THE POTENTIAL FOR AIRPORT-TO-AIRPORT MUTUAL AID IN THE LATIN AMERICAN AND CARIBBEAN REGION

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ABSTRACT

This study examines the feasibility of an airport-to-airport mutual aid program across international borders throughout the Latin America and the Caribbean (LAC) region. The analysis describes two model U.S. mutual aid programs and focuses on identifying need, benefits, programmatic requirements, stakeholders, obstacles, and solutions. A "flight plan" provides guidelines for developing and implementing a cross-border airport-to-airport mutual aid program.

Keywords**:** *airport, mutual, aid, international, cross-border*

INTRODUCTION

The potential benefits of cross-border airport-to-airport mutual aid programs in the Latin American and Caribbean (LAC) region are promising. Because aviation is a network, a disruption at a single airport can result in a cascade of negative impacts on a wide variety of stakeholders. Therefore, maximizing the efficiency and effectiveness of airport responses to disasters can improve regional and national resiliency and help maintain continuity of business. In an area where airborne commerce is essential to socioeconomic health, resources are limited, and tropical storms and hurricanes are regular events, sharing resources and capabilities in a focused, preplanned manner could make a profound difference in preparing for, responding to, and recovering from natural disasters.

When a major emergency or disaster strikes, LAC airports face an extraordinary range of external and internal pressures. An airport may be damaged and need outside help to repair and reopen. Operations unfold at a much more rapid pace than usual to support disaster response and recovery, and personnel may need to work with different types of aircraft and equipment than they are accustomed to. Moreover, in the immediate aftermath of the disaster, the airport's own employees face additional strain from the pressing need to care for their loved ones and property. To address this wide range of needs, qualified personnel from airports participating in a mutual aid program can assist and supplement the airport's own managers and employees.

Traditionally, airport-to-airport mutual aid across national boundaries in the LAC region has been viewed as impractical, impossible, or both due to perceptions regarding cultural, legal, regulatory, and linguistic differences. However, following devastating hurricanes in the Southeastern U.S., airport-to-airport mutual aid provided by skilled volunteers from undamaged airports demonstrated that mutual aid programs are both practical and effective. Due to the growing recognition of the benefits of these programs, mutual aid is now also an element of current plans for airport response to earthquakes in the western U.S.

No one knows better how to help an airport than another airport [2]. The specialized functions and equipment required to operate and sustain an airport are highly similar among airports, so airport personnel from one airport can contribute effectively at another with relatively minor adjustments. Following a disaster, airport resiliency and functionality are essential to both humanitarian relief and economic recovery in the LAC region. Airport-to-airport mutual aid can

be a useful, cost-effective way to promote ongoing resiliency, effective emergency response, and timely recovery from disasters, benefitting the airport, its region, and even its nation.

WHAT IS AIRPORT-TO-AIRPORT MUTUAL AID?

A mutual aid program is a voluntary, non-contractual arrangement that provides short-term emergency or disaster assistance between two or more entities [1]. The operative concepts in this definition are "mutual" and "voluntary." The designation of "short-term" generally refers to the emergency response phase, and sometimes to the early parts of the recovery phase.

For an airport-to-airport mutual aid program in the LAC region, the entities in the program would be airports, where the stricken airport receives aid from other airports volunteering expert professional assistance. Non-airport partners may also participate in the program, and airports outside of the LAC region would be welcome to send volunteers as well.

Effective airport-to-airport mutual aid assists and supplements existing operations; it does not supplant or replace them. It is limited solely to aviation functions, with control of the airport remaining with its designated managers.

EXISTING AIRPORT-TO-AIRPORT MUTUAL AID PROGRAMS IN THE U.S.

Examining existing mutual aid programs can provide useful models for determining the proper approach to developing such programs in the LAC region. In 2012, the Airport Cooperative Research Program (ACRP), funded by the FAA to advance the industry through research, studied the airport-to-airport mutual aid program concept. ACRP Report 73, *Airport-to-Airport Mutual Aid Program Guidebook* [2], details the following elements:

- benefits of a formal mutual-aid program;
- steps to implement and sustain a program;
- avenues for funding a mutual-aid program;
- potential liability and reimbursement issues;
- obstacles to gaining interest from potential members; and
- best practices/lessons learned from mutual-aid programs used by non-aviation industries that can be implemented in an airport-to-airport mutual-aid program at the regional and/or national level.

ACRP Report 73 examined existing airport-to-airport mutual aid programs worldwide. Two exemplary U.S. programs, the Southeast Airports Disaster Operations Group (SEADOG) and the Western Airports Disaster Operations Group (WESTDOG), stood out, and were thoroughly documented and analyzed. No comparable programs were found anywhere else in the world.

SEADOG was founded in late 2004 in response to a series of hurricanes that struck the southeastern United States. Led by airports in Savannah, Orlando, Dallas-Fort Worth, and Houston, airports were organized to provide voluntary mutual aid to any airport in the region that needed help following a disaster. The first major SEADOG deployments were to New Orleans and Biloxi-Gulfport after Hurricane Katrina in 2005 and to Houston and Jack Brooks after Hurricane Ike in 2008. More than 20 airports, including some from outside the southeastern U.S., sent aid in the form of skilled airport professionals and specialized equipment sent assistance to Louis Armstrong New Orleans International Airport in 2005 (Figure 1).

In a typical scenario, each assistance team worked five to seven days, with one day's overlap with the incoming team. The Federal Aviation Administration (FAA) contributed conference call capabilities to facilitate coordination. SEADOG volunteers were often the earliest and most reliable source of information about the status and capabilities of the damaged airports. Since both hurricanes were presidentially declared disasters, all participating airports were eventually reimbursed through the Federal Emergency Management Agency (FEMA).

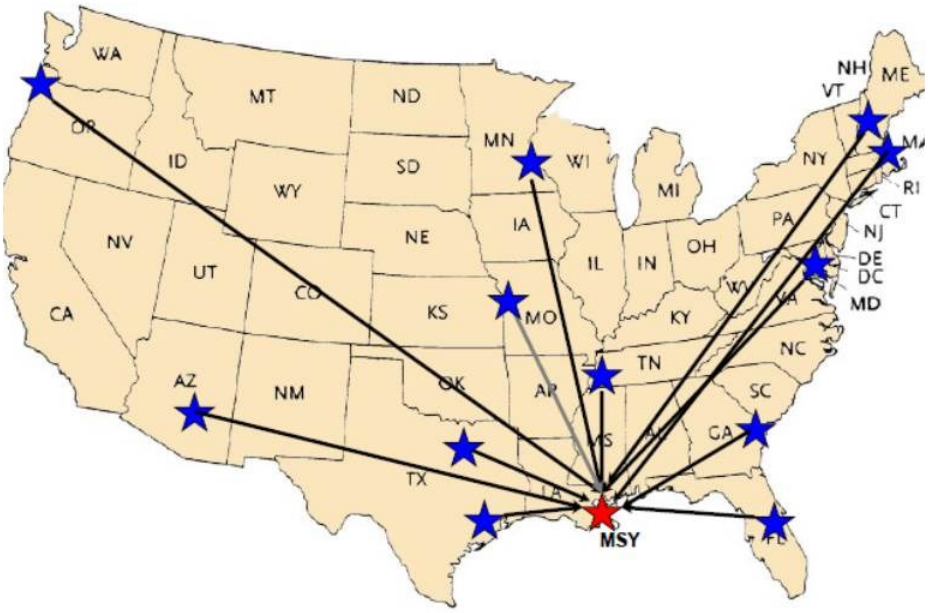

Figure 1. Airports sending aid through SEADOG to Louis Armstrong New Orleans International Airport after Hurricane Katrina, 2005

SEADOG has not been called upon to dispatch assistance teams since 2005, but it routinely stands on alert for tropical storms and hurricanes, and it was on standby to assist St. Louis and Oklahoma City after tornadoes struck city airports.

SEADOG is informally structured with no written agreements. Three airports voluntarily serve as coordinators for three geographical regions; a fourth airport coordinates law enforcement assistance; and a fifth coordinates aircraft rescue and fire fighting (ARFF) assistance. In addition, SEADOG has two dedicated rapid assessment teams that can be dispatched to quickly evaluate a damaged airport and determine which specific skills and equipment are needed. In a major enhancement in 2012, Everbridge Corporation began providing a notification service to all SEADOG airports.

Inspired by SEADOG, WESTDOG was founded in 2007. The philosophy and mission of the two groups are nearly identical, with WESTDOG focusing more on preparing for and responding to earthquakes, SEADOG to storms. WESTDOG developed a procedural manual [3] and dedicated website [4] to keep participants informed.

The most significant differences between the two DOGs are administrative, as WESTDOG designates one airport to coordinate all functions for a year with a designated back-up airport which serves as coordinator the following year, whereas SEADOG's members share functions on a rotating basis. WESTDOG also requires formal memberships and requires the sponsor of each airport to pass a resolution authorizing participation, as compared to SEADOG's more informal structure. Nevertheless, with both DOGs participation is voluntary and there are no mandatory requirements for response.

SEADOG and WESTDOG maintain close ties and communication; as a result, situational awareness and readiness to request or contribute assistance is essentially seamless across both

groups. From 2007 through 2011, the two DOGs held a joint annual session in conjunction with a major general meeting of an airport industry association. Since 2012, SEADOG and WESTDOG have held annual conferences to review procedures, examine outcomes, and plan for the future.

At present, neither SEADOG nor WESTDOG has any non-airport members. They both have close associations with the FAA and with regional chapters of the American Association of Airport Executives (AAAE).

FUNDAMENTAL ASPECTS OF AN EFFECTIVE AIRPORT-TO-AIRPORT MUTUAL AID PROGRAM IN THE LAC REGION

In May of 2013, at the thirteenth meeting of Directors of Civil Aviation of the Central Caribbean (CCAR-DCA/13) in Havana, Cuba, Mr. Randy, Moseng, an FAA representative from the Office of Airport Safety and Standards, presented a working paper designed to spark discussion of initiating airport-to-airport mutual aid programs in the LAC region based upon need and capability [5]. The proposal built on ACRP Report 73 [2].

Combining information and insights from Mr. Moseng's presentation with ACRP Report 73 yields a list of 24 requirements for effective cross-border airport-to-airport mutual aid programs [2,5]. Unifying elements are effectiveness, timeliness, clear communication, interoperability, and mutual respect. Table 1 lists the 24 requirements, grouping them according to underlying philosophy, essential elements, and desirable elements. (Table 1 can also serve as an effective checklist for developing and implementing a cross-border airport-to-airport mutual aid program.) Airports should follow the International Civil Aviation Organization (ICAO) Annex 14 [7] and ICAO Publication 9137 [8] so they have strong foundation of proficiency with basic operations and emergency procedures.

While essential principles of airport-to-airport mutual aid programs would apply to cross-border mutual aid program in the LAC region, such a program would need to be structured differently to accommodate the unique social, political, and material circumstances of the international partners. Unlike the two existing airport-to-airport mutual aid programs in the United States where only airports are members, an effective cross-border program in the LAC region would need to include a broader range of members, i.e. industry partners, international organizations, governmental agencies/offices, etc., as appropriate to the situation and the needs of those involved.

Table 1. Essential and Desirable Elements in a Cross-border Airport-to-Airport Mutual Aid Program

Type	Policy, Procedure, Process, or Step
Underlying Philosophy	Clearly defined purpose and scope
	Voluntary
	Existing bilateral, or multilateral, agreements fully considered and incorporated
	Involvement of the full range of stakeholders in all stages of the program
	Strong governmental and senior management support
	Limited to aviation-related assistance following a disaster
	Aid remains under the control of the receiving airport and is in response to that airport's requests
	No self-deployment
	No impact to the operational effectiveness of the airports sending assistance
	Basic emergency management principles are followed: disaster phase recognition, establishment of standard terminologies, command and control authority, communications, functional teams, security, training, and outreach

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Type	**Policy, Procedure, Process, or Step**
Essential Program Elements	A standard operating procedures (SOP) document to guide response
	Asset inventories, including a Minimum Essential Equipment (MEL) list for airport operations that identifies the minimum staffing required following a disaster and defines the required skill sets for volunteers
	Pre-planning of response plans for disaster categories by scale
	An effective communications system in place prior to activation
	Aid teams as self-sustaining as possible
	Estimated costs and funding agreements established well in advance
	A broadly accepted coordination function to connect the airport in need with airports willing to send mutual aid
	Information flow and communication sufficient to allow precise matching of specific needs to volunteers, equipment, and supplies
	A method to document specific skills, both needed and available
	A rapid assessment capability to help a damaged airport identify and prioritize its needs
	Close cooperation of airlines, airports, and national agencies including customs and immigration to facilitate smooth cross-border travel by aid teams
Desir -able	Familiarization among airports in advance of disasters
	Promotion of the program, its capabilities and procedures
	Education of stakeholders

STAKEHOLDERS IN AIRPORT-TO-AIRPORT MUTUAL AID

Table 2 lists the full range of stakeholders who need to be considered when developing a cross-border airport-to-airport mutual aid program. It also indicates those likely to be involved in the sending and/or the receiving of voluntary aid.

Table 2. Stakeholders for International Airport-to-Airport Mutual Aid

Type of Agency	Agency	Devel. Phase	Sending Aid	Receiving Aid
Coordinator	Organization that coordinates program	X	X	X
International Agencies	ICAO	X	X	
	Office for the Coordination of Humanitarian Affairs (OCHA)	X	X	
	Regional safety oversight organizations	X	X	
National Agencies	Aviation regulatory and safety agencies	X	X	X
	Air traffic control agencies	X	X	X
	Transportation security agencies	X	X	X
	National law enforcement agencies	X	X	X
	Immigration and border control agencies	X	X	X
	Customs agencies	X	X	X
	National emergency management agencies	X		
	Military/defense departments	X	X	X
Local Agencies	Fire	X	X	X
	Law enforcement	X	X	X

Table 2. Stakeholders for International Airport-to-Airport Mutual Aid

Type of Agency	Agency	Devel. Phase	Sending Aid	Receiving Aid
	Emergency management	X	X	X
	Health departments	X	X	X
Airports	Senior management	X	X	X
	Operations	X	X	X
	Maintenance	X	X	X
	ARFF	X	X	X
	Emergency management	X	X	X
	Airport police	X	X	X
	Corporate level management	X	X	X
	Tenants	X		
	Concessionaires	X		
Associations	International Air Transport Association (IATA)	X		
	Airports Council International (ACI) World	X		
	ACI-NA	X		
	ACI-LAC	X		
	Latin American and Caribbean Air Transport Association (ALTA)	X		
	Unions	X	X	X
NGOs	Non-governmental humanitarian organizations	X		X
Airlines	Passenger airlines	X	X	X
	Cargo carriers	X	X	X
Customers	Passengers	X		X
	Shippers	X		X
	Disaster victims	X		X
	Disaster evacuees	X		X
Other	Insurers	X		

A steering committee should be formed from the group of stakeholders to guide the development of the program, including drafting a charter with a clear statement of mission, purpose, scope, and objectives. Once the broader range of stakeholders has reviewed and approved the charter, the steering committee, with possible additional stakeholder representatives, should develop the standard operating procedures (SOP) document or manual.

COORDINATION

Of the stakeholders listed in Table 2, the least defined role is that of coordinator. Several options are possible:

Option 1. An international agency such as ICAO. Enlisting the Regional Aviation Safety Group (RASG) or the Regional Aviation Safety Team (RAST) from the appropriate regional office would work well.

Option 2. One of the associations such as ACI, IATA, or ALTA. This is the pattern used by Colorado Aviation Recovery Support Team (CARST), a within-state mutual aid program that helps airports and communities recover from crashes.
Option 3. A national agency from one of the member countries, perhaps on a rotating basis.
Option 4. An airport or several airports, either rotating or permanent. This is the pattern used by SEADOG and WESTDOG.
Option 5. A nongovernmental organization (NGO) such as the Port Resiliency Program (PReP), as suggested during the pilot project at Las Americas International Airport in Santo Domingo. The NGO could provide coordination under grants or as a contractor to another agency, association, or group of airports [6].
Option 6. A contractor, under contract to another agency, association, or group of airports.
Option 7. Some other arrangement determined by the initial steering committee.

The first four options are generally viewed as "free," but their costs are actually absorbed by the coordinating entity. Options 5 and 6 would require the transfer of funds, necessitating a funding mechanism such as dues and/or contributions.

NEED

For airports in regions prone to hurricanes, earthquakes, and volcanoes, their existing hazard analyses establish and delineate the need for airport-to-airport mutual aid. Other airports can consult with their regional and/or national emergency managers, as an existing regional or national hazard analysis may serve the same purpose.

If a disaster directly strikes and damages an airport, outside airports can help restore and reopen the airport, as they have similar equipment and specialized personnel available to respond quickly to facilitate timely resumption of normal operations. For example, following Hurricane Katrina, Minneapolis-St. Paul International Airport assisted Gulfport-Biloxi International Airport through SEADOG.

Of course, often a disaster can strike a region without damaging the airport, resulting in extreme operational demands on the airport with incoming aid flights, outgoing evacuation flights, search and rescue operations, and economic and social recovery. For example, operations at the airport

Figure 2. Port-au-Prince International Airport about one week after 2010 earthquake
(U.S. Navy photo by Petty Officer 2nd Class Justin Stumberg)

at Port-au-Prince, Haiti escalated from fewer than 40 per day to more than 700 per day within a week after the 2010 earthquake [2]. Figure 2 shows Haiti's Toussaint Louverture International Airport at the height of relief activities. A regional disaster can also pull skilled airport employees away from airport duties to care for their families and personal property, reducing staffing levels just when they need to be at a maximum.

Pressure from competition with other airports and/or from airlines concerned with rates and charges drives airports to minimize staff and equipment redundancy; when operational needs increase due to a disaster, outside airport experts can bridge the gap created by lean organizational structures created for normal operations.

BENEFITS

A cross-border airport-to-airport mutual aid program in the LAC region would yield the following benefits for all the stakeholders in preparing for and responding to disasters:

- assisting communities in accelerating humanitarian relief and economic recovery after a regional disaster;
- helping the stricken airport adjust to the heightened operational tempo of disaster response and recovery;
- allowing flexibility for local airport employees to tend to their families and avoid burn-out from prolonged high-tempo operations;
- allowing the airport receiving aid to reopen as soon as possible, reducing revenue losses; and
- facilitating rapid resumption of normal commercial service, thus minimizing network disruptions, potential tax write-offs, and bad publicity.

Airports both receiving and providing aid benefit from mutual aid programs, as all participants experience hands-on real-world training in disaster recovery, and the overall sense of readiness is enhanced for all stakeholders.

Moreover, volunteers for both SEADOG and WESTDOG activations report feeling good about being able to "give back" to their industry. Many participants in past airport-to-airport mutual aid mobilizations note that their efforts resulted in public pride that their airport helped friends and neighbors in need. Public pride engenders public support for the airport, which can be helpful when addressing community issues.

OBSTACLES AND SOLUTIONS

The cost of managing and operating a cross-border airport-to-airport mutual aid program in the LAC is relatively small, especially when compared with potential economic losses for airports and the regions they serve when an airport is out of service or poorly functioning. The costs for coordination and communication for a mutual aid program in the LAC are estimated to be US $300,000-500,000 per year. Methods for paying these costs lie outside the scope of this paper as they cannot be realistically addressed until there is a concrete programmatic proposal that stakeholders can evaluate.

Travel costs can be minimized with the cooperation of airline and agency members. Liability and employee insurance issues need to be resolved during the development of the program via cooperation among airports, national agencies, unions, and insurance companies.

Reimbursement of costs accruing to aid teams should be resolved by drawing up agreements during the development of the program. There is no "one size fits all" solution. One possible solution is that sending airports cover their own costs without reimbursement, viewing the aid

given as a type of good will insurance for their own future needs. Another solution would be to establish a fund built through voluntary contributions.

Qualifications of incoming aid personnel should be documented. The precise matching requirement (Table 1) and the procedural standardization created by ICAO Annex 14 and ICAO Publication 9137 greatly simplifies qualification issues.

Membership or a letter prior to the arrival of an aid team is necessary to establish specific authorization to act [1]. ACRP Report 73 provides a sample authorization letter [2].

Security, access, and badging issues are often raised as major obstacles, but in actual SEADOG and WESTDOG activations, they have not presented problems. It is recommended that standard procedures for security, access, and badging, as well as rules about escorts, be written into the SOP document.

Differences in language and culture are also raised as barriers to successful cross-border mutual aid, but airlines and air cargo companies long ago solved these issues and operate efficiently across border: every day, airlines and air cargo companies demonstrate the feasibility of cross-border activities. Legalities including immigration, work visas, and customs (duties, inspections, impounds, and delays) have been a major problem for NGOs working across borders. Both of these issues can be addressed by seeking airline and national agency participation in the program.

During the SEADOG assistance to New Orleans and Gulfport-Biloxi, the physical security of aid teams being deployed was a very real issue [2]. Given the social disruptions inherent in regional disasters, this problem could also arise in a cross-border program. Involving local and national law enforcement agencies as stakeholders would help teams address these issues proactively.

FLIGHT PLAN FOR DEVELOPING A MUTUAL AID PROGRAM FOR THE LAC REGION

Table 3 provides a detailed flight plan and estimated timeline for the development and activation of a cross-border airport-to-airport mutual aid program to serve the LAC region.

Table 3. Flight Plan to Develop Cross-border Airport-to-Airport Mutual Aid Program

Estimated Duration	Action	Target Audience or Projected Participants
3 months	Brief key stakeholders working through international agencies and associations.	ICAO, FAA, RSOOs, ACI, IATA, ALTA, AAAE, and through them, their airport, airport, airline, and agency members.
1 month	Establish steering committee by following ICAO-NAC CCAR/DCA/13.	ICAO, RSOOs, ACI, IATA, ALTA, AAAE nominate members and issue invitations.
2 months	Convene steering committee.	One of the key stakeholders
3 months	Draft charter.	Steering committee
2 months	Review charter and revise as necessary.	All stakeholders
1 month	Identify coordinator for program.	Steering committee
3 months	Draft SOP document.	Steering committee working with contractor and/or volunteers
2 months	Review SOP document and revise as necessary.	All stakeholders
1 month	Distribute charter and SOP document to potential program members.	Coordinator at direction of steering committee

2 months	Hold organizational meeting(s).	Airports, airlines, agencies, aviation-related corporations, and NGOs
3 months	Provide training to airports.	Coordinator and volunteers
	Exercise coordination, communication, logistics, and other procedures.	Coordinator, steering committee, program members, and volunteers
1 month	Activate program.	Program members
24 months	**Total estimated duration from start to activation**	

ACRP Report 73 provides a detailed flight plan for establishing a new airport-to-airport mutual aid program in the U.S. [2]. That flight plan and the experiences of SEADOG and WESTDOG were combined to develop the flight plan and timeline for a cross-border airport-to-airport mutual aid program shown in Table 3.

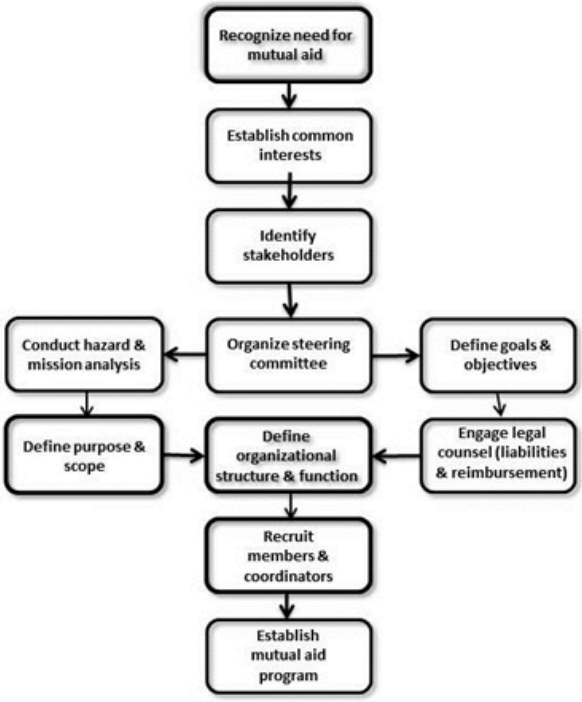

Figure 3. Flowchart to develop mutual aid program (adapted from ACRP Report 73)

The main difference between U.S. efforts and developing a successful cross-border airport-to-airport mutual aid program will be the purposeful expansion of involvement beyond just airports to include airlines, national aviation, and other agencies including emergency management and law enforcement, international agencies, aviation trade associations, and perhaps major nongovernmental humanitarian organizations. Figure 3 shows a flowchart for the process to develop the program.

Exactly the same concept proposed for the development and implementation of a cross-border airport-to-airport mutual aid program can be applied to airport-to-airport mutual aid programs within individual countries. The main differences are that the list of stakeholders will be shorter, national emergency management or military agencies will most likely play a greater role, and international agencies and associations may play a slightly smaller role. There is no reason that cross-border and within-country programs cannot be developed side by side, and a tandem effort would be more cost- and time-efficient. Most documents and solutions presented herein can serve both efforts.

CONCLUSION

Exploring cross boundary airport-to-airport mutual aid programs is well worth the effort. In the face of a disaster, airport-to-airport mutual aid for response and recovery can enhance social resiliency and support business continuity to benefit the airport, its region, and even its nation.

Potential problems inherent in long-distance travel, immigration, work visas, and customs inspections can be addressed by involving pertinent national agencies as members or backers of a mutual aid program.

The possible long-term benefits of cross-border airport-to-airport mutual aid programs are wide-ranging. As all airports face resource limitations, sharing resources and capabilities in a

preplanned manner can maximize positive outcomes and minimize negative outcomes in a response to a natural disaster.

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