

June 2009

# INTERNATIONAL AVIATION

## Federal Efforts Help Address Safety Challenges in Africa, but Could Benefit from Reassessment and Better Coordination



GAO

Accountability \* Integrity \* Reliability



Highlights of [GAO-09-498](#), a report to congressional requesters

## Why GAO Did This Study

The African continent is important to U.S. economic, strategic, and foreign policy interests, and efforts have been made to improve commerce and connectivity to benefit the two regions. However, the continent has the highest aviation accident rate in the world, which has hindered progress. Recognizing the importance of improving aviation safety in Africa, the United States and the international aviation community have worked to improve aviation safety in Africa.

This congressionally requested report discusses (1) challenges in improving aviation safety in Africa, (2) key U.S. efforts to improve aviation safety in Africa and the extent to which they address the identified challenges, and (3) international efforts to improve aviation safety in Africa. To address these issues, GAO synthesized literature and aviation safety data, interviewed federal officials, and visited four African countries.

## What GAO Recommends

The Secretary of Transportation should (1) lead a collaborative effort to reassess the SSFA program's goals and identify the level of budgetary and human capital resources necessary to achieve those goals and (2) develop a comprehensive strategy to lead efforts to coordinate the governmentwide resources available to accomplish the program's goals. DOT generally agreed with GAO's findings and recommendations.

To view the full product, including the scope and methodology, click on [GAO-09-498](#). For more information, contact Gerald L. Dillingham at (202) 512-2834 or [dillingham@gao.gov](mailto:dillingham@gao.gov).

## INTERNATIONAL AVIATION

### Federal Efforts Help Address Safety Challenges in Africa, but Could Benefit from Reassessment and Better Coordination

#### What GAO Found

Improving aviation safety in Africa is an important goal for the United States and the international aviation community. However, achieving that goal presents several challenges. The major challenge is the relatively low priority that political leaders in many African countries have accorded aviation safety, in part because of more pressing concerns such as widespread poverty, national health care issues, and a lack of awareness about the potential benefits of an improved aviation system. This relatively low priority placed on improving safety is reflected in the other challenges that were frequently identified in the literature GAO reviewed and by the officials GAO interviewed. These challenges include weak regulatory systems, inadequate infrastructure, and a lack of technical expertise and training capacity.

U.S. assistance to improve aviation safety in Africa has helped to address some challenges. For instance, the Department of Transportation's (DOT) Safe Skies for Africa (SSFA) program—created in 1998 as a presidential initiative—is the principal U.S. effort to improve aviation safety. One of the primary goals of the SSFA program is to increase the number of African countries that meet international aviation safety standards. Through memorandums of agreement, the State Department provides funding for the program and DOT manages the program. DOT and the Federal Aviation Administration work to help African countries meet international aviation safety standards by providing technical assistance and training. However, funding for the program has been inconsistent since its inception, with funding levels ranging from a high of \$8.5 million from the Department of State's fiscal year 2003 appropriation to zero from its appropriations in fiscal years 2008 and 2009. DOT officials stated that current budgetary and personnel limitations hamper their ability to effectively implement the program. For example, DOT has currently limited SSFA activities to countries making tangible progress in improving safety, rather than directing activities to all participating countries. Given the potential benefits associated with improved aviation systems, two agencies that focus on economic development—the U.S. Trade and Development Agency and the Millennium Challenge Corporation—have also provided funding for aviation safety-related projects in Africa. However, coordination of U.S. efforts on the continent has not been consistent, because of differences in agency missions and program processes, resulting in potential duplication of effort and missed opportunities to leverage limited resources.

Several international efforts have been implemented to assist and encourage African countries in improving their civil aviation systems. For example, in response to widespread concerns about the adequacy of aviation safety oversight on the continent, the International Civil Aviation Organization developed the Comprehensive Regional Implementation Plan for Aviation Safety in Africa to help African countries meet their international obligations for safety oversight. The World Bank also provides funding for African countries to address aviation needs and deficiencies.

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## Abbreviations

AFI Plan	Comprehensive Regional Implementation Plan for Aviation Safety in Africa
AFRICOM	U.S. Africa Command
AGOA	African Growth and Opportunity Act
CASSOA	Civil Aviation Safety and Security Oversight Agency
COSCAP	Cooperative Development of Operational Safety and Continuing Airworthiness Program
DOD	Department of Defense
DOT	Department of Transportation
EAC	East African Community
EU	European Union
FAA	Federal Aviation Administration
IASA	International Aviation Safety Assessment
IATA	International Air Transportation Association
ICAO	International Civil Aviation Organization
IOSA	IATA Operational Safety Audit
MCC	Millennium Challenge Corporation
NCAA	Nigerian Civil Aviation Authority
SSFA	Safe Skies for Africa program
USAID	U.S. Agency for International Development
USTDA	U.S. Trade and Development Agency

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United States Government Accountability Office  
Washington, DC 20548

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June 16, 2009

The Honorable James L. Oberstar  
Chairman  
Committee on Transportation and Infrastructure  
House of Representatives

The Honorable Jerry F. Costello  
Chairman  
Subcommittee on Aviation  
Committee on Transportation and Infrastructure  
House of Representatives

The Honorable Corrine Brown  
House of Representatives

The Honorable Eleanor Holmes Norton  
House of Representatives

The Honorable Donald M. Payne  
House of Representatives

The African continent is important to U.S. economic, strategic, and foreign policy interests, and efforts have been made to improve commerce and connectivity to benefit the two regions.<sup>1</sup> U.S. interests in Africa include having access to natural resources, particularly petroleum reserves, and ensuring their security and market stability; mitigating potential security threats posed by vast uncontrolled spaces; and alleviating the effects of sporadic humanitarian crises and armed conflicts. Furthermore, Africa has been identified as a strategic trading partner, because the continent is a large potential market for U.S.-manufactured products, such as aviation safety and security equipment and aircraft. African countries have also recognized the benefits of improved commerce and connectivity between the United States and Africa, notably the economic benefits associated with increased trade and tourism.

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<sup>1</sup>In this report, we use the term “connectivity” to refer to aviation connectivity that is related to the range and economic importance of destinations, the frequency of air service, and the number of connections available through countries’ aviation networks.

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However, efforts to increase commerce and connectivity between the United States and Africa have been hindered, in part, by the poor aviation safety record of some African countries. The African continent has historically had one of the highest accident rates in the world. The poor aviation safety record of some African countries has contributed to the limited number of direct flights between the United States and the continent. With few exceptions, flights between the United States and African countries bring passengers through intermediate points, often European hubs, adding time to these flights and potentially increasing their cost.

Recognizing the importance of aviation in advancing U.S. and African interests, the federal government has initiated various efforts to improve aviation safety in Africa. In particular, the Safe Skies for Africa (SSFA) program was created in 1998 as a presidential initiative to improve aviation safety and security and air navigation in Sub-Saharan African countries.<sup>2</sup> The State Department provides funding for the program from its budget using economic support funds.<sup>3</sup> The program is managed by the Department of Transportation's (DOT) Office of the Secretary, through which the Federal Aviation Administration (FAA) provides technical assistance and training to participating African countries. Currently, 10 African countries participate in the SSFA program.<sup>4</sup> Concerned about the impact that poor aviation practices in Africa can have on global aviation safety, the international community, including the International Civil Aviation Organization (ICAO), International Air Transportation Association (IATA), and World Bank, has also launched a number of initiatives to improve aviation safety in Africa.

You asked us to examine issues related to U.S. efforts to improve aviation safety in Africa. This report discusses (1) the challenges that exist in improving aviation safety in Africa, (2) key U.S. efforts to improve aviation safety in Africa and the extent to which they address the identified

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<sup>2</sup>According to Department of Transportation documents, the SSFA program was designated as the primary mechanism for supporting the goals of the President's 2003 East Africa Counterterrorism initiative for aviation security by working with the U.S. Department of Homeland Security and its Transportation Security Administration.

<sup>3</sup>The Economic Support Fund is an appropriation account authorized by the Foreign Assistance Act of 1961 to provide flexible economic assistance to countries selected for their special political and security interests to the United States.

<sup>4</sup>The current SSFA participants are Angola, Cameroon, Cape Verde, Djibouti, Ghana, Kenya, Mali, Namibia, Tanzania, and Uganda.

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challenges, and (3) steps that other countries or international organizations have taken to improve aviation safety in Africa. To address these issues, we reviewed and synthesized literature and studies on U.S. efforts to improve aviation safety in Africa, including the SSFA program, comparable international aviation efforts, and Africa's aviation markets and safety record. We also analyzed legislation related to U.S. efforts to improve commerce and connectivity to Africa, SSFA program documents, and international aviation safety information. We interviewed officials at the Departments of Transportation, State, and Defense; U.S. Agency for International Development (USAID); U.S. Trade and Development Agency (USTDA); National Transportation Safety Board; and Millennium Challenge Corporation (MCC) about U.S. efforts to improve aviation safety in Africa. We also interviewed aviation specialists from the European Commission, World Bank, ICAO, and IATA.

In addition, we conducted site visits to Cape Verde, Kenya, Senegal, and Tanzania. We selected these countries using the following criteria: the countries' participation in the SSFA program, the countries' aviation safety record, FAA's safety ratings for the countries, and geographic location. These criteria enabled us to identify countries with a range of safety and aviation experiences. However, because we selected these four countries as part of a nonprobability sample, our findings cannot be generalized to all African countries. During these site visits, we interviewed government officials, civil aviation authority officials, representatives from aviation stakeholder groups, and representatives from air carriers to obtain information on efforts to improve aviation safety in Africa, including U.S. efforts.

We conducted this performance audit from April 2008 to June 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. See appendix I for more information about our scope and methodology.

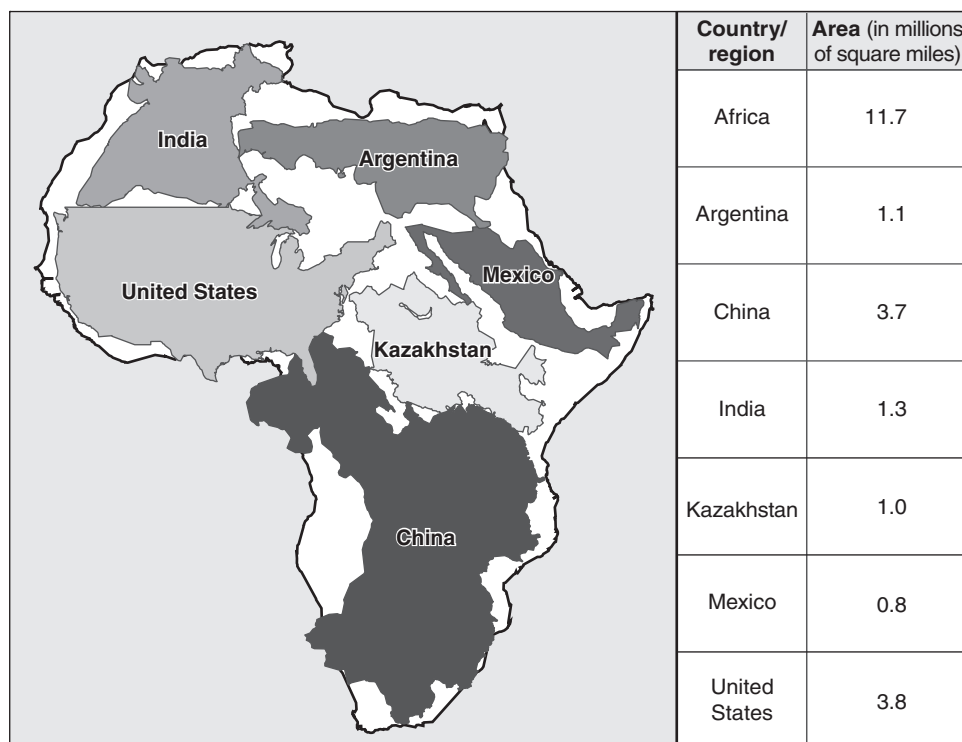
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## Background

The African continent is the second largest continent in terms of land mass and population, comprising 54 culturally diverse countries, many with distinct histories and identities. The continent is about three times the size of the United States, roughly the size of Argentina, China, India, Kazakhstan, Mexico, and the United States combined (see fig. 1). African

countries are politically varied, ranging from dictatorships to emerging democracies. African countries also vary in the types and quantities of natural resources they control and in the size and strength of their economies. For example, the gross domestic product of African countries ranged from about \$145 million to \$277 billion in 2007, with countries rich in natural resources, such as petroleum and diamonds, generally having larger economies.<sup>5</sup> In comparison, the gross domestic product of the United States was almost \$14 trillion in 2007.<sup>6</sup>

**Figure 1: Relative Size of the African Continent**



Source: GAO and MapArt.

Despite Africa's size, diversity, and wealth of resources, however, many African countries remain economically underdeveloped. According to the literature we reviewed, improving airline connectivity between a developing country and the rest of the world has potential to create

<sup>5</sup>World Development Indicators database, World Bank, September 10, 2008.

<sup>6</sup>World Development Indicators database, World Bank, September 10, 2008.



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economic benefits both locally and globally. In particular, the remoteness and size of some African countries, coupled with underdeveloped—and sometimes unsafe—road networks, makes air transport critical for connecting some African markets to other African markets, the United States, and the rest of the world. Our literature synthesis suggests that safe aviation could increase connectivity and potentially create economic and social benefits for a country.<sup>7</sup> For example, aviation can contribute to sustainable development by facilitating tourism and trade. Such development, in turn, generates economic growth, provides jobs, and can improve living standards, alleviate poverty, contribute to social stability, and increase tax revenues. Similarly, according to the literature we reviewed, when a developing country creates additional airline connections with other countries, it may derive potential economic benefits in the form of increased exports, as well as tourism and business opportunities. For example, Africa is a growing export market for U.S.-manufactured products, including aircraft and air navigation systems.<sup>8</sup> According to DOT reports, several African countries have stated their intention to purchase aviation security equipment based on the same technologies as equipment donated to them by the United States.

The literature we reviewed also mentions other potential benefits to improving aviation safety in Africa, including the following:

- *Improved safety of the global aviation system.* Aviation is a global enterprise, and maintaining a safe system is the foundation upon which the entire global aviation system network operates. One country's failure to comply with international aviation safety standards could have disastrous consequences for other countries' air carriers and passengers.
- *Improved U.S. national security.* Civil aircraft traveling from some African countries to other parts of the world potentially pose a threat to U.S. national security because adequate safety and security measures are not in place in those countries. In particular, African countries with weak aviation oversight are more likely to have airports that act as transit points

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<sup>7</sup>FAA, *The Economic Impact of Civil Aviation on the U.S. Economy* (Washington, D.C., 2008); ICAO, *Economic Contribution of Civil Aviation: Ripples of Prosperity* (Montreal, 2000); Air Transport Action Group, *Air Transport Drives Economic and Social Progress: The Economic and Social Benefits of Air Transport* (Geneva, 2008). The Air Transport Group is an independent coalition of 70 members—including the Airports Council International, Airbus, IATA, and Boeing—whose mission is to promote aviation's sustainable growth for the benefit of the global society.

<sup>8</sup>Boeing estimated 560 airplanes will be delivered at a market value of \$60 billion to African countries between 2008 and 2027.

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for illicit activities, such as arms transfers and trafficking, encouraging criminals to establish organizational bases in these areas.

Efforts have been made to improve connectivity as a means of creating economic benefits for both the United States and African countries, as well as for pursuing strategic and foreign policy interests. For example, in 2000, Congress identified Africa as a strategic trading partner under the African Growth and Opportunity Act (AGOA).<sup>9</sup> AGOA provides duty-free access for over 6,000 products from 40 Sub-Saharan African countries and has served as the central U.S. trade and investment policy toward Sub-Saharan Africa.<sup>10</sup> AGOA is aimed at promoting open markets, expanding U.S.-Africa trade and investment, stimulating economic growth, and facilitating Sub-Saharan Africa's integration into the global economy. Under AGOA, U.S. trade with Africa has grown substantially. For example, U.S. imports under AGOA have more than tripled for apparel—from \$359.4 million in 2001 to \$1.3 billion in 2007—while U.S. exports to Sub-Saharan Africa have more than doubled from \$7 billion in 2001 to over \$14.4 billion in 2007.<sup>11</sup> In addition, the United States has been engaged in various strategic and foreign policy interests in Africa. For example, the Department of Defense (DOD) maintains a small military presence in Djibouti to provide a regional security presence related to counterterrorism for several Horn of Africa and East African countries.<sup>12</sup> Similarly, the Trans-Sahara Counterterrorism Partnership is a multiagency U.S. effort to provide support to nine north and western African countries relating to diplomacy, development assistance, and military activities aimed at strengthening country and regional counterterrorism capabilities.<sup>13</sup> DOD's plans to locate the U.S. Africa Command (AFRICOM) on the continent are

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<sup>9</sup>The African Growth and Opportunity Act is included as Title I of the Trade and Development Act of 2000, Pub. L. No. 106-200 (2000).

<sup>10</sup>AGOA offers trade benefits to countries in Sub-Saharan Africa that meet certain criteria, including progress toward a market economy, respect for rule of law, and human and worker rights.

<sup>11</sup>In 2007, according to the U.S. Trade Representative, the total value of U.S. trade exports of goods and services was \$1.6 trillion.

<sup>12</sup>The primary operating area of DOD is the Horn of Africa region of Djibouti, Eritrea, Ethiopia, Kenya, Seychelles, Somalia, and Sudan. Outside of this area, the East Africa region consists of Comoros, Mauritius, Tanzania, and Uganda.

<sup>13</sup>The nine countries are Algeria, Chad, Mali, Mauritania, Morocco, Niger, Nigeria, Senegal, and Tunisia.

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under review, and a decision on whether or where will not be made until the end of 2011.<sup>14</sup>

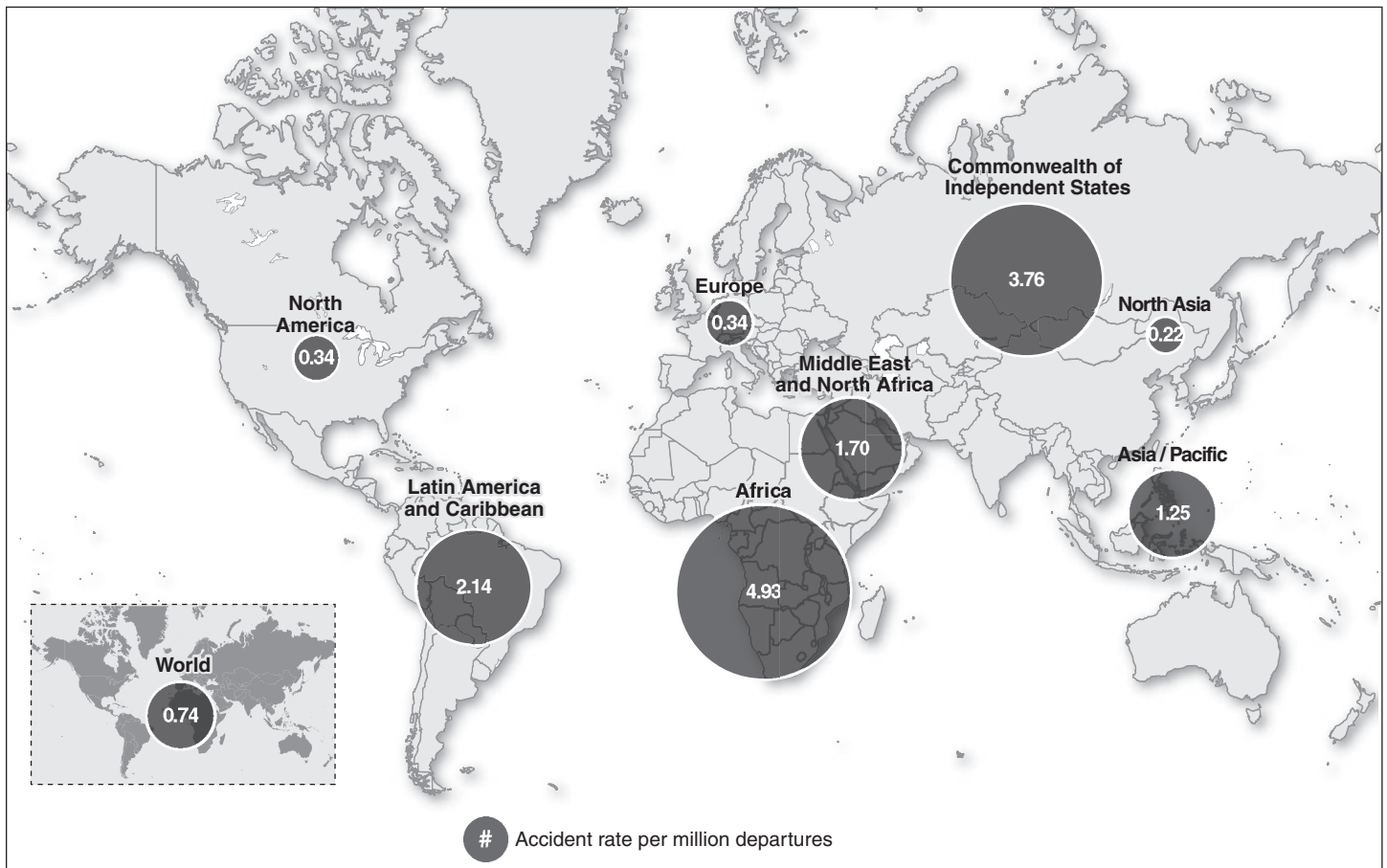
However, efforts to improve connectivity and commerce between the United States and Africa have been hindered, in part, by the overall poor condition of African nations' aviation systems. The African continent has historically had a poor aviation safety record, compared with other regions of the world. For instance, the annual average accident rate per 1 million flights for the African region over the last 4 years is about 15 times greater than for North America (see fig. 2). Moreover, according to federal and other officials, the accident rate in Africa is likely to be higher than reported because accidents involving small aircrafts are underreported. For example, according to ICAO, on average, about 70 percent of accidents in Africa were not reported from 1990 through 2006. However, the accident rate among African countries varies greatly. In particular, a few African countries have a much higher accident rate than other African countries and contribute disproportionately to the continent's overall accident rate. For example, over half the total number of aviation accidents in Africa over the last 10 years occurred in 4 of the continent's 54 countries.<sup>15</sup>

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<sup>14</sup>AFRICOM's headquarters is currently located in Stuttgart, Germany. It was established to consolidate responsibility for DOD activities in Africa under one command that was previously divided between the U.S., European, Central, and Pacific commands. DOD is reviewing its initial plans to relocate AFRICOM in Africa because of concerns from African partners, other U.S. government agencies, and nongovernmental organizations.

<sup>15</sup>The four countries are Angola, the Democratic Republic of Congo, Nigeria, and Sudan.

**Figure 2: Annual Average Aviation Accident Rate, by Regions of the World, from 2005 through 2008**



Source: GAO presentation of IATA data.

Note: The accident rate reflects accidents that resulted in one hull loss per 1 million flights of Western-built jet aircraft. A hull loss means an accident in which an aircraft is destroyed or substantially damaged and is not subsequently repaired for whatever reason, including a financial decision of the owner. Western-built jets are commercial transport aircraft designed in Western Europe, the Americas or Indonesia.

ICAO is the international body that seeks to harmonize global aviation standards so that worldwide civil aviation can benefit from a seamless air transportation network. ICAO members, known as contracting states, including the United States, are not legally bound to act in accordance

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with ICAO standards and recommended practices.<sup>16</sup> Rather, contracting states decide whether to transform the standards and recommended practices into national laws or regulations. In some cases, contracting states deviate from some of the ICAO standards and recommended practices, or do not implement some of them at all when they find it impracticable to do so.<sup>17</sup> Contracting states are also responsible for the establishment of a regulatory framework to provide safety oversight for their civil aviation systems, and for developing the required aviation infrastructure necessary to maintain a safe, secure, and sustainable system.

FAA is responsible for regulating the safety of civil aviation in the United States. FAA also works to advance the nation's leadership on the international level by engaging in dialogue with aviation counterparts across the world, collaborating with ICAO, providing technical assistance and training, working to harmonize global standards toward developing a seamless air transportation network, and sharing expertise and technologies. In 1992, FAA established the International Aviation Safety Assessments (IASA) program based on its own and congressional concerns that the level of safety oversight being applied by other civil aviation authorities with air service to the United States was inadequate and not in compliance with international safety standards. The IASA program examines the ability of foreign countries, not individual air carriers, to adhere to international standards and recommended practices for aircraft operations and maintenance established by ICAO. FAA generally conducts a safety assessment when a foreign air carrier files an application with DOT requesting to initiate new air service to the United States, or take part in a code-share arrangement with U.S. airlines.<sup>18</sup> FAA also conducts a safety assessment when reliable information indicates that another country with operators providing service to the United States has serious aviation oversight deficiencies. In conducting these assessments, FAA meets with officials from the foreign civil aviation authority and foreign air carrier and reviews pertinent records.

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<sup>16</sup>ICAO is a sovereign body, consisting of 190 contracting states (members). Each contracting state is entitled to one vote, and decisions are determined by a majority of votes cast.

<sup>17</sup>Contracting states are obligated to notify ICAO of differences if they choose not to implement ICAO standards.

<sup>18</sup>A code-share is a marketing arrangement in which an airline places its designator code on a flight operated by another airline, and sells and issues tickets for that flight.

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FAA uses a two-tier rating system for the results of the assessments: **Category 1** for countries that comply with ICAO standards and **Category 2** for countries that do not.<sup>19</sup> FAA uses this determination as part of its basis for recommending whether or not DOT should allow air carriers overseen by certain foreign civil aviation authorities to initiate, continue, or expand air service to the United States. In particular, air carriers in foreign countries without a Category 1 rating cannot initiate or continue service to the United States, take part in code-share arrangements with U.S. air carriers, or effectively increase air traffic with the United States.<sup>20</sup> Currently, five African countries have a Category 1 rating: Cape Verde, Egypt, Ethiopia, Morocco, and South Africa. Partly because of the small number of Category 1 countries, direct connections between Africa and the United States are currently limited. In fact, only one U.S. commercial airline provides direct passenger service to the continent as of June 2009.<sup>21</sup> Furthermore, there are only eight direct connections between U.S. cities and an African city, and three of these connections are provided solely by foreign air carriers (see fig. 3).

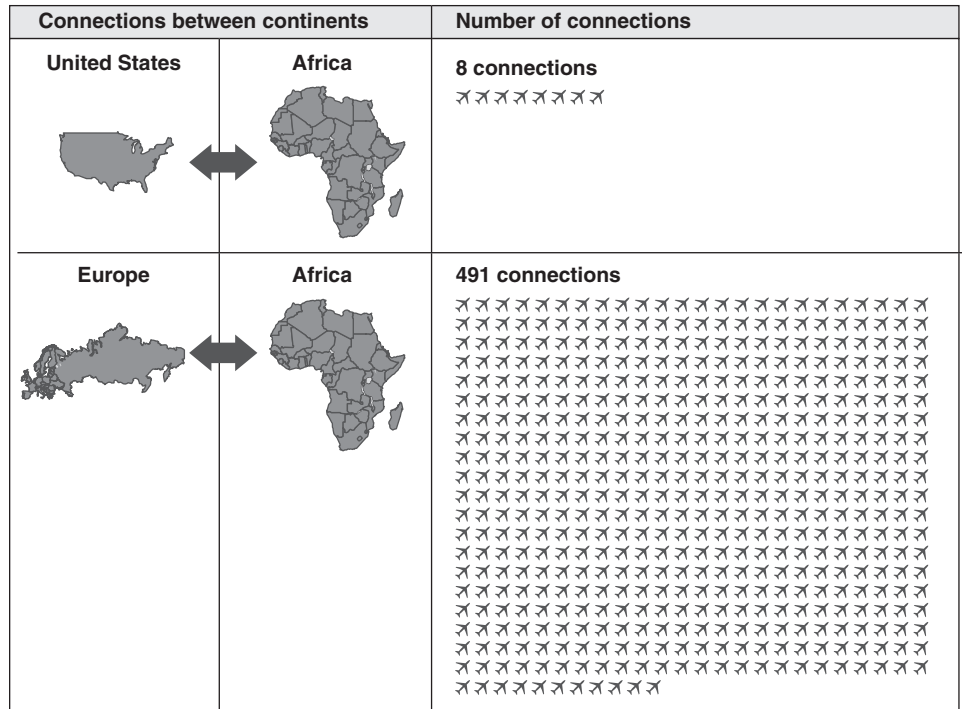
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<sup>19</sup>Category 1 means a country's civil aviation authority has been assessed by FAA inspectors and has been found to meet ICAO's aviation safety standards for providing safety oversight of its air carrier operators. Category 2 means a country's civil aviation authority does not provide safety oversight of its air carrier operators in accordance with the minimum safety oversight standards established by ICAO. A country is assigned a Category 2 rating after FAA has assessed its civil aviation authority and found that one or more of ICAO's eight critical elements of safety oversight are not met. The eight critical elements are: (1) primary aviation legislation; (2) specific operating regulations; (3) state civil aviation system and safety oversight functions; (4) technical personnel qualifications and training; (5) technical guidance, tools, and provision of safety-related critical information; (6) licensing, certification, authorization, and approval obligations; (7) surveillance obligations; and (8) resolution of safety issues. See *ICAO Safety Oversight Manual Part A—The Establishment and Management of a State's Safety Oversight System* (Doc 9734).

<sup>20</sup>While a country's civil aviation authority is in Category 2 status, air carriers from that country are permitted to continue operations at current levels under heightened FAA surveillance, but generally are not permitted to expand or change services to the United States.

<sup>21</sup>Delta Airlines currently offers service between the United States and six African destinations with flights from New York's John F. Kennedy International Airport to Accra, Ghana; Dakar, Senegal; Cairo, Egypt; and Cape Town, South Africa (via Dakar); and from Atlanta, Georgia, to Lagos, Nigeria, and Johannesburg, South Africa (via Dakar). United Airlines also provides service from Washington's Dulles International Airport to Johannesburg, South Africa, through South African Airways under a code-share arrangement. When a U.S. air carrier decides to initiate new service, or amend or expand existing service to an international destination—including to foreign countries that are not rated as Category 1—the carrier has to file an application with DOT requesting authority to do so.

**Figure 3: Direct Flights between the United States and Africa Compared with Direct Flights between Europe and Africa, December 2008**



Source: GAO presentation of IATA data.

Note: The number of connections refers to the number of weekly, nonstop commercial and charter air service flights between a U.S. city and Africa (city pair) and a European city and Africa.

## Many Ongoing Challenges Make Improving Aviation Safety in Africa Difficult

According to our literature synthesis and U.S. and African officials we interviewed, the major challenge in improving aviation safety is that the highest levels of government in some African nations have not made it a priority. We have previously identified leadership support as critical to fundamental organizational changes<sup>22</sup>—such as those required to prioritize aviation safety in some African countries. According to U.S. federal officials and ICAO representatives, making aviation a governmental priority is critical to the successful transformation of African civil aviation authorities. In fact, we found that in African countries that have succeeded in improving aviation safety and generating economic benefits, like Cape

<sup>22</sup>GAO, *Results-Oriented Cultures: Implementation Steps to Assist Mergers and Organizational Transformations*, [GAO-03-669](#) (Washington, D.C.: July 2, 2003).

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Verde (see table 1), top leadership's clear and personal involvement has set the direction for civil aviation officials to act upon. However, according to U.S. government and African officials, many political leaders in African countries have not prioritized aviation safety, in part because of more pressing priorities, such as poverty, health care, and basic nutrition. Some African officials told us that aviation is seen as a luxury for the affluent in African society, and these perceptions pressure governmental leaders to give lower priority to improving aviation safety and to use resources for issues that affect a larger segment of the African population. These officials further said that African political leaders often do not realize the potential benefits, such as increased tourism, that can flow from improved aviation safety.

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**Table 1: Cape Verde's Experience in Improving Aviation Safety**

Ten islands off the west coast of the African continent make up the country of Cape Verde. Cape Verde islands are mostly barren, volcanic rock, and the country has few natural resources, limited fresh water, and limited agricultural products. Nevertheless, according to Cape Verde officials, the country has a strategic location in the Atlantic by air and sea, which makes the country a potential hub for intercontinental transport, business, and tourism. To fulfill this vision, political leaders set out to develop its air transport sector.

Cape Verde was an original SSFA program participant in 1998. According to DOT, the highest levels of the government of Cape Verde consistently gave high priority to improving the country's aviation system and meeting international aviation safety standards, including changing the country's civil aviation regulations and establishing a financially and politically independent civil aviation authority, among other things.

In September 2003, Cape Verde became the first SSFA country to meet ICAO international safety standards and achieve FAA Category 1 status. According to Cape Verde officials, this achievement created opportunities for further development of air transport to and from Cape Verde. In July 2005, Cape Verde initiated regularly scheduled air services from the national capital of Praia to the United States (Boston, Massachusetts) via the national carrier, TACV Cape Verde Airlines. Cape Verde officials attributed these new routes, in part, to the country's efforts to improve aviation safety. In addition to creating jobs associated with growth in the aviation sector, Cape Verde officials told us that the increased connections to the United States have had a positive impact on their country's tourism sector. To illustrate, Cape Verde's tourist industry expanded about 13 percent between 2000 and 2003, and about 16 percent between 2004 and 2007. Cape Verde officials expect this growth to reach the benchmark of 1 million tourists annually by 2015, when tourism would account for as much as 30 percent of Cape Verde's gross domestic product, compared with 18 percent in 2006.

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Source: GAO.

The lack of priority for improving safety may create or exacerbate other challenges frequently identified in the literature we reviewed and by officials we interviewed, including weak aviation regulatory systems, a lack of resources, inadequate infrastructure, a lack of human capital expertise, and a lack of training capacity. These challenges are not



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mutually exclusive, since most are affected by or contribute to the other challenges.

- *Weak aviation regulatory systems.* ICAO recommends that civil aviation authorities be created as politically and financially independent bodies. Accordingly, an authority should be independently funded and (1) have its own financial resources, (2) have the authority needed to issue aviation standards and regulations and conduct safety oversight of air operators; and (3) establish requirements for the certification of air operators. These are among the critical elements of a safety oversight system designed to ensure the implementation of ICAO standards and recommended practices. According to DOT officials, however, many African civil aviation authorities do not have sufficient regulatory autonomy or stable and reliable revenue sources to comply with ICAO standards. For example, some officials we interviewed stated that some African civil aviation authorities' budgets are linked to their countries' general treasuries or transportation ministries, making the authorities susceptible to political interference. Moreover, because they are not independent entities, some civil aviation authorities can have their decisions overturned by higher-ranking government officials. For example, according to several officials we interviewed, a decision to ground two aircraft because of safety concerns in one African country resulted in the firing of the civil aviation authority head. According to representatives from the United Nations' World Food Program, a program that uses the aviation system to deliver humanitarian aid, these weak regulatory systems allow unsafe aviation practices—such as certifying outdated and poorly maintained aircraft in some African countries—to go unchecked. According to DOD, the ability of each African country to have a civil aviation authority that meets international standards of oversight is critical for the safety of DOD's aviation operations on the continent and to mission success.
- *Lack of resources.* Some African countries lack sufficient revenues to improve the safety of their aviation systems. A World Bank official told us that only a few countries in Sub-Saharan Africa have an aviation market with sufficient passenger traffic to generate sustained funding for aviation safety improvements. Furthermore, aviation officials from all four of the African countries we visited told us that obtaining adequate funding to properly maintain their aviation system was a major challenge. For example, according to Tanzanian civil aviation officials, they have not been able to make needed aviation safety improvements because their authority does not generate sufficient revenue from air traffic. Moreover, revenue generated through such mechanisms as landing fees are not always dedicated to the aviation system in some African countries; rather, the governments use this revenue for other priorities. Finally, because of the low priority placed on improving aviation safety in some African

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countries, African aviation officials told us that it can be difficult to secure additional government funding for safety improvements.

- *Inadequate infrastructure.* Partly for lack of resources, the aviation infrastructure in many African countries is insufficient, outdated, or in otherwise poor condition, which can lead to safety hazards. For example, as discussed previously, airspace in some regions of Africa is not controlled by air navigation systems. The lack of such technology increases the potential for midair collisions, affecting both civilian and military aviation. For example, DOD officials told us that the lack of air navigation systems affects military aviation operations, such as carrying out missions and conducting training exercises, on the continent. To reduce the risk of collisions, officials from one African airline said they fly to certain regions only during daytime hours. African airports also sometimes lack basic infrastructure, such as radar systems, adequate runway surfaces, and other navigation facilities, or the infrastructure they have is obsolete. For example, according to IATA, at many African airports, airfield lighting is not compliant with international aviation safety standards. Noncompliant airfield lighting contributed to a crash in Nigeria in December 2005 that killed 108 passengers. The runway lights were off, in part because the airport lacked the funds and resources to maintain a stable power supply from operating generators.<sup>23</sup> According to Tanzanian airport officials, maintaining and improving airport infrastructure is the biggest challenge they face in attempting to improve their country's aviation safety.
- *Lack of human capital expertise.* According to several U.S. and African officials, the lack of qualified aviation personnel, such as pilots, air traffic controllers, maintenance technicians, and flight inspectors, has been a major challenge for African countries. These officials stated that many African civil aviation authorities and air carriers find it difficult to attract and retain qualified personnel, primarily because of the low wages they pay. This problem becomes especially acute for some African civil aviation authorities trying to retain qualified inspectors, because their salaries are tied to the governmental pay structure, which is not competitive with the private sector. According to U.S. and African officials, aviation personnel leave African civil aviation authorities and air carriers for more lucrative positions, frequently with foreign air carriers in the Middle East and Asia, after gaining a few years' experience in Africa—a phenomenon these officials referred to as “brain drain.” As a result, critical aviation positions, such as airworthiness inspection positions, go unfilled, leaving the country

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<sup>23</sup>Ministry of Aviation, Federal Republic of Nigeria, *Civil Aviation Accident Report No. FMA/AIPB/424* (Abuja, 2006).

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noncompliant with international aviation safety standards. We and others have identified the importance of a competent aviation inspector workforce to improve safety and compliance with safety standards.<sup>24</sup>

- *Lack of training capacity.* Improving aviation safety in Africa has been hindered by the lack of training capacity in some African countries. Having inadequate financial resources and competing primary needs, many African countries do not have sufficient means to fund training for personnel in technical, management, and leadership disciplines. Two of the four countries we visited had training centers to train aviation personnel in various disciplines, such as air traffic control, flight operations, and airport security. However, the training center officials said they lacked important training capacity because of funding constraints. For example, officials said the centers had insufficient numbers of teachers and classrooms and lacked up-to-date training materials and equipment. Because they lack training capacity, many African civil aviation authorities send personnel to other countries, including the United States, for training, which can be costly and time-consuming.

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## U.S. Assistance Has Helped Address Some Challenges but Could Benefit from Better Coordination

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### DOT Provides Assistance to African Countries Primarily through the SSFA Program

DOT's SSFA program has been the principal U.S. aviation safety assistance program for African countries since its inception in 1998 as a presidential initiative. The program was established to promote sustainable improvements in aviation safety and security in Africa and to foster aviation growth between the United States and Africa. The program was designated in 2003 as the vehicle to support the goals of the 2003 East Africa Counterterrorism presidential initiative to advance the

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<sup>24</sup>GAO, *Aviation Safety: FAA's Safety Oversight System Is Effective but Could Benefit from Better Evaluation of Its Programs' Performance*, [GAO-06-266T](#), (Washington, D.C.: Nov. 17, 2005).

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administration's regional security strategy.<sup>25</sup> According to DOT officials, the program was also incorporated into the administration's strategy for working with Sub-Saharan African countries in 2007.<sup>26</sup> DOT's 2008 strategic plan describes the SSFA program as advancing the Department's mission and objective of international outreach and global connectivity.<sup>27</sup> Furthermore, according to FAA's business plan, the program serves to coordinate and advance FAA's international leadership objectives and activities in Africa.<sup>28</sup>

The SSFA program has three main goals: (1) increase the number of Sub-Saharan African countries that meet the ICAO aviation safety standards, (2) improve aviation security at a number of African airports, and (3) improve regional air navigation services in Africa by using modern satellite-based navigation aids and modern communications technology. DOT works to achieve these goals by providing training and technical assistance to the participating countries, including direct assistance from FAA. For example, DOT has provided training to over 1,200 aviation personnel from Africa through the SSFA program. Similarly, DOT and FAA collaborated with ICAO to formally develop model civil aviation regulations to provide countries participating in SSFA with a cohesive set of guidance materials to use in developing their own set of technical regulations and guidance materials. DOT's Office of the Secretary manages the SSFA program, including identifying the program's objectives, activities, and project time frames, as well as documenting the program's results. FAA provides the technical expertise and other in-kind services to participating African countries, especially in technical areas such as safety oversight. For all participating SSFA countries, DOT works with FAA to conduct a baseline safety and security assessment, develop an action plan to remedy the identified deficiencies, and outline an assistance plan to

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<sup>25</sup>The National Security Council developed the 2003 East Africa Counterterrorism presidential initiative as a regional effort for Djibouti, Eritrea, Ethiopia, Kenya, Somalia, and Tanzania to minimize the potential for terrorism-related activities through security training, enhanced border control, and the monitoring of money laundering and smuggling activities. Aviation security was recognized as a key component of the administration's regional security strategy.

<sup>26</sup>In September 2006, the President signed National Security Presidential Directive 50, "*U.S. Strategy for Sub-Saharan Africa*."

<sup>27</sup>DOT, *Strategic Plan Fiscal Years 2006-2011* (Washington, D.C., 2006).

<sup>28</sup>FAA, *2008-2012 FAA Flight Plan: Charting the Path for the Next Generation* (Washington, D.C.).

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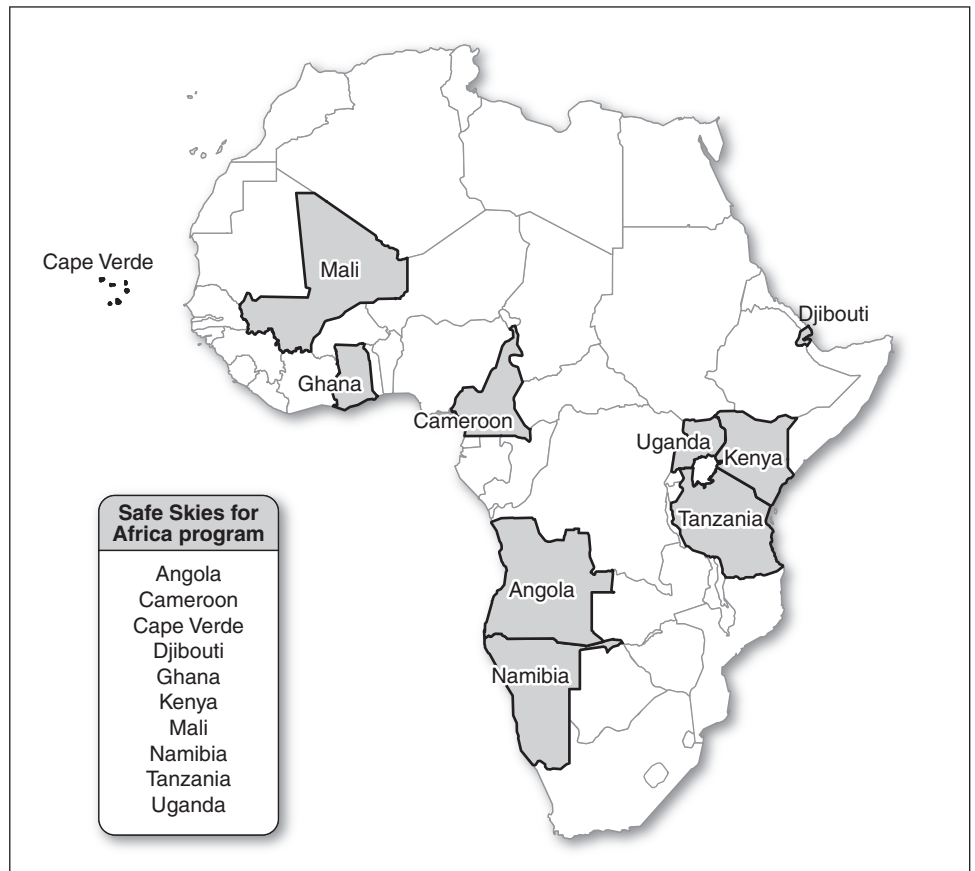
guide the country's efforts to address its aviation safety and security issues. The participating SSFA countries bear the primary responsibility for funding the improvements recommended by DOT.<sup>29</sup> Currently, 10 African countries participate in the SSFA program (see fig. 4).<sup>30</sup>

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<sup>29</sup>FAA is not involved with all of the countries at the same time and has developed a priority list.

<sup>30</sup>The original eight SSFA program participants—Angola, Cameroon, Cape Verde, Cote d'Ivoire, Kenya, Mali, Tanzania, and Zimbabwe—were selected in 1998 by an interagency committee with representation from the Departments of Defense, State, and Transportation and USTDA. The committee considered priority lists created by each agency, among other things, and selected countries that it believed had the highest likelihood of complying with international aviation safety standards set by ICAO. The committee also considered U.S. trade interests and regional diversity issues.

**Figure 4: African Nations Currently Participating in the SSFA Program**



Source: GAO and MapArt.

A recent focus of the SSFA program is encouraging African countries to take a regional approach to address aviation safety challenges. DOT officials told us that a regional approach to safety allows countries to address resource, human capital, and training challenges by pooling and leveraging expertise and sharing costs. For example, rather than each country establishing individual training centers, countries can band together to establish regional training centers that could serve aviation personnel from all of the participating countries. Such an approach allows the countries to provide the necessary training, but with less money and fewer teachers than they would need to establish multiple, country-specific training centers. In 2007, as part of the SSFA program's regionalism effort, three East African Community (EAC) countries (Kenya,

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Tanzania, and Uganda)<sup>31</sup> established the first operational regional safety and security oversight organization in Africa—the Civil Aviation Safety and Security Oversight Agency (CASSOA)—to be responsible for, among other things, ensuring the development of a safe and secure civil aviation system, including uniform operating regulations that meet the international standards and standardized procedures for licensing, approving, certificating and supervising civil aviation activities.<sup>32</sup> CASSOA was fashioned after aspects of ICAO’s regional safety oversight organizations, as discussed later in this report. According to FAA officials, one of the main focuses of CASSOA will be to assist in developing a pool of qualified, transnational inspectors who can be used in any of the EAC countries as needed.

In addition to the SSFA program, DOT has other efforts to assist foreign countries, including African countries, in developing their civil aviation systems and improving aviation safety. In particular, FAA provides aviation safety technical assistance and training to countries across the globe. According to FAA, a key component of the agency’s technical assistance efforts is its technical reviews. A technical review is an evaluation of a country’s compliance with ICAO standards for aviation safety oversight. In these reviews, FAA technical teams apply the same criteria used in an IASA program audit and identify areas of noncompliance and work with the country to develop an action plan in order to implement the proposed corrective actions.<sup>33</sup> The goal of the technical review is to provide a baseline for a country in order to help the country eventually meet ICAO standards and, potentially, IASA requirements. According to DOT, FAA has conducted technical reviews of seven African civil aviation authorities, in both SSFA and non-SSFA countries. For example, in July 2007, FAA conducted a technical review of the safety oversight capability of the civil aviation authority in Nigeria, a non-SSFA country. FAA also provides aviation-related training to the international community and supports ICAO contracting states and regional aviation organizations. For example, in July 2007, FAA helped

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<sup>31</sup>The East African Community is a regional intergovernmental organization reestablished in 2000, with its headquarters in Arusha, Tanzania, for harmonizing political, economic, and social areas of mutual benefit.

<sup>32</sup>Burundi and Rwanda have since become members of the EAC and CASSOA.

<sup>33</sup>FAA’s technical review does not normally result in the assignment of a specific IASA category safety rating indicating the aviation authority’s compliance with ICAO standards. The results are confidential.

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South Africa review its aviation law and regulations prior to an IASA reassessment scheduled for later that year.

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## Resources for SSFA Program Have Been Unpredictable and Constrained

DOT and FAA officials told us that resources for the SSFA program and other technical assistance efforts directed toward Africa have been unpredictable and constrained since the program began, hampering their efforts to carry out its objectives. The State Department provides funding for the program from one of its appropriations—the Economic Support Fund Account—and funding for the program has ranged from \$8.5 million from the appropriation for fiscal year 2003 to zero from the appropriations for fiscal years 2008 and 2009 (see table 2).<sup>34</sup> Funds that are provided for SSFA are available for obligation for 2 fiscal years, and in fiscal year 2008, DOT-obligated funds carried over from fiscal year 2007, according to DOT.<sup>35</sup> Because of a continuing resolution, funds for SSFA remained available for obligation into fiscal year 2009, and a DOT official estimated that such funds could sustain the program for the remainder of the fiscal year.<sup>36</sup> However, to stretch the resources through this date, DOT officials said they have limited SSFA activities, focusing only on countries that are making tangible progress in improving safety and regional initiatives. Other planned activities were delayed or cancelled. For example, because of limited funding, according to DOT officials, the SSFA program was unable to keep aviation safety personnel in Africa to provide on-site guidance and technical assistance. According to these officials, such on-site guidance and technical assistance would help African countries eliminate errors in implementing or interpreting aviation safety requirements and, over time, would reduce the amount of time spent working with them to meet international aviation safety standards. In addition, DOT officials said that one funding priority is helping EAC countries establish the newly created regional oversight organization. According to a State Department official, the fiscal year 2010

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<sup>34</sup>Under section 632(a) of the Foreign Assistance Act of 1961, as amended, the Department of State is authorized to transfer funds to another U.S. agency through interagency agreements in support of other government-sponsored programs for the purposes for which such funds are appropriated. 22 U.S.C. § 2392(a). Funding is provided from the State Department to DOT through 632(a) agreements, or memorandums of agreement, in which USAID functions as the funding pass-through entity for the State Department.

<sup>35</sup>An obligation is a legal liability of the federal government that can be incurred, for example, through a contract or a grant agreement.

<sup>36</sup>A continuing resolution is a form of appropriation that enables an agency to continue to operate when Congress and the President have not completed action on the regular appropriation acts by the beginning of the fiscal year.



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congressional budget justification for the department includes \$2 million for the program.

**Table 2: Funding Allocated from the Department of State’s Appropriations for the SSFA Program, Fiscal Years 2000 through 2009**

Fiscal year	Funding
2000	\$1,000,000
2001	4,995,000 <sup>a</sup>
2002	3,000,000
2003	8,500,000 <sup>b</sup>
2004	6,470,500 <sup>c</sup>
2005	3,472,000
2006	1,970,000
2007	2,000,000
2008	0
2009	0

Source: DOT.

Note: The table shows the funding transferred from the Department of State’s appropriation account by fiscal year. Because funds provided to SSFA are available for obligation for 2 fiscal years, the funding levels above indicate the amounts allocated to SSFA for each fiscal year and not necessarily the amounts obligated or expended in a particular fiscal year. For example, no funds were transferred to the program from the Department of State’s fiscal year 2008 appropriation account, but DOT obligated and expended funds from the previous fiscal year’s account to operate the program in 2008. All funding amounts are in nominal dollars.

<sup>a</sup>Funding level reflects one-time funding for aviation security equipment. This funding was provided after the September 11, 2001, attacks for the purchase, transport, and installation of the equipment and for training in seven of the nine countries active in the SSFA program at that time.

<sup>b</sup>Funding level reflects a special allocation for Kenya.

<sup>c</sup>Funding level includes a one-time allocation of \$1.5 million for Djibouti.

In addition to budgetary constraints, DOT and FAA officials told us, they have limited staff resources to work on aviation safety issues in Africa. Most of the DOT and FAA staff working on aviation safety in Africa also have other responsibilities that limit the amount of time they can spend on the SSFA program and other African initiatives. All of the African governmental officials we spoke with were appreciative of the technical assistance and training provided under the SSFA program, but many said additional assistance for implementing the technical advice provided by FAA would be very helpful. For example, EAC headquarters officials said the technical assistance through SSFA has helped EAC harmonize the civil aviation regulations for each country. However, they said the lack of funding and expertise will make the next step in the process—implementing regulations in each member country—difficult.

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## Two Economic Development-Oriented Agencies Have Funded Aviation Projects in Africa

In addition to the training and technical assistance provided by DOT and FAA, USTDA and MCC have provided funding for aviation-related projects, including safety improvements, in Africa. Neither of these agencies has an aviation-related mission; rather the missions of these agencies focus on promoting economic development in countries around the world.<sup>37</sup> However, given the potential economic benefits associated with improved aviation systems, USTDA and MCC, in total, have funded over two dozen aviation-related projects in various African countries, including the following:

- Over the past 10 years, according to USTDA, the agency has provided over \$6.1 million in funding for 26 aviation-sector projects throughout Sub-Saharan Africa.<sup>38</sup> These projects typically focus on providing technical assistance or conducting feasibility studies for African governments or private-sector entities. For example, USTDA provided \$460,000 to the Malawian Ministry of Transport and Public Works to assist in establishing an autonomous civil aviation authority with a supportive legal and regulatory framework and adequate institutional capabilities. USTDA has also funded aviation projects in several African countries in an effort to strengthen regional air traffic management and communications structures. For example, USTDA has provided about \$1.7 million for conducting feasibility studies for air traffic management development and for modernizing three regional groups' upper airspace. The benefits expected from these efforts include improved air traffic safety and regional coordination, and increased revenues for the member countries. In addition, USTDA has sponsored training and seminars. For example, in 2002, USTDA provided about \$84,000 for an orientation visit in which 18 delegates from nine African countries traveled to Washington, D.C., to meet with government and private-sector representatives on project-specific opportunities in Africa, and on the role and development of air cargo transportation in AGOA. Also, in November 2008, USTDA and DOT partnered to sponsor a workshop in Washington, D.C., to bring together ministers and senior officials from eastern African countries, U.S.

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<sup>37</sup>USTDA's mission is to advance economic development and U.S. commercial interests in developing and middle-income countries that support the development of a modern infrastructure and a fair and open trading environment. MCC is a government corporation, established by Congress in January 2004, which receives an annual appropriation and is authorized to provide assistance to developing nations, through a competitive selection process, for global development in a manner that promotes economic growth and the elimination of extreme poverty and strengthens good governance, economic freedom, and investments in people.

<sup>38</sup>According to USTDA officials, these aviation projects have stimulated more than \$251 million in related U.S. exports.

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government officials, and private-sector representatives to discuss transportation needs and regional solutions to transportation infrastructure challenges in East Africa.

- MCC has funded aviation-related projects for Mali and Tanzania. MCC provides its assistance through compact agreements, or multiyear agreements between MCC and an eligible country. Compact agreements were signed with Mali in November 2006 and with Tanzania in February 2008. Under these agreements, MCC has provided about \$183 million and \$7 million, respectively, for airport infrastructure projects.

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## U.S. Efforts Are Not Consistently Coordinated

U.S. efforts on the continent have not consistently been coordinated. The SSFA program began as a collaborative effort between DOT and other U.S. agencies. Throughout the program's existence, DOT has pursued collaborative efforts, such as regular briefings to the State Department on program developments and formal and ad hoc discussions and meetings with USTDA and MCC. Currently, multiple federal agencies are working to improve aviation safety or are funding aviation-related projects in Africa. However, these agencies' missions do not focus specifically on improving aviation safety. These agencies have distinct missions and, consequently, their efforts on the continent have different purposes, but their efforts nonetheless intersect. Recognizing the interrelatedness of their efforts, DOT has used memorandums of agreement with several federal agencies to coordinate aviation-related efforts in Africa to prevent duplication and to ensure that federal funding is put to best use in the aviation sector.<sup>39</sup> DOT officials told us these memorandums of agreement are mechanisms to provide recommendations based on international standards and coordination with SSFA activities. In addition, USTDA and FAA jointly formed an Interagency Committee on International Aviation Safety and Security in 2004 to coordinate technical assistance in the areas of aviation safety and security in developing countries.<sup>40</sup> The committee was formed to strengthen the impact of U.S. aviation and security assistance through a

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<sup>39</sup>DOT has entered into memorandums of agreement with MCC, USTDA, the U.S. Export-Import Bank, and the U.S. Transportation Security Administration for collaboration on aviation-related efforts in Africa.

<sup>40</sup>In addition to USTDA, the members of the committee are DOT, FAA, the Transportation Security Administration; the Departments of Commerce, Defense, and State; USAID, and the Export-Import Bank of the United States. The committee members meet regularly to share information on international aviation projects that hold potential for improving aviation safety and security, and to establish priorities and strategies for the delivery of technical assistance.

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strategic, governmentwide focus on priority projects, and to target U.S. assistance to those countries that are committed to progress and capable of both improving and maintaining their safety and security performance.

These mechanisms have not consistently worked as intended. For example, MCC and DOT signed a memorandum of understanding to ensure coordination on related projects. However, circumstances surrounding the MCC aviation project in Mali demonstrate a need for improved coordination between the two agencies. According to FAA officials, MCC did not have prior consultations with them on MCC's aviation project in Mali, even though FAA was actively working with Mali on aviation safety issues. Rather, DOT and FAA officials said they learned about MCC's project through an MCC contractor. In contrast, MCC officials told us that they did coordinate with DOT on the Mali project, noting that DOT officials attended several meetings held prior to the signing of the compact with Mali in which the compact was discussed.

DOT and FAA officials told us that increased collaboration is needed among federal agencies providing aviation-related assistance to Africa to leverage limited resources and minimize duplication of effort. The officials pointed out that in some instances other agencies and organizations that provide funding for aviation infrastructure, technical assistance, and training projects may not have the aviation expertise needed to determine whether the projects meet international aviation safety standards. As a result, investments provided to fund projects that do not meet international aviation safety standards may not allow African countries to reap the potential economic benefits associated with enhancing air connectivity with the United States.

In addition, we have previously reported on the importance of coordinating federal efforts, especially when these efforts target the same population, to prevent duplication and fragmentation of effort.<sup>41</sup> This potential for overlap and fragmentation underscores how important it is for the federal government to develop the capacity to more effectively

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<sup>41</sup>GAO, *VA Health Care: Experiences in Denver and Charleston Offer Lessons for Future Partnerships with Medical Affiliates*, [GAO-06-472](#) (Washington, D.C.: Apr. 28, 2006); *Results-Oriented Government: Practices That Can Help Enhance and Sustain Collaboration among Federal Agencies*, [GAO-06-15](#) (Washington, D.C.: Oct. 21, 2005); [GAO-03-669](#); and *Managing for Results: Barriers to Interagency Coordination*, [GAO/GGD-00-106](#), (Washington, D.C.: Mar. 29, 2000).

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coordinate crosscutting program efforts.<sup>42</sup> Our work also indicates that coordinating crosscutting programs is a persistent challenge for executive branch agencies, and in addressing these challenges, agencies will need to overcome barriers, such as disparate missions and other incompatibilities. Agencies can enhance and sustain their collaborative efforts by developing a strategy that includes necessary elements for a collaborative working relationship, such as defining and articulating a common outcome; identifying and addressing needs by leveraging resources; agreeing on roles and responsibilities; establishing compatible policies, procedures, and other means to operate across agency boundaries; and developing mechanisms to monitor, evaluate, and report on results.

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## The International Community Has Taken Steps to Address the Challenges

The international community also has taken steps to improve aviation safety in Africa. Addressing issues on the continent has been elevated in international aviation organizations, institutions that represent sovereign nations or foreign governments, and other international organizations. Many of these steps, such as improving aviation oversight, increasing training, and improving infrastructure, address the challenges involved in improving aviation safety in Africa. The following are among the international efforts most frequently mentioned by officials we interviewed.

- *International Civil Aviation Organization has strengthened its focus on the safety oversight capacity of African countries.* ICAO implemented the Universal Safety Oversight Audit Program in 1999 as an auditing tool to determine contracting states' capability for safety oversight by assessing the states' implementation of a safety oversight system and identifying areas of concern.<sup>43</sup> Findings from ICAO's audits revealed that a number of African countries lack the resources and regulatory framework necessary to fulfill their safety oversight responsibilities, and vary widely in their

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<sup>42</sup>Fragmentation refers to those circumstances in which more than one federal agency (or more than one bureau within an agency) is involved in a mission in the same broad area of national need. See GAO, *Managing for Results: Using the Results Act to Address Mission Fragmentation and Program Overlap*, [GAO/AIMD-97-146](#), (Washington, D.C.: Aug. 29, 1997).

<sup>43</sup>ICAO's audit program, established in 1999, is mandatory for contracting members and was developed in response to widespread concerns about the adequacy of aviation safety oversight around the world. The program is intended to (1) determine whether its contracting states were meeting their obligations for following international aviation standards and (2) promote global aviation safety through the regular auditing of safety oversight systems. The mandatory audit program superseded a voluntary safety oversight assessment program that was established in 1995.

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ability to provide safety oversight.<sup>44</sup> In 2007, audits of 27 African countries showed that, on average, these countries were not effectively implementing over half of ICAO's eight critical elements of a safety oversight system, with the proportion of standards effectively implemented ranging from about 9 percent to about 94 percent. As a result, ICAO has been involved in several initiatives to help African countries improve aviation safety. The first major initiative, the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan), was developed in 2007 to address aviation safety concerns and support African countries in meeting their international obligations for safety oversight. The plan was intended to coordinate and lead all of ICAO's efforts for addressing aviation safety issues in Africa with clearly defined objectives, outputs, activities, and metrics.<sup>45</sup>

Like the SSFA program, ICAO has worked with African nations to share aviation oversight responsibilities through regional organizations in its Cooperative Development of Operational Safety and Continuing Airworthiness Program (COSCAP).<sup>46</sup> Under this program, African countries have begun to consider the benefits of coordinating aviation oversight responsibilities to enhance the safety of air transport operations in their respective regions. For example, eight countries in western Africa formed the West Africa Economic and Monetary Union COSCAP. This COSCAP established a cooperative arrangement for the member countries to provide collaborative safety oversight for the subregion to enhance the safety and efficiency of air transport. According to literature sources and ICAO officials, these regional organizations will enhance the ability of civil

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<sup>44</sup>Deficiencies identified as major problems included the lack of appropriate legislation and regulations, absence of appropriate organization, and lack of adequate and appropriately qualified staff.

<sup>45</sup>In 2008, ICAO established the AFI Comprehensive Implementation Program to manage the implementation of the AFI plan for coordinating and facilitating the performance of comprehensive gap analyses assessing safety deficiencies. The program focuses on three areas and proposes a concerted effort in (1) enabling African nations to establish and maintain a sustainable safety oversight system through efforts such as infrastructure and capacity building, (2) assisting states in resolving identified deficiencies within a reasonable time, and (3) enhancing the aviation safety culture of African aviation service providers.

<sup>46</sup>COSCAPs are cooperative arrangements among participating states aimed at enhancing the safety and efficiency of air transport operations in specific regions by building a regional core of qualified flight operations and airworthiness inspectors to perform flight safety inspection and certification functions on behalf of the participating states.

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aviation authorities in Africa to provide safety oversight by addressing resource, human capital, and training challenges.

ICAO has also created a database for information on aviation safety and security assistance provided to African countries by contracting states. The purpose of this database is to facilitate the coordination of assistance in order to better leverage limited resources. According to ICAO officials, assistance provided to African countries to improve aviation safety is largely uncoordinated, creating the potential for efforts that are duplicative or serve cross purposes. Similar to U.S. officials, ICAO officials have noted that from an international perspective, many countries and organizations are eager to support aviation safety efforts in African nations, and thus offer various forms of assistance, including funding. Furthermore, the officials noted that with limited resources, African nations have little incentive to turn away assistance from donor countries even if it overlaps with assistance from another country.

- *International Air Transport Association provides aviation operational safety audit tools and support for members.*<sup>47</sup> The IATA Operational Safety Audit (IOSA) program was initiated in 2001 and is an evaluation system designed to assess the operational management and control systems of an airline. Starting in 2008, IATA required that its members pass an IOSA audit as a condition of membership. To help its members identify operational gaps when preparing for safety audits, IATA developed a technical assistance program for member airlines, including African airlines. Nigeria affords an example of an African country's participation in ICAO and IATA programs (see table 3). IATA also provided \$3.7 million to initiate the Implementation Program for Safe Operations in Africa, which is designed to improve aviation safety by providing African airlines with access to IATA's Flight Data Analysis tool. This tool monitors and collects data from airplanes, allowing airline officials to analyze data from actual flights to improve procedures, monitor compliance, and identify trends for aircraft maintenance. The initiative gives up to 30 African airlines free access to the Flight Data Analysis tool for 3 years.

IATA has been involved in several efforts related to improving airport infrastructure as a means to improve aviation safety in Africa. For example, IATA addresses airport deficiencies by performing on-site visits and bringing relevant reports to the attention of the local and national authorities. IATA also regularly organizes technical missions to African

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<sup>47</sup>IATA is the industry trade association that represents air carriers worldwide.

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countries. On these missions, IATA conducts airport operations assessments and discusses issues of common interest with the civil aviation and airport authorities, including infrastructure deficiencies, priorities for remedial action, possibilities for cooperation between IATA and the authorities, and future development plans. Eleven technical missions were held in Africa in 2007.

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**Table 3: Nigeria’s Experience in Improving Aviation Safety**

Nigeria’s federal government, in partnership with Boeing and IATA and with technical assistance from FAA, has taken steps to enhance the country’s civil aviation system. These steps are designed to address issues that led to the failure of Nigeria Airways in 2003 and several fatal accidents in the country. In November 2006, a new Civil Aviation Act became law, establishing the Nigerian Civil Aviation Authority (NCAA) as an autonomous safety regulator.

The Civil Aviation Act incorporates provisions specified by ICAO into Nigerian domestic law. This law mandates that NCAA provide safety oversight for airlines and service providers, such as the airports authority and aviation training organization; economic regulation of the aviation industry; and consumer protection. The law also establishes the Accident Investigation Bureau of Nigeria as an autonomous agency in compliance with ICAO aviation safety standards.

Nigeria has also committed to improving its aviation infrastructure, after making no significant investment for 20 years. In 2006, the government launched an airport improvement plan for runway resurfacing and airfield lighting, among other improvements. In 2007, the country’s civil aviation authority required Nigerian airlines to pass an IOSA audit when applying for renewals of their air operator’s certificate. Two Nigerian operators, Bellview Airlines and Virgin Nigeria, have become IOSA-registered with IATA after passing an IOSA audit. They are the first airlines in the country to achieve compliance with these standards. While these steps indicate that progress is being made in Nigeria, additional efforts will be needed for Nigeria to fully meet international aviation safety standards.

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Source: GAO analysis of Flight Safety Foundation information.

Note: For further information, see Dr. Harold O. Demuren, Director General, Nigerian Civil Aviation Authority, “Early Signs of Turnaround,” Flight Safety Foundation, *AeroSafety World*, May 2009.

- *The European Union (EU) publishes a list of banned airlines to encourage airlines to improve safety.* The EU publishes a list of banned airlines that are restricted from operating in the EU because they are deemed to be out of compliance with international aviation safety standards.<sup>48</sup> In 2005, the EU developed the list of banned airlines in

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<sup>48</sup>The process and rules for developing and updating the banned list are based on “common criteria” that are categorized by three main areas: (1) verified evidence of serious safety deficiencies on the part of an air carrier, (2) lack of ability and/or willingness of an air carrier to address safety deficiencies, and (3) lack of ability and/or willingness of the authorities responsible for the oversight of an air carrier to address safety deficiencies.



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response to several fatal aircraft crashes in 2004 and 2005. European Commission officials told us that the list of banned air carriers is both a preventive and a dissuasive measure—in particular, the threat of being placed on the list encourages airlines to take the measures necessary to improve safety within the shortest possible time. In November 2008, the EU declared that 168 air carriers—100 of which are from African countries—were noncompliant with international aviation safety standards and banned them from operating at EU members’ airports.

Unlike FAA’s IASA program, which focuses on foreign countries’ aviation regulatory framework, the EU’s approach primarily focuses on the operational safety of individual airlines. However, the EU may ban all air carriers from a particular country if it finds systemic safety deficiencies on the part of air carriers certified by that country’s civil aviation authority. For instance, the November 2008 list included all air carriers certified in the Democratic Republic of Congo, Equatorial Guinea, Sierra Leone, Liberia, and Swaziland because previous safety audits have indicated serious deficiencies in the capability of the civil aviation authorities of these countries to perform their air safety oversight responsibilities. According to European Commission officials, when an operating ban has been imposed on an air carrier, the European Commission provides technical assistance to the air carrier and coordinates with the respective civil aviation authority to remedy the deficiencies that resulted in the operational ban.

In April 2009, the European Commission and the African Union Commission held an aviation conference in Namibia to address the critical issue of aviation safety in Africa, among other items. An outgrowth of this conference was the creation of the Common Strategic Framework and Action Plan, which details areas of cooperation and agreement for permanent strategic dialogue in aviation matters. In the area of aviation safety, the main goals are to (1) significantly reduce accident rates in Africa, (2) reduce the average rates of nonconformity of African states for compliance with ICAO standards and recommended practices, and (3) reduce the number of African airlines affected by the EU list of banned airlines.

- *World Bank investments address aviation infrastructure challenges in Africa.* The World Bank and the Group of Eight, or G-8, countries have been focusing their efforts on the continent to support economic development in African countries, with goals beyond humanitarian relief, and promoting development across Africa has become a global security

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issue.<sup>49</sup> The World Bank spends about \$600 million annually on aviation projects in Africa. Much of this funding is used for specific infrastructure improvement projects, such as runway construction and air traffic control improvements. For example, in 2007, the World Bank provided international development grants of about \$151 million for 23 countries for the ongoing development of a regional air transport program, including about \$47 million to Nigeria to help finance the modernization of safety oversight bodies and airport facilities.

- *World Food Program implemented requirements for contracting with African air carriers.* The World Food Program implemented an aviation safety program in 2004, which consists of registering, evaluating, and monitoring contract air carriers used to carry out its humanitarian efforts. The program was developed in response to a series of fatal crashes in Africa involving World Food Program personnel. According to World Food Program officials, the safety program holds contractors to high standards and has helped to improve the safety practices of small African air carriers.
- *AviAssist Foundation provides assistance to African countries to improve aviation safety.* The AviAssist Foundation identifies safety deficiencies, analyzes their causes, and works with African countries to find practical solutions and secure funding for making necessary improvements.<sup>50</sup> AviAssist also works to promote aviation safety through training events, workshops, and outreach. For example, AviAssist conducted an information session for government and aviation personnel in Zambia in November 2008 to help them prepare for their upcoming ICAO audit. In addition, AviAssist is working with the Flight Safety Foundation to develop plain-language informational documents on countries' international responsibility for aviation safety and the role of a civil aviation authority. According to AviAssist officials, such information is needed to help increase political leaders' awareness of the importance of aviation safety.

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<sup>49</sup>The G-8 member countries include Canada, France, Germany, Italy, Japan, Russia, the United Kingdom, and the United States. This membership comprises the main industrialized countries in the world and is not an international organization; it is a process that culminates in an annual Summit at which the Heads of State and Government of the member countries hold talks for finding solutions to the main world issues.

<sup>50</sup>The AviAssist Foundation, the regional affiliate of the Flight Safety Foundation, is a nonprofit organization that provides aviation safety support to aviation organizations—government and industry—in the 22 ICAO participating countries of the Eastern and Southern African regions. The Flight Safety Foundation is an international nonprofit membership organization that researches and promotes aviation safety.

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## Conclusions

A little more than 10 years have passed since the SSFA program was launched in an attempt to bridge the United States and Africa via air transport by assisting African countries in improving aviation safety. U.S. and African officials attribute important safety advancements in Africa over this period of time—such as the establishment of a regional regulatory organization in East Africa—directly to this program. The program is also of strategic importance to DOT, helping it reach out to the international community and increasing global connectivity. Furthermore, the program has been considered strategically important to U.S. foreign policy interests. However, funding for the program has been inconsistent, and the future of the SSFA program is uncertain because of resource constraints. Given this uncertainty, it seems appropriate for DOT, FAA, and the Department of State to reassess the government’s ability to achieve the program’s goals in view of the level of resources being provided.

In addition, better interagency coordination through DOT for funding air transportation-related activities in Africa would improve U.S. efforts to assist African countries not only by preventing duplication of effort, but also by establishing a more comprehensive strategy for achieving common goals and objectives. Several U.S. federal agencies are involved in funding aviation-related projects in African countries, but this assistance is inconsistently coordinated. Such lack of coordination can lead to duplication of effort and the potential allocation of scarce resources for unnecessary and unwarranted projects. It also can prevent agencies from leveraging resources and expertise across government and optimizing the impact of their efforts. While DOT has been involved in some of these aviation safety-related projects, the federal agencies have not collaborated consistently, partly because the other agencies do not focus specifically on improving aviation safety. The Interagency Committee on International Aviation Safety and Security, formed by USTDA and FAA, could potentially serve as a mechanism for developing a strategy to coordinate agencies’ resources for aviation-related projects in Africa and to assist DOT in accomplishing the SSFA program’s goals. By leading collaborative efforts, DOT can share expertise and provide strategic direction for aviation projects in Africa, especially through the SSFA program, helping to ensure that the U.S. agency with the greatest aviation expertise and technical capabilities has a leadership role in activities related to U.S. funding of aviation safety-related efforts in Africa. Furthermore, by encouraging coordination and collaboration, DOT may be able to work with all agencies involved to more consistently focus cumulative efforts on deliverable targets, leverage resources, and achieve tangible results.

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## Recommendations for Executive Action

We recommend that the Secretary of Transportation take the following two actions:

- Lead a collaborative effort with the Administrator of FAA and the Secretary of State to reassess the SSFA program's goals and identify the level of budgetary and human capital resources necessary to achieve those goals, including identifying the implications of reduced resource levels on DOT's ability to achieve the program's goals.
- Develop a comprehensive strategy to lead efforts to coordinate the governmentwide resources available to accomplish the SSFA program's goals.

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## Agency Comments and Our Evaluation

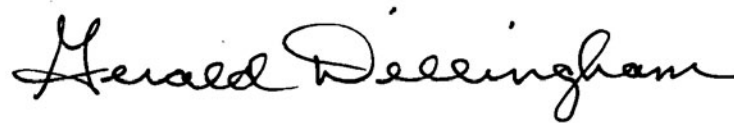
We provided a draft of this report to DOT, the State Department, DOD, USAID, USTDA, and MCC for review and comment. DOT and USTDA generally agreed with the report's findings, conclusions, and recommendations and provided technical clarifications, which we incorporated, as appropriate. Based on DOT's comments, we clarified the intent of the recommendations to provide a better focus on the desired results to be achieved. MCC provided clarifications to information related to MCC in the report, which we incorporated as appropriate, and MCC's review provided no opinion on the larger content of the report, including its findings, conclusions, or recommendations. The State Department, DOD, and USAID did not comment on the report.

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As agreed with your offices, unless you publicly announce the contents of this report earlier, we plan no further distribution until 7 days from the report date. At that time, we will send copies of this report to other interested congressional committees and members; the Secretary of Transportation; the Secretary of State; the Secretary of Defense; the Administrator, U.S. Agency for International Development; the Director, U.S. Trade and Development Agency; the Chief Executive Officer, Millennium Challenge Corporation; the Director, Office of Management and Budget; and others. The report is also available at no charge on the GAO Web site at <http://www.gao.gov>.

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If you or your staffs have any questions about this report, please contact me at (202) 512-2834 or [dillingham@gao.gov](mailto:dillingham@gao.gov). Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff that made major contributions to this report are listed in appendix II.

A handwritten signature in black ink that reads "Gerald Dillingham". The signature is written in a cursive, flowing style.

Gerald L. Dillingham, Ph.D.  
Director, Physical Infrastructure Issues

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# Appendix I: Scope and Methodology

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To address our objectives, we reviewed and synthesized reports and studies on U.S. efforts to improve aviation safety in Africa, the Department of Transportation's (DOT) Safe Skies for Africa (SSFA) program, and Africa's aviation markets and safety records. Specifically, we reviewed GAO and Congressional Research Service reports that included general background information on a variety of related issues on the African continent, such as the safety and security of foreign airports and U.S. airlines' code-share partnerships with foreign carriers. We searched databases, such as ProQuest, Nexis, and TRIS, for information on the SSFA program, U.S. trade and investment interests in Africa, challenges to improving aviation safety in Africa, and comparable international aviation efforts. Furthermore, we reviewed SSFA program documentation that included information on the program's selection criteria, eligibility, objectives and goals, accomplishments, and funding information. We also reviewed the *DOT Strategic Plan for Fiscal Years 2006 – 2011*, the Federal Aviation Administration's (FAA) *Flight Plan 2008 – 2012*, and FAA's *International Aviation Business Plan Fiscal Year 2009*. In addition, we reviewed FAA guidance on the agency's International Aviation Safety Assessment and Code-Share Safety programs.

We also reviewed documentation and reports on efforts to improve aviation safety in African countries from other U.S. agencies, such as the Department of State, Millennium Challenge Corporation, and U.S. Trade and Development Agency. For U.S. trade and investment policies for Africa, we reviewed reports from the U.S. Trade Representative on the implementation of the African Growth and Opportunity Act of 2000. To examine international efforts to improve aviation safety in Africa, we reviewed published reports, documentation, and regulations from the European Commission on its list of banned carriers, and aviation safety plans, reports, and flight statistics from the International Civil Aviation Organization (ICAO) and International Air Transport Association (IATA).

In addition to reviewing program documentation and published literature, we conducted semistructured interviews with department-level officials from U.S. federal agencies and representatives of international organizations, trade group associations, and other industry stakeholders involved with aviation safety issues in Africa. A list of these agencies and organizations follows:

## **U.S. federal agencies**

Department of Transportation  
Federal Aviation Administration

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Department of Defense  
Department of State  
Millennium Challenge Corporation  
National Transportation Safety Board  
U.S. Agency for International Development  
U.S. Trade and Development Agency  
U.S. Trade Representative for Africa

**International organizations**

International Civil Aviation Organization  
World Bank  
European Commission  
European Aviation Safety Agency  
MacArthur Foundation

**Associations**

Air Transport Association  
American Association of Airport Executives  
Flight Safety Foundation  
International Air Transport Association  
International Federation of Air Traffic Controllers Association

**Industry organizations**

Airbus  
Boeing  
Continental Airlines  
Delta Airlines  
Honeywell International, Inc.

To obtain additional information on aviation safety efforts in Africa, we conducted site visits to four selected African countries. To identify the African countries to visit, we reviewed published research on U.S. efforts to improve aviation safety in Africa, comparable international efforts, Africa's aviation markets and safety record, and DOT and FAA documentation on the SSFA program. We used the following criteria to ensure variation in the countries chosen for site visits: (1) countries' participation in the SSFA program; (2) countries that have an FAA Category 1 rating, currently have direct flights to the United States, and are not currently participating in the SSFA program; (3) countries that have achieved an FAA Category 1 rating as a result of the SSFA program; (4) countries that are not involved with the SSFA program or do not have an FAA Category 1 rating, and have major challenges and a poor safety record for aviation safety, with consideration

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to geographic dispersion; and (5) countries that are involved in positive efforts to meet international aviation safety standards and improve aviation safety as a result of the SSFA program, such as countries that have been involved in regional aviation safety oversight organizations to improve air transport and aviation safety. In addition, we considered other factors, such as recommendations from U.S. government officials and aviation experts whom we consulted about countries to visit based on their knowledge and experience working with African countries and their professional judgment. Using this information, we selected Cape Verde, Kenya, Senegal, and Tanzania for site visits. During the site visits, we conducted semistructured interviews with government officials, including those at the Ministry level, as well as civil aviation authority and airport authority officials; and representatives of regional aviation organizations, African airlines, industry groups, and aviation training schools. However, because these four countries were selected as part of a nonprobability sample, the findings from our interviews cannot be generalized to all African countries. A list of the organizations we contacted in each country follows:

**Cape Verde**

Cape Verde Ministry of Infrastructures, Transport, and the Sea  
Cape Verde Agency for Civil Aviation  
Cape Verde Airport and Air Navigation Authority  
Cabo Verde TACV Airlines  
Halcyon Air (airline)  
U.S. Embassy, Cape Verde

**Kenya**

ALS Ltd. (airline)  
East African School of Aviation  
International Air Transport Association, Eastern Africa Office  
International Civil Aviation Organization, Eastern and Southern African Office  
Kenya Airports Authority  
Kenya Airways (airline)  
Kenya Civil Aviation Authority  
Kenya Ministry of Transport  
United Nations World Food Program  
U.S. Embassy, Kenya

**Senegal**

African Civil Aviation Commission  
Agency for Air Navigation Safety in Africa and Madagascar  
Air Senegal International (airline)



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Federal Aviation Administration, Regional Office for Africa  
High Authority Airport Leopold Sedar Senghor  
International Air Transport Association, Central and West Africa Office  
International Civil Aviation Organization, Western and Central Africa Office  
National Civil Aviation Agency of Senegal  
U.S. Embassy, Senegal

**Tanzania**

East African Community (EAC)  
EAC Civil Aviation Safety and Security Oversight Agency  
Civil Aviation Training Centre  
Tanzania Airports Authority  
Tanzania Civil Aviation Authority  
Tanzania Ministry of Infrastructure Development

We conducted this performance audit from April 2008 through June 2009 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

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# Appendix II: GAO Contact and Staff Acknowledgments

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## GAO Contact

Gerald L. Dillingham, Ph.D., (202) 512-2834 or [dillinghamg@gao.gov](mailto:dillinghamg@gao.gov)

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## Staff Acknowledgments

In addition to the contact named above, the following individuals made important contributions to this report, Nikki Clowers, Acting Director; Vashun Cole; Elizabeth Eisenstadt; Hannah Laufe; Nitin Rao; and Amy Rosewarne.

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