

*U.S. Agency for International Development
Guatemala – Central American Program
(USAID/G-CAP)*

**CENTRAL AMERICAN PROGRAM MITCH
SPECIAL OBJECTIVE:
IMPROVED REGIONAL CAPACITY TO
MITIGATE TRANSNATIONAL EFFECTS OF
DISASTERS**



**Drafted: Bernai Velarde
Date: April 19, 2000**

**IR4: STRENGTHENING REGIONAL POLICIES THAT REDUCE ENERGY
SYSTEM VULNERABILITIES TO DISASTER**

CONTENTS

1	<i>Executive Summary:</i> _____	1
2	<i>Background:</i> _____	2
2.1	<i>Constraints and Barriers:</i> _____	3
2.2	<i>Conducive Conditions to Program Success:</i> _____	4
2.3	<i>Comparative advantage of USAID/G-CAP:</i> _____	5
3	<i>Relationship with USAID'S/G-CAP Regional Program</i> _____	5
4	<i>Results Framework:</i> _____	6
4.1	<i>Roadmap for Central America Energy Sector</i> _____	7
4.2	<i>Results Framework, Intermediate Result and Results Packages:</i> _____	7
4.2.1	<i>Intermediate Result:</i> _____	7
4.2.2	<i>Program Result 1: Regional Energy Sharing Advanced</i> _____	8
4.2.3	<i>Program Result 2: Improved Efficiency of the Energy Sector Through Restructuring</i> _____	10
4.2.4	<i>Program Result 3: Promote renewable energy and equity (especially for economic reactivation).</i> _____	12
5	<i>Proposed Central American partner institutions:</i> _____	14
6	<i>Proposed Implementation Mechanisms:</i> _____	14
7	<i>Monitoring and Evaluation:</i> _____	15
8	<i>Staffing Requirements:</i> _____	15
9	<i>Illustrative Budget:</i> _____	15

USAID/LAC & G-CAP REGIONAL HURRICANE RECONSTRUCTION:

STRENGTHENING REGIONAL POLICIES THAT REDUCE ENERGY SYSTEM VULNERABILITIES TO DISASTER

1 Executive Summary:

In the wake of Hurricane Mitch, reconstruction efforts offer a unique opportunity to both reduce energy system vulnerabilities to natural disaster and strengthen market-oriented policies that support private investment and development in competitive energy markets on a regional scale. The Central American energy network will be enhanced by promoting private investment in more efficient and disaster resilient infrastructure, while advancing the interconnection system of the region. This \$4.2¹ million Hurricane Mitch Reconstruction Energy initiative will promote policies that are conducive to environmentally-sound, cost-effective energy development, for economic reactivation; and reduce energy system vulnerability to future disasters. To support the region in this effort USAID will provide technical assistance and training for:

- (a) policy reform;
- (b) strengthening regulatory agencies;
- (c) supporting the regional interconnection efforts;
- (d) developing financial tools to support energy projects, and;
- (e) introducing best practices.

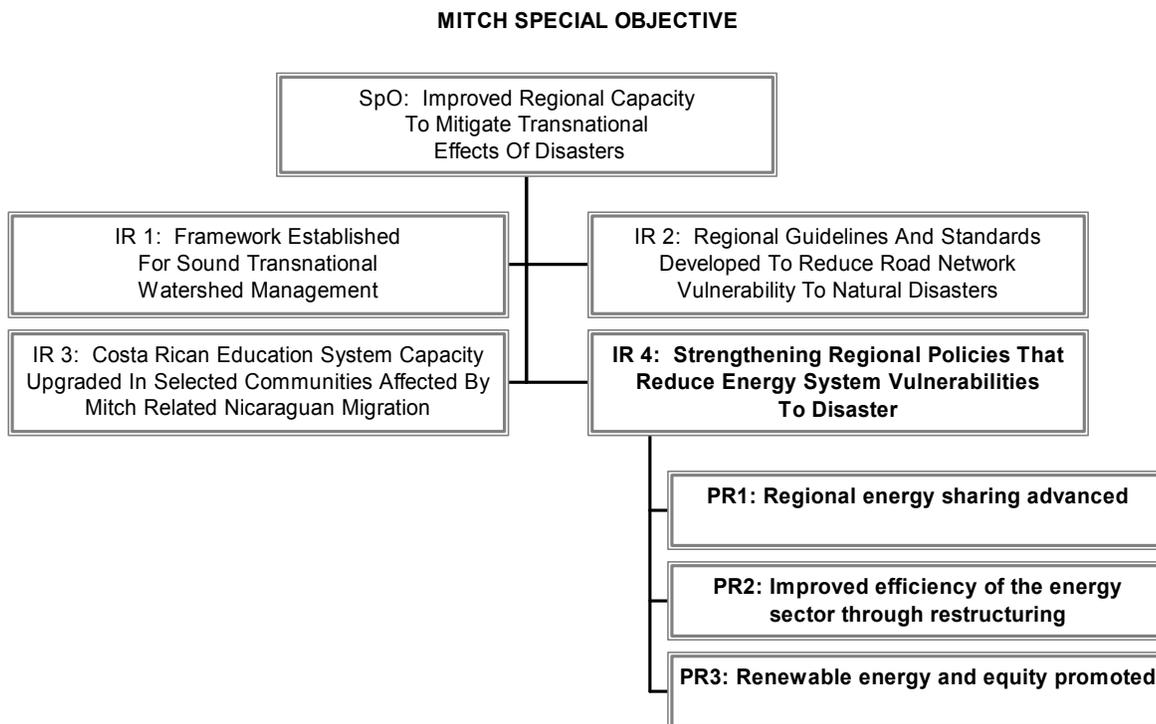
USAID and the Department of Energy (DOE) conducted a Central America Energy Sector Roadmap Study after Hurricane Mitch. This study identified the following guiding principles for the Hurricane Mitch Energy initiative:

- (a) promote the interconnection of the energy system in the region;
- (b) support policy and regulatory harmonization;
- (c) increase energy efficiency via legislation and regulation;
- (d) support policy reform for environmentally friendly energy technologies and approaches;
- (e) promote energy access in rural areas;
- (f) incorporate disaster mitigation response, and resilient infrastructure; and
- (g) build local capacity.

The activities proposed under this document will complement and reinforce the USAID bilateral reconstruction and energy programs. The Hurricane Mitch Energy initiative is part of the Mitch Special Objective (SpO) which seeks “*Improved Regional Capacity to Mitigate Transnational*

¹ This amount includes \$200,000 that has been earmarked for the Department of Energy.

Effects of Disasters.” The SpO has four intermediate results. This paper describes in detail the activities and program results related to **IR4, Strengthening regional policies that reduce energy system vulnerabilities to disasters**. To achieve this objective USAID will concentrate its activities in three program results (PR) as described in the following chart.



2 Background:

Even before Hurricane Mitch, it was unclear how Central America would afford electricity over the next two decades. The region relies mostly on large hydroelectric facilities that are threatened by siltation from deforested and poorly farmed hillsides. In addition, its energy growth rate is over 6% a year. The region undoubtedly faces considerable challenges in its efforts to provide reliable and adequate energy to its people. Nearly one-half of the population (approximately 15 million people) lack electricity. A large portion of the population relies on wood for their cooking, increasing the region's deforestation problems. Power shortages, especially in Honduras and to a lesser extent, Nicaragua, severely hinder economic development. Hurricane Mitch exacerbated the region's energy problems by damaging the energy infrastructure.

USAID/G-CAP will implement a comprehensive program that will lay the foundations for economic and technical reactivation in the energy sector and hereby reduce the sector's vulnerabilities to disaster. USAID/G-CAP will promote market policies that will attract private investment in the energy sector. It will also advance an agenda for regional energy sharing, and; support policy reform that will encourage the use of efficient and climate-friendly equipment that are less vulnerable to natural disasters. To achieve these objectives, certain real and/or perceived constraints and barriers need to be addressed.

2.1 Constraints and Barriers:

- **Limited Privatization and Market Development:** The Central American countries are at different stages of the liberalization process. Innovative regulatory support is needed to continue the unbundling process in activities (i.e., generation, transmission, distribution and retail supply) where economies of scale are not a key factor.
- **Weak Regulatory Bodies:** Newly created regulatory bodies still do not yet have the capabilities to successfully lead energy sector transformations. The countries in the region will benefit from technical assistance (TA) and hands-on training in their respective regulatory and policy agencies. TA and training will help these agencies to further their knowledge of policy options to support privatization, rural electrification, technology diversity and development of a regional electricity and natural gas market. Countries in the region lack trained energy auditors and adequate consumer information to monitor competition, prices and service quality.
- **Poor Understanding of how to Promote Better Approaches and Technologies:** Existing power purchase policies strongly favor the building and operation of relatively inefficient, high emission, liquid petroleum-fueled power plants. Renewable and clean energy technologies are not sufficiently competitive to attract private sector investment without government subsidy. There is a need to setup legal procedures and methodological approaches that promote the use of cost-effective energy and environmentally friendly technologies with minimum or no subsidies.
- **Limited Approaches to Rural Electrification:** Central grid extension is still considered the only valid approach to rural electrification (to meet the needs of the under-served). However, grid extension is not economically viable in areas of low population density and/or low demand for power. The region needs assistance in promoting rural off-grid utilities favoring allocation to private sector firms that require the lowest subsidy to provide the service.
- **Lack of Regulatory Framework for Natural Gas:** There are on going talks between Mexico, Columbia and the region, to introduce natural gas to Central America through pipelines. The countries need to determine if there is a regional market for this product. If the answer is yes, then each country (and the region as a whole) needs to develop a regulatory framework that will clearly define the roles and authority of each party. This includes: 1) the creation of a regional regulatory entity responsible for regional policy; 2) defining each Country's counterpart institution responsible for coordinating with the regional regulatory entity; 3) developing technical and environmental norms to monitor the construction, operation and maintenance of the pipeline, and 4) developing norms and procedures to store and distribute natural gas, as well as other related activities that have not been initiated in Central America.

2.2 **Conducive Conditions to Program Success:**

Progress, however, has been made in addressing some of the constraints and barriers.

- **Private Sector Investment:** Large amounts of foreign, private sector investment are flowing into the region as the power sector privatization processes move forward, thus validating predictions of the early benefits of privatization.
- **Donor Resources:** Large amounts of donor aid are becoming available. Stockholm Donors Conference pledges indicate that \$9 billion will be available for Hurricane Mitch Reconstruction, of which approximately 5% are destined for energy sector reconstruction. While USAID energy efforts remain small relative to needs, we have the opportunity to influence the use of millions of dollars from multi-lateral banks and private sector sources for energy use.
- **Lower Cost:** The privatization efforts continue to promise lower electricity costs to producers increasing competitiveness and to consumers, thereby creating more disposable income.
- **Incipient Education Efforts for Regulatory Bodies:** Partnerships and executive exchanges and hands-on technical assistance between new Central American electricity regulators and counterparts in the United States are improving the new regulatory bodies.
- **Growing Interest in Off-Grid Approaches for Rural Electrification:** Governments are anxious to maintain the new peace in Central America and see rural electrification as a key element toward achieving success. In some cases, proceeds from utility privatization are being allocated for rural electrification programs. Electricity generation alternatives based on renewable resources, such as solar, wind, waste biomass, small hydropower and geothermal energy, may provide economically viable alternatives to grid extension.
- **Incentives for Renewable Energy Use:** The countries are also seeing that large-scale development of their many renewable energy resources frees them from dependence of imported fuels whose prices they cannot control, improves their balance-of-payments, provides a strong basis for economic development, and improves resilience to future natural disasters.
- **Local Government Incipient Projects:** Central American governments have begun encouraging the use of renewable energy for remote villages, and the positive results have encouraged a growing interest by communities and governments for further assistance.
- **Strong Central American interest:** The USAID-DOE Central America Energy Roadmap found near unanimous demand by public and private energy interests for technical assistance and training in improved energy practices and technologies. Central America also wants to decrease its overall vulnerability to natural disasters and its reconstruction and recovery dependency on foreign donors by increasing their capacity to resist and respond to disaster.
- **Other USG Assistance:** The Departments of Agriculture, Commerce and State have begun reconstruction work in the region. Of note is the watershed management, protection and restoration project underway by the USDA. This \$7 million watershed work has direct implications on the hydropower capacity of the region.

2.3 Comparative advantage of USAID/G-CAP:

USAID/G-CAP has established a strong working relationship with the leaders of the region that are responsible for implementing policy reform in the energy sector for each country. We have assisted El Salvador, Guatemala and Nicaragua in establishing their regulatory and policy framework and provided technical assistance to strengthening the regulatory agencies in each of these countries. USAID/G-CAP provides quality technical assistance and responds quickly and effectively to the requests from the Missions² in Central America. USAID/G-CAP maintains close coordination and contacts with our Missions and Embassies in the region. The PROALCA project provides technical assistance to Central American countries for the establishment of a competitive framework in energy, to foster efficiency and investment by eliminating outdated restrictions. With these fundamental changes, Central America has been able to attract about \$4 billion in new investment over the last three years. PROALCA activities support the unbundling process, promote private sector investment, and, improve the competitiveness and efficiency of the energy industry. It is important to note that most of the proposals under the Hurricane Mitch Energy Initiative are complementary and mutually supportive activities for those that USAID/G-CAP is currently implementing in the region.

3 Relationship with USAID’S/G-CAP Regional Program

USAID’S/G-CAP and Mitch program are highly complementary and supportive of each other. The focus of the on-going regional program is to increase private sector investment in energy by promoting sound regulatory policies. The focus of the Mitch program is to develop regional policies that reduce the energy system vulnerabilities to disaster, i.e., place more emphasis on renewable technologies which have demonstrated greater capacity to withstand impact of disasters, facilitate regional power sharing an essential element to reduce energy system vulnerabilities, and accelerating restructuring processes in Honduras and Nicaragua, the two countries hit hardest by Mitch. Because of Mitch these countries have shown heightened interest in speeding up energy system reform as part of their own national strategies to reduce vulnerability. Such specific actions at the individual country level are needed to develop a more effective regional energy market and power sharing arrangements.

Under strategic objective No. 1, “Increased CA Participation of Global Markets,” USAID/G-CAP has intermediate result No. 3, which seeks to increase private investment in energy and telecommunication in the region. Under the existing program, USAID/G-CAP is supporting the liberalization of the power and telecommunication sector by providing technical assistance for developing sound regulatory frameworks to encourage sustainable energy investment. Some of the major activities conducted to date include the following:

- ☛ **El Salvador:** USAID provided technical assistance in the development of the general regulations that support El Salvador’s new electricity law. In addition, it prepared model contracts which El Salvador could use when negotiating power purchase agreements with private developers of generation plants. Technical assistance was also provided to support the development of contracts covering international electricity transactions with Guatemala.

² USAID/El Salvador is a satisfied customer and partner of our regional program. The Mission in El Salvador has added \$500,000 to the program in order to receive additional services.

USAID also assisted in the development of a new tariff methodology for the distribution companies to allow phased increased in tariffs.

- **Guatemala:** During the drafting of Guatemala’s new electricity law, the government of Guatemala sought assistance from USAID to develop an overall action plan for the restructuring and privatization of the sector, drafting laws, regulations and assistance in the unbundling and restructuring process. This included providing the government with an analysis of the options for unbundling the operations of the National Electrification Institute (Spanish Acronym: INDE) and the Electric Company of Guatemala (Spanish Acronym: EEGS).
- **Nicaragua:** USAID’s/G-CAP main objective in assisting Nicaragua was to finalize the electricity law and support the decision-making process on the restructuring of the power sector.
- **Honduras:** USAID provided assistance to draft the Electricity Law that was submitted to the Energy Commission of Congress.

The Mitch Energy IR is complementary to the efforts made by USAID/G-CAP. The funds earmarked under Mitch will heavily support the two countries (Honduras and Nicaragua), which were hardest hit by Mitch. Nicaragua has just initiated the liberalization process of the energy sector, while Honduras has still not approved its new Electricity Law. In addition, power sector programs for rural electrification, renewable energy, and resilience have not received the same level of attention from the governments of the region. These areas must be addressed to ensure maximum socio-economic and environmental benefits from restructuring and privatization.

A key aspect of that will be complemented with Mitch resources is the regional interconnection aspect. The interconnection will increase energy security and the reliability of energy supplies to individual countries. “The extensive damage caused by Hurricane Mitch and the fire that closed down generating capacity at the El Cajon hydroelectric generating stations in Honduras has again drawn focus to the benefits of regional electricity interconnection in Central America.”³ Technical assistance will be provided to harmonize rules and regulations to make them compatible among the countries of the region to support regional electricity and natural gas development.

4 Results Framework:

The highest priority for the energy sector in the region is policy reform and implementation. In cooperation with the Central American leaders the policy reform foundation has been laid to attract increased levels of private investment. The overall objectives of the Hurricane Mitch Energy initiative is to: (a) promote policies that support private sector investment and development of a competitive energy market on a regional scale; (b) reduce energy system vulnerability to disasters, and; (c) promote policies that encourage investment in environmentally clean energy. Mechanisms to accomplish this may include but will not be limited to promoting

³ USAID/DOE, Roadmap for Central American Energy Sector Reconstruction and Development, July 1, 1999, page 6.

financial tools, technology transfers, policy reforms, strengthened institutions, and sharing of best practices.

4.1 Roadmap for Central America Energy Sector

Guiding principles for the Hurricane Mitch Energy initiative, based in large part on the draft USAID/DOE “Energy Sector Roadmap” for Central America, are to:

- **Disaster, Mitigation, Response and Resilience:** Tying into the overall USG hurricane reconstruction goals of reducing the impacts of future natural disasters, the Hurricane Mitch energy initiative will promote the adoption of standards, codes and design criteria in the systems to enable them to more likely survive the next hurricane.
- **Promote Regional Integration:** Support energy generation and transmission efforts to promote in-country and cross-border line connections with technical assistance programs. Support the development of consistent legal, regulatory and institutional frameworks that encourage private investment in regional energy infrastructure including the Central American Countries Interconnection System (Spanish Acronym: SIEPAC).
- **Promote Energy Efficiency:** Increased energy efficiency should be a priority goal in Central American countries. The USG should encourage optimal energy efficiency via legislation and regulation. Technical assistance should be provided to assess the role of legislation and regulations in helping Central American Countries achieve end-use energy efficiency objectives.
- **Promote Environmentally Sound, Climate-friendly Technologies and Approaches:** Optimal cost-effective environmental-friendly energy sources and approaches will be supported. Activities will support the San Jose Declaration and the climate-change initiatives of the Santiago Summit of the Americas and promote energy options that reduce pollutants or protect tropical forests.
- **Universal Coverage and Poverty Reduction:** Priority should be given to activities that promote energy access for the poor, or those who lack reliable and adequate energy sources. Most of those people live in rural areas where electric grid extension is very costly and unlikely to occur.
- **Fuel Source Diversity:** Promote fuel source diversity to enhance the energy security by mitigating the potential impacts of world energy market fluctuations and help reduce damage from natural disasters.

4.2 Results Framework, Intermediate Result and Results Packages:

4.2.1 Intermediate Result:

A three-prong program to reduce the overall energy system vulnerability to disasters in Central America is proposed to: (1) help advance the regional energy sharing activities; (2) promote improved energy efficiency, and; (3) promote renewable and environmentally sound energy policies and equity. The three programs are described below:

4.2.2 Program Result 1: Regional Energy Sharing Advanced

The benefits of regional power sharing are considered essential for the region to achieve sustainable growth and improving its overall resilience to natural disasters. Establishing a regionally unified energy system will allow for power requirements in one locality to be met by accessing underutilized generation capacity anywhere on the grid. Excess energy will not be wasted, but can instead be sent to underserved markets reducing the demand for the construction of costly new power generating facilities to meet local demand and improving resistance to natural disasters.

A regional grid system is essential to creating a larger, regional energy market. The small size and uncertain energy demands of Central America's national energy markets limit private investment in the energy sector. Central American countries have small populations ranging from approximately four to twelve million people. Energy related businesses have to respond to each country as a separate market. Pooling the region's total population of approximately thirty-five million people will create a dynamically different market that will: attract new private-sector investments that can take advantage of economies of scale; support development of regional projects that cannot be justified on a country specific basis; and produce least cost options that will reduce prices and help address the needs of currently underserved consumers. Larger projects will also improve the efficiency of converting fuel to electricity, reducing net pollution and greenhouse gas emissions per kilowatt-hour produced.

Regional energy sharing will also improve resistance to energy losses caused by natural disasters. A country struck by a disaster can compensate for the loss of local electric power by importing energy from a neighboring country. Strengthened transmission networks – a so-called “web” of networks – can safeguard power flow in the event of either a power outage or disruption of transmission lines. Grid lines reinforced through extensive redundancies and multiple paths, can securely transmit power from the plant to the substation and from there to the distributor and the consumer. Immediately after Hurricane Mitch, a 25 MW power shortfall in Guatemala was filled by purchases of power from El Salvador. This power was available due to their international transmission grid interconnection.

As part of the San Jose Accord, the Inter-American Development Bank (IDB) is supporting the Central American Countries Interconnection System (Spanish Acronym: SIEPAC), and intends to interconnect six Central American countries through a US \$350 - \$400 million, 1,800 km of transmission line between Panama and Guatemala. USAID grant funds will support and complement IDB's effort in the creation of a market oriented technical and regulatory regional agency for managing a restructured and regionally integrated power system.

Central American national laws and tariff structures related to grid connection, and interconnection agreements need to be reviewed and protocols established. Country policies and regulatory frameworks need to be consistent to facilitate the formation of a regional regulatory entity. USAID/G-CAP will provide assistance for drafting regional and country policies that are complementary and supportive of the regional market for energy.

4.2.2.1 Proposed Activities to Achieve Program Result1:

The following activities will reduce the vulnerability of the energy sector in Central America by allowing the demand for energy in the region to be accessed from underutilized capacity from anywhere in the grid and, by promoting private sector investment in natural disaster resilient infrastructure.

- **Bilateral Interconnections**: There are existing interconnections that have formed the beginnings of a regional transmission system. The regional transmission system will promote new generating facilities and wholesale energy markets across national borders, reduce adverse environmental impacts, and exploit regional and seasonal load diversities. Through technical assistance, USAID will help introduce elements providing for bilateral interconnections in the regulatory framework of the countries. Technical assistance and hands-on training will support the development of operating rules and procedures for managing these connections and the newly planned transmission connections.
- **Regional Association Support**: The energy initiative will continue to support the recently formed regional association of electricity regulators in efforts to harmonize rules and regulations relating to the energy market among the Central America countries. Assistance will focus on building the capacity of the countries to establish domestic regulations that are complementary and harmonious, and that will allow for the regional marketing of energy and promote standards, codes and design criteria to insure disaster resilience of the energy network
- **Wholesale Market Development**: The energy initiative will help form a regional electric power pool (i.e., power sharing to avoid “brown-outs”) and will strengthen existing country-specific wholesale markets among utilities that conduct bulk electricity sales through technical assistance and training. The goal of these efforts is to enable the efficient management of regional electrical power resources and mitigate natural disaster impacts by pooling electric power to affected areas from non affected areas during a disaster crisis.
- **Transmission Network Strengthening**: Through a training program, the energy initiative will introduce transmission network operators to the latest information technology to control, operate, and meter large, national networks. These technologies can significantly improve the efficiency and reliability of the operation in the transmission network.
- **Capacity Building**: Individuals within key communities, government agencies, institutions and electric utilities will be strengthened for accomplishing the IR1 activities. Included will be on-the-job training, seminars, study tours, US and in-country based courses and workshops.

4.2.2.2 Indicators for Program Result 1:

- Twelve (12) Institutions strengthened technically so bilateral interconnections are improved, a regional association can function, wholesale markets can be developed, and/or transmission networks can be strengthened.
- A regulatory framework and by-laws for a regional regulatory agency drafted.
- Central American countries draft and negotiate bilateral grid protocol governing the exchange of electricity.

- Four national policies drafted and promoted to support energy efficiency and encourage the adoption of standards, codes and disaster resilient design criteria for energy system and equipment.
- Four national energy emergency preparedness plans drafted that will guide decision makers through the steps of protecting the energy sector before, during and after disaster.

4.2.2.3 Estimated Budget for Program 1: \$1,000,000

4.2.3 Program Result 2: Improved Efficiency of the Energy Sector Through Restructuring

Increased energy efficiency through restructuring is a priority for all the countries in Central American. USAID/G-CAP has assisted the countries in laying a competitive regulatory that will attract private sector investment. USAID assistance in energy while small relative to the scope of the problem plays a critical role because of the Agency's ability to leverage additional energy investments. Key opportunities for leveraging include:

- Power sector restructuring resulting in major private sector investment in disaster resistant and environmentally sound energy.
- Planned and anticipated larger reconstruction support in the energy sector from other multilateral development banks, commercial banks and private investment.
- New innovative energy financing options.

Multilateral development banks have significant funds for loan purposes but are handicapped by their severe limitations of grant funds for technical assistance. By providing technical assistance and funding for targeted studies, USAID has successfully leveraged hundreds of millions of dollars for improved energy efficiency loans from the World Bank and the Interamerican Development Bank. USAID will continue to work with these institutions to help provide the financing to assist in the implementation of the energy policy and legal frame work that is required to attract private sector energy investment in the region.

Adequate energy policies and regulatory framework are essential for restructuring and privatizing the energy sector. Energy policies in some Mitch-affected countries discourages long-term investments by the private sector. The existence and behavior of parastatal utility companies limit the ability of energy providers to acquire long-term financing to pay for capital investments. The countries' power sectors are just emerging from parastatal utilities that controlled energy generation, transmission, and distribution. To garner needed energy supplies, these utilities would only enter into short-term agreements to purchase energy from power suppliers. Because the agreements were short-term, power suppliers were not able to convince financial institutions to provide them with long-term loans to upgrade or augment energy facilities. This financial barrier has been especially detrimental to companies whose generation is based on renewable energy technologies because renewable energy systems tend to have high "up front" capital costs. Only providers able to provide cheap, short-term energy (usually based on carbon intensive fossil fuels) could compete in this environment. Privatization of the power

sector of the region is changing this environment. Parastatal utilities are being sold, with each country anticipating revenues from foreign investment in these assets of hundreds of millions of dollars. The countries' desires for energy security is also driving them to provide extra incentives for generation capacity based on indigenous, renewable energy technologies, and to eliminate subsidies for residential, agricultural and industrial energy consumption which reduce or eliminate the economic incentives for efficient energy use renewable energy technologies. USAID's energy initiative will be providing support for the analyses and training needed for restructuring and privatization to advance.

4.2.3.1 Proposed Activities to Achieve Program Result 2:

- **Reducing Infrastructure Vulnerability:** The best way to mitigate or reduce the energy system's vulnerability to natural disaster is to accelerate the divestiture process from the government to the private sector. The private sector has the technical expertise to abide by building standards that resist or minimize the danger that different types of natural disasters have on infrastructure. Technical assistance will be provided to the government agencies to develop guidelines, standards and codes to be met by the private sector in the energy sector.
- **Developing an Improved Policy Environment to Level the Playing Field:** The Central American Countries are at different stages of the liberalization process and are pursuing various approaches to reform their power sectors. This Program will encourage optimal energy efficiency via legislation and regulation. Key country-specific policy and regulatory interventions related to energy privatization and pricing will be developed in close coordination with USAID Missions and other donors.
- **Strengthen the Regulatory Agency:** Technical assistance will be provided to the independent regulatory agencies of the region so they can better perform their supervisory functions in the areas of tariff, oversee the operational monopoly components of the system, as well as its competitive aspects.
- **Privatization and Unbundling:** Technical assistance will be given to the governments to complete the privatization and unbundling process by supporting market policy incentives so that separate entities may operate efficiently and competitively. Nicaragua and Honduras trail El Salvador and Guatemala in the sector.
- **Commercialization:** A large portion of the generating capacities of the region are owned by the governments. Technical assistance in commercialization will be provided to improve management and operational policies that govern state-owned enterprises. Subsidies will be targeted for removal, including state guarantees for borrowing. State-owned enterprises should become subject to the same tax laws, prices, and accounting rules as private sector companies.
- **Diversify Energy Fuel Sources:** Natural gas pipeline options entering Central America will be assessed as one method to reduce electricity prices and improve environmental impacts. Important components of the assessment will be consideration of all environmental and socio-economic issues related to pipeline construction and maintenance.
- **Capacity Building:** Individuals within key communities, government agencies, institutions and electric utilities will be strengthened for accomplishing the IR2 activities. Included will

be on-the-job training, seminars, study tours, US and in-country based courses and workshops.

4.2.3.2 Indicators for Program Result 2:

- Technical assistance and training will be provided to each country to draft and implement energy regulatory policies, framework, and regulations by independent regulatory agencies.
- Privatization and unbundling process promoted in each country and technical assistance provided to further the process.
- Private sector participation in generation, transmission and, distribution in each country.
- Regulatory agencies evolved into technical entities with functional and economic autonomy, regulating the activities in generation, transmission distribution and wholesale market. Monitoring the quality of services provided by the utilities and assuring the competitiveness of the industry.
- Methodology developed to charge market based prices in each country.
- Guidelines to eliminate subsidy of government owned utilities are drafted. Technical assistance is provided to implement market policies for state-owned enterprises.
- Drafting guidelines, standards, codes and design criteria for the energy infrastructure that will insure disaster resiliency.

4.2.3.3 Estimated Budget for Program Result 2: \$1,500,000

4.2.4 Program Result 3: Promote renewable energy and equity (especially for economic reactivation).

The region lacks adequate policies and programs to promote environmentally friendly, cost-effective, and dependable energy sources to facilitate short and long term reconstruction efforts in Central America. Sustainable renewable energy may provide innovative solutions to immediate development needs while also benefiting the local environment. The myriad of reconstruction efforts required by the communities affected by Hurricane Mitch requires a variety of integrated development projects.

Under the current energy policy framework which does not require the internalization of pollution costs to the energy generating source, renewable and clean energy technologies are at a serious disadvantage. As a result of this distorted incentive structure, private investors are dissuaded from investing in renewable and clean energy projects. The most effective way to support these technologies is by allowing them to compete on the same basis of fuel fossil energy projects. The region's policy makers need to recognize the negative externalities resulting from fossil fuel generated power, and develop appropriate compensatory adjustments for renewable and clean energy production.

USAID has had much success incorporating climate-friendly technologies to promote economic objectives in the region. In Honduras, off-grid electric utilities have been established so that some of the rural poor now have access to cost-effective, climate-friendly electricity for basic

amenities. This electricity is generated by solar photovoltaics, and paid by a monthly fee. With USAID/G-CAP's assistance, Fundacion Solar and Winrock International provided technical assistance for renewable energy in the region. These organizations have promoted projects that use hydro, geothermal and wind. On the equity side, Fundacion Solar has a renewable energy program at the village level. Over the last four years, more than 1,500 solar photovoltaic panels have been deployed in the field providing energy services to more than 7,000 rural inhabitants in Guatemala.

4.2.4.1 Proposed Activities to Achieve Program Result 3:

- **Support Policies for Renewable Energy Implementation:** Policy guidelines, regulations and financial incentive mechanisms will be developed to promote private sector investment in clean and renewable energy. Renewable and clean energy technologies are not sufficiently competitive to attract private sector investment without government subsidy. USAID will support a policy dialogue with the governments to analyze the convenience of providing subsidies to private sector firms to finance off-grid activities. If the countries are willing to support this initiative, then there will be a need to setup a mechanism to minimize the required subsidy to invest in these technologies. A model like that developed in El Salvador (with technical support from USAID/G-CAP's regional energy program) will be explored. This includes setting-up a legal framework to compete rural, off-grid, and renewable utilities by favoring the allocation to private sector firms that require the lowest subsidies.
- **Proposing Innovative Financial Mechanisms for Energy:** Options to finance rural sector energy projects will be explored. USAID will assess various revolving funds that have worked in the hemisphere and promote its replication in the Central American countries. USAID/RUDO recently ended a successful Municipal Infrastructure Finance Program (Spanish Acronym: PROMUNI) in Central America which provided financing to communities so that they could connect to the grid system. The program which was implemented by the Central American Bank for Economic Integration (CABEI) was able to attract considerable financial support from private banks and NGOs in the region. USAID will continue to encourage local Central American institutions to invest in such activities.
- **Capacity Building:** Individuals within key communities, government agencies, institutions and electric utilities will be strengthened for accomplishing the IR3 activities. Included will be on-the-job training, seminars, study tours, US and in-country based courses and workshops.
- **On the Ground Renewable/Clean Energy Projects:** USAID/G/ENV/EET will coordinate the efforts for renewable and clean energy activities. G/ENV/EET led the joint USAID/DOE Central America Energy Sector Roadmap Study after Hurricane Mitch and is familiar with all the issues and opportunities that exist in the region. The G/ENV/EET Office will replicate a highly successful USAID/DOE renewable energy program that it developed in Mexico and use it as a model for Central America. USAID and DOE already have the implementation mechanisms in place and can proceed quickly without significant management attention from the Bilateral Missions. The Bilateral Missions would be involved in the defining the role and definition of the program and clearing the activities to be implemented in their respective countries.

4.2.4.2 Indicators for Program Result 3:

- Ten institutions strengthened so they understand how renewable energy and energy efficiency technologies and approaches can help them meet their objectives, and/or they can maintain renewable energy and energy efficiency technology and systems.
- Models for innovative financial energy needs are developed.
- National policies developed (in the four Mitch affected countries) and implementing institutions strengthen so they may facilitate and encourage renewable and environmentally sound technologies in energy.
- Development of efficiency and emission standards for common energy consuming equipment.
- From two to ten projects using renewable energy systems will be developed.

4.2.4.3 Estimated Budget for Program Result 3: \$1,500,000.

5 Proposed Central American partner institutions:

Wholesale Market Administrator (Guatemala and El Salvador)

Asociación Regional de Comisionados (Regional Association of Regulatory Commissioners)

National Energy Regulatory Commissions (e.g., Guatemala, El Salvador, Honduras, Nicaragua)

Fondo de Inversión Nacional en Electricidad y Telecomunicaciones (FINET) - El Salvador

National Energy Ministries:

Ministerio de Energía y Minas (MEM) - Guatemala

Instituto Nacional de Electrificación (INDE) – Guatemala

Ministerio de Recursos Naturales y Ambiente - Honduras

Empresa Nacional de Energía Eléctrica (ENEE) – Honduras

Ministries of Economy and Natural Resources of El Salvador (cover the energy sector)

Empresa Nicaragüense de Electricidad (ENEL) – Nicaragua

National Energy Ministry and related institutions in Costa Rica

National Energy Ministry and related institutions in of Panama

National Energy Ministry and related institutions in of Belize

National Ministries of Health, Education, Agriculture, Natural Resources and Telecommunications

Fondo de Inversión Social para el Desarrollo Local (FISDL) - El Salvador

Comisión Nacional para el Desarrollo Sostenible (CONADES) - Nicaragua

Central American council for Electrification (CEAC)

FHIS (Honduran Social Investment Fund) – Honduras

6 Proposed Implementation Mechanisms:

An IQC task order will be competed among the three energy IQC firms for the policy reform activities supporting program results 1-3. G/ENV/EET will manage the renewable and clean

energy activities under Program Result 3 through its existing implementation mechanism within the Agency and with DOE.

7 Monitoring and Evaluation:

It is expected that funds for these energy activities will be obligated through USAID/G-CAP and USAID/G/ENV/EET, with the exception of the \$200,000 Inter-Agency Agreement with the Department of Energy for hurricane reconstruction activities. The contractor and grantee will prepare semi-annual progress reports to be reviewed by LAC/RSD/E, G/ENV/EET, bilateral Central American Missions, and USAID/G-CAP, based on the results indicators for which they are responsible. In addition to Mission staff, USAID/G-CAP, LAC/RSD/E and G/ENV/EET will visit field sites as frequently as feasible and merited. USAID/G-CAP and G/ENV/EET will coordinate all implementing activities with the USAID Mission staff and jointly determine the program direction. USAID/G-CAP and Mission staff will be key in the monitoring of this initiative.

8 Staffing Requirements:

USAID/G-CAP will manage the activities described under Intermediate Results No. 4 "Strengthening Regional Policies that Reduces Energy System Vulnerabilities to Disaster." The three programs will be managed by the Office of Trade and Economic Analysis with its current personnel structure. A Project Officer will be charged with the responsibility of managing these activities. Administrative support will be provided by a Project Development Assistant from the Office of Trade and Economic Analysis of USAID/G-CAP. This existing position will be financed by funds from this IR.

9 Illustrative Budget:

(1)	Regional energy sharing:	\$1.0 million
(2)	Improved efficiency of the Energy Sector through Restructuring:	\$1.5 million
(3)	Promote equitable energy and equity:	\$1.5 million
	a. Policy Reform	\$0.5 million
	b. On the ground renewable activities ⁴	\$1.0 million
(3a)	IAA with U.S. Department of Energy ⁵ :	\$0.2 million
	TOTAL BUDGET	\$4.2 million

⁴ G/ENV/EET will directly manage this activity.

⁵ DOE will submit a proposal directly to USAID/G-CAP. The activities proposed by DOE will support the IR 4 objective to strengthen regional policies that reduce energy system vulnerabilities to disaster in an environmentally sound manner.

Document Revised Date: April 19, 2000
File Name: Mitch Regional Energy Draft from TEA, Version 9