water points will be maintained.
- The division into emergency and development projects was artificial resulting in unnecessary administrative impediments.
- Targets should remain flexible to allow implementing organizations to be responsive to new information or changing conditions.

RECOMMENDATIONS

- Follow-up efforts such as training, monitoring, and equipment replacement are needed to ensure that wells are maintained.
- Administrative procedures to approve emergency programs should be streamlined and expedited to avoid damaging delays.



The Pan American Health Organization (PAHO) Emergency Preparedness and Disaster Relief Coordination Program (EPD). January, 1994

Background: PAHO has been funded by OFDA since 1981 (3 million US\$ or 20% of total funding) to promote mitigation and preparedness in the health sector of the LAC region. The EPD project provides education and training for health responders to improve national, regional and local health preparedness and response management (especially mass casualty management); promote inter-regional cooperation; and expand emergency communication capacity.

Although the project covers the entire LAC region, the evaluation only applied to 4 "not necessarily representative countries" countries, Costa Rica (CR), Honduras (H), El Salvador (ES), and Ecuador (E). PAHO maintains sub-regional offices in Costa Rica and Ecuador. The report is an interim evaluation. CIDA conducted an overview evaluation in 1990.

FINDINGS

- The countries visited had varying levels of commitment to and institutionalization of health preparedness. CR has the highest level of institutionalization. ES and H have created specialized disaster units within their Ministries of Health but have provided limited financial support. In E, there is no specialized unit or inter-agency arrangement. With the exception of CR there was no evidence that policies and plans would translate into an efficient coordinated response in the event of a major disaster.
- PAHO, especially the subregional offices, enjoys a positive reputation; is seen as the primary provider of emergency health technical assistance; and is considered both responsive and flexible. Technical assistance, training courses, emergency supply management, and hospital mitigation programs have made high quality inputs. PAHO's primary focus has been at the national level but PAHO/EPD has also promoted inter-country disaster management activities. There is considerable technical assistance provided by regional disaster management professionals.
- Support for rapid epidemiological assessments of post-disaster needs has been successful but no country in the region has standing guidelines for such assessments. Mass casualty management has not achieved desired competency levels due to limited national support, the wide array of providers of such services, and limitations in staff and equipment. With the exception of CR, countries do not routinely monitor and evaluate preparedness programs or the capacity of disaster management agencies. Finally, there is insufficient formalized multi-agency planning.
- PAHO's education and training program, supported by many donors, develops and disseminates a wide range of information materials and manuals (mostly produced in the early 1980s and never updated); conducts and supports training of disaster management professionals; promotes disaster drills in participating organizations (especially in schools); and promotes public awareness and community participation. The general health and hospital preparedness courses were offered at low unit cost on demand to national and local health authorities. National staff are now able to provide the training. PAHO has expanded training to nontraditional audiences such as Ministries of Foreign Affairs. The impact of training is evidenced by the internationally accepted technical norms understood and demonstrated by field personnel interviewed.
- The CR-based Documentation Center has excellent holdings, is under resourced, and under utilized. It does not have priorities for dissemination and there is limited national capacity to store and disseminate materials.

LESSONS LEARNED

- A multi-year approach to institution building in the emergency health sector can be effective. PAHO should give priority to countries with a high commitment to emergency health preparedness since it is not possible, given available resources, to be active in all countries in the region.
- While PAHO primarily works with Ministries of Health as its counterpart, in none of the countries is MOH the lead agency for coordination of health preparedness and relief activities.
- The health sector is heavily influenced by other sectors such as housing, land use, logistics, and transport; therefore approaches need to be multi-sectoral.

RECOMMENDATIONS

- PAHO should increase emphasis on awareness-raising among high level officials.
- PAHO should emphasize institutionalizing interagency planning, design, administration, monitoring and evaluation of emergency preparedness practices for disaster management agencies at the national level. Bi-national, trans-national, and sub-regional collaboration schemes should be increased.
- PAHO should consider appointing Assistant Representatives in each subregional office and a third sub-office in the Southern Cone but place professionals in countries with low commitment and high vulnerability only for the short-medium term.
- SUMA (Supply Management System for Post-Disaster Relief) should be adapted to produce information on needs to help donors determine assistance packages during disaster response.



Partner of Americas Emergency Preparedness Program (EPP) in Ecuador. October, 1993

Background: The EPP is a five year program (1989-93) designed to improve and expand the capability of Ecuador's Civil Defense (legally mandated for disaster response coordination) systems for disaster management. Using funds from USAID OFDA, PL480, and the Government of Ecuador (GOE), five components were developed including: hazard research and assessment; disaster management training; public awareness; preparedness education; and regional disaster preparedness activities. Total project funding was \$1,259,807. The evaluation occurred in the fourth year of the project.

FINDINGS

- EPP strengthened Civil Defense (CD) by creating interorganizational arrangements and technical committees at the national and provincial level; and obtained funding for 18 provincial posts within Civil Defense. Further work with the Civil Defense has been delayed to the 5th year to allow for a transition in political leadership that affected the Civil Defense leadership. The effectiveness of the EPP was tested by two disasters (1990,92). EPP positively influenced the response.
- EPP conducted disaster management training for emergency managers (409), volunteer responders (81), teachers in school preparedness (760), disaster management instructors (101), and created a computerized data base detailing possible disaster consultants. EPP supported 3 hazard assessment institutions including purchase of equipment and providing training, and conducted an analysis of the feasibility of an Andean Volcanological Center, now being established.
- EPP promoted public awareness and preparedness education through school disaster education projects (1,020 schools), development of public media education programs, the development of videos, articles, brochures, and a needs assessment and seminar for ham radio operators.
- The project was able to build on a strong commitment and substantial pre-project expertise in disaster management in Ecuador. EPP was able to effectively coordinate with other programs to maximize impact, reduce duplication and increase integration.
- The USAID project officer, Mission and MDRO were all significantly involved in project formulation, monitoring and implementation.

LESSONS LEARNED

- The Partners project is seen as the important catalyst in increasing disaster management capability.
- Government support and commitment is critical for successful project implementation. Furthermore, since political changes will affect leadership in government institutions, programs need to plan for continuity during these transitional periods.
- Smaller projects and small grants can be effective mechanisms for increasing disaster management capacity and promoting coordination.
- Failure to address mitigation will limit long term impact.

RECOMMENDATIONS

Expand school preparedness programs and work to institutionalize the programs within the Ministry of Education. Distribute school education materials to other earthquake prone communities.

Public awareness programs should be expanded to reach indigenous people, private enterprises, and other community institutions.

Support modifications to the Civil Defense law to broaden participation from provincial and local levels as well as the private sector. The municipal structure should be systematically involved in building mitigation commitment and activities.

- Establish and facilitate a Civil Defense Emergency Operations Center and increase CD communications capability. Strengthen links between national CD and local and provincial level CD.
- Implement similar programs and use BPP materials wherever possible in other priority, high risk countries.



The Emergency Preparedness Program of the National Association of the Partners of the Americas (Partners). June, 1993

Background: Partners undertook a program in 1991 with USAID funding to train teachers and students to be better prepared to respond to disaster threats and to improve collaboration among NGOs to increase their preparedness and response capacity. The program was implemented in Costa Rica, Ecuador, Guatemala, Honduras, Nicaragua, and the Caribbean. The project had one year left to run at the time of the evaluation. Specific program targets were developed in an amendment to the original (1990), overly general, Cooperative Agreement.

FINDINGS

- Partners has carried out a well designed and executed school preparedness program which provided leadership in 4 of the 5 countries. The program developed effective preparedness education materials and approaches and increased readiness for preparedness education activities. Teachers believe that students are better prepared for disaster threats and will respond in a more orderly manner to such threats. The program is likely to result in the reduction of casualties but not property damage. Emphasis on increasing the capacity of Ministries of Education and NGOs has been less effective.
- Partners has not been effective in generating funding to ensure continuation beyond USAID assistance. Governments do not seem likely to fund program extension. In several cases (especially Ecuador) government authorities actually impeded project implementation. Partners' volunteers in all five countries were dedicated and committed, represented diverse backgrounds but were not seen as being able to sustain the program without paid staff support.
- Parent involvement evolved as an originally overlooked but critical part of the school preparedness project and is seen as one way of generalizing project outcomes to the community at large and promoting ongoing mitigation activities. Parent involvement is now widespread.
- Regional seminars were highly valued by participants but criticized for failing to be flexible enough to adapt curricula to meet felt learning needs of the participants.

LESSONS LEARNED

- Emphasis on community organization, self-help efforts, and private fundraising comprise the most promising strategy for achieving sustainability. Governments cannot be relied on for program sustainability.
- It is important for local volunteer committees to have a diverse representation including such types as journalists, boy scout leaders, and parents.

RECOMMENDATIONS

- USAID should continue funding Partners, especially the school preparedness project, to allow it to stabilize its funding base and reach a larger target audience but any future funding should be tied to an expectation that Partners will raise funds as well. For-profit program participants should pay some or all of their cost for participation in programs.
- The program should shift from its focus on government as an involvement partner to a focus on community-based organizations. The objectives should be adjusted to make PVO coordination an aspect of school preparedness as opposed to a stand-alone objective.
- The program should expand to include other hazards e.g. fire, other preparedness activities e.g. first aid and develop a special focus on promoting early warning systems for vulnerable communities. More frequent regional seminars should be conducted but designed to be flexible enough to respond to the unique learning needs of course participants.



The Worldwide Earthquake Risk Management Program (WWERM). March, 1993

Background: The project was designed to reduce risk from earthquakes in 3 countries (Indonesia, the Philippines, and Chile). The program targeted a small group of geologists and engineers from national institutions in each country who received technical training from USGS to improve seismic hazard maps. When the maps were produced technical symposia were held to demonstrate their use in zoning control and risk management. Total cost of the project was US\$384,436. At the time of the evaluation the Indonesian and Chilean projects were complete and the Philippines was just beginning. Each of the demonstration countries has significant national disaster management capacity and had ongoing programs in hazard risk reduction and disaster management.

FINDINGS

- The national institutions in the three countries were strengthened. Each institution had unique capacities and limitations. There was a perception that the University as a collaborating partner resulted in a greater emphasis on technical/scholarly outcomes as opposed to broad education and applied disaster mitigation materials.
- The technical training, equipment and software provided by the program are effective and appropriate for the capacities of the host countries. In Chile, the "Willy Lee" software was further adapted by national authorities.
- The project was not designed to include a disaster mitigation component. Limited linkages were formed with national institutions promoting disaster mitigation or engaged in disaster response planning. There was evidence of increased awareness of the value of mitigation among commercial interests but little direct evidence that this was linked to the hazard mapping project. Disaster mitigation practices at the residential community level did not appear to have been influenced by the project.
- The program has not resulted in leveraging of additional financial support from donors but national implementing agencies express commitment to develop additional resources.

LESSONS LEARNED

- Monitoring projects should be designed with explicit links and activities to increase utilization of data by preparedness, mitigation and response authorities. Hazard mapping by itself will not be used by disaster managers.
- Sustainability of the project gains will require continued training (short and long term) and technical assistance.

RECOMMENDATIONS

- Target key policymakers to increase awareness and utilization of project data in order to strengthen preparedness and mitigation and improve attention to construction standards and site recommendations.
- Develop public education materials to promote citizen awareness of activities to prepare for and mitigate earthquake effects.
- Conduct regional seminars to disseminate project findings and further promote earthquake monitoring. Assign regionally based OFDA field representatives to provide ongoing technical assistance and training.



The Volcano Disaster Assistance Program (VDAP). March, 1993

Background: The United States Geological Survey (USGS) undertook a 5 year project funded by OFDA to develop self-sufficient monitoring capacity for volcanic hazards in 4 high risk countries (Colombia, Ecuador, Guatemala, and the Philippines) and form an international network for volcano warning. The project included a training and technical assistance component and furnished equipment and software. The evaluation included field visits but due to security reasons a site visit was not made to Colombia.

FINDINGS

- The training and equipment were found to be efficient and appropriate. The USGS-VDAP was especially important during the eruption of Mt. Pinatubo where, in association with Philippine disaster management authorities, VDAP mapped high risk areas and projected possible damage scenarios. This aided evacuation plans and contributed significantly to efforts estimated to have saved 25,000 lives and approximately US\$ 1 billion in economic assets.
- The program allowed expansion of the pre-existing mobile Volcano Crisis Assistance Teams (VCAT) and deployment of a wider range of sensing equipment. It utilized VCAT members to train nationals in hazard monitoring and evaluation; provided on-going reports and assistance in data interpretation to country level preparedness and response authorities; and created databases and map-photo libraries.
- In the Philippines and Ecuador the project worked with strong national institutions that appear to be capable of sustaining project gains. In Guatemala a new institution was created. This institution is, understandably, seen as needing further technical assistance.
- This project was one of several in each country designed to improve disaster management capacity. There was some evidence that the project had leveraged additional donor support. There was a perception that the project had not been explicitly designed to ensure that the data would be used in ongoing preparedness and mitigation projects.

LESSONS LEARNED

- Project goals should explicitly include saving lives and reducing damage so that the scientific community is required to link the monitoring project with disaster preparedness and mitigation authorities.
- There should be ongoing communication among donors to ensure a systematic and coordinated approach to developing national institutions.

RECOMMENDATIONS

- To ensure sustainability, provide further training (both long and short term) to create a professional cadre with geology and volcanology/seismology expertise in each country.
- OFDA/USGS should develop relations with other donors to build their support for continued institution strengthening and sustainability of project gains.
- Build into project design explicit links to ensure that data are used in preparedness and mitigation efforts for any extension of this program or new or similar programs.



The Disaster Management Training Program for the Latin America and Caribbean Region (LAC). March, 1993

Background: A September, 1984 regional assessment targeted high need countries in LAC and identified overarching needs for (1) basic and specialized training, (2) earthquake and volcano monitoring and (3) mitigation. In 1985, in response to a high number of disasters, OFDA created a LAC regional team (RT) to respond to disasters, coordinate USG assistance, and assist missions and governments in developing preparedness, mitigation and prevention (PMP) activities.

FINDINGS

- The team identified training as an appropriate response to achieve its mandate and in June, 1986 convened a first disaster management workshop involving 64 individuals from 19 countries. In 1987 and 1988, the RT and others received Training for Instructors (TFI) courses provided by training consultants. In both years, the RT held 2 workshops using their new training skills and orientation.
- In 1989 the RT developed plans to initiate a wide-reaching disaster management training program and determined to concentrate on developing a Spanish equivalent of the TFI - the CPI. Over the next few years, the CPI was offered to over 2000 trainees throughout the region. The course is a Spanish language course taught by Latin American instructors trained in the TFI method.
- Also in 1990 the RT began to develop a course in Basic Emergency Management (ADP I) and utilized an Advisory Group to aid it in the task. The intent of this basic course is to teach generic management principles for application in emergency situations. Since June, 1992, ADP I has been offered 6 times to 141 individuals from a variety of countries. The ADP I course has been translated into English and is planned to be offered in the Caribbean Region by mid-1993.
- While an ambitious curriculum has been designed, to date only the 2 courses described above have been developed while another two courses are under development.

LESSONS LEARNED

- Training of trainers approaches and basic management courses meet a need in the LAC Region. Training programs are well received and sought after and the RT is experiencing increased demand to provide more instructional opportunities.
- The demand for more offerings of already developed courses has impeded the development of further courses given limited training resources.

RECOMMENDATIONS

- The RT should complete the development of the curriculum even if this requires reducing the number of offerings of already developed courses.
- The program should be further expanded into the Caribbean region.
- A follow-up program should be developed to monitor training effectiveness, assess the ongoing knowledge and skill needs of course graduates, and provide guidance for developing further training programs.



Evaluation of the Asian Disaster Preparedness Center (ADPC). November, 1992

Background: Based on a feasibility study (1985) by the United Nations Disaster Relief Organization (UNDRO) and the World Meteorological Organization the ADPC was established on the campus of the Asian Institute of Technology (AIT) in Bangkok. Over a 7 year period, USAID contributed almost 45% of the support for ADPC. The purpose of USAID funding was to provide a sound institutional base during the start-up years of ADPC. OFDA anticipates shifting its support from core to project related funding.

FINDINGS

- Ten development agencies have or are providing support for ADPC. However, except for OFDA, donor support has largely been program specific. Other donors have not shared equitably in the cost of building institutional capacity. ADPC has not been sufficiently aggressive in developing other sources of core support.
- Over 900 professionals from the Asia-Pacific region have attended ADPC sponsored courses at sites on the AIT campus and at locations in the region. Approximately 350 of these persons have attended a six week residential course on the AIT campus. ADPC has a field oriented, hands-on approach to disaster management education. ADPC staff includes 8 professional disaster managers but only one staff with natural science expertise. ADPC has developed a significant resource library on disaster management.
- ADPC has inadequately developed its collaborative relationship with AIT faculty and resources. AIT has not assisted in removing policy barriers that would increase faculty participation. When faculty have participated they have often failed to adapt their messages to the action-oriented requirements of the ADPC curriculum and training audience.
- ADPC has not systematically analyzed its market potential, does not have a business plan, and is overly reliant on training and education as its major revenue source and prime business strategy. Important recommendations from a previous evaluation (1987) were not systematically implemented.

LESSONS LEARNED

- A regional training program can be an effective mechanism for building disaster management capacity and will be supported by donors. Therefore, ADPC should continue its strong training programs but broaden its product line if it is to be viable.
- While the promise of drawing on AIT's faculty remains, significant institutional impediments will require ADPC and AIT to deliberately work to reduce barriers to effective utilization.

RECOMMENDATIONS

- In order to help ensure ADPC's sustainability and plan for the transition in OFDA's core support, a business and marketing plan should be developed.
- OFDA should convene a meeting of donors to coordinate their support and develop a phased conversion of OFDA funding to ease the transition period.
- ADPC should conduct routine follow-up evaluations to determine the effectiveness of its training programs.
- ADPC should establish a Human Settlements division integrating its current fragmented approach. OFDA's housing expert should be integrated into ADPC's team in this area. ADPC should also strengthen its scientific and technical capacity.



The Pan-African Epidemic Preparedness Project (PEP)(Ethiopia), April, 1992

Background: In response to epidemics of meningococcal meningitis that caused significant morbidity, mortality, and required substantial US relief dollars, USAID provided funds to the World Health Organization (WHO) PEP for an epidemiologist based at the WHO Pan-African Center for Emergency Preparedness and Response in Addis Ababa. The project proposed to strengthen preparedness especially for meningitis and yellow fever by strengthening early warning systems and laboratory support; and training health personnel for targeted countries in Sub-Saharan Africa. The evaluation assessed PEP accomplishments and identified OFDA options for continuing the project.

FINDINGS

- Participation in the project has resulted in significant leveraging of funds by OFDA's contribution; created a prominent US presence using limited funds; and supported a Center with the potential to concentrate greater resources on prevention, mitigation, and preparedness activities. Significant progress has been made in Ethiopia and Uganda, but little progress has been made in Nigeria.
- The project received inadequate supervision and support from WHO. WHO did not provide adequate administrative support and accountability. Project administrators changed frequently and project supervision was shifted to Geneva. WHO now requires annual action plans and has implemented changes in organizational structure.
- Severe problems have plagued the project including overly broad mission, insufficient resources, poorly defined management structure, and inadequate administrative support. The action plan is too ambitious in light of the constraints imposed by underfunding, poor communications and limited travel capacity. Furthermore, the planned Training Unit has not been established.

LESSONS LEARNED

- Failure to adequately design a project will limit accomplishments. Planners should ensure that project resources are adequate to achieve project purposes and determine managerial responsibilities before commencing activities.
- Progress must be monitored closely to allow early identification of implementation problems. USAID may need to take corrective action if monitoring reveals ineffective implementation.

RECOMMENDATIONS

- OFDA options include: (1) continue support of the activity but detail expectations for improvement; (2) temporarily disassociate from the WHO project and relocate the office; (3) relocate the project and reassign the staff person; or (4) terminate the project.
- The report recommends, that unless problems are resolved, OFDA should continue the work of the epidemiologist, but withdraw from the WHO supported program, and relocate the project office. In addition, OFDA should justify its actions and establish expectations of changes that would allow the activity to be subsequently reintegrated into the project.
- The program should not be expanded into other countries until resources are adequate for the first three countries. The project should reconsider including Nigeria given available resources and limited accomplishments to date.
- The action plan should be redesigned to reflect expected outcomes. Project staff should involve PAHO in the redesign, and Terms of Reference for the OFDA funded staff person and the project budget should be clarified.



Strategic Evaluation of the World Environment Center's Local Accident Mitigation Program.

January, 1995.

Background: The World Environment Center's (WEC's) Local Accident Mitigation Program (LAMP) is designed to meet the OFDA objective of a reduced loss of lives. Its purposes are: (1) increased awareness of man-made accidents, and improved response to technological--namely chemical--emergencies; (2) reduced risk to persons and property caused by the threat of such emergencies; and (3) improved local capabilities to respond to technological emergencies and natural disasters. During August-October, 1994, an interim, strategic evaluation was carried out in three of the four countries where the program exists: India, Mexico and Thailand (Indonesia could not be accommodated in the evaluation).

FINDINGS:

- The program has achieved progress in the technical area of emergency preparedness.
- The most consistent feature of the chemical emergency planning is that it is industry and government driven.
- Progress has been made in developing an emergency planning capacity among industry participants.
- Major accomplishments have been made in disseminating emergency planning and response information. In addition, progress has been made in educating industry and government officials in awareness and preparedness, at local, regional, and national levels.
- There is a need for local community development training to enable the most vulnerable populations to learn and use emergency preparedness procedures.
- WEC has generated a greater capacity in industry to respond to a chemical disaster than in government. To strengthen the government response, WEC would need to increase incorporation of emergency local responders.

LESSONS LEARNED:

- Across the three countries, LAMP interventions have to deal with very different conditions of technology and political sensitivity to the public's right to know, among other issues. A meaningful comparison of the three country programs would have to be fine-tuned to reflect social, economic and political differences.
- Often, the affected population is the last to know what to do in a chemical accident.
- For these programs to have an impact on higher goals, they require more than just a technical solution. People-level understandings and interventions are necessary to bring these programs to their intended ends.
- USAID's approach to strategic planning and performance monitoring contributes to achieving results. This approach, which served as a framework in this evaluation, should be equally valuable to the management of WEC activities both in Washington and in the host country.

RECOMMENDATIONS

- While progress in the technical and management areas of emergency preparedness needs to continue, if the program is to achieve its full impact, it now must shift its focus to community-based emergency preparedness planning. WEC-Washington must concentrate its efforts on training a corps of emergency responders. A training-of-trainers approach will promote program sustainability and will prepare the public to react more quickly and efficiently to future emergencies.
- It is vital that WEC-Washington encourage the three country programs to enroll the vulnerable community in the chemical emergency planning process. Each country should provide awareness and preparedness training programs for the community, which would allow the people to become both more involved in the planning and better prepared for actual emergencies. These activities will more directly benefit the most at risk population - the local community. At the same time, OFDA's objectives of saving lives, reducing suffering, and diminishing property loss will have a greater chance of being achieved.



The Pan American Development Foundation (PADF) Low Cost Housing Retrofit Pilot Project. April, 1993

Background: USAID funded a two year pilot project to retrofit houses in Jamaica to make them more resistant to hurricane damage. PADF's implementing partner is the Jamaica-based Construction Resource and Development Centre (CRDC). The project promoted improved roof construction in low income housing and involved training builders, providing loans to homeowners, and building national material production capacity. The evaluation occurred at the end of the first year of operation of the program.

FINDINGS

- The project has been well received in the target communities. The technical interventions chosen for implementation are sound and cost effective averaging US\$31.00/unit (the average cost per unit varied considerably from community to community). These interventions should significantly reduce loss of life and material damage in the event of a hurricane. Several of the intended mitigation interventions were not tested because they were projected to be too expensive.
- CRDC has proven to be an effective and respected implementing partner. While the project demonstrated the potential for collaboration between U.S. and locally-based organizations the collaboration between PADF and CRDC has been uneven. This has proven especially unsatisfactory in marketing and fundraising where the PADF consultant has not established a working relationship with CRDC.
- No expectation of loan recovery was made in project proposals. Loan payback mechanisms were not systematically developed and many participants either did not know the assistance was in the form of a loan or had no intention of repayment. Even so the implementing partners stressed loan payback and 52% of loans have been recovered. The project has attracted interest from other funders and Jamaican institutions in the credit and insurance area. However, it is not yet clear that local credit will be available.
- Hurricane straps are being produced by a local workshop thus increasing potential for introducing the technology into the ongoing commercial sector.

LESSONS LEARNED

- The program should have had an aggressive marketing/fundraising approach aimed both at other funders and implementers. It should also have been explained to beneficiaries so as to create more demand among homeowners.
- A demonstration program should allow revised outcome expectations and project personnel should be encouraged to test a range of mitigation devices and approaches.
- Disaster mitigation materials and construction practices will be chosen by homeowners if funding is provided through a loan program. Loan payback procedures must be developed during the project design stage so that their terms can be made clear to beneficiaries.
- Mitigation devices should be produced by local suppliers
- The program experienced several problems when introduced to an urban area, notably the resistance to builders from outside the local area.

RECOMMENDATIONS

- In order to expand the program to middle income home owners, credit unions, development corporations, and other forms of community financing should be systematically involved in the program. Both community and individual beneficiary selection criteria should be developed. A variety of mitigation options should be available to homeowners depending on their ability to pay. CRDC should rely on subcontractors for training and building inspection.
- Further effort should be devoted to institutionalize hurricane strap production and technology in the commercial sector. The program should be expanded to urban areas and an effective loan recovery strategy should be developed.



The Costa Rican Hospital Retrofitting Programme: Decision Making, Implementation Procedures, and the Construction Process. September, 1992

Background: Starting in 1986, the Costa Rican Social Security (Caja) undertook a hospital building structure strengthening program and upgraded its insurance protection to reduce seismic risk and financial exposure. The evaluation sought to identify factors influencing the decision to undertake the retrofitting program and identify lessons learned from an analysis of the construction process.

FINDINGS

- Despite some initial efforts spurred by earthquakes in Managua, Nicaragua (1972) and Guatemala (1976), prior to 1983, Costa Rica had severely deficient knowledge about seismic risk and a low interest in promoting mitigation. Interest in mitigation and increased resource commitment was influenced by a number of factors.
- In 1983 an earthquake severely damaged the hospital in San Isidro. Increased awareness among government and hospital authorities about hospital risk resulted. Caja's limited financial resources inhibited an increased commitment to mitigation but its increased awareness did result in a movement toward more rigorous coverage by formal insurance policies. The quake prompted hospital vulnerability analyses of the Mexico hospital by students at the University of Costa Rica (UCR) Engineering Department. The studies identified significant vulnerability.
- The Mexico City earthquake (1985), which destroyed 60% of hospital capacity, heightened concern due to the similarities between Mexican and Costa Rican hospital construction. The administrator of Children's Hospital independently pursued a vulnerability analysis which highlighted the hospital's vulnerability (1986). The San Salvador (1986) earthquake, which also reduced hospital capacity by 60%, combined with increased pressure from Costa Rican engineers and a less stringent economic atmosphere galvanized official Caja policy to seriously pursue vulnerability reduction for the country's hospitals.
- Using an ad hoc process in the absence of thorough analysis the Caja chose two hospitals and the central office building for a retrofitting program in addition to the two hospitals for which a vulnerability analysis had been done rejecting hospitals which were in low seismic risk zones; expected to be replaced or substantially remodeled; single story or lowrise; or more recently built and certified to be earthquake resistant.
- Problems encountered during construction led to serious delays and cost overruns. These included: (1) the need to revise plans; (2) delays in vacating sections of buildings to be retrofitted; (3) unplanned reconstruction needs; (4) on the job requirements for unforeseen retrofitting; and (5) facility upgrading requests. Earthquakes during the retrofitting program increased project costs and required new retrofitting procedures. The earthquakes also diverted resources from mitigation programs.
- Hospital administrators were not adequately involved or briefed on construction plans, requirements, and timetables, frequently resulting in delays, work stoppages, and decreased hospital efficiency.
- Although the Caja undertook an ambitious building program in addition to the retrofitting project staff resources did not increase commensurately nor did the centralized decision making style change.
- The Caja has moved from a largely self-insurance scheme to a comprehensive loss replacement program, thus broadening coverage and reducing exposure. This policy change resulted from the occurrence of large uncovered losses due to less adequate insurance approaches.

LESSONS LEARNED

- The urgency that Caja felt to implement a program led to inadequate planning and coordination. Human and material resources must be sufficient for implementation and monitoring.
- Hospital authorities must be involved in a participatory process throughout the retrofitting program including vulnerability analysis, construction planning and scheduling, and mitigation selection.
- Decisions to upgrade facilities during the construction process caused competition for scarce resources and slowed

Implementation.

RECOMMENDATION

Projects as ambitious as a hospital retrofitting program require a coordinated and systematic project management approach. This should include a vulnerability assessment, analyses of alternative retrofitting approaches, structural plans and architectural plans.



Post-Disaster Housing Education As a Tool to Achieve Safer Housing, June, 1994

Background: Over the last 15 years, several projects which sought to increase mitigated building practices in the informal (vernacular) housing sector in disaster-prone communities were initiated during the reconstruction phase resulting from natural disasters. Although each project was uniquely designed, they all intended to train local builders and utilized a variety of training methodologies. The projects had both short and long term goals, i.e., in the short run, to rebuild safer houses and, in the long run, change building practices. The evaluation analyzed 6 different programs in the LAC region, Western Pacific, and the Arabian Gulf. In each case the projects were at least 10 years old thus allowing evaluators to assess sustainability of mitigated building practices.

FINDINGS:

- In all cases the projects were successfully implemented resulting in most, if not all, of the tangible outcomes promised actually delivered, e.g. stronger housing and training aids. But, none of the projects reviewed was sustained much beyond the project period.
- No one set of training approaches proved superior. Classroom training by itself was not effective. Most skill transfer resulted from repetitive field oriented "guided practice". Most knowledge in the informal building sector is passed on by a highly informal apprentice process. Training aids such as model houses, "how-to" manuals, and videos were not effective as promotional tools after the project ended.
- The types of housing promoted by the projects frequently failed to incorporate local trends in design and materials and thus trained builders to build in an "old style" no longer seen as desirable by beneficiaries. Mitigation techniques based on unfamiliar technology were not generally integrated into post-project construction practices. Builders did not, on their own, promote mitigation practices unless there was demand by home owners. The informal building process often resulted in copying some innovations, rejecting some, and adapting others resulting in a failure to adopt the whole mitigation system. This, in turn, resulted in less safe houses.
- Conventional training institutions, architects, and engineers were typically not involved in the traditional housing sector. Building codes and the inspection process were not effective in maintaining minimal construction standards for this sector. Existing credit resources for the informal sector were helpful in promoting mitigation but insurance and owner financial participation had no predictable effect.
- Despite being "disaster response" projects, the long lead time for project start-up meant that projects did not construct emergency housing. Further, long project start up timeframes created the opportunity for systematic participant input in project design - a "social marketing" approach.
- Post-disaster needs assessments do not typically include findings on local resources and other factors, such as land tenure, that would influence project design.
- PL480 and other monetization schemes are appropriate for longer term projects but not for emergency response situations that require fast administrative processing.

LESSONS LEARNED:

- The post-disaster reconstruction period provides an opportunity to promote mitigation in a development context but the links between disaster aid and ongoing development are still not fully exploited.
- When projects have multiple goals, e.g long term behavioral change or micro-enterprise development and short term construction, short term construction goals are accorded priority.
- If sustainability is an objective, an institutional home for the project must be found and planning for transition to local and national authorities should be incorporated into project design.
- Chances for institutionalization are limited when only one part of the housing sector is targeted, e.g. builders. Projects should not concentrate exclusively on government but, instead, include members of the housing community

likely to be involved over the long term. Ongoing technical assistance and vocational and professional skill upgrading programs would encourage sustainability.

- Ongoing monitoring and evaluation can have a positive effect on project implementation and result in more effective implementation.

RECOMMENDATIONS:

- Projects need to move away from a short term orientation and concentrate more on sustainability.
- Donors should commit to long term monitoring and evaluation maintaining participant records and providing, when feasible, follow-up technical assistance.
- Program planners should utilize a social marketing approach to designing programs by encouraging input into project design from implementing partners and beneficiaries.
- Disaster resistant construction techniques should be integrated into normal building trades courses and the formal construction sector.



Introducing Limited Improvements in Vernacular Housing After the 1987 Ecuador Earthquake: Program Constraints on Sustainability, January, 1994

Background: In response to the 1987 earthquakes several housing assistance programs were established. This evaluation examines the program administered by Centro Andino de Accion Popular (CAAP), a 12 year-old development oriented NGO, which was active in the affected communities prior to the earthquake. The project trained and paid for the technical assistance of construction supervisors and provided some tools and materials. The supervisors worked with family building teams to incorporate mitigation techniques into rebuilt houses.

FINDINGS:

- The CAAP exceeded project goals for training and house construction resulting in 1,916 rebuilt owner-designed homes in 84 communities utilizing the services of 70 project trained construction supervisors. The homes were found to be "reasonably improved in earthquake resistant design". Nevertheless, there were insufficient trained supervisors for all the construction activity and many homes were not rebuilt to be able to withstand earthquakes. Conventional training institutions, insurance, and building codes had no involvement with the vernacular housing.
- Because CAAP was already active in the affected area it was able to reprogram funds from an existing project and establish a program more quickly than any other organization. The CAAP effort was designed with significant community input and was administered at the community level by local people with whom CAAP had previously worked. Locals established beneficiary lists, supervised community contribution of labor and participated in the distribution of tools and materials. Since CAAP had not done any housing programs prior to the earthquake it linked its program with another pre-existing local housing resource and technology center, Centro Sinchaguasin, which provided two expatriate architects to supervise the project.
- CAAP only promoted innovations that required local inputs and rejected model houses, revolving credit schemes, concrete block and burnt brick, and wattle and daub approaches as inappropriate for cultural reasons. The project focused on rural vernacular housing of the "rammed earth" design. There is little current evidence of the ongoing use of the innovations taught primarily because "rammed earth" is no longer a preferred building approach having been eclipsed by more "modern" materials such as brick and concrete. Further, only the poorest families use "rammed earth" and they do not hire paid construction supervisors.
- CAAP had no intention of developing a long term role in hazard resistant house building or in emergency/disaster response. CAAP did not aggressively fund raise for program expansion. It saw the program as a short term project to meet the emergency needs of its target population and intended to return to its empowerment/development agenda as soon as possible. CAAP's long term goal influenced project design, e.g. its determination to help all survivors equally victims in the target area and its unwillingness to differentiate beneficiaries by need or capacity.

LESSONS LEARNED:

- CAAP achieved its primary objective of rehousing people but did not establish an alternative construction model for the communities.
- Using a pre-existing NGO with good community contacts allowed a fast start up and promoted community involvement but the long term program objectives were constrained by the NGO's long term goals.
- The training design failed to account for trends in material selection and house design and essentially trained people for an outdated building technology.

RECOMMENDATIONS:

- Mitigation innovations proposed for rebuilding after disasters must account for changes in construction practices.
- Projects should use local NGOs which have an expressed long term commitment to the housing sector and involve local people in design and implementation.
- Donors should be flexible to allow local programs to be redesigned to be responsive to post-disaster relief and rehabilitation needs.



Madagascar: Training for Safer Construction After Cyclone Kamisy. July, 1993

Background: Following a 20 year period with no major cyclonic events, Cyclone Kamisy struck Madagascar on April 9th and 11th, 1984 causing extensive damage to all types of buildings in several communities. USAID OFDA approved a US\$500,000 material distribution program and funded an assessment which determined that damage was due to poor workmanship and weak fastenings and building frames. Based on more limited programs from Central America and the South Pacific, the assessment recommended expanding the proposed subsidized material distribution program; a new concurrent builder training program; expanding the program to unaffected communities; and using sales from materials to advance mitigation-oriented development projects.

FINDINGS

- The project had early difficulties negotiating an institutional home; achieving consensus on a satisfactory material distribution program; and gaining access to monetized PL 480 funds. This resulted in a delayed start-up in September, 1984.
- Ultimately, the project included the following components: training aids for builders and instructors; community awareness materials; construction and repair of 12 model houses; a subsidized sales program for building materials; guidelines to establish micro-enterprises to produce mitigation materials; and guidelines to implement work projects using cash from material sales. The initial objectives were achieved by December, 1984 when the expatriate technical assistance team left and the program was turned over to a national director and the Ministry of Public Works (MPW).
- The program was fraught with implementation difficulties which included having four different institutional homes over the life of the project. Since most skilled builders were otherwise engaged in reconstruction, the training focus was mostly low skilled laborers. The works component was never implemented and material sales were used to co-fund the program administration not development and mitigation projects as originally envisioned. There is little evidence of continued use of the community awareness materials or training aids. Most model houses are inaccessible to the general population. Despite the uneven implementation, a number of houses were built under the program. The houses are more cyclone resistant than houses built outside the project.
- The Kamisy team, although recommended to be involved with the response to Cyclone Honorinina (March, 1986), was never funded for that purpose and the project was terminated in June, 1986. Plans to continue the project under other auspices were never implemented.
- There is some evidence of continued use of mitigation building techniques in the informal sector but mitigation materials were either not available (e.g. cyclone straps) or were unaffordable (e.g. roof nails with washers). The formal sector has institutionalized some mitigation practices. Schools and MPW buildings were built with appropriate materials such as roof fasteners. The MPW published a guide on cyclone resistant construction for use in conjunction with the national building code (which is seen as generally not effectively enforced) and has an internal training program with a mitigation component. Formal building trades education at the trade-school level does not have a mitigation component.
- The USAID Mission office had destroyed all program files. This, coupled with the lack of local records, significantly impeded the work of the evaluation team and made it difficult for the evaluators to determine what future use the trainees made of the skills learned in the training program. The local administrator was not accessible to the evaluation team. Interviewees suggested that this lack of transparency might have been intentional due to the widespread belief that substantial corruption resulted from the beneficiary selection and materials distribution component of the program.

LESSONS LEARNED:

- Overall, vulnerability has not been reduced and, for most people, there is no change in building techniques. The innovations proposed were not affordable to the target beneficiaries, thus, when the subsidy was removed there was little utilization of suggested mitigation improvements.

- If projects are to be sustainable they must have an institutional home. Failure to extend support to national implementing authorities reduces sustainability. Without consistent follow-up, there is little sustainability. Local authorities were unable to implement the program without yielding to corrupt practices.
- Funding for disaster emergency response programs should be in hard currency and free of excessive in-country controls. PL 480 funds cannot be made available in a timely enough fashion.
- Record keeping must be a programmed part of long term mitigation programs if adequate follow-up or evaluation is to take place.

RECOMMENDATIONS:

- Program planners should do more market analysis to ensure that proposed mitigation techniques are both affordable and acceptable to the proposed beneficiaries.
- Expatriate staff should continue involvement with a project after turnover to local authorities to ensure effective implementation.

Solomon Islands Builder Education Programs: What Has Been Sustained?, June, 1993



Background: The Solomon Islands are vulnerable to a variety of hazards, especially cyclones. A 1984 OFDA funded analysis determined that housing vulnerability could be significantly reduced through improved building practices. During the ensuing 10 years, the Solomon Islands had 7 distinct builder education programs designed to reduce vulnerability, primarily to cyclones, through the construction of safer housing. This study reviewed the extent to which practices taught in these programs have been sustained and institutionalized into general building practices.

FINDINGS:

Of the seven programs, two were short term and the rest are ongoing. All but one were supported by bi- or multi-lateral aid. One was a part of a larger post-disaster house building program. Short term programs typically utilized training manuals, workshops for builders, and construction of demonstration houses. Longer term programs involved integrating building mitigation content into college and technical school curricula. Training materials developed for the 1984 program continued to be used in later programs and copies of the materials were still used by builders.

There are three predominant housing types: permanent, semi-permanent (transitional), and traditional. Mitigation practices are most evident in permanent housing built by the formal construction sector in Honiara, the capital, and in provincial capitals. Mitigation is supported by building code enforcement, and requirements of lenders and insurers.

Eighty-five - 90% of all housing is located in rural areas where the housing stock is primarily traditional utilizing materials gleaned from the "bush" and requiring cyclic reconstruction. In villages affected by Cyclone Namu (which dramatically increased the commitment to mitigation) and provided with builder education programs there is a high awareness of mitigation techniques. Builders trained in the program actively promote and utilize some of the methodology learned. Rural villages are not subject to building code enforcement, or affected by formal sector lender and insurer requirements for mitigation.

Semi-permanent housing merges permanent and traditional materials. This frequently results in increased vulnerability when non-traditional materials are used incorrectly. For example using nails instead of traditional lashing results in weaker structures.

The Solomon Islands Government (SIG) is committed to reducing vulnerability but, in light of a poor economy and a short term emergency focus on malaria and civil conflict, lacks the resources to implement significant programs. The National Disaster Council (NDC) has limited capacity and sanction to inspire preparedness and mitigation and has not been able to influence the practices of line ministries. Even so, the NDC has a weekly radio program focusing on improved building practices and disaster preparedness.

Considerably more commitment and dedication of resources is found in the NGO community. NGOs have sustained and increased their involvement in builder education programs. Locally respected NGOs have contributed significantly to increased mitigation practices.

LESSONS LEARNED:

A culture of mitigation has developed in the Solomon Islands as a result of government and donor commitment, ongoing builder education programs, the capacitation of NGOs, and development of building codes. This has resulted in a critical mass of projects which has increased sustainability.

Since the SIG is totally dependent on foreign assistance for relief, as long as donors continue to support builder education for mitigation, the SIG will continue to request it. Donors have demonstrated an ongoing commitment to builder education programs.

Even when government commitment for mitigation exists, government cannot be counted on for sustainability. Long term players in the housing sector should be targeted. Capacitating locally respected NGOs can be a very effective strategy for sustainability.

- While mitigation can be built into formal construction sector education programs the resulting transfer of skills to the non-formal sector is indirect and unpredictable. Since such considerable progress has been made in the formal/urban sector, builder education programs for the Solomon Islands should target rural villages and emphasize the strengthening of traditional and semi-permanent housing.
- The lending and insurance industries are the most powerful tool for ensuring mitigation in areas where they are active. Moving housing construction out of the government's responsibility and into the private sector strengthens the role of lenders and insurers.

RECOMMENDATIONS:

- Donors should concentrate programs over time in a targeted country to build a critical mass of commitment to mitigation throughout all housing sectors.
- Mitigation programs should be developed in the private and non-governmental sector to increase sustainability.



Feasibility Study of Hospital Ship for Disaster Assistance. May, 1993

Background: In 1990, Life International (Life), a PVO with limited overseas and disaster experience, paid US\$10 for a decommissioned hospital ship, the USS Sanctuary, that had not been used since 1973. As part of its fund raising efforts to turn the ship into a health care teaching and clinic for major 3rd world ports, Life approached the US Congress. The 102nd Congress responded by requesting USAID to study the cost-effectiveness of using such a ship to provide "urgently needed assistance to disaster victims".

FINDINGS

- The American Bureau of Shipping (ABS) determined that to be seaworthy and meet contemporary Coast Guard standards, Sanctuary would need extensive repair and retrofitting that would take an estimated 2 years to complete and would cost approximately US\$ 20 million. Modernizing the medical equipment would cost an additional US\$3 million. The annual operating costs would be US\$ 10 million. In sum, Life would spend US\$1.50 - 2.00 for every dollar of assistance delivered.
- Hospital ships provide a controlled and sanitary environment, especially suitable for highly complicated cases and providing suitable living conditions for expatriate health care providers.
- Hospital ships are a high cost, high risk method for providing disaster assistance. Ships do not offer any comparative advantage over land based operations for providing disaster assistance and have a slow response capacity due to the length of time required for a ship to move from one location to another. Project Hope has ended its use of a hospital ship for these reasons.
- If OFDA were to proceed with the project, the annual grant to Life International, as requested by them, would consume all projected expenditures by OFDA for medical/sanitation related disaster funds.

LESSONS LEARNED

- A hospital ship fails to meet OFDA's disaster response objectives to intervene rapidly and develop indigenous medical capability.
- For landlocked countries a pre-packaged mobile arrangement would be more cost effective for delivering sophisticated treatment. Even for coastal locations, airlifting specialists with prepackaged kits to victims' locations would be more cost effective and less disruptive to families.

RECOMMENDATION

- Do not support the Life International proposal.



Housing Construction Programs in the Republic of Yemen Following the 1982 Dhamar Earthquake. January, 1993

Background: In November, 1982 an earthquake (5.8 Richter) struck the Yemen Arab Republic (YAR) killing 2,000, injuring 2,000, destroying 25,000 homes and damaging 17,000 others (assessments conducted by various sources differed by 25%). Arab donors funded a contractor-built housing reconstruction program (13,000 homes). Other donors supported self-help programs intended to effect long term building practices by educating local builders about earthquake resistant construction techniques and materials. The Dhamar Builder Education Project (DBEP) was administered by NGOs and included a series of one-time two day training programs for self-identified masons and a mobile educational consulting team. The Dhamar Aided Self Help project (DASH), supported by USAID, the Dutch, and the EEC was a reconstruction program (1,000 homes) for remote villages that used trained master masons, community based training and supervision, modest beneficiary participation during construction, and Dutch expatriate management for the first 5 years.

FINDINGS

- The DBEP program, initiated quickly by NGOs already present in the country, trained an estimated 1,500 persons, and provided on-site consulting to an unknown number of other rebuilding survivors. No record of the trainees exists nor are any of the training materials accessible. While DBEP no doubt influenced building practices there is no hard evidence to support this finding. DBEP was not connected to any Yemeni institutions.
- The DASH program built an estimated 1,000 earthquake resistant houses. The project was plagued with impediments including problems with cash flow, interrupted supply of building materials, and delays in beneficiary selection. The program did not build a single house until 3 years after the earthquake. As the house construction program fell behind schedule the education for mitigation component receded in importance. The DASH program was lodged in a new ministry which continued the program for five years after the expatriate managers left but which was closed after the reconstruction period.
- While several thousand masons were trained, relatively few of them are currently active as home builders. For many the training provided an entree into government service but not necessarily in the construction sector. The training materials developed for the DASH program were technically oriented to building only one type of house while the DBEP materials were more broadly oriented. But, in neither case are the videos, manuals, and model houses accessible or used.
- Most of the non-native mitigation innovations were not ultimately adopted into the building culture. Attempts to promote mud construction were not effective as that building material is no longer used in Yemen. Some innovations, such as the use of steel, were, though modified, incorporated into building practices. At the time of the earthquake there was a growing use of steel. The University and trades schools did not incorporate the mitigation approaches proposed by the projects into their curricula.
- All the post-earthquake housing programs failed in one way or another to account for Yemeni cultural standards of privacy, family structure, site design, acceptable innovations, or builder knowledge dissemination (the apprentice model). On the whole contractor-built homes are the least accepted while the DASH houses are liked by their beneficiaries.
- The use of PL480 funds proved challenging because the funds were available only in local currency thus limiting what they could purchase and subjecting them to inflation. Further, disbursements were impeded by YAR bureaucratic controls.

LESSONS LEARNED

- Programs must have an institutional home. However, even a well integrated program if lodged in a ministry with a time-limited mandate for reconstruction will have limited sustainability.
- Utilizing existing NGOs allows for a more rapid response than creating a new expatriate effort.
- Training materials including manuals, videos, and model houses are not sustainable as teaching devices. Community based on-the-job training programs linked to construction programs have more influence than stand-alone training

programs. Saturating a reconstruction area with a large number of earthquake strengthened houses creates a sustainable model of safe building techniques.

- Ongoing monitoring and evaluation can have a positive impact on correcting implementation problems.
- Failing to account for cultural factors can inhibit goal accomplishment.

RECOMMENDATIONS

- In order to make non-native construction innovations sustainable programs must create and support a local supplier/manufacturer.
- Evaluations should be conducted at several time intervals after a project to determine sustainability and long term impact. Evaluators should be required to assess outcomes not just document process. Programs should be required to develop and maintain reliable and accessible program documentation. Training programs should be required to develop and maintain data bases of trainees so that they can be located for follow-up or to launch other building programs.
- Programs utilizing expensive expatriate management should be transitioned to national authorities as soon as feasible.
- Demonstration programs should have a component where training takes place in non-stricken but highly vulnerable communities.



The Role of Reinsurance in the Caribbean Region.

November, 1992

Background: In support of a RHUDO/CAR project - the Caribbean Disaster Mitigation Project (CDMP), this report provides a general discussion of insurance concepts and their application in the context of natural disaster mitigation in the Caribbean.

FINDINGS

- Reinsurers are an important part of the insurance system since they spread risk across countries thus broadening participation and increasing resources. Some reinsurers have withdrawn from the Caribbean region because they perceived the risks to be too high. If more reinsurers withdraw it could result in limited insurance coverage and increased insurance costs which may have ripple effects such as reduced lending activity. Despite the trend toward reduced reinsurer coverage, one new reinsurer has been established in Bermuda.
- The insurance industry in the Caribbean focuses on selling insurance policies and transferring them to a reinsurer. Companies derive their revenue from selling policies; are not involved in risk reduction activities; and do not maintain capital reserves to cover estimated losses. Further, most of the insurance companies are owned by banks. While the banks require mortgage insurance to protect against losses, individual predilection to purchase insurance that is not required by banks is limited. The industry is loosely regulated and supervised. There is no overall rating/classification system.
- Insurers manage risk by avoiding it, causing others to bear a larger share of the policy costs, limiting losses, and broadening the risk sharing resource base. Specifically, they have reacted to recent disasters by raising rates, reducing coverage, increasing deductibles, and instituting co-insurance - all of which make insurance less affordable.
- Normally, the price of the insurance premium is influenced by the estimated losses and the size of the resource base and thus, provides incentives for the insured to engage in loss-mitigating activities. However, this pricing practice is not common in the Caribbean.
- Mitigation can be an effective technique for strengthening and rationalizing the insurance system. Hazard mapping is an important first step in implementing a pricing scheme based on risk analysis. A hazard mapping project is being implemented in Puerto Rico.

LESSONS LEARNED

- As currently configured, the Caribbean insurance industry does not promote mitigation. The key actors needed to strengthen the insurance industry's ability to promote mitigation and finance disaster recovery include the reinsurers, mitigation promoters, national and local lending and insurance companies, and individual and corporate building owners. All of these groups require reliable data and expert analysis which is currently not available.

RECOMMENDATION

The Caribbean Disaster Mitigation Project can fill an important informational and educational void and should be supported. CDMP should support cost effective mitigation efforts, such as hazard mapping.



Proposals to Retain Reinsurance Availability in the Caribbean (English speaking states and the Dominican Republic). November, 1992

Background: As part of the RHUDO/CAR Caribbean Disaster Mitigation Project (CDMP), this report was prepared to study the availability of reinsurance in the region. The author conducted interviews with insurers, lending institutions, and regulators in Barbados, Jamaica, and the Dominican Republic.

FINDINGS

- Approximately 85% of the risk is currently held by reinsurers. There has been limited outright withdrawal of reinsurance as well as limited mid-term contract changes. Still, the insurance industry is identifying strategy options in light of recent costly disasters. National insurance authorities are not fully aware of the potential reduction in the availability of reinsurance.
- If, as expected, reinsurers limit their exposure in the Caribbean countries the following scenarios are projected to occur: astutely managed insurance companies will be reluctant to retain additional risk; overall insurance will be generally less available and larger numbers of individuals and businesses will not be able to afford insurance; policy holders can expect their premiums and their deductibles (beyond the standard 2% of full market value) to rise; and lending institutions may reduce available credit if insurance is not available. Given certain assumptions, such a reduced availability of reinsurance is projected to last only 2 years. The analysis of impacts of various scenarios of reduced availability do not portend serious economic consequences.
- These changes will affect the insurance industry. Local companies may need to reinsure each other. Net income will be increased but the capital base will be strained. If claims are minimal or average, profits should increase. Companies may be able to materially affect portfolio quality. There will be limited reinsurance price differentials between good and so-so portfolios. Poor track record portfolios will have difficulty finding reinsurance at affordable rates and/or conditions. Regulators will be severely challenged to scrutinize the solvency of insurance companies.
- Inflation has driven up the cost of insurance and, currently, most insurance is carried only to fulfill lending institutions' requirements. Neither positive nor negative incentives are available to influence vulnerability reduction in the Caribbean insurance industry. For example, there is no variation in premium costs due to vulnerability reduction or other risk management actions. Some efforts at vulnerability reduction have been made, for example by utilities and foreign owned resorts. A major insurer in Jamaica has initiated risk and actuarial studies.
- The Insurance Association of the Caribbean (IAC) has limited capacity and data to influence developments in the Caribbean insurance industry. Insurers and regulators do not participate in a rating system that would increase public awareness of healthy insurance companies. Insurers do not have accurate data upon which to base rates. In all countries there is substantial competition among insurance brokers.

LESSONS LEARNED

- Local insurance industries are perceived as fragile. Dependence on reinsurance has impeded growth of capital bases, mature underwriting expertise, and astute premium pricing.
- Reduced reinsurance will strain local capacity to meet insurance needs. Local companies may have difficulty achieving the financial capability to fully meet policy obligations on a timely basis.
- Four activities will increase the willingness of reinsurers to participate in Caribbean insurance programs. These include: appropriate risk pricing, Probable Maximum Loss assessment (PML), hazard mapping, and increased mitigation through the utilization of appropriate building materials and technologies.
- Insurance companies need to improve the risk quality of their portfolios. Accurate risk analysis data are critical to maintaining a strong reinsurance presence. There needs to be better insurance data so that constituent groups of the insurance industry can assess company strengths.
- Government insurance schemes may be required if private sector availability declines.

RECOMMENDATIONS

- Cost effective mitigation analysis should be made that would identify high payback building technologies, e.g., hurricane tie downs for roofs in vulnerable areas. A hazard mapping program should be started. Rates and premiums should be conditioned by mitigation activities.
- Local insurance regulators should improve their scrutiny and reporting through a standard rating that assesses the financial health of insurance companies and identifies weak companies.
- The IAC should convene a meeting with major reinsurers to assess their potential actions and clarify needed changes, such as adopting a common statistical reporting system. The IAC institutional capacity needs to be strengthened.



A Decade of Initiatives for Safer Housing in Jamaica, October, 1992

Background: During the period 1979-1989, several housing preparedness and mitigation projects were undertaken in Jamaica. The evaluation examined the extent to which housing mitigation practices promoted in these projects have been institutionalized within the Jamaican housing industry.

FINDINGS

- In response to natural disasters in 1979 and 1980 and based on a study by USAID OFDA and UNDR0, the Government of Jamaica (GOJ) created the Office of Disaster Preparedness and Emergency Relief Coordination (ODP). ODP was never established legislatively and over time has been shifted from ministry to ministry causing it to suffer from a lack of institutional identity and authority.
- ODP commissioned a housing vulnerability survey in 1982 which proposed developing a "locally based training program". In 1983 consultants developed the "Jack Hammer Series" - seven booklets written in a user friendly style. Using the booklets workshops were conducted in various locations in Jamaica. Although there have been several recommendations to revise the "Jack Hammer" series this has not been done. In 1985, another workshop targeted the informal housing sector (65% of Jamaica's housing) and an NGO - the Construction Resource and Development Centre (CRDC). CRDC has remained active in the housing sector; developed training programs for this sector (including the Womens' Construction Collective; and published a booklet on safer construction based on some of the "Jack Hammer" materials. Dissemination of these materials has been uneven.
- In a continued attempt to strengthen the formal sector USAID funded training programs for building inspectors. While the program has been institutionalized within the GOJ Ministry of Education, the number of inspectors is too small to seriously impact construction quality. Although Jamaica has a building code it is not enforced in any systematic way. The Jamaican Institute of Architects and Institute of Engineers have not been an integral part of the effort to promote safe building practices.
- Disasters have both hindered and impelled efforts for safer housing. Progress was halted due to serious floods (1986) but Hurricane Gilbert (1988) highlighted the vulnerability of Jamaican housing to wind damage. Fifty five% of the housing stock was damaged or destroyed providing evidence that building codes had not been adhered to. Gilbert provided a stimulus to renewed interest in mitigated construction and resulted in several new initiatives.
- Two major projects were undertaken in the aftermath of Gilbert. One, termed the saturation model was undertaken by CRDC through a subcontract with the Pan American Development Foundation. The goal of this project was to train community based builders to retrofit all the houses in a given community thus creating an expectation of safe construction. CRDC organized the construction and purchased/distributed bulk materials. In all this project is intended to build 1,500 mitigated houses - a number considered to be unrealistic.
- The second project, termed the capacitation model, was administered by an umbrella organization of development agencies, the Association of Development Agencies (ADA) - an empowerment NGO with limited interest in housing. The ADA approach involved organizing 13 community based shelter clinics which instructed 620 householders and builders in mitigated construction techniques through building demonstration houses. ADA has also adopted policy objectives for housing which it is advancing at the national level.
- Both ADA and CRDC have worked collaboratively in other island countries teaching mitigation techniques learned in Jamaica. However, attempts to wed the programs in Jamaica have been difficult because CRDC's short term objectives of house building have been in conflict with ADA's long term empowerment strategy.
- With USAID and matching GOJ funds, a large broad based training program (HEART) was developed beginning in 1982. A part of this program is the Vocational Training and Development Institute (VDTI) which concerns itself with building skills training. VDTI does not have a mitigation component in its curriculum.

LESSONS LEARNED

- Written training materials are not self-sustaining. They should be updated based on field experience and changing

material and construction practices. Donor financed training programs have not been sustained after external funding has ceased.

- Unenforced building codes and insufficient inspection schemes are not effective in ensuring safe housing, especially in informal sector.

RECOMMENDATIONS

- Renewed and sustained efforts at builder education should be supported. Disaster mitigation education should be integrated with normal building instruction. More short training courses for informal sector builders should be conducted.
- Peace Corps Volunteers should be systematically used to promote safe housing construction in communities in which they reside.



Consideration of a Regional Multi-Hazard Network for the Caribbean and Central America. December, 1991

Background: *The report provides an initial conceptualization of a disaster resistant telecommunications network among hazard monitors and disaster response authorities in the LAC region. The research included interviews with international and regional agencies and organizations and review of related studies and project reports.*

FINDINGS

- Such a network may be affordable if costs are shared by all the users/beneficiaries. The potential number of users is extensive. Several existing hazard monitoring and early warning systems could participate in the network.
- The network would contain (1) user workstations, (2) a satellite earthstation supporting a Very Small Aperture Terminal (VSAT) network, (3) an international satellite, (4) and linkages between these three components.
- The network would store basic information about hazards and response capacity/resources and receive and transmit real-time information about possible or actual disaster situations and needs.
- The technology recommended would allow multi-sectoral individual users to join, over time and, more importantly, be operative even if some stations in the network were rendered inoperable due to a disaster or other unforeseen event.

RECOMMENDATIONS

- If the project proceeds, potential users must be involved in establishing system specifications, operating protocols, and system management.
- The role of national institutions, e.g. Public Telephone Telegraph companies (PTTs) and national communications agencies, in the network must be clarified.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

INTRODUCTION

The OFDA Program in disaster prevention, mitigation, and preparedness (PMP) seeks to stimulate innovative and effective approaches to reducing impacts of disasters on potential victims and economic assets in highly disaster-prone countries throughout the world. A critical component of this effort is a systematic attempt to develop a monitoring and evaluation system which extracts lessons learned from projects and proposes guidelines to structure project review and design.

To further the development of the M&E system, OFDA undertook an analysis of 24 evaluation studies including four disaster responses, six post-disaster housing education programs, five special studies, and nine preparedness and mitigation projects. Each of these general areas was analyzed to identify the lessons learned within an area and develop a synthesis of these across specific studies. In some cases, a Lesson may be supported by studies in more than one area.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

DISASTER RESPONSE

Four evaluations support the synthesis in this area. These include analysis of the response to the sudden onset disasters in Limon, Costa Rica (earthquake - 1991), Nicaragua (tsunami - 1992), Indonesia (earthquake/tsunami - 1992), and the slow onset drought in Southern Africa (1991-92).

1. Preparedness is critical to a timely and effective response.

The benefits of preparedness were most evident in OFDA's response to disasters in the LAC region. In both Costa Rica and Nicaragua, OFDA was able to quickly respond with relief supplies because of the Southcom stockpile and rapid assessments of survivor needs done by regional advisors. In comparison, it took over two weeks to get similar supplies to Indonesia. The Regional Advisor, based in Costa Rica, significantly strengthened the OFDA response capacity. USAID missions were generally found to be less well prepared. Mission disaster plans were often out of date and the designee in the position of Mission Disaster Relief Officer (MDRO) usually lacked training and standard operating procedures which would guide his/her role in the response. While disaster management expertise is defined as an important element of a designated USAID official's scope of work, the MDRO position is most often perceived as one additive among many to an officer's long list of responsibilities. As a result, missions tend to rely upon regional advisors and regional offices for important services during the emergency phase of a disaster and are thus not usually fully prepared themselves.

2. Accurate and reliable assessments are critical to appropriate response.

Assessments critically inform the response. In Nicaragua, political considerations coupled with humanitarian concerns prompted a response before an assessment could substantiate need, resulting in excessive relief supplies. Major disasters often inspire a variety of assessments. U.S. assistance decisions are not systematically coordinated, e.g. sharing assessments and coordinating relief distribution, with other actors in the international humanitarian assistance arena. Protocols requiring on-site confirmation of needs from government authorities, NGOs and other reliable assistance partners like the Red Cross are not available. Assessments often fail to specify how relief needs will be used and how aid could be made more appropriate for end users, e.g. pre-cutting plastic sheeting instead of distributing it as uncut rolls.

Assessments did not routinely include a determination of logistical constraints that could inhibit aid being delivered in a timely manner. When the disaster is in a remote area it may be more expeditious to purchase supplies in local markets (when available). In the Indonesian case, relief supplies arrived after the emergency period and most survivors had already met their emergency needs. Assessments may be difficult to conduct from a logistical standpoint and, furthermore, may suffer from an absence of unreliable information. In addition, targets are not defined in a sufficiently flexible manner to allow implementing organizations to be responsive to new or better information or changing conditions.

3. Relief can promote development.

Disaster response and emergency assistance can promote rehabilitation and, in some cases, long-term development. The recovery period of a disaster is a fruitful time in which positive changes can be introduced to further mitigation and preparedness or stem the tide of a continuing or recurrent slow-onset event. In the response to the Southern Africa drought ~~new well creation and well rehabilitation were both an effective emergency response and contributed to rehabilitation and~~ aspects of long-term development. Administrative barriers sometimes impede relief that aids development and assistance fails to accommodate the relief to development process. Again in Southern Africa, the division into emergency and development projects was artificial resulting in unnecessary administrative impediments. In Nicaragua, emergency funds were effectively used to promote recovery of the damaged fishing industry. Further, community involvement in relief programs can reduce costs, build community strengths, and increase the likelihood that rehabilitation and mitigation can be sustainable.

3

4. The need for a timely response may require bypassing local and national authorities.

Relying on national and local authorities resulted in significant delays in delivery of relief supplies to affected areas in Costa Rica, Indonesia, and Nicaragua. This situation is likely to repeat itself when the government is unstable or the national disaster staff are inadequately trained or disorganized. Assistance would have been more effective if relief supplies could have been delivered directly to the affected areas. Despite long term efforts to build the capacity of local institutions, in an emergency situation the needs of survivors take precedence over institution building goals. For example, despite OFDA/LAC's support of Costa Rica's National Emergency Commission (NEC), NEC was unable to overcome management and political constraints contributing to limited effectiveness in the response. Government ministries are prone to political influence and have high turnover rates in key personnel thus limiting their dependability.

5. The OFDA goal of "saving lives" often did not apply to response situations.

Evaluations determined that the goal of "saving lives", while laudable, was often not an appropriate goal. This was primarily the result of the occurrence of disasters in relatively benign climactic conditions. In such climates, relief clearly reduced human suffering but did not save lives. At the same time, delays in approving emergency assistance and in delivering relief goods raises concern that assistance may not be deliverable in a sufficiently timely manner to achieve the goal of saving lives even when that goal is appropriate.

LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS



DISASTER PREPAREDNESS

Nine evaluations were used to develop the synthesis in this area. These included assessments of two regional training programs in Asia and Latin America and the Caribbean; two regional hazard monitoring capacity building programs for earthquakes and volcanos; three programs to build capacity and strengthen institutions for the Latin American and Caribbean region; and one program to address health problems in Africa.

1. Hazard monitoring can dramatically reduce loss of life.

Hazard mapping and monitoring of Mt. Pinatubo allowed effective evacuation which minimized loss of life and economic assets from the volcanic explosion. However, the evaluations concluded that without explicit links to national preparedness and mitigation authorities, monitoring data were often not used. Further, sustainability of the project gains and maintenance and strengthening of national institutional capacity will require continued training and technical assistance.

2. Regional training programs are an effective mechanism for long term capacity building and increased preparedness.

Both the Asian and LAC training programs have been well received in their respective regions resulting in the training of impressive numbers of disaster managers. Neither of the programs systematically follows its graduates to determine the appropriateness and applicability of the training curriculum or its long term impact on institutional capacity. The high demand for short term training has negatively impacted both programs' long term goals of expanding curriculum offerings and broadening its capacity to provide other mitigation and preparedness services. Training of instructors' approaches proved effective in Latin America in creating a regional training cadre to sustain training capacity.

3. Sustainability of preparedness capacity requires donor collaboration.

While donors do not often work at cross purposes to each other, neither do they regularly collaborate to build and sustain institutional capacity. Effective preparedness requires core funding of institutional capacity over the long term. At ADPC donors relied on OFDA to support core capacity and used their funds to support individual programs resulting in an over reliance on one funder. In programs to build national hazard monitoring capacity, donors did not work together to integrate funding programs and develop a long term effort to sustain and build national capacity. In several projects, managers did not systematically try to diversify financial support and secure dependable long term funding.

4. Not every country can equally benefit in a regional approach.

Regional programs are often expected to be inclusive of all countries in the region. However, in light of limited resources and varying levels of national commitment to mitigation and preparedness, inclusiveness often results in scarce resources being expended in countries where little progress can reasonably be expected. In both Africa and Latin America, the acceptance and benefit from programs was clearly influenced by a government's commitment to strengthen preparedness and the capacity of the partnership Ministry to advance preparedness projects. At the same time, regional approaches do improve the potential for local and multi-lateral regional collaboration and technical assistance.

5. Sustainability of preparedness programs may require partnerships with institutions other than governments.

While government support and commitment is critical for successful project implementation, political changes affect leadership and priorities in government institutions resulting in delays and other impediments. Regrettably, governments cannot be relied on for program sustainability. A program emphasis on community organizations, self-help efforts, private fundraising, and involvement of the private sector appear the most promising strategies for achieving sustainability of preparedness programs. For example, a school preparedness program found that involving parents was a critical strategy.

6. Failure to adequately design a project will result in reduced accomplishments.

While some ambiguity in project design is evident in every proposal, evaluators concluded that the desire to initiate a program may cause planners to overlook whether project resources are adequate to achieve project purposes; whether managerial responsibilities are established before commencing activities; and whether monitoring is sufficient to allow early identification and correction of implementation problems. A common design problem is the failure to link new projects to previous efforts in the country which were designed to build preparedness capacity.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

DISASTER MITIGATION

Eight studies support the synthesis of lessons learned in this area. Six of these assess the sustainability of efforts to promote safer construction of informal housing through builder education programs established during the reconstruction phase of disasters. These six studies include 5 countries, i.e. Yemen (earthquake, 1982), Ecuador (earthquake, 1987), Jamaica (hurricanes, 1979, 80, and 88), Solomon Islands (cyclones, 1984), and Madagascar (cyclones, 1984). The sixth study is a comparative analysis and synthesis of these five country studies. The two other studies examined retrofitting programs, one in Jamaica for residential construction and the other an historical analysis of factors leading the Government of Costa Rica to undertake a hospital retrofitting program.

1. The post-disaster reconstruction period presents an opportune time to introduce mitigation measures.

Post-disaster reconstruction periods are characterized by heightened governmental and donor willingness to invest in mitigation. In Costa Rica and Jamaica, mitigation programs designed in the aftermath of one disaster languished until another disaster galvanized a renewed commitment.

Tying education programs to reconstruction programs is the best way to teach new building practices. Nevertheless, when projects have competing goals, e.g long term behavioral change or micro-enterprise development and short term construction, short term construction goals are accorded priority.

2. Mitigation innovations are most sustainable when they are affordable and in keeping with evolving building practices.

Evaluators found that mitigation materials and practices that result in extra cost are chosen by homeowners if they are subsidized but when the subsidy ends so does the innovation. The projects reviewed confirmed that builders would not, on their own, promote mitigation unless requested to do so by homeowners.

In both Jamaica and the Solomon Islands, builders showed a tendency to choose certain techniques and reject others. The failure to adopt the mitigation "system" ultimately resulted in increased vulnerability. In Yemen and the Solomon Islands, program planners failed to account for trends in material selection and house design and essentially trained builders for an outdated building technology. Innovations which require new materials or new practices, also require collateral efforts to ensure that mitigation devices are made available or produced by local suppliers.

3. Effective mitigation requires a long term commitment and resource capacity.

A "flash" of mitigation in the immediate post-disaster recovery period is possible but the critical factor is that mitigation be given a long term institutional home. The projects reviewed concluded that government cannot be relied on to sustain mitigation programs. Therefore, programs should target several different sectors of the building industry, especially the private (lending and insurance) and nongovernmental sector. Locally respected NGOs are effective in starting programs quickly and can be important partners in a sustainable mitigation strategy. However, they are often limited in their ability or willingness to sustain such programs especially if mitigation and housing construction are not an ongoing part of their mission.

Ex-patriate managed programs should plan for and implement transition to national authorities as soon as feasible but ex-patriate managers may need to continue involvement to sustain a long-term commitment. In the Solomon Islands evaluators determined that a "culture of mitigation" had developed as a result of a critical mass of projects, government and donor commitment, ongoing builder education programs, the capacitation of NGOs, and development and enforcement of building codes.

4. Training materials developed to promote long term education for mitigated building practices are not effective.

Videos, "how to" manuals, model houses, and other training aids were not used after projects ended. In part this was a result of the failure to update and disseminate the materials and provide ongoing training opportunities but, in general, these materials had a short "shelf life". Community based on-the-job training programs linked to a construction program had more influence than stand-alone classroom training programs and saturating an area with houses that demonstrate safe building techniques was found to be the most effective means to provide an ongoing source of education. Unfortunately the sustainability of effective training programs was limited by the failure to maintain lists of trained builders for use in future disaster reconstruction situations.

Evaluators concluded that demonstration programs could have had more widespread effect if they were implemented in areas vulnerable to the hazard but not affected by the current disaster. Further, demonstration programs failed to test a wide range of mitigation devices and approaches because they were not allowed to revise outcome expectations and, therefore, the goal of building homes took precedence over "demonstration" goals.

5. Informal housing is not affected by the formal building industry.

While mitigation can be built into construction education programs the transfer of skills to the non-formal sector is indirect and unpredictable. Further, code development and enforcement, and the involvement of the insurance industry lead to sustainability of mitigation in the formal construction sector but not the informal sector. In the informal sector codes were unenforced and inspection schemes were unevenly implemented and not effective in insuring safe housing.

6. Beneficiary selection is problematic in the post-disaster reconstruction period.

Identifying beneficiaries proved difficult in several cases. In part this was a result of the chaos that results from a disaster. Especially in remote areas, assessors were often unable to determine which structures were damaged or destroyed by the disaster and which had just deteriorated over time. Although not widespread, this assessment ambiguity helped to create conditions where beneficiary selection was subject to political and cultural influence as well as fraud.

7. Mitigation programs could improve their results through the utilization of improved marketing.

None of the housing education mitigation efforts provided emergency housing or reconstruction and, therefore, the start-up time would have allowed program designers to involve local people in design and implementation (social marketing) to determine which innovations were likely to be acceptable and sustainable and build knowledge, interest and commitment to the program.

Where there was systematic involvement such as in the Partners projects or in Jamaica, this involvement increased the chance for sustainability. However, more often beneficiaries were not involved. In Yemen, the lack of knowledge that market analysis would have provided resulted in culturally unacceptable house and site designs. In Costa Rica, the failure to systematically involve hospital administrators resulted in implementation delays and increased costs. In Jamaica, homeowners were not aware that subsidies were actually loans.

8. PL 480 funds can be effectively used to fund disaster management projects.

While PL 480 funds allowed significant program expansion, using them was not without difficulties. Since these funds are available only in local currency they are sensitive to devaluation and their purchasing power declines over the life of a project in inflationary situations. Further, by virtue of being available only in local currency they cannot be used to pay for imported materials. Finally, they are under the control of government authorities, which, in the case of Madagascar and Yemen, resulted in significant delays in project implementation.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

SPECIAL STUDIES

Four special studies were analyzed to identify lessons learned. Two of these examined the potential reduction in hazard insurance coverage as a result of losses by reinsurers from disasters in the Caribbean. The other two studies were feasibility analyses. One considered the costs and benefits of retrofitting a hospital ship to serve as a disaster response tool. The other sought to determine the potential of a multi-hazard telecommunication network in the LAC region.

1. Special studies are an important tool to inform policy making.

The studies of the likelihood of a reduction in reinsurance in the Caribbean concluded that such a reduction, even if it did occur, was likely to be only short term. The analysis of costs of retrofitting the hospital ship indicated that such a project was not desirable. In both cases, the special studies provided policy makers with important insights which ultimately saved money and helped determine that certain types of project development were neither necessary or desirable.

Further, the studies were useful in helping orient program design. The reinsurance studies pointed out weaknesses in the structure of the insurance industry in the Caribbean and suggested potential areas for improvement. The analysis of the potential for telecommunications network highlighted the benefits from such a program and provided guidance, at an early stage of project design, that would ultimately strengthen the project and, at the same time, highlighted potential problem areas.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

OVERALL IMPLICATIONS FOR EVALUATION IN OFDA

An additional set of lessons learned is derived from considering all the studies together. These lessons address evaluation issues specifically.

1. Ongoing monitoring and evaluation of programs are effective management tools in ensuring that programs stay on track.

Particularly in Yemen, but also in several other projects, evaluations conducted during implementation resulted in program corrections that positively influenced achieving project goals. Monitors were able to meet with government authorities to redirect resources and advocate for government action. Monitoring and short term evaluations suggested changes in target beneficiaries and changes in project design.

2. Long term evaluations were useful in determining program impacts.

Short term evaluations were able to determine whether the project objectives were achieved, e.g. were builders or school officials trained, were "how-to" manuals produced, or were relief materials delivered. However, long term evaluations, even after 10 years, were necessary to determine whether desired impacts were achieved, e.g. was builder or school official behavior changed, were "how-to" manuals used, or were relief materials used as intended. Unfortunately, projects were rarely designed to facilitate long term evaluation. Program documents and records were usually poorly maintained, if maintained at all.

3. Prior evaluations provide critical information.

In several cases programs were evaluated by more than one stakeholder over the life of the project. When these previous evaluation results were systematically considered they provided important insights and a base for the new effort. For example, during the evaluation of the Asian Disaster Preparedness Center, evaluators reviewed previous evaluations and determined that project personnel had failed to implement important recommendations. In Yemen, interim evaluations provided the major source of documentation which allowed the evaluation team to reconstruct the project evolution. However in some cases, such as the PAHO EPD study, there was little evidence that a major evaluation conducted by another donor was reviewed. There was limited evidence of proactive efforts by donors to routinely coordinate and share evaluation and monitoring data.

4. Conducting evaluations of similar types of projects facilitated comparisons and synthesis.

The attempt to evaluate similar types of programs such as six different builder education projects, two hazard monitoring programs, or 3 rapid on-set disaster response efforts proved effective in identifying lessons learned that transcended individual projects. One time evaluations of isolated or unconnected programs tended to be idiosyncratic and the lessons learned were often constrained as a result of local contextual factors which ultimately inhibited their generalization.

5. Evaluation designs will vary depending on their expected use.

The goals of the evaluation efforts considered varied across the projects. Some of the studies were interim efforts intended as a management tool to provide mid-course correction. Others were final evaluations at the conclusion of a project intended to put a cap on the project and determine whether project objectives had been achieved. Still others were post-hoc and intended to assess long-term behavioral change. Finally, some were strategic intended to assess the policy implications of shifts in project environments. Evaluations which were designed with their goals in mind were much more likely to produce intended results. As may be expected, projects designed with evaluation in mind, tended to include reporting systems which provided a flow of outcome information which significantly improved the ability to conduct reliable evaluations and monitoring efforts.

6. Systematically considering a broad range of lessons previously learned can increase the potential for satisfactory project outcomes from future projects.

The lessons described above contain important information which, if used, can inform policy making as well as project design. For example, the housing builder education projects taken as a whole contain important findings and recommendations which, if incorporated in future program designs, can substantially increase the potential for sustainability as well as effective mitigation. The sudden-onset response evaluations point out important impediments to an effective and efficient USAID reaction. The preparedness studies provide a range of insights that can significantly increase the likelihood preparedness capacity building can be sustained. Unfortunately, evaluations are too often a stand-alone effort unconnected in a systematic way to ongoing organizational activities.



POLICY AND OPERATIONS RECOMMENDATIONS

INTRODUCTION

OFDA's programs in disaster relief (DRD) and disaster prevention, mitigation, and preparedness (PMP) seek to stimulate innovative and effective approaches to reducing impacts of disasters on potential victims and economic assets in highly disaster-prone countries throughout the world. A critical component of this effort is a systematic attempt to develop a monitoring and evaluation system which extracts lessons learned and identifies their implications for OFDA policy and operations.

In further developing its monitoring and evaluation (M&E) system, OFDA undertook an analysis of 24 evaluation studies it had carried out to identify the lessons learned. These lessons were further analyzed to develop, for use by OFDA managers, the implications and recommendations for policy and operations in the design, implementation and monitoring of programs that are described below.



LESSONS LEARNED SYNTHESIS FROM EVALUATIONS OF OFDA PROGRAMS

DISASTER RESPONSE

Four evaluations support the synthesis in this area. These include analysis of the response to the sudden onset disasters in Limon, Costa Rica (earthquake - 1991), Nicaragua (tsunami - 1992), Indonesia (earthquake/tsunami - 1992), and the slow onset drought in Southern Africa (1991-92).

1. Preparedness is critical to a timely and effective response.

The benefits of preparedness were most evident in OFDA's response to disasters in the LAC region. In both Costa Rica and Nicaragua, OFDA was able to quickly respond with relief supplies because of the Southcom stockpile and rapid assessments of survivor needs done by regional advisors. In comparison, it took over two weeks to get similar supplies to Indonesia. The Regional Advisor, based in Costa Rica, significantly strengthened the OFDA response capacity. USAID missions were generally found to be less well prepared. Mission disaster plans were often out of date and the designee in the position of Mission Disaster Relief Officer (MDRO) usually lacked training and standard operating procedures which would guide his/her role in the response. While disaster management expertise is defined as an important element of a designated USAID official's scope of work, the MDRO position is most often perceived as one additive among many to an officer's long list of responsibilities. As a result, missions tend to rely upon regional advisors and regional offices for important services during the emergency phase of a disaster and are thus not usually fully prepared themselves.

2. Accurate and reliable assessments are critical to appropriate response.

Assessments critically inform the response. In Nicaragua, political considerations coupled with humanitarian concerns prompted a response before an assessment could substantiate need, resulting in excessive relief supplies. Major disasters often inspire a variety of assessments. U.S. assistance decisions are not systematically coordinated, e.g. sharing assessments and coordinating relief distribution, with other actors in the international humanitarian assistance arena. Protocols requiring on-site confirmation of needs from government authorities, NGOs and other reliable assistance partners like the Red Cross are not available. Assessments often fail to specify how relief needs will be used and how aid could be made more appropriate for end users, e.g. pre-cutting plastic sheeting instead of distributing it as uncut rolls.

Assessments did not routinely include a determination of logistical constraints that could inhibit aid being delivered in a timely manner. When the disaster is in a remote area it may be more expeditious to purchase supplies in local markets (when available). In the Indonesian case, relief supplies arrived after the emergency period and most survivors had already met their emergency needs. Assessments may be difficult to conduct from a logistical standpoint and, furthermore, may suffer from an absence of unreliable information. In addition, targets are not defined in a sufficiently flexible manner to allow implementing organizations to be responsive to new or better information or changing conditions.

3. Relief can promote development.

Disaster response and emergency assistance can promote rehabilitation and, in some cases, long-term development. The recovery period of a disaster is a fruitful time in which positive changes can be introduced to further mitigation and preparedness or stem the tide of a continuing or recurrent slow-onset event. In the response to the Southern Africa drought new well creation and well rehabilitation were both an effective emergency response and contributed to rehabilitation and aspects of long-term development. Administrative barriers sometimes impede relief that aids development and assistance fails to accommodate the relief to development process. Again in Southern Africa, the division into emergency and development projects was artificial resulting in unnecessary administrative impediments. In Nicaragua, emergency funds were effectively used to promote recovery of the damaged fishing industry. Further, community involvement in relief programs can reduce costs, build community strengths, and increase the likelihood that rehabilitation and mitigation can be sustainable.



POLICY AND OPERATIONS RECOMMENDATIONS

DISASTER PREPAREDNESS

1. The benefits resulting from hazard monitoring are impressive, suggesting that OFDA should increase its support of such projects. However, when doing so, OFDA must be prepared to support the projects with mid- to long-term assistance in the form of training and equipment maintenance. Further, OFDA should require that such projects include measures to ensure that monitoring data are utilized by national preparedness and mitigation authorities.
2. OFDA should continue to support and expand the curricula of regional efforts in disaster management training. At the same time, OFDA should require that these regional training programs evaluate the impact of their training programs on the behavior of graduates and the institutions they work for. Further, these training programs should be required to develop alternative revenue sources to reduce dependency on OFDA core funding.
3. Preparedness efforts require funding over a multi-year time frame. To ensure a dependable and sustainable revenue stream, OFDA should coordinate its support of preparedness projects with other donors.
4. Given resource limitations, OFDA should target its assistance to countries which have a demonstrated capacity to benefit from the programs. To expand applications to countries with less readiness, OFDA should encourage bi- and multi-lateral regional resource sharing.
5. Because governments have often proven unable to sustain funding for preparedness programs, whenever possible, PMP programs should be designed to include other partners, especially the private sector.
6. If projects are not fully conceptualized on the basis of the managing for results approach, they will have reduced outcomes. This requires that the OFDA project review and approval process ensure that project inputs (both material and human) are adequate for the intended outcomes. A well designed proposal will also demonstrate awareness of previous similar efforts and contain provisions which increase the likelihood of successful transitions to government or other authorities at project end.



POLICY AND OPERATIONS RECOMMENDATIONS

DISASTER MITIGATION

1. When OFDA funds projects during the post-disaster recovery period, projects should be encouraged to include a mitigation component or, at a minimum, be assessed by the degree to which projects promote some mitigation activities
2. Mitigation projects must have an adequate marketing component. This should include testing the acceptability of innovations with beneficiaries as well as the systematic involvement of critical institutional stakeholders and implementing partners.
3. Mitigation projects should be designed to be sustainable. This requires an institutional home(s) with a mission compatible with mitigation. This home need not necessarily be in government. Rather, projects should seek to develop partnerships with NGOs and the private sector, especially banking and insurance. When sustainability requires a steady and dependable supply of devices, e.g. hurricane straps, projects must create a long-term source of supply, preferably in the private sector.
4. Concentrated funding, over time, of one or more projects in a country is most likely to create the "critical mass" of projects required for developing a "culture of mitigation". Because resources are limited, OFDA's mitigation efforts should be targeted at the most disaster prone countries.
5. Mitigation training aids for home builders are not used after construction projects end. OFDA should carefully scrutinize proposals that promise to develop training aids that will be used over time to teach mitigation building practices. In general, OFDA should support builder education programs that are tied to shelter construction programs.
6. While building code and inspection programs positively influence construction practices in the formal construction sector they do not influence practices in the informal sector. Therefore, were OFDA to be involved in shelter mitigation, it should not rely on such programs as part of its strategy to reduce vulnerability in vernacular housing.
7. Although PL480 funds can be an important revenue source for PMP programs, designers should anticipate the consequences of possible delays in accessing funds and potential devaluation of local currency and build contingencies into project timelines and resource plans.



POLICY AND OPERATIONS RECOMMENDATIONS

SPECIAL STUDIES

1. The use of special studies proved useful in avoiding bad projects and informing project conceptualization. OFDA should increase the use of special studies to inform policy decisions. Special studies are most effective when they are focused on a specific set of policy or design questions. More general studies should not be supported.



POLICY AND OPERATIONS RECOMMENDATIONS

OVERALL EVALUATION IN OFDA

1. OFDA should ensure that projects have adequate monitoring as part of their implementation plan. Monitoring can be useful in keeping projects on track and on time; ensuring that programs are free of fraud and that intended beneficiaries are receiving aid; and proposing adaptations in goals or objectives as conditions change.
2. OFDA should support long-term evaluations, e.g. up to several years after a project has ended, because they can be effective in assessing project outcomes which seek to change mitigation and preparedness behaviors. In order to conduct such evaluations, however, it is imperative that OFDA require that project records be maintained.
3. OFDA should support efforts to coordinate the sharing of project monitoring and evaluation data. As part of this effort OFDA should require evaluations to reference other previous or ongoing evaluation efforts conducted by other organizations and donors.
4. In general, knowledge will be increased by conducting several evaluations within a general programmatic area thus allowing comparisons between projects and reducing the impact of project specific, contextual factors.
5. Because different types of evaluation designs yield different types of result, OFDA must be careful to ensure that evaluation designs are appropriate for their purposes.
6. OFDA should commit to the M&E function as an important ongoing part of PMP and DRD strategies. This will require dedicated resources and a willingness and capacity to utilize results to build institutional knowledge. It will further require that OFDA continue systematically to review its evaluation portfolio, work with its grantees on the managing-for-results approach, including the development of more performance-based proposals and ensuring adequate monitoring and appropriate reporting. Finally, OFDA needs to continuously feed lessons learned back into its own strategy and management.



PERFORMANCE GUIDELINES

INTRODUCTION

This section is directed at use by OFDA program designers, manager, and implementers of the Agency approach to Managing for Results. The link to previous sections is in the proposed use by OFDA staff of summarized evaluation findings, lessons learned, and recommendations in improved program design, management, and implementation.

The first section outlines the general Agency approach to Managing for Results. The second section applies that approach to the improved design of proposals. Reference in this section to "constraints analysis" refers to the process of asking critical questions at each point in the design about "what problems or constraints need to be addressed or overcome in achieving the intended results of the proposed program?"

The last section provides a format for periodic reporting on results, including an illustrative table showing intended change from one time period to another. It is aimed at improved reporting which is results-based rather than discursive or descriptive. Some OFDA grantees are already using this approach and providing clearer, more focused proposals and reporting with more measurable results.

Guidelines for Writing Results Oriented

Proposals

Offerers' Proposals

Prepared for USAID/OFDA/PMP

Grantee Proposal Preparation Guidelines

Proposals submitted by offerers should be structured and prepared according to the following guideline:

EXECUTIVE SUMMARY

This section briefly describes what the proposal is all about? why it is needed? where it will be implemented (target countries) ? who are the program beneficiaries? how much the program will cost over its life-cycle? who will provide the funding? what impacts are expected from the program? It should be no more than two pages. The summary should include (1) a brief background and project rationale (what? why?); (2) the project objectives, its beneficiaries and the expected outcomes and payoffs (where? what impact?); (3) the project's life-cycle and its major components; (4) a brief description of how the project will be implemented and how it is to work; and (5) the project cost (how much?)and the funding mechanisms including the amount requested from OFDA.

I. Introduction

Give a brief background (historical context) of the general problem of disaster and its management and mitigation for the target region/country. Also give a brief description of your organization's capabilities and experience with disaster preparedness, mitigation and prevention and relate them to the disaster addressed by this proposal.

II. Problem Statement & Needs Assessment

Succinctly state the nature of the perceived or actual disaster problem you are proposing to address through this proposal. Describe the country/regional setting. Provide an assessment of the magnitude of the problem including an estimate of the size of the vulnerable population (i.e., population at risk) and the total value of the physical and economic assets at risk. Provide an estimate of the extent of expected damage to economic assets and loss of human lives if the disaster is not properly responded to and mitigated. Discuss the distinct actions that need to be taken, by all concerned, in order to (1) lessen the loss of lives, (2) lessen the damage to property and economic assets, and (3) shorten the duration of the effect of the disaster. Describe how the proposed project will contribute to the amelioration of the problem.

III. Project Description

Clearly define/describe what the proposed project is all about. State the project's goals, purposes and/or objectives. Describe why the project is needed. Why is the project proposed? To achieve what result(s)? What do you want to see happen at the end of the project life cycle? Be as specific as possible. State the objectives in terms of results to be achieved over the life of the project. Clearly describe how each result is to be achieved. In other words, describe the strategy to be employed in order to achieve each result.

Describe who the project beneficiaries are and what the perceived benefits are. State all the critical external factors that could detract from achievement of the stated results.

Does the project have discrete components? How many discrete component does it have? What are these discrete project components? Describe each component as clearly as possible. Are each of these project components to be implemented simultaneously or are they to be phased-in at different time periods over the life of the project? Describe in detail the expected outcomes for each project component. As much as is possible state these outcomes in terms of results to be achieved. Describe the relationships and the synergies among the project components. Describe how each project component contributes to the achievement of the overall project objective.

How will the proposed project contribute toward achievement of OFDA's strategy and its objectives?

{This section defines the proposed program/project, its objectives and the associated outcomes, the strategy in-place for achieving the program objective(s), the program beneficiaries and expected benefits}

IV. Project Management & Implementation Plan

Describe in detail how the project is going to be implemented and how it is to be managed. Describe the contracting mechanism. In brief, describe how the project is expected to work.

Who or which organization(s), public and/or private, will take direct responsibility for ~~managing the project? Describe in detail the management capacity of the organization~~ selected to implement the program/project in terms of its ability to (1) source and coordinate resource, (2) provide logistics support and supervision, and (3) develop and

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manage a monitoring and evaluation system.

Who or which organizations/institutions will be responsible for implementing and overseeing the day-to-day workings of the project and each of its components?

Describe in detail when the project implementation phase will begin and when the project is expected to be completed. Identify when each of the project components will be phased-in and when each is expected to be completed.

Describe where the project and each of its components will be implemented

V. Project Monitoring & Evaluation Plan

Summarize, from Section III, the project objectives, including the results to be achieved by each project component (use Table 1 to summarize the results in a matrix format). How is achievement and progress toward achievement of the stated objectives/results measured? For each project objective/result identify and describe what set of variables (indicators) will be used for measuring progress toward achievement of each result. The variables selected should measure both process and impact. The objectives/results statement identifies what is to be measured and the indicators identify what data sets are to be monitored and collected.

{Process indicators identify the outputs of the project inputs (e.g., number of health professionals trained, number of search and rescue teams trained, land use legislation drafted and ratified, building standards and codes drafted and adopted, etc) while impact indicators measure progress made, for example, in saving human lives; reducing human suffering; protecting physical and economic assets from destruction, etc.. }

Next identify the system in-place for collecting the performance monitoring data. Clearly identify the data collection instrument to be used (periodic surveys, periodic rapid assessments, regular field reports, etc.). Identify who will be responsible for collecting, updating and maintaining the database and describe how frequently the data will be collected, evaluated and reported.

Describe how the data will be evaluated and who will do the evaluation? The evaluation report should clearly identify whether or not the intended results have been achieved. If they have not been achieved or if the achievement falls short of expectation, the evaluation must identify why the results were not achieved as expected. It must identify the critical external factors that affected the project outcomes.

Who will receive the periodic evaluation reports? How will the recipient of the report use the information?

Describe the mechanism in-place for modifying program strategies based on the periodic performance monitoring. How is the performance evaluation data used to adjust a program strategy and improve the chances of achieving the stated results? Identify the organization/management who will be responsible for the decision to adjust project strategy as required.

VI. Project Financial Plan

This section presents a detailed breakdown of the total project cost. The cost estimate should include all operating (recurrent) and capital costs (e.g., vehicles, computers, etc.) Identify in detail both the human and material resources required for the planning, implementation, management, monitoring and evaluation of the project over its life. All direct and indirect costs should be captured. These cost estimates will be the basis on which you will be requesting OFDA funding. The calculation for each cost element should be clearly footnoted to facilitate the proposal evaluation process.

ANNEXES:

- A. Environmental Assessment Study
- B. Social Soundness Analysis
- C. Economic Analysis
- D. Statements of support from local Ministries, NGOs, USAID Mission and other collaborating agencies

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Succinctly state the nature of the perceived or actual disaster problem you are proposing to address through this proposal. Describe the country/regional setting. Provide an assessment of the magnitude of the problem including an estimate of the size of the vulnerable population (i.e., population at risk) and the total value of the physical and economic assets at risk. Provide an estimate of the extent of expected damage to economic assets and loss of human lives if the disaster is not properly responded to and mitigated. Discuss the distinct actions that need to be taken, by all concerned, in order to (1) lessen the loss of lives, (2) lessen the damage to property and economic assets, and (3) shorten the duration of the effect of the disaster. Describe how the proposed project will contribute to the amelioration of the problem.

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{This section defines the proposed program/project, its objectives and the associated outcomes, the strategy in-place for achieving the program objective(s), the program beneficiaries and expected benefits}

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Describe in detail how the project is going to be implemented and how it is to be managed. Describe the contracting mechanism. In brief, describe how the project is expected to work.

Who or which organization(s), public and/or private, will take direct responsibility for managing the project? Describe in detail the management capacity of the organization selected to implement the program/project in terms of its ability to (1) source and coordinate resource, (2) provide logistics support and supervision, and (3) develop and

manage a monitoring and evaluation system.

Who or which organizations/institutions will be responsible for implementing and overseeing the day-to-day workings of the project and each of its components?

Describe in detail when the project implementation phase will begin and when the project is expected to be completed. Identify when each of the project components will be phased-in and when each is expected to be completed.

Describe where the project and each of its components will be implemented.

V. Project Monitoring & Evaluation Plan

Summarize, from Section III, the project objectives, including the results to be achieved by each project component (use Table 1 to summarize the results in a matrix format). How is achievement and progress toward achievement of the stated objectives/results measured? For each project objective/result identify and describe what set of variables (indicators) will be used for measuring progress toward achievement of each result. The variables selected should measure both process and impact. The objectives/results statement identifies what is to be measured and the indicators identify what data sets are to be monitored and collected.

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Describe how the data will be evaluated and who will do the evaluation? The evaluation report should clearly identify whether or not the intended results have been achieved. If they have not been achieved or if the achievement falls short of expectation, the evaluation must identify why the results were not achieved as expected. It must identify the critical external factors that affected the project outcomes.

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Who will receive the periodic evaluation reports? How will the recipient of the report use the information?

Describe the mechanism in-place for modifying program strategies based on the periodic performance monitoring. How is the performance evaluation data used to adjust a program strategy and improve the chances of achieving the stated results? Identify the organization/management who will be responsible for the decision to adjust project strategy as required.

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- C. Economic Analysis
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Program Performance Quarterly Reports

Writing Guidelines

Prepared for
USAID/OFDA/PMP

Quarterly Program Performance Report

Name of Program

Quarter Under Review (e.g., Second Quarter, 1994)
(Beginning of Quarter (Month, day, Year) - End of Quarter (Month, Day, Year))

Prepared For:
Cooperative Agreement No.: xx xxxx xxxx xxxxx

Issued By:

Name of Your Organization
Address of Your Organization

Date Report Issued (e.g., July 27, 1994)

Outline for a Quarterly Program Performance Report

TITLE PAGE

The title page should include (1) title of the program, (2) the quarter covered by the report, (3) the Cooperative Agreement No. with OFDA, (4) your name and address, and (5) the date the report was officially approved and issued by your organization to OFDA and other report recipients.

I BRIEF PROGRAM/PROJECT OVERVIEW

Limit the overview to one page. The overview is intended to provide background information and make the report a stand alone report for readers unfamiliar with the program/project. The same information, with slight modifications, will appear in subsequent quarterly reports. The overview page should contain:

- (1) PROGRAM DESCRIPTION - a brief description of what the program/project is intended to achieve;

- (2) PROGRAM OBJECTIVES & STRATEGY - a clear statement of the problem(s) addressed by the program/project, a statement of the program objectives and outcomes, and a brief explanation of the strategy for achieving the objectives and outcomes; and

- (3) MAJOR PROGRAM CHANGES & ADJUSTMENTS - changes to the original program/project design, if any.

II DESCRIPTION OF PROGRAM/PROJECT ACCOMPLISHMENTS

Briefly summarize (1) accomplishments in the current reporting period; and (2) accomplishments to-date. Since program performance is evaluated on the basis of achievement of the stated objectives and outcomes, state which objectives and outcomes were achieved. Use the program performance monitoring matrix (see attachment) to summarize the values of the performance indicators associated with each program objective/outcome. Explain any unforeseen circumstances that negatively affected achievement of targeted results. Describe unexpected events that facilitated achievement of stated results.

III CONCLUSIONS and RECOMMENDATIONS

Provide an overall assessment of program performance and progress. If the program has not progressed as planned, outline what program modifications/changes are recommended. Explain program strategy changes and resource reforecasting that are required to improve the performance of the program, including agreements with TCO and Contracting Office regarding required formal or informal contract amendments.

Table 1. Quarterly Program Performance Report
Quarter:

COUNTRY:

Performance Indicators	Baseline	Achievement To-Date	Current Quarter		Overall Assessment
			Target	Actual	
PROGRAM OBJECTIVE No. 1: State the result to be achieved.					
Indicator No. 1					
Indicator No. x					
Program Outcome No. 1.1 State the result to be achieved.					
Indicator No. 1					
Indicator No. x					
Program Outcome No. 1 x State the result to be achieved					
Indicator No. 1					
Indicator No. x					

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Quarterly Program Performance Report

Local Environmental Disaster Prevention, Mitigation and Preparedness (LEDPMP) Project

Second Quarter, 1994
April 1, 1994 - June 30, 1994

Prepared For: USAID/Office of Foreign Disaster Assistance
Cooperative Agreement No.: 940-1008-W-00-4533-99

Prepared By:

Industrial Waste Management Center (IWMC)
10 Farragut Drive, Vienna, VA 22180

July 27, 1994

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LOCAL ENVIRONMENTAL DISASTER PREVENTION, MITIGATION AND PREPAREDNESS (LEDPMP) PROJECT

I. OVERVIEW

1. PROGRAM DESCRIPTION

The Local Environmental Disaster Prevention, Mitigation and Preparedness (LEDPMP) project is designed to develop and implement prototype disaster prevention and mitigation programs for environmental and man-made disasters and emergencies related to (1) chemicals and industrial fires, (2) hazardous materials transport accidents, and (3) chemical leakages from factories and storage facilities, in high-risk urban centers in selected developing countries.

2. PROJECT OBJECTIVES AND STRATEGIES

The project has two key objectives. These objectives directly support and buttress the achievement of OFDA's objective of "reduced human suffering, loss of lives, and economic assets". Objective No. 1: "Reduced incidences of major industrial, hazardous materials transport and other technology accidents and disasters", is directed at preventing industrial and chemical accidents. Achievement of this objective is buttressed by two project outcomes - (1) increased adoption of industrial fire safety and spill control technologies; and (2) improved regulation and enforcement of industry fire safety, hazardous materials handling and transports and emergency codes.

Objective No. 2: "Reduced risk of loss of lives and property from technology accidents and disasters." is directed at minimizing the loss of human lives, property damage and human suffering from industrial and chemical hazards. Achievement of Objective No. 2 is buttressed by two related project outcomes - (1) increased awareness and knowledge of disaster prevention, mitigation and preparedness; (2) strengthened emergency and disaster prevention, response, and mitigation institutions.

The project is being implemented in two phases in Tigray. Phase I, begun in the third quarter of 1992, has concentrated on training and information dissemination to create greater awareness and knowledge of technology disaster prevention, mitigation and preparedness. Under Phase I, the project has provided specialized training for persons and organizations responsible for chemical and industrial disaster management, including chemical and industrial fire fighting; control of chemical spills; medical response to chemical emergencies, including use of antidotes, detoxification, and triage-based emergency treatments; and training for emergency response planning and execution.

Phase II of the project, which is planned for execution in the first quarter of 1995 will address issues related to strengthening chemical and technology disaster response networks, computerized chemical emergency information systems, and transfer of chemical fire fighting and chemical spill control technology and equipment at target sites. Emphasis will also be placed on spreading the information, technology and the formation of emergency response units into other high-risk urban areas within the country.

II PROJECT ACCOMPLISHMENTS

A. Second Quarter 1994 Accomplishments

Project accomplishments are summarized in Table 1. In this quarter, industrial disasters have been reduced by 10% despite a 25% increase in industrial chemical outputs. Six of the largest chemical factories in Kula Industrial Estate and two of the largest state-owned chemical storage facilities in Emes Industrial Estate were retrofitted with modern chemical fire and chemical spills containment equipment and accessories. In addition, the fire fighting units in both industrial estates are now equipped with personal safety gear. Because of the lengthy court procedures and back log, only 5% of the 175 violators in this quarter were prosecuted in court. The Kula Industrial Estate Chemical Industry Association has begun drafting by-laws to allow it to place heavy fines on safety code violators. It is expected that the draft by-law will be completed and ratified by its members by the end of this year. This industry self-regulation should lighten the burden of the courts and help avert industrial disasters and accidents.

The training given to the fire and medical response teams is beginning to pay off by reducing the number of injuries and protecting lives and property. Community awareness has also helped in reducing injuries to humans and damage to property. There were 15 industrial fires and 25 hazardous material transport accidents in this quarter. There were deaths in 50% of these disasters. Only 10% of the number of people affected by these disasters incurred injuries. There was no property damage in 30% of the accidents. Fifty fire fighters and 75 doctors and nurses were trained in this quarter. This brings up the total number of fire fighter and medical responders trained in chemical fire safety and chemical accident medical treatment in the country to 75%.

B. Accomplishments To-Date

Year to-date, IWMC has developed and conducted workshops and seminars in medical emergency response, chemical emergency preparedness and accident prevention, industrial fire safety and spill control, assessment of chemical risks and emergency plans and risk analysis to a total of 1,240 participants at the cost of \$ 700,000. These workshops and seminars, planned for Phase I of the project implementation schedule, have been executed as scheduled. The project has received good support from industry associations, government agencies and local community leaders who have actively participated in recruiting and nominating workshop and seminar participants. All workshops and seminars and mock drills were scheduled by the local coordinating committees at each project site, with IWMC providing technical assistance. Seminars and workshops were conducted in collaboration with EPA's Chemical Emergency Preparedness and Prevention Office and CDC's - Center for Environmental Health - Division of Hazards and Health Effects. The number of workshop/seminar participants by industrial estate and by type of training are summarized below.

Workshop/Seminar	Kula Industrial Estate	Emes Industrial Estate	Other Locations
Awareness and Preparedness	300	150	200
Medical Emergency Response	50	50	45
Chemical Emergency Preparedness & Accident Prevention	100	-	-
Industrial Fire Safety & Spill Control	45	-	120
Assessment of Chemical Risks & Emergency Planning	-	70	60
Total	495	270	475

To-date, risk analysis has been conducted in six of the 15 major industrial sites. As an outcome, these risk assessments have generated increased awareness and urgency among public and industry officials. In Kula Industrial Estate, the Chemical Industry Association is taking steps to ensure that the membership will comply with the government and industry mandated safety requirements. The government of Kula province has begun to widen and pave the 150 kilometers of road to the chemical waste dump in Kulibi. This measure was taken to reduce hazardous material transport accidents.

III. CONCLUSIONS AND RECOMMENDATIONS

Phase I of the project has been executed successfully. Greater awareness and preparedness to chemical and technical disasters has been achieved. Local disaster response teams are forming and are being strengthened. Dialogues between government, industry and local communities have started taking place on a regular basis. Chemical emergency information systems are in their early stage of formations. Risk assessments and analysis conducted so far have provided a framework for technology disaster prevention, mitigation and preparedness planning.

Table 1. Quarterly Program Performance Report

Quarter: April 1, 1994 - June 30, 1994

COUNTRY: Tigray

Performance Indicators	Baseline	Achievement To-Date	Current Quarter		Overall Assessment
			Target	Actual	
PROGRAM OBJECTIVE No. 1: Reduced incidences of major industrial and technology disasters, and hazardous materials transport accidents.					Even though industrial activity has expanded by 20% over the last two years, the project has managed to reduce disasters and accidents.
Incidences of Industrial Disasters	95/yr	10% reduction	15% reduction	10% reduction	
Incidences of hazardous materials transport accidents	125/yr	20% reduction	25% reduction	20% reduction	
Program Outcome No. 1.1 Increased adoption of industrial fire safety and spill control technologies					
Chemical factories with fire safety technologies	10%	25%	10 factories	6 factories	
Chemical factories and storage facilities with chemical spill control technologies	5%	20%	5 factories	2 factories	
Industrial estates with trained fire safety and spill control teams	0	3 of 12	2	0	
Program Outcome No. 1.2 Improved regulation and enforcement of industry fire safety, hazardous materials handling and transport codes					
Appropriate codes and enforcement mechanisms in-place (yes/no)	No	Yes	Yes	Yes	
Safety code violators prosecuted	0%	5%	25%	5%	
PROGRAM OBJECTIVE No. 2: Reduced human suffering and risk of loss of lives, property and economic assets for technology related disasters					Industry safety codes have been drafted and ratified. Industry inspection and violators prosecution mechanisms have been put in place.
Deaths averted	5/disaster	50 lives	No death in at least 75% of all disasters	No death in 50% of all disasters	
Injuries averted	25/disaster	240 injuries	25% injuries of all disasters	10% injuries of all disasters	

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Performance Indicators	Baseline	Achievement To-Date	Current Quarter		Overall Assessment
			Target	Actual	
Value of property and economic assets protected from damage	\$50,000 - \$75,00 per accident	\$570,000 damage	No property damage in 50 % of all Disasters	No property damage in 30 % of all Disasters	
Program Outcome No. 2.1: Increased awareness and knowledge of disaster prevention, mitigation and preparedness					
% of industrial workers aware of chemical disasters	>5%	50%	75%	50%	
% of public officials, industry officials and community members aware of chemical & technology disasters	Public Official = 10% Industry Officials = 20% Community = 0%	50% 25% 30%	25% of remaining 25% of remaining 25% of remaining	25% of Remaining Pub. Officials 25% of Remaining Ind. Officials 20% of targeted communities	
% of emergency and disaster responders trained	0%	30%	100%	75%	
Program Outcome No. 2.2: Strengthened emergency and disaster prevention, response and mitigation institutions					
% of disaster and emergency response units appropriately equipped	0%	20%	50%	20%	
% of disaster and emergency response units staffed with trained personnel	0%	30%	50%	30%	