



 United States Department of Transportation

## **Organization of American States Unit for Sustainable Development and Environment**

### **Mechanisms for Mutual Assistance in Case of Damage and Vulnerability Reduction of Transportation Infrastructure in Central America**

#### **Working Document**

Prepared with the support  
of the Department of Transportation  
of the United States of America  
as part of the  
Western Hemisphere Transport Initiative (WHTI)  
Priority Action Area 3

Washington, DC  
February 28, 2001



## TABLE OF CONTENTS

|  |     |
|--|-----|
| ACKNOWLEDGEMENTS .....                                       | vii |
| PREFACE .....  | xi  |
| ACRONYMS.....  | xv  |
| INTRODUCTION.....  | 1   |
| PART 1: OVERVIEW .....                                       | 5   |
| Vulnerable Components .....                                  | 5   |
| Mechanisms for Regional Cooperation Assistance.....          | 6   |
| Mechanisms for International Cooperation and Assistance..... | 9   |
| PART 2: CONCLUSIONS AND RECOMMENDATIONS .....                | 11  |
| Vulnerable Components: Conclusion.....                       | 11  |
| Vulnerable Components: Recommendations.....                  | 11  |
| Mechanisms for Assistance: Conclusions .....                 | 12  |
| Mechanisms for Assistance: Recommendations .....             | 14  |
| Participants in Assistance: Conclusions .....                | 16  |
| Participants in Assistance: Recommendations .....            | 16  |
| Goods and Services: Conclusions .....                        | 17  |
| Goods and Services: Recommendations .....                    | 17  |
| Financing: Conclusions .....                                 | 18  |
| Financing: Recommendations .....                             | 18  |

### List of Figures

|            |   |    |
|------------|---|----|
| Figure 1.1 | Assistance Mechanisms for Infrastructure Damage in the Transportation Sector in Central America in the Case of Hazardous Events: Current Situation                  |    |
|            | Air Transportation.....   | 19 |
| Figure 1.2 | Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America in the Case of Hazardous Events: Current Situation |    |
|            | Air Transportation.....   | 21 |
| Figure 1.3 | Alternative Assistance Mechanisms for Infrastructure Damage in the Transportation Sector in Central America in the Case of Hazardous Events                         |    |
|            | Air Transportation.....   | 23 |

---

|            |   |    |
|------------|---|----|
| Figure 1.4 | Alternative Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America in the Case of Hazardous Events        |    |
|            | Air Transportation.....   | 27 |
| Figure 2.1 | Assistance Mechanisms for Infrastructure Damage in the Transportation Sector in Central America in the Case of Hazardous Events: Current Condition                  |    |
|            | Maritime Transportation.....  | 31 |
| Figure 2.2 | Assistance Mechanisms for Vulnerability Reduction in the Transportation Sector Infrastructure in Central America in the Case of Hazardous Events: Current Condition |    |
|            | Maritime Transportation.....  | 33 |
| Figure 2.3 | Alternative Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America in the Case of Hazardous Events                         |    |
|            | Maritime Transportation.....  | 35 |
| Figure 2.4 | Alternative Assistance Mechanisms for Vulnerability Reduction Transportation Sector Infrastructure in Central America in the Case of Hazardous Events               |    |
|            | Maritime Transportation.....  | 39 |
| Figure 3.1 | Assistance Mechanisms for Infrastructure Damage in the Transportation Sector in Central America in the Case of Hazardous Events: Current Situation                  |    |
|            | Land Transportation.....  | 43 |
| Figure 3.2 | Assistance Mechanisms for Vulnerability Reduction Transportation Sector Infrastructure in Central America in the Case of Hazardous Events: Current Situation        |    |
|            | Land Transportation.....  | 45 |
| Figure 3.3 | Alternative Assistance Mechanisms for Infrastructure Damage in the Transportation Sector in Central America in the Case of Hazardous Events                         |    |
|            | Land Transportation.....  | 47 |
| Figure 3.4 | Alternative Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America in the Case of Hazardous Events        |    |
|            | Land Transportation.....  | 49 |
| Figure 4   | Assistance Mechanisms for Damage and Vulnerability Reduction: State of the Situation.....   | 51 |

---

|             |  |       |
|-------------|--|-------|
| Figure 5    | Proposed General Program for the Development of Assistance for<br>Damage and Vulnerability Reduction of Transportation Sector<br>Infrastructure in Central America in the<br>Case of Natural Disasters ..... | 55    |
| Appendix A: | Cuestionario para Encuestas .....  | A - 1 |
| Appendix B: | Autoridades que Respondieron las Encuestas.....  | B - 1 |
| Appendix C: | Convenio de Asistencia Mutua para la Reducción de<br>Vulnerabilidad de Daños en la Infraestructura del Sector<br>Transporte en Centroamérica ante la Ocurrencia<br>de Eventos Naturales Peligrosos.....      | C - 1 |
| Appendix D: | Pautas para un Proceso Prelicitatorio.....   | D - 1 |



## ACKNOWLEDGEMENTS

During the preparation of this document, many institutions and individuals gave freely of their time, knowledge and experience to help collect, analyze and comment on the current and future state of mutual assistance in case of damage to transportation sector infrastructure and its vulnerability reduction in Central America. While it is impossible to adequately acknowledge all those who contributed to the preparation of this document, it is possible to mention the contributions from the collaborators identified below.

Representatives of the different transportation modes in Central America were generous in providing information through the survey forms, as well answering questions and commenting on conclusions and recommendations as they were drafted.

### Air Transportation

#### El Salvador

Lic. José A. Estrada Vega  
Gerente Aeropuerto El Salvador  
Comisión Ejecutiva Portaria Autónoma

Mauricio E. Rival Rodas  
Subdirección General  
Dirección General de Transporte Aéreo del Salvador

Lic. José R. Rodriguez Gutierrez  
Director General de Transporte Aéreo  
Aeropuerto Llopango

#### Guatemala

Cap. Javier A. García  
Director General de Aeronáutica Civil  
Aeropuerto La Aurora

#### Honduras

Lic. Luis R. Leiva Teruel  
Director General de Aeronáutica Civil  
Aeropuerto Toncontín

#### Nicaragua

Lic. Uriel Lanzas Gallo  
Director General de Aeronáutica Civil  
Aeropuerto Internacional de Managua

Panamá

Jaime I. Fábrega Q.  
Director General  
Dirección de Aeronáutica Civil

COCESNA

Lic. Eduardo Marin  
Gerente General

Uriel Urbizo Fley  
Gerente CNS/ATM

**Maritime Transportation**

Costa Rica

Juan R. Rivera  
Presidente Ejecutivo  
Junta de Administración Portuaria y de Desarrollo Económico (JAPDEVA)

Ing. Guillermo Ruiz Castro  
Presidente Ejecutivo  
Instituto Costarricense de Puertos del Pacífico (INCOP)

Alfredo Walker Brown  
Jefe  
Departamento de Planificación, JAPDEVA

El Salvador

Mario Chávez  
Comisión Ejecutiva Portuaria (CEPA)

Guatemala

Juan Garrido  
Director  
Comisión Portuaria Nacional

Nicaragua

Carlos Morice  
Presidente Ejecutivo  
Empresa Portuaria Nacional (EPN)

Panamá

Juan A. Manelia  
Jefe de Control de Contaminación  
Autoridad Marítima de Panamá

## **Land Transportation**

### Costa Rica

Alvaro Escamilla Gutierrez  
Director General de Emergencias  
Ministerio de Obras Públicas y Transportes

### EL Salvador

Oscar A. Diaz Ruiz  
Director Unidad de Planificación Vial  
Ministerio de Obras Públicas

### Guatemala

Edelberto A. Teos Morales  
Jefe del Departamento de Gestión Ambiental  
Dirección General de Caminos

### Honduras

Ing. Ana María Pavón  
Jefe Unidad Apoyo Técnico  
Secretaría de Estado en los Despachos de Obras Públicas, Transporte y  
Vivienda  
Dirección General de Carreteras

### Nicaragua

Mario Palacios  
Jefe de Planificación  
Ministerio de Transporte

### Panamá

Ing. Federico Bequer  
Director Nacional de Mantenimiento  
Ministerio de Obras Públicas  
DINAMAN

In addition, Joan W. Bauerlein, Division of Finance and Basic Infrastructure, Inter-American Development Bank, was helpful in coordinating with Central American aviation officials and in counseling on aviation issues. Carlos Gallegos of the Inter-American Committee on Ports at the OAS facilitated contacts and cooperation with the maritime transportation authorities. Carl Sobrevisana and his team from the U.S. Maritime Administration (U.S. MARAD) provided helpful insights into port vulnerability issues. Raul Leclair and Rafael Perez facilitated an exchange of information with the highway transportation sub-sector personnel in Central America. Bernard Becq, World Bank transportation engineer, contributed information on related post disaster reconstruction projects.

Several private company officials provided background information on corporate relationships with governments and emergency officials. The Clean Caribbean Cooperative provided particularly useful examples related to its agreement and procedures.

William Medigovich and Janet Benini of the Office of Emergency Transportation (OET) at the U.S. Department of Transportation (USDOT) provided unwavering support throughout the preparation of the document and were instrumental in assuring that this activity was included in the U.S. interagency program for post-Hurricane Mitch reconstruction as not only a contribution to Central America but also as a pilot for the Western Hemisphere Transportation Initiative (WHTI) Priority Action Area 3 on mutual assistance. Barbara Barajas and Tom Scott of OET provided needed administrative orientation and support.

Ray Lynch at the U.S. Agency for International Development (USAID) encouraged and facilitated a useful exchange of information with the other participants of the U.S. interagency program for post-Mitch reconstruction.

This document was prepared by Oliver Davidson and Susana Castiglione, independent international consultants whose experience, expertise and knowledge of the subject matter and development issues in Latin America and the Caribbean contributed greatly to the breath and depth to which the subject matter could be covered. Overall coordination of the design and preparation of the document was the responsibility of Stephen Bender with the assistance of Paula Tibabuzo, and contributions from Sylvana Ricciarini and Melanie Dillon, all from the Organization of American States, Unit for Sustainable Development and Environment (OAS/USDE). Solidad MacKinnon, consultant, and Maria Eugenia Garcia, and Mauricio Martinez, interns, assisted with the translation and editing of the document.

## PREFACE

The Ministerial Declaration adopted by the Western Hemisphere Transportation Initiative (WHTI) in December 1998, and the impact of Hurricane Mitch that same year became two of the catalysts for this report.

In December 1998, the Ministers of Transport of the Americas, who had gotten together before in the Summit of the Americas (Santa Cruz, Bolivia, 1996) and in Santiago (Chile, 1998), gathered in New Orleans and agreed to continue in a joint effort to face the common problems in the transportation sector and to promote the creation of the Western Hemisphere Transportation Initiative (WHTI). In the meeting, the Ministers of Transport created a Plan of Action in the main areas. Among the objectives to reach were: (a) to integrate transportation (all modes) policies and procedures among all the western hemisphere countries, and (b) to increase the efforts to prevent disasters that would involve the transportation system and the environment, as well as to improve the response mechanisms.

In that same meeting, among other actions, it was agreed:

“Recognizing that weather-related or other destruction of essential transportation infrastructure hampers post-disaster relief efforts and that the rebuilding of such infrastructure is key to the economic recovery of countries in the region which experiences such disasters, we agree to develop a Western Hemisphere Transportation Disaster Response Plan to more effectively respond sub regionally and regionally to weather related disasters.”

### *A regional approach*

The impact of Hurricane Mitch has made more evident the need for a coordinated response to emergency situations and the vulnerability reduction of the transportation sector in Central America with cooperation among the Center for Natural Disaster Prevention in Central America (CEPREDENAC), the Commission of Ministries of Transport (COMITRAN), the Commission Central American Maritime Transportation Committee (COCATRAM), the Inter-American Committee on Ports (ICP), and national transportation and civil defense organizations.

In the twenty-first Summit of Presidents of Central America held in Guatemala in October 1999, the presidents subscribed the Declaración de Guatemala II which identifies 2000-2004 as the Central American Period for Vulnerability and Impact Reduction of Natural Hazards. They also appointed CEPREDENAC as the coordinating entity of the activities to be carried out to reach the summit goals. As part of that institution’s efforts, the Materials and Methods Laboratory at the

University of Costa Rica (UC/LANAMME) prepared a project proposal on disaster reduction of the Central American transportation sector, which is part of the proposals to be considered by the Consultative Group process lead by the Inter-American Development Bank (IDB). The first draft of this study was discussed in response to Resolution 01-99 adopted in its XXI Meeting in November 1999 of COMITRAN, which asked SIECA to organize a regional workshop so that an action plan for disaster prevention and mitigation in the transportation sector could be formulated. The workshop took place in San José, Costa Rica in March 2000, with the assistance of the Ministry of Transportation and Public Works of Costa Rica, OAS/USDE, CEPREDENAC, and COCATRAM.

SIECA had also obtained support from the U.S. Agency for International Development (USAID) to prepare a study on proposed regional norms and standards for development of primary national highways that form part of the Pan American Highway and auxiliary road transportation corridors in Central America. These two studies would complement the ongoing Central America Transportation Study (ECAT) aimed at defining long-term highway development needs in the region.

#### *The participation of the OAS*

The Unit for Sustainable Development of the Organization of American States (OAS/USDE) has had an active role in vulnerability reduction to natural hazards and has been supporting disaster reduction activities related to the transportation sector. Prior to Hurricane Mitch the OAS/USDE approached the Central American Secretariat for Economic Integration (SIECA) and COMITRAN on the need to begin a systematic evaluation of the Pan American Highway to natural hazards.

Following that disastrous event, and as part of the U.S. Government's interagency support of reconstruction activities in the affected countries, which are coordinated by the USAID, the OAS/USDE approached the U.S. Department of Transportation (USDOT) for financial support studies on the disaster reduction of the Central America transportation sector. One component of those studies is a the preparation of a document to identify existing and potential mechanisms for mutual assistance in case of damage to infrastructure and vulnerability reduction of the transportation sector in Central America. This study also forms part of USDOT's support of the implementation of the Western Hemisphere Transportation Initiative (WHTI) through its action plan adopted at the WHTI meeting in New Orleans, Louisiana in December 1998.

Prior to undertaking the preparation of these studies, the OAS/USDE with collaboration of other international institutions presented a series of regional workshops on Sustainable Cities and Trade Corridors: Vulnerability Reduction to Natural Hazards, Mandates and Future Actions, with one workshop taking place

in Central America with the participation of the Infrastructure Department of SIECA. This workshop took place immediately prior to Hurricane Mitch in October 1998.

The OAS has identified a network of specialists, institutions, and operational entities that can assume the preparation of vulnerability assessments and training activities, together with further developing regional emergency response mechanisms for air, sea, and surface transportation modes. This network includes institutional and technical coordination and administration capabilities, political forums appropriate to formally address country participation, consultative technical support to those political forums, processes with the private sector and the technical capacity to undertake the relevant studies.

At the operational level, this report identifies tools so that the sector may act more efficiently when a natural disaster affects any transportation infrastructure. Also, it is anticipated that the principles and approaches may be of help for decision makers to understand and act upon as they recognize the importance of developing mechanisms for mutual assistance, vulnerability reduction and negotiations for international aid in Central America.



## ACRONYMS

|                   |  |
|-------------------|--|
| <b>ACI/LAC</b>    | Oficina Latinoamérica y el Caribe del Consejo Internacional de Aeropuertos |
| <b>AEC</b>        | Asociación de Estados del Caribe   |
| <b>ALIDES</b>     | Alianza para el Desarrollo Sostenible                                      |
| <b>BID</b>        | Banco Interamericano de Desarrollo   |
| <b>CAM</b>        | Convenio de Asistencia Mutua   |
| <b>CARICOM</b>    | Mercado Común del Caribe   |
| <b>CC</b>         | Carretera Centro Americana   |
| <b>CCC</b>        | Clean Caribbean Cooperative  |
| <b>CDERA</b>      | Agencia Caribeña de Respuesta a los Desastres                              |
| <b>CEPA</b>       | Comisión Ejecutiva Portuaria Autónoma (El Salvador)                        |
| <b>CEPREDENAC</b> | Centro de Prevención de Desastres Naturales de América Central             |
| <b>CIP</b>        | Comisión Interamericana de Puertos   |
| <b>CIRDN</b>      | Comité Interamericano para la Reducción de los Desastres Naturales         |
| <b>COCATRAM</b>   | Comisión Centroamericana de Transporte Marítimo                            |
| <b>COCESNA</b>    | Corporación Centroamericana de Servicios de Navegación Aérea               |
| <b>COEN</b>       | Comité de Emergencia Nacional (El Salvador)                                |
| <b>COMITRAN</b>   | Consejo de Ministros de Transporte de Centroamérica                        |
| <b>CP</b>         | Carretera Panamericana   |
| <b>CTPD</b>       | Cooperación Técnica entre Países en Desarrollo                             |
| <b>DAHNU</b>      | Departamento de Asuntos Humanitarios de las Naciones Unidas                |
| <b>DIRDN</b>      | Decenio Internacional para la Reducción de Desastres Naturales             |
| <b>FAA</b>        | Federal Aviation Administration (Estados Unidos de América)                |
| <b>IATF</b>       | Inter-Agency Task Force  |
| <b>ITHO</b>       | Iniciativa de Transporte del Hemisferio Occidental                         |
| <b>INCOP</b>      | Instituto Costarricense de Puertos del Pacífico                            |
| <b>JAPDEVA</b>    | Junta de Administración Portuaria y de Desarrollo Económico (Costa Rica)   |
| <b>LANAMME</b>    | Laboratorio Nacional de Materiales y Modelos Estructurales (Costa Rica)    |
| <b>MDRD</b>       | Mainstreaming Disaster Reduction Development                               |
| <b>NOTAM</b>      | Notice to Airmen   |
| <b>OACI</b>       | Organización de Aviación Civil Internacional                               |
| <b>OCHA</b>       | Oficina de Coordinación de Asuntos Humanitarios de las Naciones Unidas     |
| <b>OEA</b>        | Organización de los Estados Americanos                                     |

|              |  |
|--------------|--|
| <b>OMA</b>   | Organización Mundial de Aduanas  |
| <b>OMI</b>   | Organización Marítima Internacional                                    |
| <b>OMS</b>   | Organización Mundial de la Salud                                       |
| <b>ONU</b>   | Organización de las Naciones Unidas                                    |
| <b>OPS</b>   | Organización Panamericana de la Salud                                  |
| <b>PNUD</b>  | Programa de las Naciones Unidas para el Desarrollo                     |
| <b>PRRD</b>  | Plan Regional de Reducción de Desastres                                |
| <b>SELA</b>  | Sistema Económico Latinoamericano                                      |
| <b>SICA</b>  | Sistema de Integración Centroamericana                                 |
| <b>SIECA</b> | Secretaría de Integración Económica Centroamericana                    |
| <b>UDSMA</b> | Unidad de Desarrollo Sostenible y Medio Ambiente                       |
| <b>UIT</b>   | Unión Internacional de Telecomunicaciones                              |
| <b>USAID</b> | United States Agency for International Development                     |
| <b>USDOT</b> | United States Department of Transportation                             |
| <b>VAI</b>   | Working Group on Vulnerability Assessment and Indexing of<br>the CIRDN |

## INTRODUCTION

The Central American isthmus is a highly vulnerable region to natural hazards, and regional transportation infrastructure is often damaged by different kinds of disasters. Despite the recognition of disasters' threats, government policies, international donors, financial lending institutions and private sector actions have not resulted in substantial measures to reduce losses.

Since natural events that become disasters do not acknowledge frontiers, this report examines regional as well as national opportunities to reduce losses of critical transportation infrastructure caused by natural events. Building on the activities in emergency preparedness and response, and a few vulnerability reduction measures that already exist in Central American countries, this report identifies opportunities for, and constraints to, cooperation through "mutual assistance" within the Regional and internationally.

The transportation infrastructure is critical to the economy as well as being the backbone of essential services after a disaster. In addition to the importance of transportation to each country, this is a critical sector for the region as products in one country are often transported across a neighboring country to reach a port for exportation. For example, products from Nicaragua, destined for Europe and the United States, move through Honduras to the Port of Cortes on the Gulf Coast. Therefore, the "disaster resilience" of road networks, bridges and ports as well as cooperation across international boundaries are vital to the smooth flow of goods and the economic prosperity of Central American countries.

This is not a report about how to keep the transportation system (airports, ports and roads) open for relief supplies. For example, an airport reopened for relief flights may still be operating at a huge loss of revenue because relief flights often pay reduced or no landing fees, no customs charges, etc. Also, reopening on a limited basis, e.g. for daylight hours only, because runway lighting has been damaged, can still result in a major loss of revenue.

Natural hazards threaten this critical component of the region's economic infrastructure, and Hurricane Mitch was a "wake up call" to the sector, the economy and the population. This document identifies the need to make plans for the immediate restoration of critical transportation infrastructure and examines the potential role of Mutual Assistance Agreements to speed up economic restoration after a disastrous natural event.

The initial mandate of this document was to have a narrow focus: if major damage occurred, what agreements and formal mechanisms were in place to assist a transportation facility rapidly restore services? As the topic and the current situation were studied, a more detailed examination of the complex

technical and institutional processes became necessary. Issues outside the process of damage assessment and assistance request procedures were identified that either facilitated the assistance or slowed and stopped the process. For example, the financial arrangements related to the request for goods, equipment and services eventually entered the decision making process. The availability of financing enabled the request to proceed, whereas, unclear or uncertain financing slowed or stalled the urgently needed assistance.

This document also treats the subject of vulnerability reduction of the transportation sector by examining the use of existing mechanisms and proposals for creating new mechanisms that can and should be used to lessen the likelihood of damage to infrastructure components that would necessitate outside assistance.

### *The methodology*

This report identifies the most vulnerable components of each transportation mode or sub-sector (airports and air navigation, ports and harbors, roads and bridges). A questionnaire (see Appendix A and B) was sent to each ministry of transportation through their transportation planning unit, to regional transportation organizations and to specialists in each sub-sector. The primary question was, *If a major natural event occurred and significant damage resulted, what critical part of your transportation infrastructure would fail and what assistance would required from outside your country?* This question identified the critical components most likely to fail and the type of regional and international assistance that might be required to rapidly restore service, rehabilitate damaged components, and carry out reconstruction projects. The objective was restoration of service for long term economic purposes, not just for use in a disaster relief operation.

A similar question was asked in terms of the current and needed vulnerability reduction activities.

Once the specific components that might fail were identified, e.g. an airport control tower, a critical bridge or the harbor dredging capability to clear the shipping channel, etc. the next question was, *What process or mechanism is in place (or needed) to obtain the required product or service necessary to rapidly restore the component to service?*

Describing the process as to how requests for needed assistance to immediately restore critical transportation services is a major element of this document, and is more important than originally anticipated. Responses from national authorities and technical organizations, identified several important facets of this process, including:

- *Policy decisions* as to whether to restore the critical component to its former condition or to rebuild it to a stronger disaster resistant standard;
- *Legal basis/authority* for emergency actions, including extraordinary procurement authority;
- *Financial resources* (a fund, loans or donations) to pay for the damaged component's repair or reconstruction;
- *Donor considerations* as to the role of international donors and financing institutions (resources for mitigation and stockpiling as well as disaster relief);
- *Technical analysis* of the need and specifications for rebuilding in a more resilient manner;
- *Timing and the proximity of critical goods and services* such as whether products, spare parts and services are available, where and when.

The contents of the document are as follows:

**Chapter 1** identifies the critical transportation system components and their vulnerability by mode or sub-sector, e.g. air, maritime and land transport systems. (See Figures 1.1 through 3.4.) Also identified is the potential assistance that would be needed from outside the country and possible sources, divided between regional (within Central America) and international (outside the region).

**Chapter 2** identifies regional processes and mechanisms that are potential sources to provide goods and services to rapidly restore the proper functioning of the components. Also, current emergency processes and relationships involving both the public and private sectors are identified. The strategic plans and existing and proposed agreements of regional organizations are reviewed. In addition, processes and mechanisms for vulnerability reduction are reviewed.

**Chapter 3** reviews international disaster and emergency relationships and constraints, including donor governments, financial institutions and the private sector. Potentially useful model language for mutual assistance agreements are described and the elements to consider in future mutual assistance agreement are included. Also included in the review are processes and mechanisms for vulnerability reduction.

**Chapter 4** contains the document's conclusions and recommendations from all chapters.

The **Appendices and Figures** provide detailed information and summaries.

In summary, this investigation started with a review of government capabilities and needs. It was found that there are no formal regional or international mutual assistance agreements to assist the transportation sector rapidly restore service in case of a damaging natural event. Governments have the responsibility and the legal authority for a wide range of actions during emergency conditions, as outlined under existing emergency legislation in each country. One major constraint is the lack of financing mechanisms in place *before the event* that would enable the immediate procurement of goods and services *after the event* to rapidly repair or restore a critical transportation component. In addition, no government stockpiles critical components identified as necessary to immediately restore the critical services. The ministers of transportation identified regional organizations as their first resource for technical support in case of a major disastrous event. Despite changes and progress made after Hurricane Mitch, the transportation sector remains very vulnerable to the next potentially destructive, disastrous natural event.

## PART 1: OVERVIEW

### Vulnerable components

The threat of disasters is well known, especially since Hurricane Mitch ravaged Central America. However, additional research is needed to more clearly identify specific vulnerabilities and also to reveal new means of mitigating these threats. In addition to the natural threats, this report includes the threat from secondary technological events (spills and accidents) that could result in a loss of critical transportation infrastructure.

Secondary threats were mentioned by the specialists because they can be caused by a natural event, resulting in fires, oil and chemical spills, and airplane crashes, to name a few such threats. In addition, loss of electrical power caused by any type of event was identified as a major potential vulnerability of ports and airports. Fortunately, good planning for any event could generally strengthen the resilience of infrastructure and might prevent or mitigate damage from any source.

#### *Threats to each mode*

Responses to detailed questionnaires for each of the modes (air, maritime and land transport) provided a detailed analysis of critical elements by sector specialists and their estimate of what assistance would be required from outside the country. For example, *air transportation* could be seriously disrupted by loss of the following: the airport control tower; the regional radar system and air navigation system; communication between the tower and aircraft; or the runway, severely damaged due to an earthquake or flood. (See Figures 1.1 and 1.2.)

*Ports and maritime* infrastructure could become inoperative due to the silting of the shipping channel; upheaval of the ship channel; physical damage to wharf or port facilities (port rail systems, cranes); disruption of the channel markers (buoys); loss of electrical power; and a major pollution event (oil spill, ship accident, etc.) (See Figures 2.1 and 2.2.)

*Roads, bridges and tunnels* are more likely to be repaired, at least temporarily, by national resources or regional sharing of expertise, supplies and equipment. Regional cooperation is more rapid since some roads are critical for the export of goods from neighboring countries. If available regionally, prefabricated bridge spans for temporary repairs could reduce the need for international assistance. (See Figures 3.1 and 3.2.)

*Railroad systems* were not included in this report because they are not a critical transportation resource at this time.

## **Mechanisms for regional cooperation and assistance**

Regional specialists and organizations were asked to identify what goods and services would be needed from outside the country. It was noted that regional technical expertise is available for immediate damage assessment, but the process for requesting, managing and paying for this expertise and equipment is ad hoc. There are few agreements that formalize the use of personnel from countries in the region although this is a traditional form of assistance during times of serious need and disasters. The need to formalize these ad hoc arrangements (see Figure 4) and the use of the network of friends has been expressed by several technical specialists. (See Figures 1.3, 1.4, 2.3, 2.4, 3.3 and 3.4.) Figure 5 presents a proposal to a general program follow-up, which complement the recommendations contained in this document.

*Regional Organizations* have proposed expanding their services to their members to include disaster-related technical assistance and loss reduction measures. Their disaster-related proposals are included in some of the organization's strategic plans or have been discussed in informal meetings with their leaders. For example, COCESNA has recently expanded their role from air traffic control over 19,000 feet to managing the air traffic for all Honduran airports. In addition a new safety project, to be financed by the Inter-American Development Bank will support COCESNA's effort to strengthen compliance with ICAO Air Safety standards in six Central American member countries. An expansion into airport safety and disaster loss reduction seems to be a logical step for COCESNA, but it will take time to develop the proposals, seek approval of their members and secure financing for that effort.

Regional technical organizations in each sector could use the conclusions and recommendations of this document to further identify regional needs and formalize these informal arrangements through a mutual assistance agreement. The legal foundation for negotiating and signing mutual assistance agreements are already established in the legal framework of each country. Although the authority exists, there are financial and bureaucratic constraints that slow or impede governments and technical agencies from entering into agreements.

Regional specialists suggest that a first step in implementing a regional approach for immediate response would be to conduct a country level inventory of the goods and services available to repair or restore the critical components identified for each mode, should assistance be needed from another country. This regional inventory should include technical specialists, equipment and spare parts, as well as a description of how the goods or services could be obtained, including any financial terms.

### *A comprehensive regional mutual assistance agreement*

One alternative to increase mutual assistance would be to have a widely focused regional disaster umbrella mutual assistance agreement under which sector agreements could be developed. A regional agreement has been discussed by CEPREDENAC, as described in their Regional Coordination Manual for Disasters. Major provisions and conditions would be adapted from elements of the Inter-American Convention to Facilitate Disaster Assistance. This general framework would enable sector and mode specific mutual assistance agreements to be developed and negotiated within a larger framework that includes legal authority, financial mechanisms, settlement of disputes, etc. Regardless of the type of agreements negotiated, some common elements should be considered. Enhanced agreements among members of an organization will still require ratification by “higher level” governmental authorities for some provisions, e.g. cross border movement of personnel, goods and equipment, waiver of customs, licensing, etc. (See Appendix C for elements of a comprehensive agreement.)

Several sample agreements are available that could be adapted to meet Central American transportation sector needs. More than 30 state governors in the United States have adopted one comprehensive agreement, an Emergency Management Assistance Compact (EMAC). The original EMAC can be viewed at <http://www.nema.org>.

*Contracts and Concessional Arrangements* or some type of privatization are becoming increasingly popular in the air transport industry. Since several of these agreements are currently under negotiation, details remain very sketchy. However, responsibility for airport terminal and runway maintenance and repairs may be included in some airport concessionary agreements. Provisions for emergency repairs, including timing, standards and financing should be clearly identified in any concession arrangement.

An analysis of the critical components in each Mode identified that, even if agreements existed, some additional constraints must be overcome. For example, in the current economic situation, particularly in the air navigation mode, spare parts for immediate repairs and replacement components for immediate installation are not available “off the shelf”, but must be manufactured. Stockpiling of certain critical components is an option, but there are few organizations that have stockpiled critical items. One major constraint is how to finance the stockpile.

### *Reducing losses and vulnerability*

Regional organizations have begun to recognize their potential role to support their members’ loss reduction actions. The Center for Natural Disaster

Prevention in Central America (CEPREDENAC) has developed disaster policies and guidance in close collaboration with their member states and with international technical organizations. CEPREDENAC has recently developed a strategy, under review by their members, to identify loss reduction actions with the private sector. Elements of this document will be considered in future CEPREDENAC recommendations and disaster activities with the transportation sector.

One factor that might stimulate pre disaster action to reduce vulnerability and losses is information about disaster-related losses of government revenue and taxes and lost private sector earnings. Direct losses from airport landing fees, port charges, reduced tax revenue, business earnings, when combined with secondary losses and the multiplier, if well documented, could become a stronger motivation for pre event prevention and mitigation actions. Country level and regional understanding of the need to reduce losses is increasing as the hardship caused by disasters is experienced and as documentation of effective loss reduction measures in other parts of the world improves.

Direct losses from oil and chemical spills and the potential impact of these events on the corporate profits, the environment and the tourist industry have motivated that sector to take loss reduction measures. These prevention and preparedness measures and the agreements that document and enforce them are examples of how events can be mitigated or contained and hopefully prevented from becoming disasters.

#### *Why mutual assistance agreements are useful*

It is generally assumed that agreements are valuable, but in the case of natural disasters agreements can save lives and reduce losses. The benefits of a formal agreement include:

- A rapid response tailored to a specific need(s) identified in advance;
- The cost of goods and services negotiated methodically rather than during an urgent situation that always demands a higher price;
- Recognized international standards could be included to reduce future vulnerability and losses;
- The agreement negotiation process brings additional benefits, (identifying weaknesses in both the facility as well as the organizational structure); and
- International agreements often include technical assistance, technology exchanges and specialized professional networking opportunities.

## **Mechanisms for International Cooperation and Assistance**

### *The role of international donors and organizations*

Recent experience with critical infrastructure restoration following Hurricanes Mitch and Georges again revealed the strengths and weaknesses of external technical organizations, donor countries and regional and international financial institutions. Although detailed damage assessments were conducted quickly and donor pledges stimulated, the actual restoration of infrastructure critical to stem the loss of business and tax revenues was slow.

Specific evidence of why the response was slow is found upon examination of the bureaucratic complexity of the assistance request – donor response process. For example, very general or incomplete requests from a disaster stricken Government to several donors and financial institutions often slow the donor decisions and response.

One national level issue that must be resolved is the current situation with several country governments. Some governments have signed agreements and treaties but find it difficult to fulfill the responsibilities agreed upon in the documents. Unless some of these concerns, primarily expressed by the private sector, are resolved there will be little real cooperation between governments and companies due to a lack of trust.

*Bilateral assistance* from an interested donor government to a stricken country to repair, replace or finance a critical transportation component has occurred several times. In the recent past, the Governments of Canada, France, Japan, Taiwan and the United States have offered or provided control towers, rapid runway repair teams, air navigation aids or recalibration, cranes for ports, road and bridge damage assessment teams, engineering teams with heavy equipment for temporary road and bridge repair, etc. Some donors with an existing transportation project in the stricken country can approve restructuring or refocusing the project to address urgent disaster-related needs.

Most donor governments make disaster decisions on a case-to-case basis after assessing the disaster's damage, even when those governments have provided similar assistance following earlier disasters. Some donor "offers" include a financing package linked to equipment manufactured in the donor country.

In order for donor funds to focus on improved standards and vulnerability reduction in disaster-related activities, agreements should be negotiated before the disaster and a clear understanding of each party's expectation identified. Disasters are not the time to conduct such negotiations, therefore, financing that could be available for vulnerability and loss reduction is not used for that purpose.

*International financial institutions* (The World Bank and regional development banks) banks have increased their lending to disaster stricken countries in recent years. Despite expediting the procedures, these loans and other financial mechanisms do not lend themselves to development of pre event mutual assistance type agreements. However, the financial institutions have demonstrated flexibility as borrowers have requested changes to meet immediate disaster needs using existing loan funds.

One creative use of loan funds is the financing of critical components in the transportation sector to be held in reserve until the next disaster. The World Bank is discussing with East Caribbean OECS countries an emergency loan that would be negotiated in advance of a disaster. Another example is in the current World Bank loan to the Government of St. Lucia for disaster mitigation and recovery that includes financing of a small number of temporary bridge components that can be used for future emergencies. A similar proposal was discussed in some Central American relief projects following Hurricane Mitch. However, governments did not accept this aspect of the project. Loan financed country or regional stockpiles remain a viable option for highly disaster prone countries with critical transportation needs. There are many places where a temporary bridge would rapidly restore major commercial activity, thus reducing losses.

## PART 2: CONCLUSIONS AND RECOMMENDATIONS

The purpose of this document is to identify the existing regional and international mechanisms with the goal of re-establishing the transportation infrastructure damaged by natural disasters, as well as to reduce their vulnerability. To achieve this, the vulnerable components of the transportation infrastructure have been identified; current assistance mechanisms have been analyzed, including local and regional processes as well as other models that could be adapted for future solutions.

From this process of compiling and analyzing data, conclusions and recommendations were made to explain the status of vulnerable components; identify current mechanisms, resources, and services; review the importance of financial aspects, and identify sources of assistance. These conclusions and recommendations are made with the goal of strengthening the existing mechanisms and exploring new opportunities to reduce vulnerability and losses.

### Vulnerable Components: Conclusions

- The majority of the essential components of transportation infrastructure in the region are vulnerable to the effects of natural disasters and to the secondary impacts that may occur (spills, accidents, etc.)
- A more in depth analysis of vulnerability is needed to ensure that all the most vulnerable elements on each component are identified and mitigation measures taken. For example, COCESNA, COCATRAM, and CEPREDENAC, as well as COMITRAN and its technical secretariat in SIECA, are working to incorporate ways to reduce the vulnerability and mitigate damage.
- The vulnerability of some components is more complex because their repair and restoration depends on goods and services that are not available locally or regionally, e.g. air navigation aids, “Bailey type” bridge components and dredging services for shipping channels.
- There is a need to quantify the potential economic losses that could result from the loss of the most vulnerable components to be able to understand the full impact and to weigh the cost-benefit of vulnerability reduction measures.

### Vulnerable Components: Recommendations

- Each sub sector should undertake a detailed and profound evaluation of their vulnerable components, beginning with those that are most

vulnerable (i.e. prioritizing them greatest to least in terms of vulnerability) for the purposes of determining the specific areas requiring attention.

- Programs and actions to analyze vulnerability and redefine policies promoting measures to reduce loss should be identified by specialized regional transportation organizations and supported at the national and ministerial levels.
- To develop improved project designs to reduce losses, it is necessary to undertake research about the economic and social impact of natural disasters and how to reduce vulnerability. Recommend that “Mode” or sub sector-level workshops be held with local, regional, and international specialists in order to design studies that can consider the possible impact of natural disasters on the transportation infrastructure and identify the best means to reduce vulnerability.
- Regional institutions are the appropriate entities to undertake and organize these studies about the reduction of vulnerability. CEPREDENAC has international credibility, has contacts with other technical and financial institutions, and has indicated a willingness to partner with other organizations.
- Research and studies should be developed with the goal of analyzing the economic impact produced by the interruption in the transportation services caused by damage to its infrastructure from natural disasters, and its multiplier effect. Additionally, the human suffering resulting from loss of jobs, property, and services as a cause of the economic downturn should be evaluated. These calculations should be made as if the country were a private enterprise.
- It is useful to generate professional exchanges and training opportunities locally and regionally, so that the technical personnel will continue to contribute ideas and solutions related to the re-establishment of the transportation infrastructure in the shortest timeframe possible and also to reduce its vulnerability.

### **Mechanisms for Assistance: Conclusions**

- The principal conclusion from this study is that, at this time, there is no formal mechanism for mutual assistance to evaluate damage or to expedite the repair, rehabilitation, or reconstruction of critical transportation infrastructure components; and there are only limited efforts to reduce their vulnerability.

- Informal networks exist among local transportation authorities and their specialized regional transportation organizations to evaluate damages and repair, rehabilitate, reconstruct, and replace some essential components of the transportation infrastructure. However, when a natural disaster of a significant magnitude affects the region, the emergency conditions will exceed the capacity of these processes and the informal networks to respond adequately.
- There are some more formal international mechanisms, for example signed treaties between countries and some “membership agreements” within the regional or with international institutions that contain useful elements. Some agreements include components of the three transportation sub sectors, e.g. COCESNA has the authority and the ability to act in case of damage to aerial navigation infrastructure components and it has taken some vulnerability reduction actions. Also, in the maritime sub sector, there is a mechanism to coordinate plans and the response to the secondary effects of natural disasters, e.g. the spill of hydrocarbons and dangerous substances. However, local capacity to respond is very limited.
- The rest of the formal mechanisms that are referred to throughout the report are isolated processes, in general, agreements that formalize projects financed by credit institutions, agreements with bilateral donors, and other processes that need to be reviewed.
- Mechanisms to provide “humanitarian or disaster assistance” have been extended to assist the repair or rehabilitation of transportation infrastructure. However, this process is not timely and has no formal vulnerability reduction component. This assistance is often guided by the availability of resources from donors and their own policies and priorities rather than focused on the priority needs of the impacted country.
- There are no agreements in the region that formally incorporate the international private sector in the emergency response to transportation infrastructure damaged as a result of a natural disaster. There are a few contracts and there are several limited agreements such as airport concessions. Agreements and treaties for specific purposes, such as oil spills and hazardous materials planning and response have been signed, but the private sector remains skeptical that governments have fulfilled their obligations or will after an emergency.
- Businesses that operate or manage their services as an owner, in general, get insurance against natural risks/disasters, which can include the rehabilitation of infrastructure and protect them against the loss of business income. As more critical transportation services are managed by

concession agreements, identifying who is responsible for natural risks and damage should be included in these agreements.

- There are few arrangements between the transportation authorities and the private sector (the provider of goods and services) to evaluate potential damage and access what critical goods and services might be required from private sources, to replace essential components of the transportation infrastructure. In some cases, spares and equipment must be manufactured, because their anticipated need was not known. When a major emergency occurs and the local authorities don't have the components or spare parts, they are not generally able to procure them immediately, often due to a lack of pre arranged financing.

## **Mechanisms for Assistance: Recommendations**

- The informal mechanisms of assistance should be formalized in written agreements. Agreements, such as Mutual Assistance Agreements, treaties, regional or international organization support agreements, bilateral donor agency arrangements, flexible loans with credit institutions, and contracts with the private sector are a clear way to determine what each party is prepared to provide or accept in case of emergency. Formal agreements permit the anticipation of deficiencies and identify costs before emergency situations materialize, and thus permit the incorporation of improvements to reduce future losses. (An example of the elements that should be considered in a Mutual Assistance Agreement is provided in Appendix C.)
- Regional specialized institutions should lead a process to develop formal regional mutual assistance agreements and stimulate activities to reduce the vulnerability of the transportation infrastructure. Regional agreements permit each country to maximize its resources without incurring the cost of doing all such activities itself. Regional organizations possess leadership and the technical capacity to be useful intermediaries between party countries and with other regional or specialized international organizations, and with countries outside the region. Regional technical organizations have credibility with multilateral credit institutions, and with the private sector, that could facilitate access to financial resources in the form of donations or loans. During emergencies, these intermediaries can function as a bridge among the parties requesting or willing to provide assistance.
- Meetings with major donors and bilateral cooperation agencies can be organized to review their policies for post disaster assistance. Suggest that vulnerability be considered and that loss reduction measures be required for donor funded relief and reconstruction activities.

- A Private – Public Task Force be established to review opportunities and to develop “action plans” between the public and private sector to identify quantifiable, effective mutual assistance in the case of emergencies, and to promote the reduction of losses and the mitigation of damage.
- Incentives to motivate the private sector to take loss reduction actions should be considered, including a waiver or reduction of import duties or taxes on mitigation materials. The public sector should establish the technical and design-based parameters for mitigation measures, including the rehabilitation and reconstruction of damaged infrastructure.
- The informal understandings and personal networks based in friendship or occasional agreements between officials and organizations should be replaced by formal agreements. Agreements should diminish the extent of damage, by defining responsibilities and expectations between the parties, and accelerating the provision of aid. All agreements should include a specific element for payment or reimbursement so that goods and services are furnished with the certitude that the party paying will be compensated.
- Transportation authorities and the institutions with jurisdiction over the critical transportation infrastructure components should consider agreements or contracts with the private suppliers for essential spare parts or services, and for their installation or repair. The representatives of the provider enterprises should be contracted to assure that they have the components most susceptible to being damaged by natural disasters and have the spare parts for them. A price and modality of payment or financing should be agreed upon that satisfies both parties; and the timeframe in which a certain component should be sent to the buyer in the case of an emergency. Such a process should be solicited from a variety of businesses, so that a comparison of prices and conditions can be made. Similar methods of pre-agreements have been done in Japan and the U.S. with great benefits as infrastructure repairs were rapidly completed. The California Department of Transportation, CALTRANS, uses a similar process that has permitted it to proceed with the rehabilitation of its highways in a fast and efficient manner. (See <http://svhqsg4.dot.ca.gov/contractor/>.) (Appendix D offers guidance on pre-qualifying suppliers of goods and services.)
- Regional and international instruments have been identified that would be able to channel certain aspects of assistance. Recommend undertaking workshops with international specialists to discuss these instruments to apply, as possible, to existing projects.

- Meet with all of the regional organizations that deal with material transport in order to see whether each one of them includes aspects related to the identification of risks and disaster mitigation with the goal of not duplicating efforts.
- Many donor governments also have legal restrictions regarding the manner in which they can invest their money, including some conditions that inhibit them from financing the reconstruction of infrastructure in such a way that improvements to the original structure are incorporated. While this might be understood in a historical context, such policies should be discussed and reviewed.

### **Participants in Assistance: Conclusions**

- The presidents of the Central American countries have the sufficient constitutional jurisdiction and authority to establish international accords, which in general would be ratified by their legislatures. When dealing with agreements of assistance, they may simply require an exchange of notes/letters to make them effective.
- Regarding the private sector, agreements signed prior to an emergency will help avoid prolonged contractual negotiations that make it difficult to rapidly select a provider of goods and services. The negotiation of fundamental aspects such as the availability of goods and services, terms of sending the assistance, payment conditions, and financing should be agreed upon before the need is urgent. In order to get a practical agreement with private companies, it would require the participation of the empowered representatives of the local transportation authorities, e.g. civil aviation institutions, and maritime authorities, to meet with the representatives of the private suppliers.

### **Participants in Assistance: Recommendations**

- Senior officials with the legal authority, as well as financial and technical specialists, should be involved in the dialogue to develop agreements. Negotiations about agreements should include the legal authority, technical details and clearly identified financing to avoid bureaucratic instances that can slow down the provision of assistance in cases of emergency.
- Organize work groups with public and private sector members of the transportation sector with the goal of identifying areas of conflict and creating opportunities for effective cooperation. With this in mind, regional organizations such as CEPREDENAC, COCATRAM, and COCESNA, local chambers of commerce, and technical representatives of the aerial,

maritime, and terrestrial transportation industries should be brought together to meet, since all of these entities have positive connections with the commercial and industrial sectors.

- Accords should be defined with the private sector to protect the essential components of the transportation infrastructure, and encouraging investment to move ahead with the tasks of reduction of vulnerability and improve response to natural disasters.

### **Goods and Services: Conclusions**

- The surveys reveal that human and material assistance is needed. Nonetheless, many of the institutions surveyed declared that they are in a position to provide the goods and services that others say they need.
- The authorities interviewed also do not distinguish between if the needed assistance refers to goods, services, or both. It is important to determine the specific characteristics of assistance that might be needed and requested.
- The possibility of agreeing how to repair or replace certain goods has been difficult because of the obsolescence of equipment and uncertain source of spare parts.

### **Goods and Services: Recommendations**

- Organize work groups with technical representatives of each mode to determine areas of cooperation when one of the local transportation authorities has goods and services that another institution in the region may need. Additionally, discussions should include the basis on which the assistance will be provided, with a special focus on mechanisms for reciprocity, reimbursement, and compensation.
- The transportation authorities need to identify by mode and by facility the exact characteristics of the goods and services that may be needed as a pre-condition to all negotiations between cooperating parties and with the private suppliers.
- When replacing or repairing damaged equipment, it is necessary to choose advanced technologies that include vulnerability reduction. Loans are also needed to modernize the equipment with new and variable technology.

## Financing: Conclusions

- The scarcity of financial resources in the region has been identified as one of the most serious problems in promoting the mitigation of damage and participation in pre-arranged accords for re-establishing damaged infrastructure.
- Obtaining financing for work in the reduction of vulnerability and repair, rehabilitation, reconstruction, and repair of components of the infrastructure is fundamental to the effective functioning of any mechanism.
- Financial institutions have recognized the importance of providing material funds, and they are also adopting new strategies relating to disaster mitigation. Concretely, the World Bank is providing loans for reduction of vulnerability and loss reduction, e.g. financing of bridges sections and materials to use in case of an emergency. Similarly, the Inter-American Development Bank (IADB) has revised its traditional policies on loans for reconstruction, in order to emphasize preventative actions and disaster mitigation (IADB 2000).

## Financing: Recommendations

- Study opportunities for immediate financing of critical transportation repair and reconstruction from national budgets and from multilateral credit institutions. Promote development of projects for strengthening regional cooperation related to disaster mitigation and vulnerability reduction.
- Ask international and regional banks for their technical cooperation by providing project design materials, cost estimates, and support for the disaster-related projects of regional or local transportation organizations.
- Include in the projects with foreign bilateral cooperation agencies flexible funds that allow for the negotiation of additional accords with providers of essential goods and services.
- Organize workshops with research economists and disaster technicians to identify how to more accurately quantify direct and indirect losses from disasters.

Cuadro 1.1  
*Figure 1.1*

**Mecanismos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America in the Case  
of Hazardous Events: Current Situation**

**Transporte Aéreo  
Air Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Processes to Facilitate the Assistance</i>   | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Processes to Facilitate the Assistance</i>  | Partes en la Asistencia<br><i>Participants in the Assistance</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|--|---|--|--|--|
| <p>Componentes de propiedad de COCESNA y aquellos propiedad de la autoridad de aviación civil local pero mantenidos por COCESNA:<br/><i>Components belonging to COCESNA and those components that are property of the local civil aviation authority, but supported by COCESNA:</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME e ILS, sus Instalaciones y vías de acceso en caso que estén instalados en lugares remotos.<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar; their installation and access in case of installation in remote places</i></li> <li>Sistemas de energía eléctrica<br/><i>Electrical energy systems</i></li> <li>Sistemas informáticos<br/><i>Information systems</i></li> </ul> | <p>Acuerdo entre los Estados partes concediendo a COCESNA la prestación de servicios aeronáuticos y el mantenimiento de ciertos componentes de infraestructura. En consecuencia COCESNA efectúa la evaluación de daños, reparación, rehabilitación, reconstrucción y reemplazo de los componentes dañados<br/><i>Agreement between the member states granting to COCESNA the provision of aeronautical services and the maintenance of some infrastructure components. As a result COCESNA undertakes the damage evaluation, repair, rehabilitation, reconstruction and the replacement of damaged components</i></p> | <p>En virtud de las potestades concedidas a nivel regional, COCESNA procede a la contratación de los bienes y servicios necesarios con proveedores del sector privado fuera de la región<br/><i>In accordance with the authority granted by the region, COCESNA obtains necessary goods and services from private suppliers outside the region</i></p> | <p>COCESNA<br/>Organizaciones locales de aviación civil<br/>Local civil aviation organizations<br/>Proveedores de bienes y servicios<br/>Suppliers of goods and services</p> | <p>Recursos propios adquiridos por distintos mecanismos:<br/><i>Own resources acquired through different mechanisms:</i></p> <ul style="list-style-type: none"> <li>Ingresos adquiridos a cambio de la prestación de servicios de protección de vuelo a operadores aéreos y por transmisión de mensajes aeronáuticos<br/><i>Revenues obtained through provision of flight protection services to air operators, and the transmission of aeronautical messages</i></li> <li>Préstamos no reembolsables o de baja tasa de interés<br/><i>Non refundable or low interest rate loans</i></li> <li>Donaciones<br/><i>Donations</i></li> </ul> |

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>   | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Processes to Facilitate the Assistance</i>   | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Processes to Facilitate the Assistance</i>  | Partes en la Asistencia<br><i>Participants in the Assistance</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|---|---|--|--|--|
| <p>Componentes de propiedad de las autoridades aeronáuticas locales:<br/><i>Components belonging to the local aeronautical authority</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME, ILS<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar</i></li> <li>Torres de control<br/><i>Control towers</i></li> <li>Sistemas de telecomunicaciones aeronáuticas<br/><i>Aeronautical telecommunication systems</i></li> <li>Pistas<br/><i>Runways</i></li> <li>Calles de rodaje<br/><i>Taxi ways</i></li> <li>Plataformas<br/><i>Platforms</i></li> <li>Edificios<br/><i>Buildings</i></li> <li>Terminales aéreas<br/><i>Terminal areas</i></li> <li>Sistemas de energía eléctrica<br/><i>Electrical power systems</i></li> <li>Balizas para iluminación de pistas<br/><i>Runway lighting systems</i></li> <li>Equipos de seguridad e incendio<br/><i>Safety and fire equipment</i></li> <li>Depósitos y sistemas de bombeo de combustible<br/><i>Fuel tanks and pumping systems</i></li> </ul> | <p>Solicitud de los Estados partes al Consejo Directivo de COCESNA con el fin de que suministre los bienes y servicios necesarios para reparar, rehabilitar, reconstruir y remplazar componentes dañados. COCESNA accede o no al pedido conforme a sus posibilidades económicas y sin esperar retribución<br/><i>Participating members request the COCESNA Directive Council to provide them with necessary goods and services to repair, rehabilitate, reconstruct and replace the damaged components. COCESNA agrees or not to the request in accordance with its economic possibilities and without reimbursement.</i></p> <p>Se desconoce la existencia de mecanismos formales regionales. Cada autoridad aeronáutica o los concesionarios privados procede a contratar los bienes y servicios necesarios en el mercado local, en caso que se encuentren disponibles<br/><i>No known formal mechanism exists in the region. Each aeronautical authority or private concessionaire proceeds to contract the necessary goods and services from the national market in the case that the supply is available</i></p> | <p>Se desconoce la existencia de mecanismos formales o informales de asistencia. En caso de no intervenir COCESNA, cada autoridad aeronáutica procede procurar de proveedores internacionales los bienes y servicios necesarios<br/><i>No known formal or informal assistance mechanism exists. In the case that COCESNA does not take part, each aeronautical authority proceeds to contract the necessary goods and services from an international supplier</i></p> <p>Se desconoce la existencia de mecanismos formales. Cada autoridad aeronáutica procede a la contratación de los bienes y servicios necesarios de proveedores fuera de la región, en el caso que no se encuentren disponibles a nivel local o regional. Existe también la posibilidad de requerir asistencia de OACI para gestionar la compra de equipos en general<br/><i>No known formal mechanism exists. Each aeronautical authority proceeds to contract necessary goods and services from suppliers outside the region when there is no local or regional availability. There is also a possibility of requesting assistance from OACI for obtaining standard equipment</i></p> | <p>COCESNA<br/>COCESNA</p> <p>Organizaciones locales de aviación civil<br/><i>Local civil aviation organizations</i></p> <p>Proveedores de bienes y servicios<br/><i>Goods and services suppliers</i></p> <p>Compañías concesionarias de aeropuertos<br/><i>Airport concessionaire companies</i></p> <p>Organizaciones locales de aviación civil<br/><i>Local civil aviation organizations</i></p> <p>Proveedores de bienes y servicios<br/><i>Goods and services suppliers</i></p> <p>OACI<br/>OACI</p> | <p>Recursos de COCESNA o propios de cada institución, en general provenientes de:<br/><i>COCESNA resources or those of each institution, coming mainly from:</i></p> <ul style="list-style-type: none"> <li>Tasas de aeropuerto<br/><i>Airport taxes</i></li> <li>Seguros<br/><i>Insurance</i></li> <li>Donaciones<br/><i>Donations</i></li> </ul> <p>Recursos propios, en general provenientes de:<br/><i>Own resources, mainly from:</i></p> <ul style="list-style-type: none"> <li>Tasas de aeropuerto<br/><i>Airport taxes</i></li> <li>Seguros<br/><i>Insurance</i></li> <li>Donaciones<br/><i>Donations</i></li> </ul> |

**Cuadro 1.2**  
**Figure 1.2**

**Mecanismos de Asistencia para Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America  
in the Case of Hazardous Events: Current Situation**

**Transporte Aéreo**  
**Air Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms to Facilitate the Assistance</i>  | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Processes to Facilitate the Assistance</i> | Partes en la Asistencia<br><i>Participants in the Assistance</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|--|---|---|---|--|
| Componentes de propiedad de COCESNA y aquellos propiedad de la autoridad de aviación civil local pero mantenidos por COCESNA:<br><i>Components belonging to COCESNA and those components that are the property of the local civil aviation authority, but supported by COCESNA:</i> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME e ILS, sus Instalaciones y vías de acceso en caso que estén instalados en lugares remotos, <i>SSR, PSR, NDB, VOR, DME and ILS radar; their installation and access in case of installation in remote places</i></li> <li>Sistemas de energía eléctrica <i>Electrical energy systems</i></li> </ul> | No existe un mecanismo formal de reducción de vulnerabilidad. COCESNA incorpora medidas de mitigación de daños (contratación de seguros, sistemas redundantes, equipos de emergencias, entre otros)<br><i>There is no formal mechanism for vulnerability reduction. COCESNA incorporates damage mitigation measures (purchase of insurance, redundant systems, emergency equipment, among others)</i> | No existe un mecanismo formal de reducción de vulnerabilidad<br><i>There is no formal mechanism for vulnerability reduction</i>                 | COCESNA<br>Organizaciones locales de aviación civil<br>Local civil aviation organizations<br>Proveedores de bienes y servicios<br>Goods and services suppliers  | Recursos propios adquiridos por distintos mecanismos:<br><i>Own resources acquired through different mechanisms:</i> <ul style="list-style-type: none"> <li>Ingresos adquiridos a cambio de la prestación de servicios de protección de vuelo a operadores aéreos y por transmisión de mensajes aeronáuticos<br/><i>Revenues obtained through provision of flight protection services to air operators, and the transmission of aeronautical messages</i></li> <li>Préstamos no reembolsables o de baja tasa de interés<br/><i>Non refundable or low interest rate loans</i></li> <li>Donaciones<br/><i>Donations</i></li> <li>Seguros<br/><i>Insurance</i></li> </ul> |
| Sistemas informáticos de los servicios de navegación aérea de propiedad o bajo el mantenimiento de COCESNA<br><i>Information systems for air navigation services owned by COCESNA or maintained by them</i>  | Plan de Contingencia Y2K adoptado formalmente por cada uno de los Estados partes<br><i>Y2K Contingency Plan formally adopted by each one of the participating states</i>  | Se desconoce la existencia de un mecanismo formal internacional<br><i>There is no known formal mechanism</i>                                    | COCESNA<br>Autoridad competente de los Estados partes a cargo de aprobar el plan de contingencia de COCESNA<br><i>Competent authority of the participating states responsible for contingency plan approval</i> | Recursos de COCESNA<br><i>COCESNA resources</i>  |

| Componentes de Infraestructura Vulnerables<br><br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><br><i>Regional Mechanisms to Facilitate the Assistance</i>  | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><br><i>International Mechanisms or Processes to Facilitate the Assistance</i>  | Partes en la Asistencia<br><br><i>Participants in the Assistance</i>  | Notas sobre Recursos Económicos<br><br><i>Notes on Economic Resources</i>   |
|--|---|--|---|---|
| <p>Componentes de propiedad de las autoridades aeronáuticas locales:<br/><i>Components belonging to the local aeronautical authority:</i></p> <ul style="list-style-type: none"> <li>• Radares SSR y PSR, NDB, VOR, DME, ILS<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar</i></li> <li>• Torres de control<br/><i>Control towers</i></li> <li>• Sistemas de telecomunicaciones aeronáuticas<br/><i>Aeronautical telecommunication systems</i></li> <li>• Pistas<br/><i>Runways</i></li> <li>• Calles de rodaje<br/><i>Taxi ways</i></li> <li>• Plataformas<br/><i>Platforms</i></li> <li>• Edificios<br/><i>Buildings</i></li> <li>• Terminales aéreas<br/><i>Terminal areas</i></li> <li>• Sistemas de energía eléctrica<br/><i>Electrical power systems</i></li> <li>• Balizas para iluminación de pistas<br/><i>Runway lighting systems</i></li> <li>• Equipos de seguridad e incendio<br/><i>Safety fire equipment</i></li> <li>• Depósitos y sistemas de bombeo de combustible<br/><i>Fuel tanks and pumping systems</i></li> </ul> | <p>No existen mecanismos formales regionales. COCESNA, en el marco de su mecanismo de asistencia a las autoridades de aviación civil locales, adopta algunas medidas de mitigación de daños<br/><i>There are no formal regional mechanisms. COCESNA, in the framework of its assistance mechanism to civil aviation authorities, adopts some damage mitigation measures</i></p> <p>Se desconoce la existencia de mecanismos regionales de reducción de vulnerabilidad<br/><i>There are no known regional mechanisms for vulnerability reduction</i></p> | <p>No existen mecanismos internacionales formales<br/><i>There are no international formal mechanisms</i></p> <p>Se desconoce la existencia de mecanismos internacionales formales. Es posible requerir asistencia técnica a OACI sobre medidas de seguridad en aeropuertos<br/><i>There are no known formal international mechanisms. It is possible to request technical assistance on airport security measures from OACI</i></p> | <p>COCESNA<br/>COCESNA</p> <p>Organizaciones locales de aviación civil<br/><i>Local civil aviation organizations</i></p> <p>Proveedores de bienes y servicios<br/><i>Goods and services suppliers</i></p> <p>Organizaciones locales de aviación civil<br/><i>Local civil aviation organizations</i></p> <p>Proveedores de bienes y servicios<br/><i>Goods and services suppliers</i></p> <p>OACI<br/>OACI</p> <p>Compañías concesionarias de aeropuertos<br/><i>Airports concessionaire companies</i></p> | <ul style="list-style-type: none"> <li>• Recursos de COCESNA<br/><i>COCESNA resources</i></li> <li>• Recursos propios de los organismos locales de aviación civil<br/><i>Local civil aviation organizations own resources</i></li> </ul> <p>Recursos propios provenientes de diversas fuentes, entre ellas:<br/><i>Own resources from diverse sources such as:</i></p> <ul style="list-style-type: none"> <li>• Cobro de tasas de aeropuertos<br/><i>Airport taxes revenues</i></li> <li>• Seguros, especialmente en caso de compañías concesionarias<br/><i>Insurance particularly in the case of concessionaire companies</i></li> <li>• Donaciones<br/><i>Donations</i></li> </ul> |

**Cuadro 1.3**  
**Figure 1.3**

**Mecanismos Alternativos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America  
in the Case of Hazardous Events**

**Transporte Aéreo**  
**Air Transportation**

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>   | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>   | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i>   | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | <b>Proceso de Implementación</b><br><i>Implementation Process</i>   |
|--|---|--|--|---|
| <p>Componentes de propiedad de COCESNA y aquellos propiedad de la autoridad de aviación civil local pero mantenidos por COCESNA:<br/><i>Components belonging to COCESNA and those components that are the property of the local civil aviation authority, but maintained by COCESNA:</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME e ILS, sus Instalaciones y vías de acceso en caso que estén instalados en lugares remotos<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar; their installation and access in case of installation in remote places</i></li> <li>Sistemas de energía eléctrica<br/><i>Electrical energy systems</i></li> <li>Sistemas informáticos<br/><i>Information systems</i></li> </ul> | <p>El mecanismo regional existente ha probado funcionar con efectividad. Resultaría conveniente adicionar al mismo procedimientos prelicitatorios y contratos preconvenidos con el sector privado<br/><i>The existing regional mechanism has functioned effectively. It would be useful to add to it pre-llicitation and pre-approved contracts</i></p>   | <p>Recursos propios adquiridos por distintos mecanismos:<br/><i>Own resources acquired through different mechanisms:</i></p> <ul style="list-style-type: none"> <li>Ingresos adquiridos a cambio de la prestación de servicios de protección de vuelo a operadores aéreos y por transmisión de mensajes aeronáuticos<br/><i>Revenues obtained through provision of flight protection services to air operators, and the transmission of aeronautical messages</i></li> <li>Préstamos no reembolsables o de baja tasa de interés<br/><i>Non refundable or low interest rate loans</i></li> <li>Donaciones<br/><i>Donations</i></li> </ul> | <p>Analisis de riesgos específicos de la infraestructura necesaria para prestar servicios de navegación aérea<br/><i>Specific risk analysis of the necessary infrastructure to provide air navigation services</i></p> <p>Estudios detallados de los componentes vulnerables<br/><i>Detailed studies of the vulnerable components</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios, tanto de proveedores nacionales como extranjeros<br/><i>Detailed technical specifications of the necessary goods and services from either domestic or foreign suppliers</i></p> <p>Organizar un listado de proveedores<br/><i>Organize a list of suppliers</i></p> | <p>Reuniones y decisión del Consejo Directivo de COCESNA<br/><i>COCESNA Directive Council meetings and decisions</i></p>  |
| <p>Componentes de propiedad de las autoridades aeronáuticas locales:<br/><i>Components belonging to the local aeronautical authority:</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME, ILS<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar</i></li> </ul>   | <p>Formalizar el proceso existente por el cual COCESNA asiste a los Estados partes en la medida de sus posibilidades, extendiendo la jurisdicción de la institución y concediendo el mantenimiento y/o propiedad de los componentes referidos<br/><i>Formalize the existing process through which the participating states are assisted by COCESNA within its possibilities, extending its institutional jurisdiction and granting the maintenance and/or the property of the identified components</i></p> | <p>Extender el presupuesto existente u orientar la búsqueda de fondos para que la asistencia sea posible<br/><i>Extend the existing budget or guide the search of funds in order to make possible the assistance</i></p>   | <p>Estudio detallado de las condiciones actuales de los componentes referidos en cuanto a antigüedad, obsolescencia y características técnicas<br/><i>Detailed study of the current condition of the identified components with respect to age, obsolescence and technical characteristics</i></p>   | <p>Llevar adelante reuniones exploratorias entre COCESNA y las autoridades de aviación civil locales para evaluar la conveniencia o no, y eventualmente, el método y procedimiento de la transferencia<br/><i>Carry out exploratory meetings between COCESNA and the local civil aviation authorities in order to evaluate the desirability or not of the transfer, and eventually the corresponding methods and procedures</i></p> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>   | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>  | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i>  | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | <b>Proceso de Implementación</b><br><i>Implementation Process</i>   |
|--|--|---|---|---|
| <ul style="list-style-type: none"> <li>Torres de control<br/><i>Control towers</i></li> <li>Sistemas de telecomunicaciones aeronáuticas<br/><i>Aeronautical telecommunication systems</i></li> <li>Pistas<br/><i>Runways</i></li> <li>Calles de rodaje<br/><i>Taxi ways</i></li> <li>Plataformas<br/><i>Platforms</i></li> <li>Edificios<br/><i>Buildings</i></li> <li>Terminales aéreas<br/><i>Terminal areas</i></li> <li>Sistemas de energía eléctrica<br/><i>Electrical power systems</i></li> <li>Balizas para iluminación de pistas<br/><i>Runway lighting systems</i></li> <li>Equipos de seguridad e incendio<br/><i>Safety fire equipment</i></li> <li>Depósitos y sistemas de bombeo de combustible<br/><i>Fuel tanks and pumping systems</i></li> </ul> | <p>Acelerar el proceso de transferencia de la prestación de servicios aeronáuticos a COCESNA conforme surge de su Acuerdo Constitutivo<br/><i>Accelerate the process of transfer the aeronautical services to COCESNA according to the basic agreement</i></p> <p>Analizar como mecanismo alternativo las ventajas y desventajas de transferir la explotación de algunos de los componentes referidos al sector privado<br/><i>Analyze as an alternative mechanism the pros and cons of transferring the operation of some of the identified components to the private sector.</i></p> | <p>Establecer claramente en el documento de transferencia, las fuentes de ingreso que corresponderán a COCESNA en compensación por la prestación de los nuevos servicios<br/><i>Establish clearly in the transfer document the sources of income to COCESNA for compensation for the new services</i></p> | <p>Analisis detallado de las condiciones de la infraestructura a transferir y de la situación del personal estatal<br/><i>Detailed analysis of the condition of the infrastructure to be transferred and of the situation of the public employees</i></p> <p>Incorporar en un eventual acuerdo de transferencia cláusulas concretas sobre quién estará a cargo de llevar adelante las medidas de reducción de vulnerabilidad y la reparación, rehabilitación, reconstrucción y remplazo de componentes dañados por fenómenos naturales<br/><i>Incorporate into the transfer agreement specific clauses concerning who will be responsible for vulnerability reduction actions and the repair, rehabilitation, reconstruction and replacement of damaged components</i></p> <p>Otorgar facilidades aduaneras para que el sector privado pueda importar con ciertas libertades impositivas, los recursos necesarios para incorporar medidas de reducción de vulnerabilidad y para enfrentar la reparación, rehabilitación, reconstrucción y remplazo de componentes dañados por fenómenos naturales<br/><i>Grant customs waivers to allow the private sector to import the necessary equipment in order to incorporate vulnerability reduction measures, and also to carry out repair, rehabilitation, reconstruction and the replacement of the damaged components due to natural events</i></p> | <p>Reuniones entre los representantes de los Estados partes y las autoridades aeroportuarias con el fin de evaluar la conveniencia de efectuar tal transferencia y, eventualmente, analizar los mecanismos y procesos para hacerla efectiva<br/><i>Meetings between the participating states and the airport authorities in order to evaluate the desirability of carrying out such a transfer and eventually, analyze the mechanisms and procedures to effectuate the transfer</i></p> <p>Celebrar reuniones entre las entidades subsectoriales del sector público y luego entre el sector público y privado y expertos en la materia para evaluar la posibilidad de transferir a manos privadas algunos de los componentes referidos<br/><i>Hold meetings between public subsectorial institutions and then among not only public and private sectors but also experts in the subject matter to evaluate the possibility of transferring to private firms some of the identified components</i></p> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i> | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>   | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i>  | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | <b>Proceso de Implementación</b><br><i>Implementation Process</i>  |
|--|---|---|--|--|
| Id. anterior<br>Same as above  | <p>Considerar la redacción y firma de un Convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C<br/><i>Consider the drafting and adoption of an agreement between the Central American countries, in which Appendix C clauses and considerations would be included</i></p> <p>En el ámbito individual, cada autoridad aeroportuaria debe recurrir a procesos prelicitatorios y a contratos o acuerdo preconvenidos<br/><i>Individually, each airport authority should use pre-llicitation processes and pre-approved contracts</i></p> | <p>Ver Apéndice C<br/>See Appendix C</p> <p>Recursos propios adquiridos por distintos mecanismos:<br/><i>Own resources acquired through different mechanisms:</i></p> <ul style="list-style-type: none"> <li>• Ingresos adquiridos a cambio de la prestación de servicios de protección de vuelo a operadores aéreos y por transmisión de mensajes aeronáuticos<br/><i>Revenues obtained through provision of flight protection services to air operators, and the transmission of aeronautical messages</i></li> <li>• Préstamos no reembolsables o de baja tasa de interés<br/><i>Non refundable or low interest rate loans</i></li> <li>• Donaciones<br/><i>Donations</i></li> </ul> | <p>Ver Apéndice C<br/>See Appendix C</p> <p>Analisis de riesgos específicos de los componentes de infraestructura aquí referidos<br/><i>Specific risk analysis of the referred infrastructure components</i></p> <p>Estudios detallados de los componentes vulnerables<br/><i>Detailed studies of the vulnerable components</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios, tanto de proveedores nacionales como extranjeros<br/><i>Detailed technical specifications of the necessary goods and services from either domestic or foreign suppliers</i></p> <p>Organizar un listado de proveedores<br/><i>Organize a list of suppliers</i></p> | <p>Ver Apéndice C<br/>See Appendix C</p> <p>Considerar las pautas indicadas en el Apéndice D<br/><i>Consider the guidelines in Appendix D</i></p>  |
|  | <p>Gestionar ante OACI, OPS y ACI, la efectivización de las actividades previstas en el Memorándum de Entendimiento suscrito entre OACI, OPS/OMS y ACI/LAC para el Desarrollo de Planes de Emergencia en los Aeropuertos de las Regiones del Caribe y Sudamérica<br/><i>Solicit OACI, PAHO and ACI the implementation of activities planned in the Memorandum of Understanding signed by OACI, PAHO/ WHO and ACI/LAC for the Development of Caribbean and South American Airport Emergency Plans</i></p>  |   | <p>Analisis detallado del contenido de los planes de emergencia de los aeropuertos centroamericanos en lo relativo a peligros naturales<br/><i>Detailed analysis of the content of the emergency plans of the Central American airports as they relate to natural hazards</i></p>  | <p>Llevar adelante una reunión entre representantes de OACI, OPS, ACI/LAC y COCESNA para debatir la situación específica de los planes de emergencia de los aeropuertos centroamericanos<br/><i>Carry out a meeting between the representatives of OACI, OPS, ACI/LAC and COCESNA in order to discuss the emergency plans of Central American airports</i></p> |



Cuadro 1.4  
*Figure 1.4*

**Mecanismos Alternativos de Asistencia para Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America  
in the Case of Hazardous Events**

**Transporte Aéreo**  
*Air Transport*

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | Proceso de Implementación<br><i>Implementation Process</i>  |
|--|---|--|--|---|
| <p>Componentes de propiedad de COCESNA y aquellos propiedad de la autoridad de aviación civil local pero mantenidos por COCESNA:<br/><i>Components belonging to COCESNA and those components that are the property of the local civil aviation authority, but maintained by COCESNA:</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME e ILS, sus Instalaciones y vías de acceso en caso que estén instalados en lugares remotos, SSR, PSR, NDB, VOR, DME and ILS radar; their installation and access in case of installation in remote places</li> <li>Sistemas de energía eléctrica<br/><i>Electrical energy systems</i></li> <li>Sistemas informáticos<br/><i>Information systems</i></li> </ul> | <p>Considerar la extensión del denominado Plan de Contingencia ATS/Y2K a cualquier situación o amenaza que afecte la prestación de servicios de navegación aérea, incluyendo los peligros naturales y que sistematice y organice un conjunto de medidas de mitigación de daños ante eventos peligrosos<br/><i>Consider extending the ATS/Y2K Contingency Plan to any situation or threat that affects air navigation services, including natural hazards by systematizing and organizing packages of damage mitigation measures</i></p> | <p>Recursos propios adquiridos por distintos mecanismos:<br/><i>Own resources acquired through different mechanisms:</i></p> <ul style="list-style-type: none"> <li>Ingresos adquiridos a cambio de la prestación de servicios de protección de vuelo a operadores aéreos y por transmisión de mensajes aeronáuticos<br/><i>Revenues obtained through provision of flight protection services to air operators, and the transmission of aeronautical messages</i></li> <li>Préstamos no reembolsables o de baja tasa de interés<br/><i>Non refundable or low interest rate loans</i></li> <li>Donaciones<br/><i>Donations</i></li> </ul> | <p>Desarrollar análisis de riesgos específicos de los componentes referidos<br/><i>Develop specific risk analysis of the identified components</i></p> <p>Realizar estudio detallado de vulnerabilidad de los componentes bajo su jurisdicción<br/><i>Elaborate detailed studies of the vulnerable components under its jurisdiction</i></p> | <p>Reunión entre COCESNA y los Estados Parte y decisión de su Consejo Directivo<br/><i>Meetings between COCESNA and members states and the decisions of its Directive Council</i></p>   |
| <p>Sistemas informáticos de los servicios de navegación aérea de propiedad o bajo el mantenimiento de COCESNA<br/><i>Information systems for air navigation services belonging to or under maintenance by COCESNA</i></p>  | <p>Ajustar el Plan de Contingencia ATS/Y2K a situaciones que afecten los servicios informáticos más allá del fenómeno denominado Y2K<br/><i>Adjust the Y2K Contingency Plan to any situation that affects information systems, beyond that of the Y2K phenomena</i></p>   | <p>Presupuesto propio de COCESNA,<br/>Id. fila anterior<br/><i>COCESNA own budget,<br/>Id. item above</i></p>  | <p>Ánalisis de riesgos sobre posibles fallas en los sistemas informáticos debido a fenómenos naturales<br/><i>Risk analysis of possible information system failures due to natural hazards</i></p>   | <p>Contratación de personal técnico en caso que COCESNA no cuente con recursos propios<br/><i>Contract technical staff in the case that COCESNA does not have its own resources</i></p> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>   | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>   | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i>  | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | <b>Proceso de Implementación</b><br><i>Implementation Process</i>   |
|--|---|---|---|---|
| <p>Componentes de propiedad de las autoridades aeronáuticas locales:<br/><i>Components belonging to the local aeronautical authority:</i></p> <ul style="list-style-type: none"> <li>Radares SSR y PSR, NDB, VOR, DME, ILS<br/><i>SSR, PSR, NDB, VOR, DME and ILS radar</i></li> <li>Torres de control<br/><i>Control towers</i></li> <li>Sistemas de telecomunicaciones aeronáuticas<br/><i>Aeronautical telecommunication systems</i></li> <li>Pistas<br/><i>Runways</i></li> <li>Calles de rodaje<br/><i>Taxi ways</i></li> <li>Plataformas<br/><i>Platforms</i></li> <li>Edificios<br/><i>Buildings</i></li> <li>Terminales aéreas<br/><i>Terminal areas</i></li> <li>Sistemas de energía eléctrica<br/><i>Electrical power systems</i></li> <li>Balizas para iluminación de pistas<br/><i>Runway lighting systems</i></li> <li>Equipos de seguridad e incendio<br/><i>Safety fire equipment</i></li> <li>Depósitos y sistemas de bombeo de combustible<br/><i>Fuel tanks and pumping systems</i></li> </ul> | <p>Hasta el momento que se formalice el mecanismo existente, solicitar asistencia técnica a COCESNA en cuanto a incorporar medidas de mitigación de daños<br/><i>Request technical assistance from COCESNA, in order to incorporate damage mitigation measures, until the formal adoption of the existing mechanism</i></p> <p>Contratación de seguros y cláusulas de garantía<br/><i>Insurance contracts and guarantee clauses</i></p> <p>Solicitar a COCESNA asistencia técnica en cuanto a incorporar medidas de seguridad en los sistemas de información<br/><i>Request technical assistance from COCESNA, in order to incorporate security measures into information systems</i></p> | <p>Costos compartidos<br/><i>Shared costs</i></p> <p>Identificar fuentes de recursos para solventar la asistencia técnica<br/><i>Identify sources of resources for covering technical assistance</i></p> <p>Recursos propios<br/><i>Own funds</i></p> <p>Considerar la posibilidad de incrementar tasas de servicios con el fin de que lo recaudado se destine a incorporar medidas de reducción de vulnerabilidad<br/><i>Consider the possibility of raising service rates for the purpose of using that money for vulnerability reduction measures</i></p> <p>Recursos propios de COCESNA<br/><i>COCESNA's own funds</i></p> <p>Considerar la posibilidad de incrementar tasas de servicios con el fin de que lo recaudado se destine a incorporar medidas de reducción de vulnerabilidad<br/><i>Consider the possibility of raising service rates for the purpose of using the collected funds to incorporate vulnerability reduction measures</i></p> | <p>Desarrollar análisis de riesgos específicos de los componentes referidos (ubicación, instalación, obsolescencia y antigüedad, entre otros)<br/><i>Elaborate risk analysis of the identified components (current location, installation, age and obsolescence among others)</i></p> <p>Análisis de riesgos específicos de la infraestructura referida<br/><i>Specific risk analysis of the identified infrastructure</i></p> <p>Evaluar la existencia o posible escasez de recursos para enfrentar emergencias<br/><i>Evaluate the existence of resources to confront emergencies.</i></p> <p>Estudios detallados de los componentes vulnerables<br/><i>Detailed studies of vulnerable components</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios, tanto de proveedores nacionales como extranjeros<br/><i>Detailed technical specifications for the necessary goods and services from either domestic or foreign suppliers</i></p> <p>Análisis de riesgos específicos de los sistemas de información<br/><i>Specific risk analysis of information systems</i></p> | <p>Talleres entre personal técnico de COCESNA y de las entidades aeroportuarias<br/><i>Workshops involving COCESNA technical staff and the airport entities</i></p> <p>Contratar recursos humanos para asesoramiento legal<br/><i>Contract personnel for legal advise</i></p> <p>Reuniones de trabajo de las autoridades aeroportuarias, organizaciones de aviación civil y COCESNA<br/><i>Working meetings between airport authorities, civil aviation organizations and COCESNA</i></p> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i> | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>  | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i> | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i> | <b>Proceso de Implementación</b><br><i>Implementation Process</i> |
|--|--|--|--|---|
| Id. anterior<br>Same as above  | <p>Considerar la redacción y firma de un Convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C<br/> <i>Consider the drafting and adoption of an agreement between the Central American countries, in which Appendix C clauses and considerations would be considered</i></p> <p>Acelerar el proceso para que se apruebe y haga efectivo el proyecto plasmado en el documento sobre el Plan Regional para la Reducción de Desastres del Sector Transporte<br/> <i>Speed up the approve and carry out the project that is established in the document on the Regional Plan for Disaster Reduction of the Transportation Sector</i></p> | <p>Ver Apéndice C<br/> <i>See Appendix C</i></p>                             | <p>Ver Apéndice C<br/> <i>See Appendix C</i></p>   | <p>Ver Apéndice C<br/> <i>See Appendix C</i></p>                  |
|  |  |  |  |   |



**Cuadro 2.1**  
**Figure 2.1**

**Mecanismos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America  
in the Case of Hazardous Events: Current Situation**

**Transporte Marítimo  
Maritime Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Process to Facilitate the Assistance</i>  | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Process to Facilitate Assistance</i>   | Partes en la Asistencia<br><i>Participants in the Assistance</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|--|--|---|--|--|
| Canales de acceso a puertos<br><i>Port access channels</i>   | Se desconoce la existencia de un mecanismo formal a nivel regional.<br><i>There is no known formal regional mechanism.</i>   | Se desconoce la existencia de un mecanismo formal. Cada autoridad portuaria, en caso de necesitar servicio de dragado luego de un desastre natural, lo procura de proveedores fuera de la región o procede a gestionar préstamos o fondos de la cooperación internacional bilateral.<br><i>There is no known formal mechanism. After a natural disaster, each port authority if in need of a dredging service, obtains it from suppliers outside the region or negotiates loans or funds from bilateral international cooperation.</i>  | Autoridades portuarias<br><i>Port authorities</i><br><br>Proveedores privados<br><i>Private suppliers</i>  | Recursos propios<br><i>Own resources</i><br><br>Recursos cedidos por el gobierno nacional para casos de emergencia<br><i>National government resources given for emergency situations</i><br><br>Préstamos<br><i>Loans</i><br><br>Fondos de la cooperación bilateral<br><i>Bilateral cooperation funds</i> |
| <ul style="list-style-type: none"> <li>• Tanques de combustible<br/><i>Fuel tanks</i></li> <li>• Tuberías para el transporte de hidrocarburos<br/><i>Hydrocarbon transportation pipelines</i></li> <li>• Sistemas de bombeo de hidrocarburos<br/><i>Hydrocarbon pumping systems</i></li> <li>• Depósitos de sustancias peligrosas<br/><i>Hazardous substance depots</i></li> </ul> | No sea identificado un mecanismo regional en relación a daños a los componentes mencionados.<br><i>There is no identified regional mechanism related to damage of the identified components.</i> | <p>No hay un mecanismo formal internacional referido específicamente a la reparación, rehabilitación, reconstrucción y remplazo de los componentes mencionados<br/><i>There is no formal international mechanism identified specifically for the repair, rehabilitation, reconstruction and replacement of the identified components.</i></p> <p>Sólo se han identificado mecanismos formales orientados a coordinar acciones de respuesta al derrame de hidrocarburos o sustancias peligrosas originado en la destrucción (por fenómenos naturales o no) de componentes necesarios para transportar y almacenar hidrocarburos o sustancias peligrosas en puerto:<br/><i>The only identified formal mechanisms are aimed at coordinating response activities in the case of oil or hazardous material spills, caused by the destruction (due to natural phenomenon or not) of the components needed for the transportation and storage of hydrocarbons and hazardous materials in ports:</i></p> <ul style="list-style-type: none"> <li>• Convenio Internacional sobre Cooperación, Preparación y Lucha contra la Contaminación por Hidrocarburos<br/><i>Clean Caribbean Cooperative (CCC)</i><br/><i>International Convention on Cooperation, Preparation and Fight against Hydrocarbons Contamination</i><br/><i>Clean Caribbean Cooperative (CCC)</i></li> </ul> | <p>Autoridades portuarias<br/><i>Port authorities</i></p> <p>Empresas concesionarias o propietarias de algunos de componentes mencionados<br/><i>Concessionaires or companies that own some of the identified components</i></p> <p>OMI y puntos focales designados<br/><i>OMI and designated focal points</i></p> <p>CCC<br/><i>CCC</i></p> | <p>Recursos propios<br/><i>Own resources</i></p> <p>Seguros<br/><i>Insurance</i></p>   |

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Process to Facilitate the Assistance</i>   | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Process to Facilitate Assistance</i>   | Partes en la Asistencia<br><i>Participants in the Assistance</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|--|---|---|--|--|
| <ul style="list-style-type: none"> <li>Sistema de atraque<br/><i>Docking systems</i></li> <li>Sistema eléctrico<br/><i>Electric system</i></li> <li>Rompeolas<br/><i>Breakwater structures</i></li> <li>Radios<br/><i>Radios</i></li> <li>Radares<br/><i>Radar</i></li> <li>Antenas<br/><i>Antennas</i></li> <li>Faros<br/><i>Lighthouses</i></li> <li>Boyas<br/><i>Buoys</i></li> <li>Bodegas de almacenamiento<br/><i>Warehouses</i></li> <li>Edificio administrativo<br/><i>Administrative buildings</i></li> <li>Pavimento de área de circulación portuaria<br/><i>Port road circulation area</i></li> <li>Canales internos de desagüe<br/><i>Port surface drainage system</i></li> <li>Sistema de alcantarillado<br/><i>Sewer system</i></li> <li>Sistema de agua potable<br/><i>Drinking water system</i></li> <li>Grúas descargadoras y transportadoras de contenedores (cimentación de grúas estacionarias o líneas férreas de grúas móviles)<br/><i>Cranes for unloading and container transporters (including foundations of fixed cranes or rails of movable cranes)</i></li> </ul> | <p>No se han identificado mecanismos regionales. En caso de daños a los mencionados componentes la autoridad portuaria, procura los bienes y servicios necesarios, de proveedores locales. En caso que alguno de los componentes, se encuentre en manos privadas (bodegas de almacenamiento), el propietario o concesionario procede a rehabilitarlos contratando proveedores locales.</p> <p><i>There are no known regional mechanisms. When the identified components are damaged, goods and services are obtained by port authorities from local suppliers. In the event that any of the components are owned by a private party (warehouses) the proprietor proceeds to rehabilitate them by contract with a local supplier</i></p> | <p>No existe un mecanismo formal para proceder en caso de evaluación de daños, reparación, rehabilitación y remplazo de tales componentes. Es posible gestionar la asistencia de la cooperación bilateral o gestionar préstamos.</p> <p><i>There is no formal mechanism for making the damage evaluation, repair, rehabilitation and replacement of the referred components. It is possible to request bilateral cooperation assistance and to negotiate loans.</i></p> | <p>Autoridades portuarias<br/><i>Port authorities</i></p> <p>Proveedores privados de bienes y servicios<br/><i>Private goods and services suppliers</i></p> <p>Agencias de Cooperación internacional<br/><i>International cooperation agencies</i></p> <p>Empresas concesionarias privadas<br/><i>Private concessionaire companies</i></p> | <p>Autoridades portuarias:<br/><i>Port authorities:</i></p> <ul style="list-style-type: none"> <li>Recursos propios<br/><i>Own resources</i></li> <li>Donaciones<br/><i>Donations</i></li> <li>Seguros<br/><i>Insurance</i></li> </ul> |

**Cuadro 2.2**  
**Figure 2.2**

**Mecanismos de Asistencia para Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America  
in the Case of Hazardous Events: Current Situation**

**Transporte Marítimo**  
**Maritime Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Process to Facilitate the Assistance</i>                             | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Process to Facilitate the Assistance</i>   | Partes en la Asistencia<br><i>Participants in the Assistance</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  |
|--|---|---|---|--|
| Canales de acceso a puertos<br><i>Port access channels</i>   | Se desconoce la existencia de mecanismos regionales de reducción de vulnerabilidad<br><i>There are no known regional mechanisms for vulnerability reduction</i> | No se han identificado mecanismos formales internacionales de reducción de vulnerabilidad<br><i>No formal international mechanisms for vulnerability reduction have been identified</i>                               | Autoridades portuarias<br><i>Port authorities</i><br><br>Proveedores de servicios de dragado<br><i>Dredge service suppliers</i>   | Se desconoce la existencia de seguros o de garantías en caso de desastres naturales gestionadas con la empresa proveedora<br><i>There is neither known insurance nor a guaranteed service in the event of natural disasters negotiated with a supplier company</i> |
| <ul style="list-style-type: none"> <li>• Tanques de combustible<br/><i>Fuel tanks</i></li> <li>• Tuberías para el transporte de Hidrocarburos<br/><i>Hydrocarbon transportation pipelines</i></li> <li>• Sistemas de bombeo de hidrocarburos<br/><i>Hydrocarbon pumping systems</i></li> <li>• Depósitos de sustancias peligrosas<br/><i>Hazardous substance depots</i></li> </ul> | No se han identificado mecanismos regionales de reducción de vulnerabilidad<br><i>There are no identified regional mechanisms for vulnerability reduction</i>   | No existen mecanismos internacionales que se refieran a reducción de vulnerabilidad de los componentes esenciales<br><i>There are no international mechanisms for vulnerability reduction of essential components</i> | Autoridades portuarias<br><i>Port authorities</i><br><br>Empresas concesionarias o propietarias de algunos de los componentes mencionados.<br><i>Concessionaires or companies that own some of the identified components.</i><br><br>OMI y puntos focales designados<br><i>OMI and designated focal points</i><br><br>CCC<br><i>CCC</i> | Recursos propios<br><i>Own resources</i><br><br>Seguros<br><i>Insurance</i>  |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>   | <b>Mecanismos o Procesos Regionales para Facilitar la Asistencia</b><br><i>Regional Mechanisms or Process to Facilitate the Assistance</i>  | <b>Mecanismos o Procesos Internacionales para Facilitar la Asistencia</b><br><i>International Mechanisms or Process to Facilitate the Assistance</i>   | <b>Partes en la Asistencia</b><br><i>Participants in the Assistance</i>  | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economic Resources</i>                                     |
|--|---|--|--|--|
| <ul style="list-style-type: none"> <li>• Sistema de atraque<br/><i>Docking systems</i></li> <li>• Sistema eléctrico<br/><i>Electric system</i></li> <li>• Rompeolas<br/><i>Breakwater structures</i></li> <li>• Radios<br/><i>Radios</i></li> <li>• Radares<br/><i>Radar</i></li> <li>• Antenas<br/><i>Antennas</i></li> <li>• Faros<br/><i>Lighthouses</i></li> <li>• Boyas<br/><i>Buoys</i></li> <li>• Bodegas de almacenamiento<br/><i>Warehouses</i></li> <li>• Edificio administrativo<br/><i>Administrative buildings</i></li> <li>• Pavimento de área de circulación portuaria<br/><i>Port road circulation area</i></li> <li>• Canales internos de desagüe<br/><i>Port surface drainage system</i></li> <li>• Sistema de alcantarillado<br/><i>Sewer system</i></li> <li>• Sistema de agua potable<br/><i>Drinking water system</i></li> <li>• Grúas descargadoras y transportadoras de contenedores (cimentación de grúas estacionarias o líneas férreas de grúas móviles)<br/><i>Cranes for unloading and container transporters (including foundations of fixed cranes or rails of movable cranes)</i></li> </ul> | <p>No se han identificado mecanismos de asistencia regional para reducción de vulnerabilidad en relación con tales componentes. Cada autoridad portuaria o compañía concesionaria o propietaria de tales componentes, incorpora medidas de seguridad y de reducción de pérdidas en la medida de sus posibilidades y en forma individual</p> <p><i>There are no known regional assistance mechanisms for vulnerability reduction related to the identified components. According to their individual circumstances each port authority, concessionaire or company owner of the identified components adopts security and damage reduction measures</i></p> | <p>No se ha identificado mecanismo de asistencia internacional en materia de reducción de vulnerabilidad</p> <p><i>There is no identified international assistance mechanism for vulnerability reduction</i></p> | <p>Autoridades portuarias<br/><i>Port authorities</i></p> <p>Empresas concesionarias<br/><i>Concessionaire companies</i></p> | <p>Recursos propios<br/><i>Own resources</i></p> <p>Contratación de seguros<br/><i>Insurance contracting</i></p> |

**Cuadro 2.3**  
**Figure 2.3**

**Mecanismos Alternativos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America  
in the Case of Hazardous Events**

**Transporte Marítimo**  
**Maritime Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i> | Mecanismos Alternativos<br><i>Alternative Mechanism</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economics Resources</i>   | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | Proceso de Implementación<br><i>Implementation Process</i>   |
|---|---|--|---|--|
| Canales de acceso a puertos<br><i>Port access channels</i>                                | Procesos prelicitatorios y Contratos preacordados<br><i>Pre-bidding processes and pre-arranged contracts</i>  | Fondos propios incrementados considerando la creación de un fondo especial aumentando la tasa de servicios y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros.<br><i>Own funds increased by considering the creation of a special fund through rising services rates and other financing mechanisms: ministerial budget operation funds, special donations or loans, among others.</i> | Analisis de riesgos específicos de cada puerto en relación a la necesidad de servicio de dragado<br><i>Specific risks analysis of each port in relation to the necessity of dredging service</i><br><br>Especificaciones técnicas detalladas del servicio necesario<br><i>Detailed specifications of the services needed</i><br><br>Organizar un listado de los proveedores internacionales de servicios de dragado<br><i>Creation of a list of international dredging service suppliers</i>  | Considerar al respecto seguir las pautas indicadas en el Apéndice D<br><i>Consider following the models indicated in appendix D</i>  |
|   | Analizar la posibilidad de crear un sistema de respuesta cooperativa regional, con asistencia internacional y coordinado por COCATRAM<br><i>To analyze the possibility of creating a regional cooperative response system with international assistance and coordinated by COCATRAM</i> | Fondos propios incrementados considerando la creación de un fondo especial aumentando la tasa de servicios y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros.<br><i>Own funds increased by considering the creation of a special fund through rising services rates and other financing mechanisms: ministerial budget operation funds, special donations or loans, among others.</i> | Analisis de riesgos específicos de cada puerto en relación a la necesidad de servicio de dragado<br><i>Specific risks analysis of each port in relation to the necessity of dredging service</i><br><br>Estudios de vulnerabilidad de los canales<br><i>Channel vulnerability studies</i><br><br>Especificaciones técnicas detalladas del servicio necesario<br><i>Detailed specifications of the services needed</i><br><br>Organizar un listado de los proveedores internacionales de servicios de dragado<br><i>Creation of a list of international dredging service suppliers</i> | Reuniones de trabajo entre los representantes de los puertos que requieran servicio de dragado y el sector privado proveedor del mismo<br><i>Working meetings between port representatives who need the dredging service and the private sector dredging supplier</i><br><br>Creación del mecanismo cooperativo mediante la convocatoria de especialistas en la materia<br><i>Create a cooperative mechanism by convening specialists on the subject</i> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>  | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>   | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economics Resources</i>   | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | <b>Proceso de Implementación</b><br><i>Implementation Process</i>  |
|---|---|---|---|--|
| <ul style="list-style-type: none"> <li>Tanques de combustible<br/><i>Fuel tanks</i></li> <li>Tuberías para el transporte de hidrocarburos<br/><i>Hydrocarbon transportation pipelines</i></li> <li>Sistemas de bombeo de hidrocarburos<br/><i>Hydrocarbon pumping systems</i></li> <li>Depósitos de sustancias peligrosas<br/><i>Hazardous substance depots</i></li> </ul>  | <p>Gestionar que la acción de los mecanismos de respuesta a derrames de hidrocarburos y sustancias peligrosas, se extienda a la reconstrucción, (incorporando medidas de reducción de vulnerabilidad) de los componentes dañados por un fenómeno natural que originaron el derrame</p> <p><i>Negotiate that the response action mechanisms to spillage of hydrocarbon and dangerous substances be extended to reconstruction (incorporating vulnerability reduction measures) of the components damaged by natural events that caused the spill</i></p> | <p>Recursos propios<br/><i>Own resources</i></p> <p>Seguros<br/><i>Insurance</i></p> <p>Sistemas de reembolso previstos en cada mecanismo<br/><i>Reimbursement systems planned for each mechanism</i></p> | <p>Cada autoridad portuaria debe llevar adelante:<br/><i>Each port authority must carry out:</i></p> <p>Análisis de riesgos específicos en relación con los componentes mencionados<br/><i>Specific risk analysis related to the mentioned components</i></p> <p>Estudios detallados de los componentes vulnerables<br/><i>Detailed studies of the vulnerable components</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios<br/><i>Detailed technical specifications of the needed goods and services</i></p> | <p>Contactar a la OMI con el fin que estudie y brinde asistencia técnica para la creación de acuerdo de asistencia en la materia<br/><i>Contact OMI to study and provide technical assistance for the creation of an assistance agreement</i></p> <p>Establecer reuniones con representantes de CCC y empresas privadas dedicadas a brindar respuesta a derrames de hidrocarburos y sustancias peligrosas<br/><i>Establish meetings between CCC representatives and private companies devoted to response to hydrocarbon and dangerous substances spills</i></p> |
| <p>Componentes vulnerables mencionados anteriormente y :<br/><i>Vulnerability components previously mentioned and:</i></p> <ul style="list-style-type: none"> <li>Sistema de atraque<br/><i>Docking systems</i></li> <li>Sistema eléctrico<br/><i>Electric system</i></li> <li>Rompeolas<br/><i>Breakwater structures</i></li> <li>Radios<br/><i>Radios</i></li> <li>Radares<br/><i>Radar</i></li> <li>Antenas<br/><i>Antennas</i></li> <li>Faros<br/><i>Lighthouses</i></li> <li>Boyas<br/><i>Buoys</i></li> </ul> | <p>Considerar la redacción y firma de un Convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C</p> <p><i>Consider the writing and signing of an agreement between the Central American countries considering and evaluating the clauses in Appendix C</i></p> <p>Considerar recurrir a procesos prelicitatorios y a contratos preacordados</p> <p><i>Consider the use of pre-bidding processes and pre-arranged contracts</i></p>   | <p>Ver Apéndice C<br/><i>See Appendix C</i></p>   | <p>Ver Apéndice C<br/><i>See Appendix C</i></p>   | <p>Ver Apéndice C<br/><i>See Appendix C</i></p>  |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i>   | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>  | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economics Resources</i>   | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | <b>Proceso de Implementación</b><br><i>Implementation Process</i>  |
|--|--|---|--|--|
| <ul style="list-style-type: none"> <li>• Bodegas de almacenamiento<br/><i>Warehouses</i></li> <li>• Edificio administrativo<br/><i>Administrative buildings</i></li> <li>• Pavimento de área de circulación portuaria<br/><i>Port road circulation area</i></li> <li>• Canales internos de desagüe<br/><i>Port surface drainage system</i></li> <li>• Sistema de alcantarillado<br/><i>Sewer system</i></li> <li>• Canales internos de desagüe<br/><i>Internal drain gutters</i></li> <li>• Sistema de alcantarillado<br/><i>Sewer system</i></li> <li>• Sistema de agua potable<br/><i>Drinking water system</i></li> <li>• Grúas descargadoras y transportadoras de contenedores (cimentación de grúas estacionarias o líneas férreas de grúas móviles)<br/><i>Cranes for unloading and container transporters (including foundations of fixed cranes or rails of movable cranes)</i></li> </ul> | <p>Analizar como mecanismo alternativo las ventajas y desventajas de transferir la explotación de algunos de los componentes referidos al sector privado<br/><i>Analyze the advantages and disadvantages of transferring the operation of some identified components to the private sector as an alternative mechanism</i></p> | <p>Analisis detallado de las condiciones de la infraestructura a transferir y de la situación del personal estatal<br/><i>Detailed analysis of the condition of the infrastructure to be transferred and the situation of the state employees</i></p> | <p>Incorporar en un acuerdo de transferencia cláusulas concretas sobre quién estará a cargo de llevar adelante las medidas de reducción de vulnerabilidad y la reparación, rehabilitación, reconstrucción y remplazo de componentes dañados por fenómenos naturales<br/><i>In a transfer agreement incorporate specific clauses as to who is going to be in charge of carrying out the vulnerability reduction measures and the repair, rehabilitation, reconstruction and replacement of the components damaged by natural events</i></p> <p>Otorgar facilidades aduaneras para que el sector privado pueda importar con ciertas libertades impositivas, los recursos necesarios para incorporar medidas de reducción de vulnerabilidad y para enfrentar la reparación, rehabilitación, reconstrucción y remplazo de componentes dañados por fenómenos naturales<br/><i>Grant custom privileges that allow the private sector to import with a tax reduction the necessary resources for incorporating vulnerability reduction measures in the repair, rehabilitation, reconstruction and replacement of damaged components due to natural phenomenon</i></p> | <p>Celebrar reuniones entre las entidades subsectoriales del sector público y luego entre el sector público y privado y expertos en la materia para evaluar la posibilidad de transferir a manos privadas algunos de los componentes referidos<br/><i>Hold meetings between subsector entities from the public and private sectors and specialists on the subject of evaluating the possibility of transferring some of the identified components to private hands</i></p> |

| <b>Componentes de Infraestructura Vulnerables</b><br><i>Vulnerable Infrastructure Components</i> | <b>Mecanismos Alternativos</b><br><i>Alternative Mechanisms</i>  | <b>Notas sobre Recursos Económicos</b><br><i>Notes on Economics Resources</i> | <b>Condiciones esenciales de cumplimiento previo para que el mecanismo funcione</b><br><i>Essential conditions precedent prior to the functioning of the mechanism</i> | <b>Proceso de Implementación</b><br><i>Implementation Process</i> |
|--|--|---|--|---|
| Totalidad de componentes vulnerables<br><i>All vulnerable components</i>                         | Ratificar el Acuerdo de Cooperación y Asistencia Mutua entre las Autoridades Portuarias Interamericanas con el fin de canalizar procesos de cooperación y asistencia para intercambios de información y documentación, asistencia técnica directa y formación de personal en cuanto a reducción de vulnerabilidad de la infraestructura portuaria<br><i>Ratify the Agreement on Cooperation and Mutual Assistance Among Inter-American Port Authorities in order to channel assistance and cooperation processes by exchanging documents and information, direct technical assistance and personnel training regarding port infrastructure vulnerability reduction</i> |   | Profundizar los análisis de vulnerabilidad de los puertos de la región<br><i>Analyze in depth regional port vulnerability</i>  |   |

**Cuadro 2.4**  
**Figure 2.4**

**Mecanismos Alternativos de Asistencia para Reducción de Vulnerabilidad de la Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America  
in the Case of Hazardous Events**

**Transporte Marítimo**  
**Maritime Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>   | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>   | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | Proceso de Implementación<br><i>Implementation Process</i>  |
|---|---|---|---|---|
| Canales de acceso a puertos<br><i>Port access channels</i>  | <p>Contratación de seguros<br/><i>Insurance contracting</i></p> <p>Prever cláusulas de garantías en caso de desastres naturales en los contratos de prestación de servicios<br/><i>Provide guarantee clauses in the case of natural disasters in service provision contracts</i></p>  | <p>Presupuesto propio de las autoridades portuarias, considerando la posibilidad de incrementar tasas de servicios con el fin de que lo recaudado se destine a incorporar medidas de reducción de vulnerabilidad<br/><i>Port authorities own budget, considering the possibility of increasing service rates to be used to incorporate vulnerability reduction measures</i></p> | <p>Analisis de riesgos específicos de cada puerto en relación con la necesidad de servicio de dragado<br/><i>Specific risks analysis of each port in relation to the necessity of dredging services</i></p> <p>Estudios de vulnerabilidad de los canales<br/><i>Channel vulnerability studies</i></p> <p>Especificaciones técnicas detalladas del servicio necesario<br/><i>Detailed specifications of the services needed</i></p> <p>Organizar un listado de los proveedores internacionales de servicios de dragado<br/><i>Organize a list of international dredging service suppliers</i></p>  | <p>Contratar al personal técnico para asesoramiento legal en la materia<br/><i>Contract technical personnel to advise on legal matters</i></p>  |
| <ul style="list-style-type: none"> <li>• Tanques de combustible<br/><i>Fuel tanks</i></li> <li>• Tuberías para el transporte de hidrocarburos<br/><i>Hydrocarbon transportation pipelines</i></li> <li>• Sistemas de bombeo de hidrocarburos<br/><i>Hydrocarbon pumping systems</i></li> <li>• Depósitos de sustancias peligrosas<br/><i>Hazardous substances disposal</i></li> </ul> | <p>Firmar y ratificar el Convenio Internacional sobre Cooperación, Preparación y Lucha contra la Contaminación por Hidrocarburos y adoptar las medidas de seguridad para evitar derrame de tales sustancias y planes y programas para respuesta inmediata<br/><i>Sign and ratify the International Convention on Cooperation, Preparation and Fight against Hydrocarbons Contamination and adopt immediate response programs, plans and safety measures to avoid such material spilling</i></p> | <p>Presupuesto propio de las autoridades portuarias, considerando la posibilidad de incrementar tasas de servicios con el fin de que lo recaudado se destine a incorporar medidas de reducción de vulnerabilidad<br/><i>Port authorities own budget, considering the possibility of increasing service rates to be used to incorporate vulnerability reduction measures</i></p> | <p>Analisis de riesgos específicos de cada puerto en relación a la necesidad de servicios de dragado<br/><i>Specific risks analysis of each port in relation to the necessity of dredging services</i></p> <p>Estudios de vulnerabilidad de los canales<br/><i>Channel vulnerability studies</i></p> <p>Evaluar la existencia de recursos para enfrentar una emergencia<br/><i>Evaluate existing resources to face an emergency</i></p> <p>Especificaciones técnicas detalladas del servicio necesario<br/><i>Detailed specifications of the service needed</i></p> <p>Organizar un listado de los proveedores internacionales de servicios de dragado<br/><i>Create a list of international dredging service suppliers</i></p> | <p>Grupo de trabajo entre los sectores públicos y privados con jurisdicción sobre los componentes mencionados con el fin de intercambiar información y experiencias en cuanto a reducción de vulnerabilidad<br/><i>Working group between the public and private sector authorities over the identified components in order to exchange experiences and information related to vulnerability reduction</i></p> |

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>   | Notas sobre Recursos Económicos<br><i>Notes about Economic Resources</i>  | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | Proceso de Implementación<br><i>Implementation Process</i>  |
|--|--|---|--|---|
| Id. anterior<br><i>Same as above</i>   | Contratación de seguros<br><i>Insurance contracting</i><br><br>Cláusulas de garantía<br><i>Guarantee clauses</i>   | Recursos propios<br><i>Own resources</i>  | Estudiar mecanismos para liberar del pago de derechos de aduana a los concesionarios privados que importen bienes para tareas de reducción de vulnerabilidad<br><i>Study mechanisms to free the paying of customs duties by private concessionaires that are importing goods for vulnerability reduction tasks</i>   | Grupo de trabajo entre los sectores públicos y privados con jurisdicción sobre los componentes mencionados con el fin de intercambiar información y experiencias en cuanto a reducción de vulnerabilidad<br><i>Working group between the public and private sectors with jurisdiction over the identified components in order to exchange experiences and information related to vulnerability reduction</i><br><br>Contratar a expertos para asesoramiento legal<br><i>Contract specialists for legal advice</i> |
| <ul style="list-style-type: none"> <li>• Sistema de atraque<br/><i>Docking systems</i></li> <li>• Sistema eléctrico<br/><i>Electric system</i></li> <li>• Rompeolas<br/><i>Breakwater structures</i></li> <li>• Radios<br/><i>Radios</i></li> <li>• Radares<br/><i>Radar</i></li> <li>• Antenas<br/><i>Antennas</i></li> <li>• Faros<br/><i>Lighthouses</i></li> <li>• Boyas<br/><i>Buoys</i></li> <li>• Bodegas de almacenamiento<br/><i>Warehouses</i></li> <li>• Edificio administrativo<br/><i>Administrative buildings</i></li> <li>• Pavimento de área de Circulación portuaria<br/><i>Port road circulation area</i></li> </ul> | Contratación de seguros y cláusulas de garantía<br><i>Insurance contracting and guarantee clauses</i><br><br>Considerar la posibilidad de incrementar tasas de servicios con el fin de que lo recaudado se destine a incorporar medidas de reducción de vulnerabilidad<br><i>Consider the possibility of increasing service rates in order to use them to incorporate vulnerability reduction measures</i> | Recursos propios<br><i>Own resources</i><br><br>Considerar la redacción y firma de un convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C<br><i>Consider the writing and signing a Central American states convention based on the notes and clauses included in Appendix C</i> | Análisis de riesgos específicos de la infraestructura referida<br><i>Identified infrastructure specific risks analysis</i><br><br>Evaluar la existencia o posible escasez de recursos para enfrentar emergencias<br><i>Evaluate resources abundance or shortage to face emergencies</i><br><br>Estudios detallados de los componentes vulnerables<br><i>Detailed studies of the vulnerable components</i><br><br>Especificaciones técnicas detalladas de los bienes y servicios necesarios, tanto de proveedores nacionales como extranjeros<br><i>Detailed technical specifications of the needed goods and services from local suppliers and foreign suppliers</i> | Contratar recursos humanos para asesoramiento legal<br><i>Contract specialist for legal advice</i>  |

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>  | Notas sobre Recursos Económicos<br><i>Notes about Economic Resources</i> | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | Proceso de Implementación<br><i>Implementation Process</i>  |
|--|---|--|--|---|
| <ul style="list-style-type: none"> <li>• Canales internos de desagüe<br/><i>Port surface drainage system</i></li> <li>• Sistema de alcantarillado<br/><i>Sewer system</i></li> <li>• Sistema de agua potable<br/><i>Drinking water system</i></li> <li>• Grúas descargadoras y transportadoras de contenedores (cimentación de grúas estacionarias o líneas férreas de grúas móviles)<br/><i>Cranes for unloading and Container transporters (including foundations for fixed cranes or rails for movable cranes)</i></li> </ul> | <p>Ratificar el Acuerdo de Cooperación y Asistencia Mutua entre las Autoridades Portuarias Interamericanas con el fin de canalizar procesos de cooperación y asistencia para intercambios de información y documentación, asistencia técnica directa y formación de personal en cuanto a reducción de vulnerabilidad de la infraestructura portuaria<br/><i>Ratify the Agreement on Cooperation and Mutual Assistance Among Inter-American Port Authorities in order to channel assistance and cooperation processes by exchanging documents and information, direct technical assistance and personnel training regarding port infrastructure vulnerability reduction</i></p> <p>Solicitar a COCATRAM que lidere el proceso regional de reducción de vulnerabilidad de infraestructura portuaria, completando los trabajos que se encuentra realizando en cuanto a medidas de seguridad en puertos (COCATRAM, 1995)<br/><i>Solicit COCATRAM to lead a port infrastructure vulnerability reduction regional process as a complement to its work on ports safety measures (COCATRAM, 1995)</i></p> |  | <p>Profundizar los análisis de vulnerabilidad de los puertos de la región<br/><i>Analyze in depth the vulnerability of the region's ports</i></p>  |   |
|  | <p>Acelerar el proceso para que se apruebe y haga efectivo el proyecto plasmado en el documento sobre el Plan Regional de Reducción de Desastres del Sector Transporte<br/><i>Speed up the process to approve and carry out the project Regional Plan on Disaster Reduction of the Transportation Sector</i></p>  | <p>Recursos propios de COCATRAM<br/><i>COCATRAM's own resources</i></p>  | <p>Analisis de riesgos específicos de la infraestructura referida<br/><i>Risk analysis of the identified components</i></p> <p>Evaluar la existencia o posible escasez de recursos para enfrentar emergencias<br/><i>Evaluate the abundance or shortage of resources to face emergencies</i></p> <p>Estudios detallados de los componentes vulnerables<br/><i>Detailed studies of the vulnerable components</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios, tanto de proveedores nacionales como extranjeros<br/><i>Detailed technical specifications of the needed goods and services from both local and foreign suppliers</i></p> | <p>Reuniones entre las autoridades de todos los niveles y COCATRAM<br/><i>Meetings between authorities at all levels and COCATRAM</i></p> |



Cuadro 3.1  
*Figure 3.1*

**Mecanismos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America  
in the Case of Hazardous Events: Current Situation**

**Transporte Terrestre  
*Land Transportation***

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Processes to Facilitate the Assistance</i>  | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Processes to Facilitate the Assistance</i>   | Partes en la Asistencia<br><i>Participants in the Assistance</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>   |
|--|--|---|--|---|
| <ul style="list-style-type: none"> <li>• Puentes<br/><i>Bridges</i></li> <li>• Sistemas de drenaje<br/><i>Drainage systems</i></li> <li>• Taludes<br/><i>Slopes</i></li> <li>• Carpetas de rodadura<br/><i>Road surfaces</i></li> <li>• Túneles<br/><i>Tunnels</i></li> <li>• Sistemas de comunicaciones<br/><i>Communication systems</i></li> <li>• Canales<br/><i>Canals</i></li> <li>• Pavimento<br/><i>Pavement</i></li> </ul> | <p>No se tiene conocimiento de mecanismos regionales para evaluar daños, reparar, rehabilitar, reconstruir y remplazar tales componentes. Las autoridades a cargo de transporte terrestre contratan los bienes y servicios necesarios de proveedores locales del sector privado</p> <p><i>There are no known regional mechanisms for making damage evaluations, repair, rehabilitation, reconstruction and replacement of damaged components. The land transportation authorities contract necessary goods and services from local private suppliers</i></p> | <p>Solicitud de asistencia a las agencias internacionales de cooperación<br/><i>Request for assistance to international cooperation agencies</i></p> <p>Convenios con organismos militares extranjeros sobre ejercicios militares<br/><i>Agreements with foreign military institutions for military exercises</i></p> | <p>Agencias de cooperación internacional<br/><i>International cooperation agencies</i></p> <p>Organismos militares extranjeros<br/><i>Foreign military institutions</i></p> <p>Autoridades viales<br/><i>Highway authorities</i></p> | <p>Fondos provenientes de la cooperación internacional<br/><i>International cooperation funds</i></p> <p>Recursos provistos por las instituciones multilaterales de crédito<br/><i>Resources through multilateral credit institutions</i></p> <p>Recursos de fondos de emergencia en general destinados a la rehabilitación de caminos para hacer posible la llegada de asistencia humanitaria<br/><i>General emergency funds set aside for road rehabilitation in order to facilitate humanitarian assistance</i></p> <p>Recursos propios de las autoridades viales<br/><i>Own highway authority resources</i></p> |



**Cuadro 3.2**  
**Figure 3.2**

**Mecanismos de Asistencia para Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos: Situación Actual**

**Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure in Central America  
in the Case of Hazardous Events: Current Situation**

**Transporte Terrestre**  
**Land Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos o Procesos Regionales para Facilitar la Asistencia<br><i>Regional Mechanisms or Processes to Facilitate the Assistance</i>   | Mecanismos o Procesos Internacionales para Facilitar la Asistencia<br><i>International Mechanisms or Processes to Facilitate the Assistance</i>  | Partes en la Asistencia<br><i>Participants in the Assistance</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>   |
|--|---|--|---|---|
| Puentes tipo Bailey<br><i>Bailey bridges</i>   | No se encuentran disponibles en la región y no existe un mecanismo que permita contar con ellos en forma rápida<br><i>They are not available in the region, and no mechanism exists that allows for their rapid acquisition</i>   | Se desconoce la existencia de mecanismos internacionales formales para procurar los mismos de proveedores fuera de la región. Es posible solicitar asistencia de la cooperación internacional bilateral o de los organismos militares extranjeros que se encuentren en la región prestando asistencia humanitaria<br><i>There is no known formal international mechanism for obtaining them from suppliers outside the region. It is possible to request international bilateral cooperation assistance or assistance from foreign military institutions present in the region providing humanitarian assistance</i>   | Autoridades a cargo del transporte terrestre<br><i>Land transportation authorities</i><br><br>Proveedores fuera de la región<br><i>Extra-regional suppliers</i><br><br>Agencias de cooperación internacional<br><i>International cooperation agencies</i><br><br>Instituciones militares extranjeras<br><i>Foreign military institutions</i>                  | Cooperación internacional<br><i>International cooperation funds</i><br><br>Recursos de fondos de emergencia en general destinados a la rehabilitación de caminos para hacer posible la llegada de asistencia humanitaria<br><i>General emergency funds set aside for road rehabilitation in order to facilitate humanitarian assistance</i><br><br>Recursos propios de las autoridades viales<br><i>Own highway authority resources</i> |
| <ul style="list-style-type: none"> <li>• Puentes<br/><i>Bridges</i></li> <li>• Sistemas de drenaje<br/><i>Drainage systems</i></li> <li>• Taludes<br/><i>Slopes</i></li> <li>• Carpetas de rodadura<br/><i>Road surfaces</i></li> <li>• Túneles<br/><i>Tunnels</i></li> <li>• Sistemas de comunicaciones<br/><i>Communication systems</i></li> <li>• Canales<br/><i>Canals</i></li> <li>• Pavimento<br/><i>Pavement</i></li> </ul> | No existen mecanismos regionales de reducción de vulnerabilidad. Cada autoridad a cargo del transporte terrestre incorpora medidas de mitigación de daños en la medida de sus posibilidades<br><i>There are no regional mechanisms for vulnerability reduction. According to their individual situation, each land transportation authority adopts damage mitigation measures</i> | Si bien no existe un mecanismo integral y formal de reducción de vulnerabilidad, tales medidas son incorporadas en alguna medida por:<br><i>Although there is no comprehensive and formal mechanism for vulnerability reduction to some extent, some measures are incorporated through:</i><br><br>Préstamos para la reconstrucción de componentes por instituciones internacionales de crédito<br><i>Loans for reconstruction of components through international credit institutions</i><br><br>Ciertas medidas de reducción de vulnerabilidad implementadas mediante ejercicios militares<br><i>Some vulnerability reduction measures performed by military exercises</i><br><br>Proyectos de reducción de vulnerabilidad financiados por agencias de cooperación bilateral<br><i>Vulnerability reduction projects supported by bilateral cooperation agencies.</i> | Autoridades a cargo del transporte terrestre<br><i>Land transportation authorities</i><br><br>Instituciones multilaterales de crédito<br><i>Multilateral credit institutions</i><br><br>Instituciones militares extranjeras<br><i>Foreign military institutions</i><br><br>Agencias de cooperación internacional<br><i>International cooperation agencies</i> | Cooperación internacional<br><i>International cooperation funds</i><br><br>Recursos provistos por las instituciones multilaterales de crédito<br><i>Resources through multilateral credit institutions</i><br><br>Recursos propios de las autoridades viales<br><i>Own highway authority resources</i>  |



**Cuadro 3.3**  
**Figure 3.3**

**Mecanismos Alternativos de Asistencia para Daños de la Infraestructura del Sector Transporte en Centroamérica  
ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Infrastructure Damage of the Transportation Sector in Central America  
in the Case of Hazardous Events**

**Transporte Terrestre**  
**Land Transportation**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>   | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>  | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>   | Proceso de Implementación<br><i>Implementation Process</i>   |
|--|--|--|---|--|
| <ul style="list-style-type: none"> <li>• Puentes<br/><i>Bridges</i></li> <li>• Sistemas de drenaje<br/><i>Drainage systems</i></li> <li>• Taludes<br/><i>Slopes</i></li> <li>• Carpetas de rodadura<br/><i>Road surfaces</i></li> <li>• Túneles<br/><i>Tunnels</i></li> <li>• Sistemas de comunicaciones<br/><i>Communication systems</i></li> <li>• Canales<br/><i>Canals</i></li> <li>• Pavimento<br/><i>Pavement</i></li> </ul> | <p>Considerar la redacción y firma de un convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C<br/><i>Consider the preparation and adoption of an agreement between the Central American countries, using the clauses and considerations contained in Appendix C</i></p> <p>Procesos prelicitatorios y acuerdos preconvenidos<br/><i>Pre-llicitation processes and pre-arranged agreements</i></p> | <p>Ver Apéndice C<br/><i>See Appendix C</i></p> <p>Fondos propios incrementados considerando la creación de un fondo especial aumentando ciertos impuestos o creando nuevos y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros<br/><i>Increased own funding through the creation of a special fund by tax increases or creating new or other financing mechanisms; operational resources from ministry budgets, special donations or credits, among others</i></p> | <p>Ver Apéndice C<br/><i>See Appendix C</i></p> <p>Perfiles de vulnerabilidad de tramos de carreteras<br/><i>Road segment vulnerability profiles</i></p> <p>Ánalisis de riesgos del sector vial en la región<br/><i>Regional highway sector risk analysis</i></p> <p>Especificaciones técnicas detalladas de los bienes y servicios necesarios<br/><i>Detailed technical specifications of necessary goods and services</i></p> <p>Organizar un listado de proveedores locales y regionales de bienes y servicios<br/><i>Organize of a list of domestic and foreign suppliers of goods and services</i></p> | <p>Ver Apéndice C<br/><i>See Appendix C</i></p> <p>Considerar las pautas indicadas en el Apéndice D<br/><i>Consider the guidelines in Appendix D</i></p> |



**Cuadro 3.4**  
**Figure 3.4**

**Mecanismos Alternativos de Asistencia para Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica ante la Ocurrencia de Eventos Peligrosos**

**Alternative Assistance Mechanisms for Vulnerability Reduction of the Transportation Sector Infrastructure  
in Central America in the Case of Hazardous Events**

**Transporte Terrestre**  
**Land Transport**

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i> | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>   | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | Proceso de Implementación<br><i>Implementation Process</i>   |
|---|---|---|--|--|
| Puentes tipo Bailey<br><i>Bailey Bridges</i>  | Establecer contactos con los proveedores del sector privado con el fin de tener disponibles puentes tipo Bailey y sus partes en el mercado regional<br><i>Establish contact with private sector suppliers in order to make available Bailey bridges and their parts in the regional market</i>  | Fondos propios incrementados considerando la creación de un fondo especial aumentando ciertos impuestos o creando nuevos y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros<br><i>Increased own funding through the creation of a special fund through tax increases or creating new or other financing mechanisms; operational resources from ministry budgets, special donations or credits, among others</i> | Ánalisis de riesgos y peligros que puedan identificar la necesidad de contar con puentes tipo Bailey<br><i>Hazards and risk analysis that could identify the need for Bailey bridges</i><br><br>Evaluar en el ámbito local y regional la existencia de puentes tipo Bailey y sus partes<br><i>Evaluate the local and regional stock of Bailey bridges and their parts</i><br><br>Perfiles de vulnerabilidad de tramos de carreteras<br><i>Road segments vulnerability profiles</i> | Involucrar al sector privado demostrando ventajas económicas y disponibilidad de mecanismos financieros de pago<br><i>Involve the private sector showing the economic advantages and the availability of financial mechanisms for payment</i>                      |
|   | Procesos prelicitatorios y acuerdos preconvenidos<br><i>Pre-llicitation processes and pre-arranged agreements</i>   | Fondos propios incrementados considerando la creación de un fondo especial aumentando ciertos impuestos o creando nuevos y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros<br><i>Increased own funding through the creation of a special fund through tax increases or creating new or other financing mechanisms; operational resources from ministry budgets, special donations or credits, among others</i> | Especificaciones técnicas detalladas de los puentes y sus partes<br><i>Detailed technical specifications of bridges and their parts</i><br><br>Organizar un listado de los proveedores internacionales de puentes tipo Bailey y sus partes<br><i>Organize a list of international providers of Bailey bridges and their parts</i>  | Considerar las pautas indicadas en el Apéndice D<br><i>Consider following the guidelines in Appendix D</i>   |
|   | Solicitar créditos a las organizaciones multilaterales de créditos para financiar la compra de puentes o sus partes con el fin de contar con recursos suficientes para enfrentar emergencias. Con el mismo fin contactar agencias asistencia internacional bilateral<br><i>Solicit credit from the multilateral organizations to finance the purchase of bridges or their parts in order to meet emergencies. For the same purpose, contact international bilateral assistance agencies</i> |   |  | Establecer grupos de trabajo para acordar una estrategia sectorial y en el ámbito regional para solicitar los créditos o donaciones<br><i>Establish working groups to agree on a sector strategy and in the regional level to demand credit lines or donations</i> |

| Componentes de Infraestructura Vulnerables<br><i>Vulnerable Infrastructure Components</i>  | Mecanismos Alternativos<br><i>Alternative Mechanisms</i>  | Notas sobre Recursos Económicos<br><i>Notes on Economic Resources</i>   | Condiciones esenciales de cumplimiento previo para que el mecanismo funcione<br><i>Essential conditions precedent prior to the functioning of the mechanism</i>  | Proceso de Implementación<br><i>Implementation Process</i>   |
|--|---|---|--|--|
| <ul style="list-style-type: none"> <li>• Puentes<br/><i>Bridges</i></li> <li>• Sistemas de drenaje<br/><i>Drainage systems</i></li> <li>• Taludes<br/><i>Slopes</i></li> </ul>                                 | <p>Considerar la redacción y firma de un convenio entre los Estados centroamericanos evaluando las cláusulas y consideraciones contenidas en el Apéndice C<br/><i>Consider the preparation and adoption of an agreement between the Centroamerican states, using clauses and considerations contained in Appendix C</i></p> | Ver Apéndice C<br><i>See Appendix C</i>   | Ver Apéndice C<br><i>See Appendix C</i>  | Ver Apéndice C<br><i>See Appendix C</i>  |
| <ul style="list-style-type: none"> <li>• Carpetas de rodadura<br/><i>Road surfaces</i></li> <li>• Túneles<br/><i>Tunnels</i></li> <li>• Sistemas de comunicaciones<br/><i>Communication systems</i></li> </ul> | Profundizar los estudios sobre vulnerabilidad de la Carretera Panamericana y sus corredores alternativos<br><i>Prepare more in-depth studies of the vulnerability of the Pan American Highway and its alternate corridors</i>   |   |  | Con base en la información que se obtenga, es necesario detallar los estudios técnicos y económicos para preparar cuando sea necesario estudios de factibilidad económica<br><i>On the basis of the acquired information, it is necessary to detail the technical and economic studies in order to prepare, when necessary, economic feasibility studies</i> |
| <ul style="list-style-type: none"> <li>• Canales<br/><i>Canals</i></li> <li>• Pavimento<br/><i>Pavement</i></li> </ul>   | Procesos prelicitatorios y acuerdos preconvendidos<br><i>Pre-llicitation processes and pre-arranged agreements</i>  | Fondos propios incrementados considerando la creación de un fondo especial aumentando ciertos impuestos o creando nuevos y otros mecanismos de financiación: recursos operativos del presupuesto ministerial, donaciones especiales o créditos, entre otros<br><i>Increased own funding through the creation of a special fund through tax increases or creating new or other financing mechanisms; operational resources from ministry budgets, special donations or credits, among others</i> | Perfiles de vulnerabilidad de tramos de carreteras<br><i>Road segments vulnerability profiles</i><br><br>Análisis de riesgos del sector vial en la región<br><i>Regional highway sector risk analysis</i><br><br>Especificaciones técnicas detalladas de los bienes y servicios necesarios<br><i>Detailed technical specifications on necessary goods and services</i> | Considerar al respecto seguir las pautas indicadas en el Apéndice D<br><i>Consider following the guidelines outlined in Appendix D</i>   |
|  | Acelerar el proceso para que se apruebe y haga efectivo el proyecto propuesto sobre la Reducción de Desastres del Sector de Transporte en Centroamérica<br><i>Speed up the approval process for execution of the Central America Transportation Disaster Reduction Study</i>  |   | Organizar un listado de proveedores locales y regionales de bienes y servicios<br><i>Organize a list of local and regional suppliers of goods and services</i>   |  |

Cuadro 4  
Figure 4

**Mecanismos de Asistencia para Daños y Reducción de Vulnerabilidad: Situación Actual**  
**Assistance Mechanisms for Damage and Vulnerability Reduction: Current Situation**

Mecanismos regionales disponibles<sup>1</sup>  
Available regional mechanisms

| Mecanismo<br>Mechanism  | Daños<br>Damages | Reducción<br>Vulnerabilidad<br>Vulnerability<br>Reduction | Cooperación<br>en General<br>Cooperation<br>In General | Asistencia<br>Humanitaria<br>Humanitarian<br>Assistance | Transporte en<br>General<br>Transportation<br>in General | Transporte<br>Aéreo<br>Air<br>Transportation | Transporte<br>Marítimo<br>Maritime<br>transportation | Transporte<br>Terrestre<br>Land<br>transportation |
|---|------------------|---|--|---|--|--|--|---|
| Mecanismo implementado por COCESNA<br>(Sección 2.1)<br><i>Mechanism implemented by COCESNA</i>  | X                |   |  |   |  | X  |  |   |
| Acuerdo Marco de Cooperación firmado entre los<br>Gobiernos de Centroamérica, Belice y<br>República Dominicana<br>(Sección 2.4.4)<br><i>Cooperation Agreement Framework signed by the<br/>Governments of Central America, Belize and Dominican<br/>Republic</i> |                  |   | X  |   |  |  |  |   |

Mecanismos regionales a ser adoptados  
Regional mechanisms to be adopted

|  |   |   |  |   |  |   |   |  |
|--|---|---|--|---|--|---|---|--|
| Estrategia del Sector Transporte para su Incorporación en<br>el Plan Básico del Plan Regional de Reducción de<br>Desastres. (Sección 2.4.2)<br><i>Transportation Sector Strategy for Incorporation in the<br/>Basic Plan of the Regional Plan for Disasters Reduction</i>  |   | X |  |   |  | X |   |  |
| Guías COCATRAM para la Preparación de Planes de<br>Reducción de Vulnerabilidad y Maximización de la<br>Capacidad para Responder a los Riesgos en el Sistema<br>Portuario de Centroamérica<br>(Sección 2.4.1)<br><i>COCATRAM Guides for the Preparation of Vulnerability<br/>Reduction Plans and Maximization of Capability to<br/>Respond to Risks in the Central American Port System</i> |   | X |  |   |  |   | X |  |
| Borrador de Manual de Coordinación<br>Regional ante Desastres<br>(Sección 2.4.3)<br><i>Draft Manual for Regional Coordination<br/>in Case of Disasters</i>   | X |   |  | X |  |   |   |  |

Mecanismos internacionales disponibles

<sup>1</sup> El presente cuadro intenta exponer la situación de los principales mecanismos incluidos a lo largo del estudio. En la columna "daños" se incluyen aquellos mecanismos que prevén asistencia en lo referente a atención inmediata con anterioridad, durante y después de la ocurrencia de un evento natural. Bajo "reducción de vulnerabilidad" se indican los mecanismos que se refieren a medidas para tornar más resistentes los componentes de infraestructura de transporte, a remover componentes de áreas amenazadas o altamente vulnerables o a la modificación de los efectos del evento mismo. Bajo la columna "asistencia humanitaria" se marcan los convenios que se refiere sólo ha este tipo de asistencia, sin referencia específica a transporte. El resto de los títulos de las columnas se introducen para que sea posible señalar los mecanismos que hacer referencia al transporte en general, incluyendo todos los modos, y al transporte específicamente aéreo, marítimo y terrestre.

<sup>2</sup> No se trata estrictamente de un mecanismo de asistencia en cuanto no incluye procedimientos de ayuda mutua o cooperación, pero prevé medidas de reducción de vulnerabilidad para que eventualmente sean adoptadas.

<sup>3</sup> Id.

*Available international mechanisms*

| Mecanismo<br><i>Mechanism</i>  | Daños<br><i>Damages</i> | Reducción<br>Vulnerabilidad<br><i>Vulnerability<br/>Reduction</i> | Cooperación<br>en General<br><i>Cooperation<br/>In General</i> | Asistencia<br>Humanitaria<br><i>Humanitarian<br/>Assistance</i> | Transporte en<br>General<br><i>Transportation<br/>in General</i> | Transporte<br>Aéreo<br><i>Air<br/>Transportation</i> | Transporte<br>Marítimo<br><i>Maritime<br/>Transportation</i> | Transporte<br>Terrestre<br><i>Land<br/>Transportation</i> |
|--|-------------------------|---|--|---|--|--|--|---|
| Convención Interamericana para Facilitar la Asistencia en Casos de Desastre<br><i>(Sección 3.4.3)</i><br><i>Inter-American Convention to Facilitate Assistance in Cases of Disasters</i>   | X                       |   |  | X   |  |  |  |   |
| Mecanismo Regional de Cooperación Técnica para Emergencias Derivadas de Desastres Naturales<br>Establecido por SELA<br><i>(Sección 3.4.3)</i><br><i>Regional Mechanisms for Technical Cooperation for Emergencies Caused by Natural Disasters<br/>Established by SELA</i>  | X                       |   |  | X   |  |  |  |   |
| Convenciones para simplificar y aligerar el despacho en aduanas de envíos de asistencia humanitarios<br><i>(Sección 3.4.4)</i><br><i>Conventions to simplify and accelerate the dispersement of humanitarian assistance in customs</i>   | X                       |   |  | X   |  |  |  |   |
| Convenio Internacional sobre Cooperación, Preparación y Lucha contra la Contaminación por Hidrocarburos<br><i>(Sección 3.2.1.2.1)</i><br><i>International Covenant regarding Cooperation, Preparation, and the Fight against Hydrocarbon Contamination</i>   | X                       |   |  |   |  |  | X  |   |
| Mecanismo establecido por CCC<br><i>(Sección 3.2.1.2.2)</i><br><i>Mechanism established by the CCC</i>   | X                       |   |  |   |  |  | X  |   |
| Memorándum de Entendimiento suscrito entre OACI, OPS/OMS y ACI/LAC para el Desarrollo de Planes de Emergencia en los Aeropuertos de las Regiones del Caribe y Sudamérica<br><i>(Sección 3.4.7)</i><br><i>Memorandum of Agreement signed between OACI, PAHO/WHO and ACI/LAC for the Development of Emergency Plans for Airports in the Caribbean and South American Regions</i> | X                       |   |  |   |  | X  |  |   |

Mecanismos internacionales a ser adoptados o a entrar en vigencia  
*International mechanisms to be adopted or to enter into force*

| Mecanismo<br><i>Mechanism</i>   | Daños<br><i>Damages</i> | Reducción<br>Vulnerabilidad<br><i>Vulnerability<br/>Reduction</i> | Cooperación<br>en General<br><i>Cooperation<br/>in General</i> | Asistencia<br>Humanitaria<br><i>Humanitarian<br/>Assistance</i> | Transporte en<br>General<br><i>Transportation<br/>in General</i> | Transporte<br>Aéreo<br><i>Air<br/>Transportation</i> | Transporte<br>Marítimo<br><i>Maritime<br/>Transportation</i> | Transporte<br>Terrestre<br><i>Land<br/>Transportation</i> |
|---|-------------------------|---|--|---|--|--|--|---|
| Acuerdo entre los Estados Miembros y Miembros Asociados de la Asociación de Estados del Caribe para la Cooperación Regional en Materia de Desastres Naturales (Sección 3.4.1)<br><i>Agreement between the Member States and the Associated Members of the Association of Caribbean States for Regional Cooperation Related to Natural Disasters</i> | X                       | X   |  | X   |  |  |  |   |
| Convención de TAMPERE sobre el Suministro de Recursos de Telecomunicaciones para la Mitigación de Catástrofes y las Operaciones de Socorro en Caso de Catástrofe (Sección 3.4.5)<br><i>TAMPERE Convention on Provision of Telecommunication Resources for the Mitigation of Catastrophes and Emergency Operations in Case of Catastrophes</i>       | X                       |   |  | X   |  |  | X  |   |
| Acuerdo de Cooperación y Asistencia Mutua entre las Autoridades Portuarias Interamericanas (Sección 3.4.6)<br><i>Cooperation Agreement and Mutual Assistance between the Inter-American Port Authorities</i>  |                         |   | X  |   |  |  | X  |   |



**Cuadro 5**  
**Figure 5**

**Programa General Propuesto para el Desarrollo de Mecanismos de Asistencia para Daños y Reducción de Vulnerabilidad de la Infraestructura del Sector Transporte en Centroamérica ante la Ocurrencia de Desastres Naturales**

**Proposed General Program for the Development of Assistance for Damage and Vulnerability Reduction of Transportation Sector Infrastructure in Central America in the Case of Natural Disasters**

| Sector<br>Sector  | Plazo Inmediato<br>(dentro los próximos 12 meses)<br><i>Immediate Term</i><br><i>(during the next 12 months)</i>   | Mediano Plazo<br>(próximos 12 a 24 meses)<br><i>Intermediate Term</i><br><i>(next 12 to 24 months)</i>  |
|---|--|---|
| <b>Transporte en General</b><br><i>Transportation in General</i><br><b>Políticas</b><br><i>Policies</i> | <ul style="list-style-type: none"> <li>SIECA revisará y actuará sobre el documento de trabajo "Mecanismos" y recomendará acciones sobre el mismo como parte de su participación y respuesta a los varios mandatos regionales sobre la reducción de la vulnerabilidad del sector transporte a los desastres naturales<br/> <i>SIECA will review the "Mechanisms" working document and will recommend actions on it as part of its participation and in response to the several regional mandates on vulnerability reduction of the transportation sector to natural hazards</i></li> <li>En coordinación con CEPREDENAC, COMITRAN, COCESNA y COCATRAM, organismos de la Región Centroamericana, la SIECA establecerá un Grupo de Trabajo sobre Mecanismos para Ayuda Mutua con comités operacionales para cada uno de los modos de transporte (aéreo, marítimo y terrestre)<br/> <i>In coordination with CEPREDENAC, COMITRAN, COCESNA and COCATRAM, institutions of the Central American Region, SIECA will establish a working group on mutual assistance mechanisms with operational committees for each transportation mode (air, sea, land)</i></li> <li>SIECA propondrá un estudio sobre la vulnerabilidad de los corredores de comercio existentes en la Región Centroamericana, teniendo en cuenta el concepto del corredor logístico, puertos multimodales, expansión de la red ferroviaria, la relación entre los corredores de transporte con los sectores agropecuario y energía, los planes de desarrollo económico y social de la región y el Plan Regional para la Reducción de Desastres del Sector Transporte<br/> <i>SIECA will propose a study on the existing vulnerability of trade corridors in Central America keeping in mind the concept of the Logistical Corridor, multimodal ports, railroad expansion, relation between trade corridors and the agriculture and energy sectors, economic and social development plans, and the Regional Plan on Vulnerability Reduction of the Transportation Sector</i></li> <li>SIECA examinará la necesidad de crear un proceso para estudiar la participación del sector privado a través de concesiones y otros mecanismos en temas relacionados con la reducción de vulnerabilidad a los peligros naturales y el manejo de emergencias en caso de daños a los componentes operados por dicho sector, así como proveerá a los países de la región información al respecto<br/> <i>SIECA will examine the necessity to create a process to study private sector participation through concessions and other mechanisms in topics related to vulnerability reduction to natural hazards and emergency management in the case of damages to the components that are managed by that sector, as well as provide to countries of the region the related information</i></li> </ul> | <ul style="list-style-type: none"> <li>En coordinación con CEPREDENAC, COMITRAN, COCESNA y COCATRAM y con base en los informes de avance de los comités de los modos de transporte sobre la implementación del documento "Mecanismos", la SIECA revisará periódicamente los progresos, evaluará las necesidades identificadas y hará sus recomendaciones al respecto<br/> <i>In coordination with CEPREDENAC, COMITRAN, COSESNA and COCATRAM, and based on the advance reports of the multimodal transportation committees on the implementation of the "Mechanisms" document, SIECA will periodically review the progress, will evaluate the needs, and will make its recommendations</i></li> </ul> |

| Sector<br><br>Sector   | Plazo Inmediato<br><br>(dentro los próximos 12 meses)<br><br><i>Immediate Term<br/>(during the next 12 months)</i>  | Mediano Plazo<br><br>(próximos 12 a 24 meses)<br><br><i>Intermediate Term<br/>(next 12 to 24 months)</i> |
|--|---|--|
| <b>Transporte en General</b><br><i>Transportation in General</i> | <ul style="list-style-type: none"> <li>SIECA solicitará un informe de avance de los tres comités de los modos de transporte, enfatizando las áreas de (1) uso de acuerdos existentes para servicios y bienes en caso de daños a los componentes de infraestructura de transporte, (2) uso de mecanismos existentes y propuestas para asegurar el financiamiento de los bienes y servicios necesarios, (3) estudios de vulnerabilidad y programas de inversión para la reducción de vulnerabilidad de cada sector y (4) la preparación e implementación de un programa regional con apoyo internacional de asesoría técnica para capacitación y transferencia de tecnología, dirigida a los componentes críticos identificados en el documento "Mecanismos" y otros componentes identificados posteriormente<br/> <i>SIECA will request an advance report from the three transportation mode committees on the areas of (1) existing agreements for goods and services in the case of damages to transportation infrastructure components , (2) the use of existing mechanisms and proposals to ensure the financing of goods and services that are needed, (3) vulnerability studies and investment programs for the vulnerability reduction of each sector, and (4) the preparation and implementation of a regional program with international technical assistance support for critical components identified in the "Mechanisms" document and other components subsequently identified</i></li> <li>SIECA en coordinación con CEPREDENAC preparará un informe sobre la actualización e implementación del estudio propuesto "Estrategias del Sector Transporte para su Incorporación en el Plan Básico del Plan Regional de Reducción de Desastres", teniendo en cuenta los informes de los modos de transporte<br/> <i>SIECA in coordination with CEPREDENAC will prepare a report on the updating and implementation on the proposed study "Transportation Sector Strategies for its Incorporation on the Basic Plan of the Regional Plan for Disaster Reduction</i></li> </ul> |  |
| <b>Transporte Aéreo</b><br><i>Air Transportation</i>             | <ul style="list-style-type: none"> <li>COCESNA y otras entidades del sector aéreo, en las que se incluye la participación de instituciones privadas, conformarán el Comité de Transporte Aéreo y estudiarán y elaborarán los pasos a seguir con base en el documento "Mecanismos"<br/> <i>COCESNA and other entities of the air transportation sector, which include private institutions, will form the Air Transportation Committee and will study and design the steps to be followed based on the "Mechanisms" document</i></li> </ul>  |  |
| <b>Transporte Aéreo</b><br><i>Air Transportation</i>             | <ul style="list-style-type: none"> <li>El Comité de Transporte Aéreo revisará y preparará sus comentarios con base en el documento de "Mecanismos" en los aspectos relacionados con (1) acuerdos existentes y propuestas, (2) necesidades de asistencia técnica, capacitación y transferencia de tecnología para mejorar los preparativos para emergencias y reducción de vulnerabilidad, (3) enlaces técnicos con CEPREDENAC, COMITRAN y SIECA en caso de emergencias y (4) financiamiento de bienes y servicios en caso de emergencias y reducción de vulnerabilidad<br/> <i>The Air Transportation Committee will review and prepare its comments based on the "Mechanisms" document in areas related to (1) existing agreements and proposals, (2) technical assistance needs, training, and technology transfer to improve the emergency preparedness and vulnerability reduction, (3) technical links with CEPREDENAC, COMITRAN and SIECA in the case of emergencies and (4) goods and services financing in the case of emergency and vulnerability reduction</i></li> </ul>   |  |

| Sector<br><br>Sector   | Plazo Inmediato<br><br>(dentro los próximos 12 meses)<br><br><i>Immediate Term<br/>(during the next 12 months)</i>  | Mediano Plazo<br><br>(próximos 12 a 24 meses)<br><br><i>Intermediate Term<br/>(next 12 to 24 months)</i> |
|--|---|--|
| <b>Transporte Marítimo</b><br><br><i>Maritime Transportation</i><br><br><b>Políticas</b><br><br><i>Policies</i>                        | <ul style="list-style-type: none"> <li>COCATRAM y otras entidades del modo de transporte marítimo en las que se incluye la representación del sector privado, conformarán el Comité de Transporte Marítimo y estudiarán y elaborarán los pasos a seguir con base en el documento "Mecanismos"<br/> <i>COCATRAM and other entities of the maritime transportation sector, which include private institutions, will form the Maritime Transportation Committee and will study and design the steps to be followed based on the "Mechanisms" document</i></li> <li>El Comité de Transporte Marítimo intercambiará información con la CIP, informándole sobre sus actividades y avances en el tema, estableciendo los enlaces formales que sean necesarios para el desarrollo de trabajos en conjunto sobre el tema<br/> <i>The Maritime Transportation Committee will exchange information with CIP, keeping that commission informed on its activities and advance in the activities related to the subject, establishing the formal links necessary to the development of work together</i></li> </ul>   |  |
| <b>Transporte Marítimo</b><br><br><i>Maritime Transportation</i><br><br><b>Actividades Técnicas</b><br><br><i>Technical Activities</i> | <ul style="list-style-type: none"> <li>El Comité de Transporte Marítimo revisará y preparará sus comentarios con base en el documento "Mecanismos" en los aspectos relacionados con (1) acuerdos existentes y propuestas, (2) necesidades de asistencia técnica, capacitación y transferencia de tecnología para mejorar preparativos para emergencias y reducción de vulnerabilidad, (3) enlaces técnicos entre CEPREDENAC, COMITRAN y SIECA en caso de emergencias y (4) financiamiento de bienes y servicios en caso de emergencia y reducción de vulnerabilidad<br/> <i>The Maritime Transportation Committee will review and prepare its comments based on the "Mechanisms" document in areas related to (1) existing agreements and proposals, (2) technical assistance needs, training, and technology transfer to improve the emergency preparedness and vulnerability reduction, (3) technical links with CEPREDENAC, COMITRAN and SIECA in the case of emergencies and (4) goods and services financing in the case of emergency and vulnerability reduction</i></li> <li>COCATRAM continuará con su acción en (1) creación de una base de información en tiempo real sobre los puertos de la región incluyendo información sobre peligros naturales y el diseño, construcción y operación de los puertos, (2) con apoyo regional y de la OEA y PROCORREDOR, fortalecerá la capacidad institucional para evaluar el costo y beneficio de inversiones portuarias utilizando información sobre peligros naturales<br/> <i>COCATRAM will continue its actions on (1) a data base with information in real time on the region's ports including information on natural hazards and their design, construction, and operation, and(2) with the regional support and the OAS and PROCORREDOR, will enhance the institutional capacity to evaluate the ports investment costs and benefits using the information on natural hazards</i></li> <li>COCATRAM con apoyo de la OEA y PROCORREDOR, pondrá en marcha un estudio sobre la vulnerabilidad de los puertos y las áreas productivas de influencia relacionadas con el desarrollo de puertos multimodales<br/> <i>COCATRAM with support of the OAS and PROCORREDOR, will begin a study on ports vulnerability and the production areas of influence related to the development of multimodal ports</i></li> </ul> |  |
| <b>Transporte Terrestre</b><br><br><i>Land Transportation</i><br><br><b>Políticas</b><br><br><i>Policies</i>                           | <ul style="list-style-type: none"> <li>SIECA y entidades del sector de transporte terrestre en las que se incluye la representación del sector privado, conformarán el Comité de Transporte Terrestre, y estudiarán y elaborarán los pasos a seguir con base en el documento "Mecanismos", manteniendo al COMITRAN informado sobre las acciones al respecto<br/> <i>SIECA and the entities of the land transportation sector which include private sector representation, will form the Land Transportation Committee and will study and design the steps to be followed based on the "Mechanisms" document, keeping COMITRAN informed on their actions</i></li> </ul>  |  |

| Sector<br><br>Sector  | Plazo Inmediato<br><br>(dentro los próximos 12 meses)<br><br><i>Immediate Term<br/>(during the next 12 months)</i>  | Mediano Plazo<br><br>(próximos 12 a 24 meses)<br><br><i>Intermediate Term<br/>(next 12 to 24 months)</i> |
|---|---|--|
| <b>Transporte Terrestre</b><br><br><i>Land Transportation</i> | <ul style="list-style-type: none"> <li>El Comité de Transporte Terrestre revisará y preparará su plan de acción con base en el documento "Mecanismos" en los aspectos relacionados con (1) acuerdos existentes y propuestas, (2) necesidades de asistencia técnica, capacitación y transferencia de tecnología para mejorar los preparativos para emergencias y reducción de vulnerabilidad, (3) enlaces técnicos con CEPREDENAC, COMITRAN y SIECA en caso de emergencias y (4) financiamiento de bienes y servicios en caso de emergencia y reducción de vulnerabilidad<br/> <i>The Land Transportation Committee will review and prepare its plan of action based on the "Mechanisms" document in the areas related to (1) existing agreements and proposals, (2) technical assistance needs, training, technology transfer to improve the emergency preparedness and vulnerability reduction, (3) technical links with CEPREDENAC, COMITRAN and SIECA in the case of emergencies and (4) goods and services financing in the case of emergency and vulnerability reduction</i></li> <li>El Comité de Transporte Terrestre revisará los estudios OEA-USDOT sobre perfiles de vulnerabilidad de la Carretera Panamericana sus corredores complementarios, SIECA-ECAT, SIECA-USAID sobre normas y criterios para el desarrollo de carreteras en Centroamérica y el estudio propuesta sobre el Corredor Logístico en Centroamérica, en relación con el estudio propuesto "Estrategia del Sector Transporte para su Incorporación en el Pan Básico del Plan Regional de Reducción de Desastres" de CEPREDENAC<br/> <i>The Land Transportation Committee will review the OAS-USDOT studies on the vulnerability of the Pan American Highway and its complementary corridors, SIECA,ECAT, SIECA-USAID on standards and criteria road development in Central America, and the proposed study on the Logistical Corridor in Central America, in relation to CEPREDENAC's proposed study "Transportation Sector Strategy to its Incorporation the Basic Plan of the Regional Plan to Disaster Reduction"</i></li> <li>SIECA, con base en las experiencias hasta la fecha y con apoyo regional del BCIE y CEPREDENAC y el internacional de la OEA y PROCORREDOR, promoverá el fortalecimiento institucional para ofrecer cursos sobre el uso de información sobre peligros naturales en la evaluación económica de proyectos de inversión de transporte vial</li> </ul> |  |