FEDERAL EMERGENCY MANAGEMENT AGENCY

Final Program Report for the
U.S. Agency for International Development
on the
Hurricane Mitch and Georges Reconstruction Project

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Introduction

The United States Federal Emergency Management Agency (FEMA) shared principles of mitigation, preparedness, response, and recovery in dealing with disasters with the countries of Honduras, El Salvador, Nicaragua, Guatemala, Haiti, and the Dominican Republic through various technical assistance projects. These projects were the result of an agreement that was signed between FEMA and the United States Agency for International Development (USAID), on September 29, 1999. The interagency agreement was the fulfillment of instruction from the U.S. Congress (contained in the 1999 emergency supplemental appropriations law) that U.S. Government Agencies (USGs) participate in reconstruction efforts in Central America and the Caribbean following Hurricanes Mitch and Georges. USAID provided FEMA with $3 million over a two year time period, and the interagency agreement ended in December 2001. FEMA divided these funds approximately equally among the six countries (expending about $500,000 per country). FEMA worked directly with the USAID Bureau for Latin America and the Caribbean (LAC), which managed the reconstruction technical assistance projects of the U.S. government agencies. The successes FEMA experienced in helping to strengthen emergency management in the region is due in no small part to the support the Agency received from USAID/LAC throughout the project.

The involvement of FEMA in the reconstruction efforts included projects that were directed at both the national government and local levels. While the specific projects resulting from FEMA's technical assistance varied slightly among the countries, the major goals were to help enhance the role, authority, and capabilities of the emergency management agencies in each country; analyze and refine national emergency management plans that coordinate the activities of the different agencies in each national government; design efficient emergency operations centers that are capable of processing information received from the new equipment placed in the countries by other USGs; and initiate pilot Project Impact communities that are actively working to protect themselves from disasters and are serving as models to other communities.

The basis of FEMA's technical assistance was to share expertise and promote the understanding of the different aspects of emergency management:

> *Mitigation* is defined as any **sustained** action taken to reduce or eliminate long-term risk to human life and property from a hazardous event. Mitigation, also known as prevention (when done before a disaster), encourages long-term reduction of hazard vulnerability. The goal of mitigation is to decrease the need for response as opposed to simply increasing the response capability. Mitigation

can save lives and reduce property damage, is cost-effective and environmentally sound. This in turn can reduce the enormous cost of disasters to all levels of government and property owners. In addition, mitigation can protect critical community facilities, reduce exposure to liability, and minimize community disruption. Mitigation is based on sound economics and is a politically viable strategy. Examples include land use planning, sound building codes and elevating homes.

Preparedness actions strengthen the capability of government, citizens and communities to respond to disasters. Preparedness actions include training and exercising, developing emergency response teams, storing 72-hour kits, maintenance and operation of hand-held radios for issuance of warnings, etc.

Response actions are those taken during an event to address immediate lifeline and health safety needs and to minimize further damage to properties such as placement of sandbags around a building to minimize flooding damage to structure, debris removal and provision of drinking water to isolated communities.

Recovery actions are those taken after a catastrophic event in order to restore order and lifeline in a community. This includes repairing infrastructure and buildings damaged by the disaster.

FEMA first established the process by which it would conduct this project. Staff was identified to manage this project from the Office of the Director. This decision was made since the scope of this international project was beyond FEMA's normal domestic responsibilities and in order to facilitate the strategy of exposing these countries to a comprehensive understanding of the work of the Agency as a whole. FEMA staff attended USAID sponsored meetings in Washington and in the region, and conducted research concerning the countries. FEMA also held meetings with other participating USG agencies and with international organizations to gain a greater understanding of the challenges these projects would present. Finally, FEMA staff made needs assessment visits to the countries and met with prospective partners in order to gain a better understanding of each existing emergency management system. These steps took time, but were a necessary part of laying the groundwork for the Agency's subsequent activities.

As a vehicle for formalizing its technical assistance, FEMA joined with USAID and USAID/Office of Foreign Disaster Assistance (OFDA) to hold an Emergency Management Summit June 5-9, 2000 at the FEMA training facility in Emmitsburg, Maryland. This meeting included representatives of the emergency management institutions and NGO partners of the six countries. The meeting allowed FEMA to efficiently provide these countries with direct access to its knowledge base and its emergency management experts. It also allowed the country representatives to further refine their goals and the methods to achieve them, and gave them an opportunity to continue to work together with their neighbors to share their experiences and lessons learned. At the conclusion of this meeting, participants had a better understanding of the next steps to be accomplished in each country with the continued support of USAID, USAID/OFDA, and FEMA.

Section I: Sector Components

A. National Emergency Management System

At the national government level, technical assistance was provided by sharing FEMA's experience in the planning and execution of emergency management functions. This included the establishment of a national emergency plan, emergency operations centers, state and local partnerships, capacity building, and training. As a component of capacity building, FEMA worked with the national government to review existing and/or develop revised legislative authority for emergency management. The comprehensive technical assistance package offered by FEMA included the assistance of FEMA employees, State partners, NGOs and contractors. These individuals possessed specific skills that were utilized to review and produce materials, and also by traveling to the countries to apply their expertise on site.

FEMA initiated the project by bringing a team of experts to each country to conduct an initial needs assessment. From the needs assessment, the team collected information on the country's emergency management system and identified potential activities. FEMA took a comprehensive approach to the technical assistance package we could offer. First, we could evaluate the emergency management system, including laws, regulations, and plans, and assist in efforts to strengthen them. Then, FEMA could help establish one of the most crucial tools for coordination of national disaster response and recovery—an effective emergency operations center (EOC). Finally, FEMA offered training at the national level on the operation of the system and the EOC. Not all items were pursued and achieved in each country, nor did they necessarily take place in the order just outlined. However, details about these institutional strengthening measures, along with country-specific examples, follow below:

1. **Emergency Operations Centers (EOCs)** – The goal was to assess the existing system and the operations center, and to develop a set of short and long-term recommendations and design plans for improvement of the operation and of the facility. Upon delivery of the recommendations and design plans, it was up to the emergency management agency to seek financial support from other sources and FEMA continued to provide technical assistance in the installation of the equipment, some equipment/hardware support, and training.

   An added benefit of the establishment of this facility would be to create an important long-term "customer" for the information provided by the equipment that other USGs installed in these countries. An effective EOC, relied upon to assist with the response to disasters, provides the government with added incentive to maintain the investments the international community has made in its country.

An excellent example of this collaboration and creative resource solicitation is Guatemala. This EOC project became a model of multi-agency cooperation in the Hurricane Mitch reconstruction effort FEMA was working closely with CONRED to analyze the emergency management system and devise a new structure based on emergency support functions. FEMA experts then developed the EOC design based on this new structure. The FEMA team assessed CONRED's EOC and made recommendations for organizational and structural changes, equipment purchases, and operational suggestions to modernize and improve its emergency management capabilities.

CONRED implemented the recommended organizational changes, and the Guatemalan Government financed the suggested structural changes to the EOC facility. The USAID mission in Guatemala City then used funds received from the Office of Foreign Disaster Assistance's Central American Mitigation Initiative to purchase the majority of the computers, equipment, and furniture necessary to outfit the operations center. FEMA purchased some additional equipment (a computer firewall, anti-virus software, and licenses) and sent a team of information technology experts to help configure the servers and establish the computer network. FEMA also provided CONRED with hurricane tracking software. In addition, OFDA worked with CONRED and the relevant national government agencies to develop national plans and standard operating plans for the EOC. The EOC was officially inaugurated in a ceremony attended by the Guatemalan Vice President and the U.S. Ambassador. This was an important ceremony, as it served to underline the role of the operations center, and the need for other government Agencies to support and participate in its coordination activities. The result of all of this effort is that Guatemala now has a fully functional, modern, emergency operations center from which it can monitor emergencies and plan and execute the national government's response.

2. **Legislation –** FEMA collected copies of laws and regulations pertaining to emergency management in each country, reviewed and assessed their effectiveness, identified areas of strengths and weaknesses and offered recommendations to the emergency management organizations for improvement. The recommendations included revision to existing laws and regulations and development of regulations and guidebooks to complement and more effectively implement the laws. Two important features of these laws should be the development of one civilian agency with the authority and responsibility to coordinate the entire government's emergency management system on behalf of the President, and the need to establish a disaster relief fund through which the national emergency management agency can provide resources to government ministries to

support these efforts. Both factors have proven crucial to FEMA's success in the United States.

An excellent example of this technical assistance and collaboration was in Nicaragua working with SNPMAD, Nicaragua's national emergency management agency. SNPMAD was a newly formed organization that was a result of the passage of Law 337 in March 2000. Therefore, it was important to develop regulations and other supporting documents to implement the law effectively and to ensure recognition and legitimacy of the newly formed organization. FEMA worked with SNPMAD on the guidebook for the sectorial working commissions and legal and financial procedures required under Law 337. FEMA also developed the first draft of the specific sections such as supply, infrastructure, special procedures and health for the main Commissions.

3. **Response Plans –** FEMA worked to develop and/or revise existing national response plans based on the U.S. Federal Response Plan model, but adapted to the system, infrastructure, and capacity of each country.

   The foundation of the U.S. Federal Response Plan is to divide national government agencies into functional areas of responsibility. This philosophy has evolved in the U.S. because FEMA's experiences prior to 1993 illustrated the difficulties of coordinating and organizing a government disaster response effort based on the activities of individual agencies. Multiple agencies with overlapping responsibilities in many different areas of response weakened the government's ability to operate effectively. Because of these difficulties, FEMA worked with 27 other federal agencies and the American Red Cross to draft the Federal Response Plan. This plan provides an efficient mechanism for coordinating the delivery of Federal assistance and resources to augment efforts of our State and local governments overwhelmed by a major disaster or emergency.

   The basis of the U.S. Federal Response Plan is that government agencies are incorporated into a structured Incident Command System. This system consists of twelve Emergency Support Functions (ESFs) that may be needed to respond to a technological or natural disaster. These functions include Transportation, Communications, Public Works and Engineering, Firefighting, Information and Planning, Mass Care, Resource Support, Health and Medical Services, Urban Search and Rescue, Hazardous Materials, Food, and Energy. Under this system, one government agency takes the lead for a specific response "function" and coordinates directly with that function's support agencies. This system simplifies the coordination and delivery of

resources and diminishes duplication of effort. It makes FEMA's mission of coordinating the entire government's response to disasters much more manageable.

The process of reviewing and developing these plans in the region was closely coordinated with participating ministries and the plans required their approval and concurrence. An example of this process took place in Haiti. FEMA experts reviewed the documents that had been developed in Haiti (including the National Risk and Disaster Management Plan and the Hurricane Response Plan). FEMA was impressed with the groundwork that had been laid by the dedicated work of the DPC with the support of the United Nations Development Program. FEMA identified an opportunity to build on this foundation by developing an all-hazards response plan that would encompass and direct response actions for all types of disasters and emergencies when local and Departmental capabilities are exceeded.

Haiti's response plan was therefore organized based on the principles mentioned above. The Plan establishes 9 Emergency Support Functions, to be administered by Ministries of the Government of Haiti. It was developed to meet the following objectives:

1. Assign and identify the emergency response and support roles and responsibilities of individual government organizations.
2. Following a disaster, immediate response operations to save lives protect property, and meet basic human needs have precedence over recovery and mitigation. However, initial recovery planning should commence at once in tandem with response operations. Actual recovery operations will be initiated commensurate with government priorities and based on availability of resources immediately required for response operations.
3. In recognition that certain response and recovery activities may be conducted concurrently, coordination at all levels is essential to ensure consistent governmental actions throughout the disaster.
4. Mitigation opportunities should be actively considered throughout disaster operations. Decisions made during response and recovery operations can either enhance or hinder subsequent mitigation activities.

The document establishes a framework for development of a process for systematic, coordinated and effective national government response to natural disasters and emergencies by:

1. Outlining fundamental policies, planning assumptions, concepts of operations, response actions, and National Government responsibilities.
2. Describing some of the resources that are available to augment Departmental and local efforts to save lives, and to protect the public health, safety and property.
3. Describing a framework process for implementing and managing National response programs.
4. Serving as the foundation for development of additional plans and procedures to implement National response activities rapidly and efficiently.

The general concept of operation for the plan is that Local and Departmental responders will have to handle most disasters and emergencies. The National Government will be called upon to provide supplemental assistance when the consequences of a disaster exceed local and Departmental capabilities.

The response plan was developed over months of work in Washington supplemented by visits to Haiti to consult with the DPC and with Government Ministries. FEMA engaged the help of the Florida Association of Voluntary Agencies for Caribbean Action, Inc. (FAVA/CA) and the Pan American Development Foundation who brought an in-depth understanding of the Haitian government to the project. A final draft of the plan was completed, but the project expired before FEMA could return to Haiti to hold an exercise with all participating government ministries to validate and practice their roles.

4. **Training and other capacity building –** FEMA concluded early on that providing training in the region should not be a major component of its project. Many other U.S. Government agencies have been administering training programs to fill this role in the region. Therefore, FEMA decided to limit its activities in this arena to providing support to other USG training efforts where possible, and to provide direct delivery of training only in response to specific requests from USAID missions and counterpart agencies in the countries.

   FEMA's support to other USGs' training activities included paying to translate an Agency emergency operations center manual into Spanish for USAID/OFDA to use in its courses in the region, and sending FEMA operations experts to participate in U.S. Southern Command exercises.

   Guatemala offers an example of one of the few direct training activities in which FEMA engaged. In support of CONRED's efforts to develop a comprehensive national emergency management training

program, FEMA delivered a train-the-trainer course in the principles of emergency management that CONRED and USAID are offering around the country. This course serves to educate CONRED staff, and departmental and municipal officials about the improved emergency management system CONRED has created, and the role they play in that national system. CONRED showed creative initiative by engaging a University to help translate FEMA's materials and help adapt them to the realities of the Guatemala system.

B. Building Disaster Resistant Communities

Project Impact: Building Disaster Resistant Communities is a FEMA initiative begun in the United States in 1997 on a pilot-program basis and implemented nation-wide, beginning in 1998. Each year, from 1998-2001, FEMA selected one or more communities, per state, to participate in the initiative. FEMA provided funds for community mitigation projects, and these funds were used to leverage private and public sector participation and leadership in an effort to build communities that are more disaster resistant. This initiative is based on the belief that mitigation solutions are best conceived and executed at the local level, and that the federal government has a role to play in sustaining these long-term local efforts.

Project Impact in Central America and the Caribbean

FEMA sought to bring this concept of mitigation to Central America and the Caribbean to create safer communities, and to adapt it so that is could be used by other communities to protect themselves from disaster. What FEMA found during the course of the project was that Project Impact in the U.S. had a more narrow mitigation focus, supplementing preexisting preparedness capabilities. In the international model of this initiative, the projects were modified to focus on what we would consider both preparedness and mitigation. In other words, in the U.S., most local governments have established emergency management capabilities that focus on preparedness activities such as planning. No such infrastructure exists in most of these countries, so Project Impact became involved in both preparedness and mitigation activities – both establishing evacuation plans and taking mitigation steps to lessen the likelihood they would be needed, for example.

These projects were implemented using the "on-the-ground" assistance of Non-Governmental Organizations (NGO) that were trained in Project Impact strategies, and by supplementing their activities with visits from U.S. Project Impact experts. NGOs were instrumental in this process because of their knowledge of the countries and their experience in disaster work. Entering into cooperative agreements with them was the most efficient strategy for using our limited funds and for increasing the long-term disaster mitigation capabilities of the NGOs themselves.

Each NGO received $250,000 through cooperative agreements with FEMA. They were instructed to dedicate at least $100,000 of that funding for direct mitigation projects. Each NGO worked within communities selected by FEMA, USAID, the national governments, and the NGOs themselves, to use Project Impact funds to leverage private and public sector community participation. The effort has been successful. Many projects have been identified, funded, and implemented with the help of public and private sector partners. Overall, at least one dollar has been leveraged for every project dollar spent. The efforts of the NGOs, coupled with community and partner efforts, will ensure that future disaster losses are reduced in the fourteen communities in which FEMA worked. One community has already suffered another disaster and the efforts of Project Impact have had a positive impact.

The Project Impact Process

FEMA officials signed a contract with the following Non-Governmental Organizations (NGO) to carry out the Project Impact Initiative. NGOs were assigned as follows:

- Honduras – Cooperative Housing Foundation (Honduras)
- El Salvador –Cooperative Housing Foundation (El Salvador)
- Nicaragua –Cooperative Housing Foundation (El Salvador), who contracted with the Center for Environmental Rights and Promotion of Development (CEDAPRODE), a local NGO, for assistance
- Guatemala –Catholic Relief Services, who contracted with the Pro Economic Development Organization of the South (PRODECO SUR), a local NGO, for further assistance
- Haiti –Pan American Development Foundation
- Dominican Republic –Dominican Association for Disaster Mitigation

Each NGO, with assistance from USAID and with each country's Office of Emergency Management, identified one or more communities to participate in the community mitigation initiative. The NGOs were instructed to identify communities that were vulnerable to multiple hazards, who had a commitment to community action and who had the potential to involve the private sector. The criteria for choosing these cities was flexible, but priority was given to areas with a history of community/private sector activism, with an interest in mitigation, and with a strong likelihood of achieving success that can be duplicated on a larger scale. With technical assistance from FEMA, and with the guidance of the NGOs, each community accomplished the following (with a few exceptions):

- Held a Convening Session, where prospective partners discussed hazards, identified solutions, pledged support, and created local mitigation committees;
- Wrote an Action Plan, summarizing hazards and vulnerabilities and identifying actions to be taken with seed funding and support from the community;
- Held a Signing Ceremony to celebrate progress made and to create community interest; and
- Implemented projects, which will lessen future disaster losses.

During the Convening Sessions, U.S. Project Impact experts explained why mitigation is so important. They emphasized that because the region has suffered tremendously from the recent hurricanes, more needs to be done to assure that fewer people suffer injury and loss of life. The amount of harm caused by disasters in the region is unacceptable. These unacceptable levels of loss must be prevented or minimized and community officials were urged to use Project Impact as a tool to accomplish this important goal. U.S. Project Impact experts stressed that although we cannot stop the ground from shaking, the wind from blowing, or excessive rain from falling, we can minimize the impacts that these events cause. The implementation of Project Impact and the carrying out of mitigation initiatives, result in avoiding property damage and lessening the number of injuries and deaths that occur following disasters.

Convening Sessions provided a forum to explain to prospective Project Impact partners the differences of mitigation from preparedness, response and recovery.

Convening Session attendees were urged to use Project Impact funds to leverage their own programs, equipment and leadership in order to accomplish structural and non-structural projects as well as effective mitigation education to citizens. Most communities that held Convening Sessions accomplished an array of structural and non-structural mitigation projects, as well as citizen education programs. In the few communities that did not hold Convening Sessions, less leveraging of resources occurred and fewer projects were based on mitigation but geared more towards preparedness and response. This is a strong testament that following the prescribed Project Impact steps, leads to community involvement, leveraging of funds and the implementation of structural and non-structural mitigation projects.

Ingredients for Success

Success under the Project Impact initiative is not guaranteed. Success comes from dedication, hard work, and a combination of other factors. Success does not require perfection in any one area, nor does it require all of the following components, but rather a combination of many of the following:

- Array of hazards –communities tend to be more successful if they are at risk to multiple natural hazards (earthquakes, landslides, flooding, wildfire, etc.) as

opposed to just one main hazard. Addressing multiple hazards tends to galvanize the participation of broad constituencies within communities.

- History of disasters –communities that have had a recent disaster tend to be more interested in getting involved. The "*it can't happen in my community*" attitude is less prevalent. However, it can be difficult to convince a community to participate at a high level, if they have had a catastrophic event and the community believes such an event could never reoccur.
- Committed leadership at the community level –this component is essential, the lack of other ingredients can be overcome with a group of dedicated leaders. Leadership can come from the private sector and/or public sector.
- Committed participation of non-governmental organizations (NGO). Involving NGOs is critical to success. NGOs can bring funding, leadership and ideas to the table. They can also help solicit private sector and public sector support. NGOs can also persuade other organizations to participate in the initiative.
- Committed participation of all levels of government: community, municipal, departmental, national and international –involving as many layers of government as possible is helpful. Each layer has valuable resources and contacts that add to the initiative.
- Commitment of private sector with in-kind donations, in-kind services, and leadership –private sector involvement is key. The private sector should be made aware that Project Impact seeks to develop win-win relationships, in other words a relationship that is as mutually beneficial to the business as it is to the community. Businesses are definitely interested in ensuring that their structures and inventories can adequately withstand disasters. They also should realize that helping reduce disaster damage to employees and in nearby communities will result in the company resuming operations faster than if they only focused on protecting their own buildings and inventories. Therefore, the simple message to businesses was "help protect yourself, your employees, and your community."
- Involvement of civic groups –civic groups have funding and in-kind services that they are willing to donate. Many civic groups make facilities available for training and workshops at no cost, or reduced cost. Civic groups are busy and are often bombarded with choices on where they invest time and resources. They must be convinced that the initiative will help the community become more disaster-resistant and that becoming disaster-resistant is in their best interest.
- Involvement of schools –schools are great partners. Few, if any, successful Project Impact communities have succeeded without involving the local schools. Schools are a great tool to educate young people, who in turn educate parents. Schools are approachable and are usually interested in investing in efforts that will make their community more disaster-resistant.
- Well devised Action Plan, outlining the hazards, the community's vulnerabilities and projects –a well written Action Plan will provide focus to the initiative and will be a useful tool in recruiting other partners.

- Convening Session –a brainstorming session to gauge the community's perception of the hazards and associated vulnerabilities. Convening Sessions allow the community to organize a mitigation committee, organize sub-committees, prioritize projects and attract new partners. Community participation in the Convening Session is critical.
- Education component –which may include the following: radio spots, TV commercials, newspaper articles, posters, murals on city walls, community meetings, pamphlets, etc.
- Array of structural and non-structural mitigation projects.

Best Practices

Each of the fourteen Project Impact communities in the six countries has been successful. Some of the exemplary projects are highlighted in the following section as Best Practices. Hopefully, the success of these projects can be continued, expanded and replicated in other communities within Central America and the Caribbean.

Participation of Partners

All 14 community projects have developed partnerships; however the following communities have done an exemplary job in motivating the local community.

Haina, Dominican Republic

The Haina Project Impact initiative involves many private sector partners. This is due in large part to the involvement of the Haina Industrial Association, including the Association's President and Executive Director. The Haina Industrial association is motivated because its leaders are aware that among its members there are businesses that provide critical services and products to the entire country. This includes both of the country's electrical power plants, the only oil refinery, the most important port, important chemical companies, important factories, etc. By nature of their close proximity to each other and by their exposure to natural disasters such as hurricanes, flooding and earthquakes, the Association leadership realized that a large event in Haina would paralyze, not only their own businesses and community, but also the entire country.

The Association encouraged all members to participate in the Project Impact initiative and provided an example by participating in all projects. The Association not only serves on the Haina Mitigation Committee, but also has provided meeting space for workshops and training events. The Haina Industrial Association has been involved in the following:

- Promoting the Hazards and Effects Management Process (HEMP), a process through which businesses identify vulnerabilities and then learn how to control causes and effects. HEMP participants develop contingency plans, which are then reviewed by the Haina Industrial Association. HEMP participants also train and exercise their plans. Currently five businesses are engaged in the process, and each has the involvement and commitment of its Chief Executive Officer.
- Developing, circulating and analyzing the results of a vulnerability assessment for member businesses of the Association.
- Hosting a two-day Contingency Planning Seminar, which was attended by 20 local businesses.
- Writing a Haina Industrial Association Disaster Plan.
- Hosting many workshops and training seminars on subjects such as First-aid, Search and Rescue and Risk Management.
- Developing a Hazardous Materials Transportation Route.
- Developing an evacuation route.

In short, there would not be a Project Impact initiative in Haina, if it were not for the leadership and participation of the Association and its members.

La Lima, Honduras

La Lima has a very active mitigation committee that has done a great job developing partners who now make great contributions to the effort. Partnerships have been developed with businesses, citizens, schools, and private foundations, etc. Partners that are making large contributions, include:

- Citizens were trained on reforestation techniques.
- 325 individuals in eight communities received courses on preparedness and mitigation. Each person attended three, three-hour sessions. Courses include: mapping vulnerabilities; what to do before, during and after disasters; and how to hold successful disaster drills. Through the training, one of the attendees identified some cracks in a levee, which were subsequently repaired.
- Hardware stores donated lumber and supplies for building seven warehouses, which are second stories to existing schools and medical clinics. Supplies donated by pharmacies and stores will be stockpiled for use following disasters. The local school parent-teacher organization donated wood, cement and part of the construction labor.
- Chiquita Banana partnered by buying a sluice gate and control valve for the Chamelco River, donating supplies for nurseries

that provide plants for reforesting dikes and providing the building plans for the supplies warehouses.

- The U.S. Department of Housing and Urban Development partnered by installing gabions and performing a reforestation project in the Martinez Rivera neighborhood.
- Schools are partnering by having all fifth grade students planting and caring for nurseries, and using the plants for reforesting the dikes. Every Saturday, sixth grade students gather garbage from city drainage ditches and streams. Sixth grade students also provided homeowners with stickers on how to properly dispose of trash. The incorrect disposal of trash exacerbates the flooding problem. Trash thrown into drainage areas clogs natural drains, leading to unnecessary flooding. This cleanup and education program is essential in preventing floods.
- Agua Azul provides drinking water for students who participate in the garbage cleanup project. Other local businesses donate plastic bags for the cleanup and the city provides transportation to the garbage pickup sites.
- The Honduran Foundation for Agricultural Investigation donated space for nurseries.

Structural Mitigation

Chichigalpa, Nicaragua

Hurricane Mitch destroyed an important highway bridge that crosses a deep ravine. The bridge has since been repaired; however, the bridge was replaced and not improved to withstand future flooding. As a Project Impact project, wing walls were installed on both ends of the bridge, which protect the bridge from flood runoff and prevent floodwaters from entering an adjacent neighborhood, where hundreds of houses were previously vulnerable to floods. The city has since found additional funds to place a series of gabions under the bridge. These gabions dissipate energy from winter runoff, minimizing downstream damages. The gabions also deter erosion of the ravine.

Pespire, Honduras

Through Project Impact, Pespire has built several structural mitigation projects, including the construction of floodwalls in two locations, dredging the Nacaome River, repairing box bridges and strengthening the bridge ramps over the Nacaome and La Montaña Rivers. The approach to the Nacaome Bridge needed enhancements to survive major floods in the future. The bridge is critical to the community as it links rural areas to the urban center. Without strengthening the bridge approach, future floods

would likely cause damage, resulting in thousands of rural residents being stranded.

Jacmel, Haiti

The main highway leading into Jacmel from Port-au-Prince has often been flooded. As the highway approaches town, it is in danger of being undercut by the river. Each flooding event scours out more of the roadbed. The leadership of the town has been concerned for several years that another hurricane would wash away the road, and vegetation and floodwater would then flow into downtown Jacmel.

During the Project Impact Convening Session, citizens and community leaders were unanimous in their desire to protect the highway. Using Project Impact funds, a 450 cubic meter gabion wall was built, which parallels the road for 60 meters. Fill material was placed between the wall and two large trees and a recreation area has been created beneath the trees. This project greatly reduces the flooding problem.

Taxisco, Guatemala

The three communities of Providencia, Tapescos and La Ceiba have been plagued with an annual flooding problem for years. Although the best solution to the problem would be to remove the vulnerable houses, there is no area nearby that is available or adequate for housing. Elevating houses or building floodwalls around individual structures was cost-prohibitive. The best alternative was to build a small levee around the streams and canals that ring the three communities. Attempting to control a river or stream by building a levee is not normally the first choice in dealing with flooding problems, but in this situation, it was considered the only viable alternative.

Prior to construction, the Guatemalan Environmental Agency was consulted, and they assured the dike would not adversely impact downstream communities. The levee was built prior to the 2001 rainy season. In a visit to the area in December 2001, local residents mentioned that they had passed through the wet season without any flooding, for the first time ever. Residents are very pleased that the levee is working so well.

Non Structural Mitigation

Taxisco, Guatemala

The Chiquimulilla Canal parallels the Pacific Ocean for many miles and eight communities lie in a row between the ocean and the canal. These

communities are only accessible via barge. The barges carry automobiles to access a road that leads to El Salvador. The highway parallels the ocean-side of the canal. Each community has residents that live between the canal and the highway. Most of these structures are vulnerable to flooding, which occurs at least at a nuisance level every year, and every few years causes widespread destruction. Hurricane Mitch caused massive flooding along the canal.

When the community learned about Project Impact, they saw an opportunity to raise the levee and/or dredge the canal. However, these projects were cost-prohibitive. The best solution to the problem would be to remove all flood-vulnerable structures and relocate them in safer areas, but this alternative was also too costly. The community decided on an alternative project to elevate the most vulnerable houses and build floodwalls around less vulnerable structures.

Catholic Relief Services and PRODECO SUR, performed a study of the flood-vulnerable structures. Houses that had historic flood depths of at least one meter, were targeted to receive an elevated foundation, upon which the family could build their home with the material of their choice: cement block, wood paneling or bajareque (mud and sticks) being the most common choices. Houses with historic flood depths between .15 and one meter were targeted to receive a one-meter perimeter floodwall, with a floodgate for the door opening. Houses with less than .15 meters of historic flooding were targeted to receive sandbags and training on how to fill and place them to protect structures from flooding.

PRODECO SUR staff met with every family and discussed the voluntary flood mitigation strategy recommended to protect their house. Pamphlets and posters printed with actions to be taken before, during and after floods, earthquakes and hurricanes were made available to all residents.

A local company was contracted to build the foundations and floodwalls. The company provided the community with blueprints for elevating houses and for building floodwalls. These plans are available to any current or future homeowner in the area. Homeowners, who received foundations, grouped together to help each other out with new construction of their houses.

Berlín, El Salvador

The mountainous slopes around Berlín are the home to coffee plantations. The slopes have been stripped of their natural vegetation and replaced with coffee, which is not as capable as the native vegetation at protecting the ground from the effects of torrential rains, which cause landslides and mudslides.

Hurricane Mitch devastated the slopes around Berlín. Many landslides and mudslides destroyed coffee plantations as well as residences in Berlín and surrounding towns. In the reconstruction, USAID and other international organizations developed mitigation projects in the steep canyons that surround Berlín. Coffee Plantation owners gave their consent for gabions to be placed in steep canyons. These projects were helpful in avoiding landslide and flooding damages in the communities at the base of the mountain, following storms that would have normally caused damage. Hence, landowners were eager to participate as partners when Project Impact came to Berlín.

One of the projects identified in the Convening Session was to perform an array of soil conservation projects on 79.5 hectares in Cerro Pelón and Las Palmas. More than 17,000 meters of live barriers and small rock walls were placed on steep slopes, in al alternating pattern. 14,500 infiltration ditches and 180 catchment wells were dug on the slopes to capture and filter runoff water. Over 2,200 meters of small dikes were constructed and the slopes have been reforested with 4,990 trees and 12,470 bamboo stakes. Near the base of some of the slopes, are a series of gabions that catch and slow floodwaters and landslides. At the bottom of Cerro Pelón lies a cement-lined ditch that drains excess floodwaters. All of these measures will slow down runoff and decrease erosion. The community has also trained 167 local residents on soil conservation techniques.

Of particular interest on the slopes of Cerro Pelón are large cracks, created by the January-February earthquakes. Several of these cracks are where the soil conservation projects were implemented. The soil conservation projects are more important than ever, as this area is at a higher risk now to landslide, than ever before. We are optimistic that these efforts will reduce the threat of a landslide and help to contain it should one occur.

Bluefields, Nicaragua

Previous to Hurricane Johan in 1988, a group of people moved into a marginal section of the city, adjacent to the river, which is vulnerable to flooding. When Hurricane Johan struck, the area was hard hit, and the city relocated residents to other, less vulnerable sections of the city. Not long after the hurricane passed, the vulnerable area was occupied once again. The City has now developed an Environmental Action Plan, which will eventually prohibit occupation in this section of town. The plan will be implemented in three phases: immediate actions, mid-term actions and long-term actions.

> The short-term plan includes cleaning and improving drainage areas so that people can continue to live in the area, but with a

reduced level of flood vulnerability. Project Impact funds helped the community accomplish its short-term goals.

The mid-range plan includes opening up drainage areas along Colón Street, creating a detour around a drainage area and installing more culverts along Fatima Street. The City will also perform a study to see where there is available land for housing developments for citizens currently living in marginal areas.

The long-range plan calls for the relocation of 100 houses and defining and enforcing a No Development Zone.

Estelí and Chichigalpa, Nicaragua

These two communities both have large rural areas that become isolated during flood events. Not only is the access cutoff to the rural areas, but communications are also cut off. Through Project Impact, Estelí received a 12-unit radio system and Chichigalpa received a 10-unit radio system. Several of the radio units will be sent to the communities most likely to become isolated by flooding, landslides or earthquakes. Municipal leaders will now know the problems and needs in isolated communities and will be able to provide the necessary resources or communicate their needs to the national government.

Education

Jaquimeyes, Tamayo, Vicente Noble, Dominican Republic

These communities have education projects that have been working well.

Community Emergency Management Teams (CERT) –each community has developed multiple CERTs, whose members have been trained in first-aid, search and rescue, fire suppression and disaster mitigation and preparedness. The communities were divided into smaller sections and teams assigned various functions. Team members have also participated in exercises.

Education and signage –each community sponsored workshops and training sessions for citizens on what to do before, during and after disasters. Community CERTs visited each family and provided them with education materials and posters on how and when to evacuate following earthquakes, floods and hurricanes. Signs were posted in each community on evacuation routes; signs were also posted on shelters and disaster supply warehouses. Posters were placed, identifying highly vulnerable flood areas. In each of the three communities, signs were placed in the floodplain, showing flood depth levels, with green, yellow and red colors. Green represents the safe levels; yellow represents that it is time to evacuate; and red represents the level when houses begin to flood. These signs are located on the shore of the river in highly visible

areas, such as near roads and/or bridges. These measures will allow residents to be more aware so they can find safer ground, when floods occur.

Working with the media –ADMD was involved in many educations projects, via television and radio networks, teaching people what to do before, during and after disasters. Many of the programs have aired across the entire country. Many people in the Dominican Republic now know to "duck", "cover" and "hold" in the event of an earthquake.

Berlín, El Salvador

Berlín implemented a successful education campaign, evidenced by actions of the residents. Through Project Impact, the community has been educated on what to do before, during and after disasters. Three town meetings were held; fourteen meetings were held with municipal councils, the Mitigation Committee and local leaders; three large murals with mitigation themes were painted in town; a poster was made; and messages were created and run by local radio stations over a seven-day period. The efforts to educate residents resulted in several residents building small floodwalls around their homes and businesses; other residents built small drainage systems. More families are asking for technical assistance in how to protect themselves from floods and earthquakes. The attitude in Berlín is changing. Residents are beginning to understand the need for mitigation and they realize that everyone has a role, from coffee plantation owners, to local government and to residents themselves.

Success Story

A recent tropical storm struck northern Honduras in November, 2001. Although this storm was not as powerful as Hurricane Mitch, it still was a strong system that caused considerable flood damage in La Lima. However, there are some significant successes to report from this event.

The Project Impact sluice gates and control valves on the Chamelco River worked well. No damages occurred in the Rivera Martinez neighborhood from this event. In the past, a tropical storm of this size would have flooded many houses.

One of the second-story disaster supply warehouses served as a temporary shelter for 18 individuals.

Donated garbage bags used for the weekend garbage cleanup, were donated for use in the flood cleanup.

City leaders cooperated well during the event. Determining where and how to place sandbags was coordinated in a more organized fashion than in previous events and this helped reduce damage.

Conclusion

The hurricanes of 1998 caused billions of dollars of damage and killed thousands of people in the Caribbean and Central America. This level of loss is unacceptable. The U.S. Congress authorized $621 million in an Emergency Supplemental Appropriations Act to help with recovery and mitigation programs. FEMA received funding under the Act and implemented two initiatives:

1) Providing a comprehensive package of technical assistance to national emergency management agencies to provide them with access to the lessons FEMA has learned in its effort to become an effective and efficient emergency management agency.
2) Project Impact, a community-based mitigation initiative that is a strategic framework for overcoming the impediments for the private and public sectors to reduce their own disaster vulnerability.

Both projects ran into challenges that were new to FEMA and unique to the region. However, FEMA found that many of the impediments to developing efficient national and local emergency management systems in other countries are similar to those we face here in the U.S. Core concepts of emergency management apply across our borders – one civilian agency should have the responsibility for coordinating national government activities and should have access to the highest levels of political leadership, inter-agency coordination is crucial, investment in the system is needed long before a disaster occurs, and prevention and mitigation are cost-effective long term solutions.

FEMA benefited from engaging in this effort. Staff received on-the-job training by traveling to a foreign country and employing their knowledge and skills in novel settings. The Agency also learned a great deal about emergency management in the region. FEMA was impressed with the dedication and expertise of its counterpart agencies, which make impressive use of the limited resources at their disposal. We were also impressed with the professionalism of our USG partners and the USAID missions, and with the huge effort USAID/LAC invested in the difficult job of coordinating the efforts of so many different organizations. FEMA is confident that because of this work, the emergency management systems in these six countries are better prepared to handle the next disaster, and hopes the international community, and the countries themselves, will continue to invest in these efforts to save lives and reduce damages from disasters.

Section III: Recommendations

The broadest observation that FEMA can offer is based, again, on its own experience in the United States. Because FEMA is acknowledged by all U.S. government agencies as being responsible for coordinating emergency management, and because there are clearly defined parameters about when FEMA becomes engaged in an emergency (when the resources of local and State governments are exhausted), FEMA has a defined role, mission, and accountability to the President of the country.

The same cannot be said for the U.S. Government's approach to supporting other countries' emergency management efforts. There are many agencies with overlapping roles, authority and goals in this area. For example, the U.S. military provides material assistance and holds exercises, the U.S. embassies provide funds, USAID/OFDA responds and provides training, and USAID executes development projects. Until there is one agency with ultimate responsibility for managing the US government's support of international disaster mitigation, preparedness, response, and recovery activities, our efforts will always be disjointed and will constantly be focused on cleaning up after a disaster, rather than helping countries adequately prepare for them and reduce their effects.

Therefore, if the U.S. Government intends to continue efforts to help improve the emergency management systems of other countries in the future, it should replicate the strategy and process that have been proven successful domestically.

Other observations and recommendations are:

- FEMA would recommend that foreign and domestic agencies set ambitious goals in projects such as these. While not all of our goals were realized, the work towards them was beneficial for us and for our partners.
- For most of the life of this project, it was managed out of the Director's office. This was important because the nature of the program was to draw from the expertise of different parts of the agency. If the project had not been managed from that office, it might have been forced to be less ambitious in scope.
- More funding would have allowed the Agency to maintain a permanent presence in each country to work on a daily or weekly basis with our counterpart agencies. We decided early on that the best way to share the different types of experience and expertise within FEMA with these countries was to use technical assistance visits as the primary delivery method. Faced with the same choice, we would do the same things again. However, we found some middle ground between the two approaches in our Project Impact efforts.

We hired a consultant who's job was to serve as a resource and advisor to the NGOs and communities in each country, and who spent a large portion of his time traveling among countries of Region. A similar position to support our national government efforts would have been beneficial.

- This type of effort, which relies on the cooperation and input of a foreign government agency, will be successful only if the agency is interested in working with us.
- The advice and counsel of supportive USAID staff in the LAC office, and of USAID country representatives who understood the country's domestic situation, was indispensable.
- The State of Florida's Department of Community Affairs, Division of Emergency Management, should be commended for the work it does in the region, and USAID should consider them a valuable resource.
- The Florida Commission on Community Service provided invaluable technical support in the areas of EOC design and recommendations and exercise planning during this project. USAID should consider them as a valuable resource for future work in the Region.
- Additional funding would have enabled us to do more for some of the countries, such as sponsoring national exercises, and establishing and equipping national and/or mobile EOCs.
- A more detailed inventory of existing donors and their respective activities/funding in each country would have been useful at the beginning of the project.
- An introductory/startup meeting for USGs with the Missions after the signing of the Interagency Agreement should be a mandatory requirement.
- It is recommended that USAID work with the Embassies to calculate ICASS costs directly w/in USAID and not involve the USGs. It was additional cost that USGs were not aware of and did not budget for.
- It would have been helpful to have USAID pay for the USGs' initial needs assessment visits to the counties prior to finalizing the IAA. This would have afforded the Missions the opportunity to comment on the IAA.
- It is evident that Project Impact is popular and effective as demonstrated in the 14 pilot projects that FEMA carried out in the six Central American and Caribbean countries. FEMA recommends that USAID expand this effort by continuing to fund the initiative through its existing grant programs. Project Impact promotes disaster resistant and sustainable communities.

Last Quarter Financial Report

(Cumulative)
Federal Emergency Management Agency
2/28/2002
USAID IAA

COUNTRY	ALLOCATED	ACCRUED OBLIGATION	ACCRUED EXPENDITURES
Honduras	$ 500,000	$ 467,882	$ 458,384
El Salvador	$ 457,445	$ 447,562	$ 409,751
Nicaragua	$ 542,555	$ 542,572	$ 550,781
Guatemala	$ 500,000	$ 485,064	$ 498,821
DR	$ 500,000	$ 492,077	$ 475,688
Haiti	$ 500,000	$ 449,895	$ 443,237
Total:	$ 3,000,000	$ 2,885,052	$ 2,836,662