

# **Managing Humanitarian Supply Chains**

Strategies, Practices and Research

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Prof. Dr.-Ing. Bernd Hellingrath  
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## Preface

The BVL Working Groups are focusing on current topics of interests within logistics and bring together practitioners as well as researchers to work out specific answers and solutions to these topics. In the case of humanitarian logistics two subsequent working groups have been organized by the BVL in order to reflect the relevance and the need for discussion covering the most important topics. During that time a network of humanitarian organisations, logistics and IT companies as well as research institutions has grown together. We strongly believe that with our initiative we could already contribute and make – at least a little – change in the humanitarian logistics world.

Disaster relief is not only a challenge for humanitarian organisations, but a global one for politics, economies, and societies worldwide. Thus humanitarian operations need to be planned sustainable; all phases have to be considered adequately, from the first response and recovery to rehabilitation and mitigation as well as to prevention and preparation in order to build resilient communities in an interconnected and globalized world. As BVL members we are aware of the importance and power of supply chain management and logistics for our businesses. BVL International felt directly responsible and able to contribute in this field.

Two very promising projects have been designed and partly initiated:

1. The platform HumLog@BVL: an international network among humanitarian organisations, logistics services providers and humanitarian logistics researchers supporting a continuous dialogue, the exchange of knowledge and logistics education.
2. Get Seaports Ready for Disaster (GSRD): a programme to increase the disaster preparedness of seaports by raising disaster awareness and port performance in free, local trainings.

To conclude, we can say that we know there is still a lot to do. Thanks to the efforts and commitment of the more than 25 experts from industry, humanitarian organisations and research institutions of the Humanitarian Logistics Working Group we have made first important steps and we know where to go next. Thanks to the Professors Helmut Baumgarten and Bernd Hellingrath who initiated and guided the idea and the work. We cordially thank all members for all the time, expertise and efforts they brought in, it deserves our utmost respect and recognition.

## Preface

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We are pleased at your interest in humanitarian logistics and wish you an interesting and informative read.

Prof. Dr.-Ing. Raimund Klinkner  
President  
BVL International

Prof. Dr.-Ing. Thomas Wimmer  
Chairman of the Executive Board  
BVL International



## **The Port Resiliency Program (PReP): Upgrading Logistics at Latin American and Caribbean Ports**

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### **Introduction**

When severe weather damages airports and seaports, local and regional communities face a cascade of hardships extending far beyond the original crisis. Medical evacuations are delayed. Food and supplies cannot reach vulnerable populations. Regular trade slows or stops, resulting in long-term economic distress.

The Latin America and Caribbean (LAC) region must develop highly functioning, highly resilient ports to ensure timely, effective responses that maximize humanitarian relief efforts and minimize the collateral harm of natural disasters. In response to this urgent need, AmericasRelief Team (ART) initiated and manages the Port Resiliency Program (PReP). PReP provides LAC ports with technical, material, and strategic support to help them tackle the complex challenges inherent in preparing for and responding to a crisis.

PReP helps ports improve resiliency by identifying their specific vulnerabilities and needs and applying industry-wide best practices. The program increases stakeholders' facility with sound, proven methods for protecting essential personnel and procuring, distributing, maintaining, and replacing vital resources. This structured, functional port restoration program standardizes and streamlines immediate response, facilitates optimal interoperability among port personnel and agencies, and promotes a timely reopening of damaged ports with rapid restoration of everyday activity.

### **Background**

It is a foregone conclusion that the LAC region will continue to be battered by severe hurricanes and/or other natural disasters. Several Caribbean basin countries lie directly in the path of tropical storms which sweep through the region every June through November, and their magnitude and frequency is expected to

increase in coming years. Many LAC countries also face the added risk of seismic activity resulting in earthquakes, volcanoes, and tsunamis.

Over the past 20 years, the LAC has sustained devastating fatalities and immeasurable fragmentation of families and communities due to hurricanes alone. Over a thirty-year period (1970 to 2000), the LAC suffered an estimated yearly average of 7,500 deaths due to natural disasters, with an estimated annual average cost of between \$700 million and \$3.3 billion dollars (Charveriat 2000). Much of the region is comprised of relatively small islands, with the economy dependent on international trade, making healthy ports central to the economic well-being of the communities they serve. Compromised ports can delay and complicate response and recovery, not just in the immediate aftermath of the event, but for weeks, months, and even years, affecting the entire region and society at large.

Inadequate disaster risk management policies and practices can compound the devastation sustained from natural disasters. While some LAC ports currently employ disaster resilience strategies, very few, if any, are fully optimized: local and regional planning, training, drilling, and exercising of standard operating procedures (SOPs) are still evolving. PReP's accelerated port restoration plan can be of tremendous benefit in fostering disaster resilience in the LAC region by implementing a fully integrated strategy involving ports, state coordinators, government agencies, NGOs, logistics firms, and other stakeholders. Helping disaster-stricken countries reopen ports as quickly as possible restores the flow of vital humanitarian aid and speeds economic recovery, saving lives and livelihoods.

### **Building Resiliency at Latin American and Caribbean Ports**

Tragic stories emerging from the aftermath of Hurricane Katrina in 2005 and the Haitian Earthquake in 2010 revealed the extent to which the initial damage of a natural disaster can be compounded by disabled or poorly-functioning ports. As they struggle to restore normal operations, port authorities often face complicated issues arising from the absence of sound policies, logistical preparedness, cooperation between agencies, etc. For example, some essential personnel were caught between a rock and a hard place: they could take valuable time off work to procure food and shelter for their families, or neglect their families' basic needs so they could repair the port that was central to the delivery of humanitarian aid to their communities. PReP strives to apply the many lessons learned from past disasters along with best management practices from around the world to promote increased resiliency for LAC ports.

Resiliency is not simply a static physical attribute of a facility; rather, it is a quality that must be designed or retrofitted into every aspect of port operations, and it requires on-going attention. A resilient facility avoids or mitigates damage and responds effectively should damage occur, re-establishing normal or near-normal levels of operations in a timely fashion, minimizing the damage to individuals and communities who depend on that facility.

Airports and seaports are vulnerable in a crisis, as they are large, publicly accessible, fixed entities. In addition, ports are complex and multifaceted: each is uniquely operated and regulated depending on geography, politics, and local regulations, and is comprised of a wide variety of facilities and functions such as terminals, delivery areas, storage areas, communication and information systems, security, process control coordination centres, customs and border control, emergency response, and public and protected areas.

The interdependencies among the various stakeholders, customers, clients, and the local community are vast and complicated, calling for careful, considered planning for response to major humanitarian crises. Human resources, the physical plant, equipment, administrative procedures, operational procedures, the legal environment, business continuity planning, and relationships with neighboring agencies all need to be attuned to the probable future effects of a major disaster and be prepared to counter and/or address those effects quickly and effectively both during and after a crisis.

Risk management experts widely agree that the most effective way to address the challenges arising from natural disasters is to implement strategies that emphasize preparedness and resiliency through

- careful assessment of the vulnerability of countries and their populations to natural disasters;
- implementation of prevention or risk reduction measures which seek to avoid disasters and, when that is not possible, to mitigate the damage they cause;
- extensive advance preparation so that quick and effective response saves lives and property following a disaster; and
- proactive efforts to ensure that, when disaster strikes, financing is available to cover the costs of rescue, recovery, and rebuilding (Conger 2011).

## **The PReP Approach: Focused, Informed, Local**

PReP's fundamental approach is to help airports and seaports identify and address logistical and strategic weaknesses and build on existing strengths. Participants are coached in evaluating their unique risks and current plans as well as identifying gaps in preparedness. The program guides airports and seaports as they strive to close identified gaps through custom-tailored training, exercise, monitoring, and mentoring. A continuous improvement cycle ensures that best management practices are shared as more and more ports are served.

Building port resiliency begins at the local level, for when local stakeholders work together to prepare for, respond to, recover from, and mitigate damage caused by catastrophic events; resiliency naturally emerges as a shared cultural value. Strengthening local capabilities is a lasting and meaningful approach. It ensures that the individuals practicing and implementing preparedness plans understand the importance of resiliency and are fully committed to the specific strategies developed for their unique situation. Strategic alliances work best when sound relationships and trust are established prior to an actual disaster.

Starting at the local level, then working outwards, promotes lasting community and national resiliency, creating an integrated framework that bridges local and industry knowledge, capacity, and support with the necessary resources. Collaboration through such a framework yields practical, sustainable, stable, and equitable measures to reduce vulnerability (Babun and Smith 2013).

PReP supports airports and seaports in fostering resiliency through improved interagency coordination and cost-effective, relatively easy-to-implement methods. Ports can strengthen disaster preparedness for effective response at all levels by identifying, assessing, and monitoring disaster risks; using knowledge, innovation, and education to build a culture of safety and resiliency; and improving early warning systems.

PReP helps ports protect life, property, and community vitality by

- facilitating rapid import and distribution of humanitarian aid and other goods following a crisis;
- protecting transportation infrastructure;
- ensuring that disaster risk reduction is a port priority with a strong basis for implementation;

- decreasing post-disaster recovery time;
- helping coordinate resumption of commercial service with extraordinary relief activities during disaster response and recovery; and
- promoting mutual aid among ports.

Table 1 explains how identified needs are addressed by the PReP approach.

<b>The Need</b>	<b>The PReP Solution</b>
Non-formalized, inadequately communicated standard operating procedures (SOPs) create a disjointed, harried response, particularly in the early phases of recovery.	✓ A planned, well-communicated set of SOPs provides a valuable roadmap for essential port personnel. Procedures are formalized, and the approach is unified and coordinated. Disaster response practices are coordinated with Strategic Operations Centers' (SOCs') pre-positioned goods as well as with the efforts of all partner alliance organisations.
Port personnel are inadequately trained.	✓ Trained port personnel with a full understanding of SOPs, including how to best use materiel in the SOCs, are on standby for short-notice dispatch when disaster strikes.
Key participating organisations (vendors, suppliers, local government, NGOs, Consuls General, etc.) lack coordination.	✓ An alliance of organized, mapped member organisations coordinates and harmonizes efforts, preventing confusion and redundancy.

*Table 1: Needs addressed by the PReP approach*

PReP is currently developing a centralized repository for archiving plans, SOPs, checklists, and related materials. This vital resource will expand knowledge, encourage innovation, and support effective collaboration among stakeholders; further, it will serve to establish baseline port capability and maturity levels for updating process improvement programs.

PReP is compatible with the United Nations' Office for the Coordination of Humanitarian Assistance (UN OCHA) and the USAID's Office of U.S. Foreign Disaster Assistance (USAID/OFDA) programs aimed at saving lives, alleviating human suffering, and reducing the social and economic impact of disasters in the LAC region. These programs support disaster risk reduction (DRR) by enhancing local and national self-sufficiency in disaster preparedness and management via risk identification, prioritization, and reduction, as well as post-disaster recovery and short-term rehabilitation projects.

### **The PReP Framework**

Even though ports vary widely around the world, fundamental preparedness, response, recovery, and mitigation principles are universally applicable. Most of the challenges ports commonly face during disasters are related to loss of (1) infrastructure, (2) communication, (3) essential personnel, and (4) interagency coordination.

The resilience of every port, large or small, is governed by universal concepts of Business Continuity Planning (BCP) and Continuity of Operations (COOP), which analyse an organisation's capability to withstand unexpected shocks, repair itself when necessary, and thrive when conditions are optimal. Applying these concepts to real-world challenges can support ports in becoming more resourceful, proactive, and flexible when adjusting to changing circumstances.

Of course perfect resilience may never be realized, but improved resilience is indeed achievable. PReP helps LAC ports create coherent and robust plans and relationships that foster resilience over the long term. The program establishes a systematic process whereby managers can first gain insight into the capabilities of their organisations by identifying the strengths and weaknesses of current processes as they relate to risks. Once the initial risk assessment is completed, ports can then take the necessary steps to build strengths, correct weaknesses, and develop more effective continuity plans.

Participation in PReP is totally voluntary and separate from any regulatory requirements. Once a port requests assistance through PReP, the following four-phase process is implemented, as shown in figure 1.

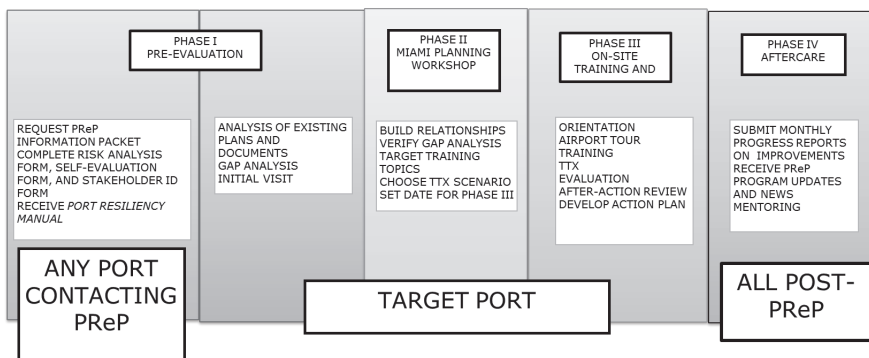


Figure 1: The PReP Process

While the same basic principles of preparedness can be applied across various regions to ports large and small, employing a single framework does not mean that identical decisions should be enacted at every port. There is no “one size fits all” approach. Each port customizes the PReP framework to fit its own specific capabilities, situation, and risk profile. PReP blends tailored training and assistance with general best practices to address the unique needs of each port by identifying critical issues regarding response and recovery.

PReP’s framework is based upon a consistent interpretation of port preparedness according to recognized industry standards. Following this universal definition of “resiliency maturity” allows the establishment of benchmarks, which in turn allows comparison of performance across ports with similar characteristics. Applying benchmarks helps foster a strong learning network of ports that can accurately identify pressing issues and share knowledge and experience over time. PReP is designed to employ a proactive process of adaptive management and a cycle of continuous improvement, with lessons learned shared with all ports in the program.

Following the identification of critical needs and vulnerabilities, ports engage in exercises to troubleshoot and/or validate plans. Practice is a key element of preparedness. Exercises, drills, and simulations enhance proficiency, identify gaps and weaknesses, organize and test the response capacity of all organisations involved, and increase the confidence of both the port and the local community in their own resiliency. Joint exercises provide participants with the opportunity to experience meaningful cross-departmental contact, improving competence and

promoting trust. Both during and after exercises, participants identify deficiencies in mission-critical recovery functions and revise policies and protocols accordingly.

Ports completing the initial review process receive material support from PReP in the form of a Critical Supplies Container (CSC), which resides at the port itself. The contents of the CSC are identified through the PReP process and customized to the specific needs of the port, with the goal of maximizing resiliency in the event of an emergency. CSCs are stocked with necessary equipment and supplies to support continuity of operations as well as the basic needs of critical personnel and their families: when staff are assured that their own and their families' basic needs are taken care of, they can devote their full attention to restoring the port. The CSC creates a more heightened level of port readiness, allowing for rapid response and recovery efforts, thereby increasing the port's functionality during extreme events.

Completing the program yields lasting, beneficial outcomes. Participants at the local level realize a dramatic increase in formalized knowledge regarding continuity and preparedness. In addition, following a maturity model for preparedness brings an inherent discipline to the planning process, which leads to more effective and efficient operations during emergency situations.

What is more, ports and their stakeholders also benefit from more fully understanding their critical roles during a disaster. Knowing exactly what to do decreases anxiety and confusion during extreme events and increases the likelihood of focused, successful action. Vendors, users, and the community at large benefit as they learn to recognize and share interdependencies in mission critical functions.

## **Cooperation is Key**

AmericasRelief Team has decades of experience and expertise bringing together large and small entities in the private sector, public agencies on the ground, and public agencies in the U.S. to harness the strengths of each organisation and create a synergy of effective approaches for enhancing port resiliency. Similar to UN OCHA's and USAID/OFDA's community resiliency programs, PReP engages communities, local and national governments, international and regional organisations, and non-governmental organisations in developing effective strategies tailored to improve port resiliency and disaster response. PReP is committed to supporting capacity development; strengthening linkages between risk identification, monitoring, early warning, and early action systems; and expanding partnerships and joint programming between ports and their stakeholders.



PReP plays a supportive role in a port's resilience-building efforts. Therefore, the port itself, not PReP, identifies specific stakeholders. Regulatory agencies and aid organisations may be invited to participate in training or observe exercises, but only with the port's consent. Generally, the main stakeholders are threefold:

- 1) ports, their tenants, mutual aid partners, and communities;
- 2) academic institutions and universities; and
- 3) acting partners, organisations providing the materials and curriculum, local and national governments, international and regional organisations, and non-governmental organisations.

Public-private partnerships can yield great benefits, as each sector contributes unique skills and resources. The PReP Team is a strong public-private partnership comprised of the following participants:

- Private Non-Profit Organisation: AmericasRelief Team
- *Private Corporations*: FedEx Corporation; AERODOM; American Airlines; Smith-Woolwine Associates
- *Public Agencies*: Miami-Dade County (Miami International Airport; Port of Miami; Miami-Dade Fire Rescue); Florida International University
- *Observers and Advisors*: U.S. Government (Southern Command [SOUTH-COM]); Federal Aviation Administration (FAA); State Department; Department of Commerce; Caribbean Community (CARICOM) and its Caribbean Disaster and Emergency Management Agency (CDEMA); Airports Council International (ACI); Airports Council International-Latin America and Caribbean (ACI-LAC); International Air Transport Association (IATA); Latin American and Caribbean Air Transport Association (ALTA)

Florida International University (FIU), Miami International Airport (MIA), and the Port of Miami complete the original PReP Team. Following the pilot study described below, the company that operates Las Americas International Airport also joined the team. The team remains open to new members as PReP grows and evolves.

## **PReP Pilot Study**

In February 2013, the PReP training team successfully completed a pilot program for the Las Americas International Airport and AERODOM in Santo Domingo in the Dominican Republic. Team members prepared for the program by holding a

planning workshop in Miami the previous December to verify gaps in preparedness through self-evaluation as well as outside evaluation by experts. They then designed specific training to bridge those gaps. In February, local emergency response stakeholders, responders, military, and government personnel gathered in a tabletop exercise (TTX).

Stakeholders involved in the pilot project included AERODOM airport and corporate operations, security, and safety personnel, along with senior representatives from the Dominican Republic's national agencies involved in airport regulation, air traffic control, aviation and transportation security, emergency management, and law enforcement. Two airlines and the main customer service concessionaire at the airport completed the array of stakeholders participating in the training and tabletop exercise.

Positive feedback from pilot test participants in Santo Domingo validated the PReP approach and highlighted necessary improvements going forward, such as expanding topics on the training menu, emphasizing mentoring of new airports by PReP alumni airports, providing more structured follow-up during the aftercare (Phase 4) stage, and facilitating the growth of airport-to-airport mutual aid.

## **Summary**

Natural disasters can rapidly overwhelm the local response capacity of Latin American and Caribbean airports and seaports. When ports are damaged in a natural disaster, basic infrastructure is severely compromised, leading to a ripple effect of hardships.

Immediately following a disaster, resilient ports save lives, for ports are central to the delivery of humanitarian aid critical to maintaining public health and safety. In the wake of a disaster, resilient ports save families, livelihoods, and communities, for the economic viability of a region greatly depends on its ports' ability to return to normal operations in as timely a manner as possible.

AmericasRelief Team's Port Resiliency Program (PReP) is designed to improve the disaster readiness of airports and seaports in the LAC region. PReP applies lessons learned from recent disasters along with widely received best practices to assist regional ports in advancing continuity of operations. The program promotes capacity building, implements resiliency assessment and planning activities, and provides post-disaster technical and commodities support. It is based on the creation, development, and dissemination of state-of-the art disaster mitigation stand-

ard operating procedures and training. PReP seeks to achieve the swift revitalization of the logistics supply chain after a disaster, facilitating the rapid delivery of much-needed aid and stabilizing traumatized communities.

With full implementation, PReP will achieve speedy restoration of ports following major crisis events. PReP's multi-agency articulation creates a standardized, viable set of policies and procedures for disaster mitigation and port reconstruction that can be formalized and communicated to essential port personnel via intensive and realistic training, drills, and practice. The resulting heightened proactive stance will establish an effective set of protocols for regional response to ensure that ports are fully operable as quickly as possible, maximizing the timely delivery of critical humanitarian aid to local communities while minimizing the avoidable hardships that can unfold in the wake of a disaster.

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**Dr. Teo A. Babun, Jr.** is the Executive Director of AmericasRelief Team (ART), which operates as an initiative of Outreach Aid to the Americas, Inc. (OAA). Its mission is to provide humanitarian logistics assistance and educational programs for disaster victims in the Americas and develop sustainable programs that establish long-term benefits for those in need. After a highly successful career in the manufacturing and maritime industries, Dr. Babun decided to dedicate the rest of his life to charitable and non-profit endeavours in support of the most vulnerable populations. Dr. Babun earned a bachelor of Electrical Engineering, as well as a Master in Business Administration, and Doctor of Philosophy, Ph.D., from Vision International University.



**Dr. Prof. Engr. James F. Smith** has an active research program in the field where airport preparedness for non-aviation disasters intersects with communities and other stakeholders. He publishes frequently in peer-reviewed professional journals and popular magazines. Since 2012, he has served as technical director of the Port Resiliency Program (PReP) of AmericasRelief Team. Jim is a professor emeritus of emergency and disaster management at American Public University System. He is the president of Smith-Woolwine Associates Inc., a consulting firm based in Floyd, Virginia. Jim's doctorate in environmental design & planning is from Virginia Tech, and he is a Professional Engineer emeritus in Virginia, USA.