



AIR TRANSPORT

ANNUAL REPORT 2022

Transport Global Practice





**END EXTREME
POVERTY WITHIN A
GENERATION AND
BOOST SHARED
PROSPERITY**

THE WORLD BANK MISSION



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FINANCING SAFE, AFFORDABLE, AND SUSTAINABLE AIR TRANSPORT WITH PRIVATE SECTOR PARTICI-

The global recovery of the air transport industry from the COVID-19 induced collapse of air traffic continued strongly in FY22. Air traffic grew in most regions at a record rate, albeit still from a low base in some regions. Air passenger traffic gained momentum globally in 2022 and recovered substantially from 41.7% of 2019 revenue passenger-kilometers (RPKs) in 2021 to 68.5% in 2022. Air cargo traffic, which performed exceptionally well in 2021 with annual cargo tons kilometers (CTK) exceeding the 2019 levels by 7.2%, declined by 8.3% in 2022 and fell slightly short of pre-pandemic levels. The reduction in cargo demand in 2022 is a strong indicator of a significant slowdown in the global economy, with a GDP growth rate of only about 3.3%, down from 6.1% growth in 2021. Overall, the global airline industry generated net losses of USD 6.9 billion in 2022, which is a significant improvement from the losses of USD 42.0 billion and USD 137.7 billion that were realized in 2021 and 2020, respectively.

In terms of regional differences, the Middle Eastern carriers recorded the strongest growth in 2022, with an increase of 144.4% of international RPKs, but still 25.9% below pre-pandemic levels. Middle East carriers posted a loss of USD 1.1 billion in 2022, but expect a profit of USD 268 million in 2023. In Europe, the industry recovered well with an increase of international RPKs of 100.2%, reaching a level of 22.2% below the pre-pandemic one. European carriers lost USD 3.1 billion in 2022 but are optimistic about reaching a profit of USD 621 million in 2023. This growth was followed by the African region with an increase in international RPKs of 84.9%, which represents a recovery of about two-thirds is now 31.3% below the 2019 level. African carriers reduced their loss to USD 638 million in 2022, but are still expecting a loss of USD 213 million in 2023. The Latin America and the Caribbean market grew by 62.7% in 2022, which puts it only 14.2% below pre-COVID traffic. However, Latin American carriers lost about USD 2.0 billion in 2022 and forecast a loss of USD 795 million in 2023. Passenger demand growth in 2023 is expected to remain strong at 9.3%, which would outpace capacity growth of 6.3% in the industry. North America's RPK grew 45.5% in 2022, which puts the market at a level only 11.3% below 2019. North American carriers generated profits of USD 9.9 billion in 2022 and are expected to reach a USD 11.4 billion profit in 2023. The Asia-Pacific region grew in 2022 by 34.0% in terms of RPK, leaving it still 55.6% below the 2019 level. Asia-Pacific carriers posted a loss of USD 10.0 billion in 2022 and are expected in 2023 to reduce their loss in 2023 to USD 6.6 billion.

The air transport industry showed great resilience in 2022 as it faced new global challenges on its way to recovery. The sharp slowdown of global GDP growth by nearly 50% to 3.3% raised concerns in many regions about a coming recession. The reasons for the economic slowdown are multiple. First was a sharp increase in the oil price from its lowest level of about USD 20 per barrel during the COVID crisis to a peak of USD 128 in March 2022 following Russia's invasion of Ukraine. The second factor was rising inflation, which more than doubled in the US, leveling at 8.1% and 8.5% in October in the Euro area. However, in 18 out of 38 OECD countries, double-digit inflation was recorded, with the highest rates observed in

ICAO long term aspirational goal of net-zero carbon emissions by 2050 [...] SAF contributing 65% to abatement of carbon emissions.

Estonia, Hungary, Latvia, Lithuania, and Türkiye (all above 20%). Energy inflation in the OECD reached 28.1%, with the highest in Italy (71%) and Germany (42%). This was followed by food inflation, which rose to 16.1%, its highest level since 1974. Another factor in 2022 was the tightening financial conditions developed economies experienced, as central banks reacted swiftly to counter inflation by raising interest rates and tightening the monetary base. In the US, for example, the Fed aggressively raised the Federal Funds Rate by 425 basis points to 4.375% in only nine months.

Another adverse economic development was the continuous strengthening of the US dollar. This is especially challenging for emerging economies a challenge, as a strong US dollar slows global GDP growth. In 2022, most currencies will have lost value against the US dollar, ranging from around 14% for the euro to some 80% of Sri Lanka's rupee. Finally, the still-lingering effects of the COVID lockdowns have affected some Asian markets, especially China, which only started to open its aviation markets in late 2022.

Despite the various headwinds in 2022, the comeback of the industry was remarkable, albeit with regional differences. In terms of restored global connectivity, a strong improvement from 50% to 75% was experienced in 2022, with North America and Latin America reaching or exceeding the 2019 levels, while Asia/ Pacific remained significantly below the average.

The recovery of air transport is an opportunity for many states to improve their oversight, policies, and infrastructure in order to render the sector more resilient and sustainable. However, especially developing countries should refrain from interfering against initiatives of the private sector by, e.g., creating new state-owned carriers or heavily regulating air transportation with restrictive tariffs. Furthermore, opening up the markets by liberalizing access and ownership for air operators would have a catalyst effect, especially in regions, that had less developed connectivity even before the COVID pandemic.

Addressing climate change has become a prime priority for the aviation industry. In 2022, 119 ICAO member states endorsed a collective global long term aspirational goal of net-zero carbon emissions by 2050. This commitment was echoed by IATA as an alignment with the Paris Agreement goal for global warming not to exceed 1.5°C. The prime measure would be the introduction of sustainable aviation fuels (SAF), which contribute up to 65% to the abatement of carbon emissions. While SAF is already being produced and deployed in some advanced countries, many developing countries lack the scale, policy, and financing to introduce SAF, and the production of feedstock may represent an important opportunity.

The 18th edition of the World Bank Group (WBG) Air Transport Annual Report summarizes the current portfolio of activities being provided to support emerging and developing countries in the development of air transportation, highlighting some of the initiatives in greater detail. The overall air transport portfolio increased by over 9% in FY22 to USD 1,02 billion. The strongest increase of 55.6% to USD 512 million was achieved by IDA, while IBRD remained stable and IFC investments in private sector projects declined by 17%. The WBG also delivered knowledge products concerning climate change, policy, and new technologies.



Dr. Charles E. Schlumberger
Lead Air Transport Specialist
The World Bank

We look forward to supporting our client in 2023 in the development of their air transport sectors.

ABBREVIATIONS

AASANA	Airport Authority, Administracion de Aeropuertos y Servicios Auxiliares a la Navegacion Aerea
ABC	Administradora Boliviana de Carreteras
ABT	Autoridad de Bosques y Tierra
ACI	Airports Council International
ADS-B/C	Automatic Dependent Surveillance – Broadcast/Contract
ADF	African Drone Forum
AF	Additional Financing
AFCAC	African Civil Aviation Commission
AI	Iraqi Airlines
ANS	Air Navigation Services
AMO	Maître d'Ouvrage
ASA	Advisory Services and Analytics
ATC	Air Traffic Control
ATM	Air Traffic Management
AVSA	Aviation Solutions Area
BASA	Bilateral Air Service Agreement
CAA	Civil Aviation Authority
CAAN	Civil Aviation Authority of Nepal
CAASI	Civil Aviation Authority of Solomon Islands
CAAZ	Civil Aviation Authority of Zimbabwe
CAD	Kyrgyz Department of Civil Aviation
CAP	Corrective Action Plan
CAPEX	Massive Capital Expenditures
CARs	Central Asia Regional Links Program
CCAA	Cameroon Civil Aviation Authority
CCRIF	Caribbean Catastrophe Risk Insurance Facility
CERC	Contingent Emergency Response Component
CES	Charles E. Schlumberger, Lead Air Transport Specialist (WBG)
CO2	Carbon Dioxide
CORSIA	Carbon Offsetting and Reduction Scheme
DPF	Development Policy Financing
DPO	Development Policy Operation
DRC	Democratic Republic of the Congo
DRM	Disaster Risk Management Services
DU	Delivery Unit
EASA	European Aviation Safety Agency
EIB	European Investment Bank
ELRP	Emergency Locust Response Program
EU	European Union
EUR	Euro
E-VTOL	Electric Vertical Take-off and Landing
FACO	Food and Agricultural Organization of the United Nations
FCCL	Fiscal Commitment and Contingent Liability
FY	Fiscal Year
GA	General Aviation
GAA	Grenada Airports Authority
GDP	Gross Domestic Product
GEF	Global Environmental Facility
GFDRR	Disaster Reduction and Recovery
GHG	Green House Gas
GIS	Geographic Information System
GLR	Great Lakes Region
GLTFP	Great Lakes Trade Facilitation Project
GNSS	Global Navigation Satellite System
GoB	Government of Bolivia
GoN	Government of Nepal

GoSM	Government of Sint Maarten
GoSTP	Government of Sao Tome and Principe
GoT	Government of Tonga
GoTv	Government of Tuvalu
GoU	Government of Uzbekistan
GP	Global Practice
GPS	Global Positioning System
HEFA	Hydroprocessed Esters and Fatty Acids
IATA	International Air Transport Association
IBRD	International Bank for Reconstruction and Development (WBG)
ICAA	Iraqi Civil Aviation Authority
ICAO	International Civil Aviation Organization (UN Agency)
ICR	Implementation Completion Report
ICT	Information and Communication Technologies
IDA	International Development Association (WBG)
IFC	International Finance Corporation (WBG)
IGAD	Intergovernmental Authority on Development
ILS	Instrument Landing System
ITRGK	Transport Global Practice's Global Unit
JKIA	Jomo Kenyatta International Airport
KAI	Kyrgyz Aviation Institute
LCR	Latin American and Caribbean Region
LED	Light Emitting Diode
LTAG	Long Term Global Aspirational Goal
MACC	Marginal Abatement Cost Curves
MBIA	Maurice Bishop International Airport
MCA	Ministry of Communication and Aviation
MDP	Ministry of Development and Planning
MettleSat	National Agency for Meteorology and Remote Sensing
MIGA	Multilateral Investment Guarantee Agency (WBG)
MoCTCA	Ministry of Culture, Tourism, and Civil Aviation
MOIID	Ministry of Infrastructure Development, Public Utilities, Energy, Transportation and Implementation
MOT	Ministry of Transport
MOTC	Ministry of Transport and Communication
MOTCA	Ministry of Tourism and Civil Aviation
MoTPW	Ministry of Transport and Public Works
MSU	Maseru Airport
MSW	Municipal Solid Waste
NAA	National Airport Authority
NAABOL	Navegacion Aerea y Aeropuertos Bolivianos
NDMA	National Disaster Management Authority
NFCS	National Framework for Climate Services
OECD	Organization for Economic Cooperation and Development
OFNAC	National Office of Civil Aviation
OROA	Ouadi Rime and Ouadi Achim
PA	Protected Areas
PAIP	Pacific Aviation Investment Program
PAP	Port-au-Prince's Toussaint Louverture Airport
PAPI	Precision Approach Path Indicator
PASO	Pacific Aviation Safety Office
PDO	Project Development Objectives
PDRJS	Tocantins Integrated Sustainable Regional Development Project
PFF	Project Facilitation Fund
PJIA	Princess Juliana International Airport
PJIAE	Princess Juliana International Airport Operating Company N.V.
PNSAC	National Civil Aviation Security Program
PPP	Public-Private Partnership

PPPC	Public-Private Partnership Commission
PRIF	Pacific Regional Infrastructure Facility
PwC	PricewaterhouseCoopers
QAIA	Queen Alia International Airport
QMS	Quality Management System
RAAMP	Regional Airport Asset Maintenance Program
RAS	Reimbursable Advisory Service
RDVRP	Regional Disaster Vulnerability Reduction Program
RESAs	Runway End Safety Areas
ROI	Register of Inspectors
RPA	Remotely Piloted Aircraft
RTP	Rural Transport Project
RVA	Regies des Voies Aeriennes
SAA	Samoa Airport Authority
SAF	Sustainable Aviation Fuels
SARPs	Standards and Recommended Practices
SCF	Strategic Climate Fund
SERNAP	Servicio Nacional de Areas Protegidas
SIACL	Solomon Islands Airport Corporation Limited
SIG	Solomon Islands Government
SIRAP	Solomon Islands Roads and Aviation Project
SMART	Spatial Monitoring and Reporting
SOARR	Safety of Aviation for Regional Resilience
SOE	State Owned Enterprises
STP	Sao Tome and Principe
SVG	Grenada and Saint Vincent and the Grenadines
TA	Technical Assistance
TAIP	Tonga Aviation Investment Project
TCRTP	Tonga Climate Resilient Transport Project
TF	Trust Fund
TSRP	Transport Sector Reform Project
TSSP	Transport Sector Support Project
TTTTFP	Tripartite Transport & Transit Facilitation Program
TvAIP	Tuvalu Aviation Investment Project
UAS	Unmanned Aircraft Systems
UAT	Uzbekistan Airways Technics
UHY	Uzbekistan Airways
UN	United Nations
USD	United States Dollar
USOAP	Universal Safety Oversight Audit Programme
UTM	Uncrewed Traffic Management
VSAT	Very Small Aperture Terminal
VOTL	Vertical Take-Off and Landing aircraft
WB(G)	World Bank (Group)
YD	Yamoussoukro Decision

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In Memoriam

Heinrich C. Bofinger

28 November 1965—27 September 2022

The Mission

The World Bank Group (WBG) is a vital source of financial and technical assistance to developing countries around the world through the provision of low-interest loans, grants, credits, guarantees, and advisory services. The World Bank Group aims to achieve two major goals by 2030:

- ◆ End extreme poverty by decreasing the percentage of people living on less than USD1.25 a day to no more than 3%
- ◆ Promote shared prosperity by boosting the income of the bottom 40% of the population in every country.

The World Bank Group aims to tackle these challenges through financing, cutting-edge solutions, cross-sectorial knowledge, and partnerships with relevant public and private sector actors, as well as civil society. The organization's investments span across a number of sectors, including education, health, public administration, private sector development, agriculture, transport, and digital development.

The Institutions and the New Structure

The International Development Association (IDA) is the part of the World Bank that helps the world's poorest countries by providing concessional loans, or credits, and grants. The World Bank's original lending arm is the International Bank for Reconstruction and Development (IBRD), which lends to governments of middle-income and creditworthy low-income countries. The International Finance Corporation (IFC) provides loans, equity, and advisory services to stimulate private sector investment in developing countries. The Multilateral Investment Guarantee Agency (MIGA) provides political risk insurance or guarantees to facilitate foreign direct investment in developing countries. The International Centre for Settlement of Investment Disputes (ICSID) is also a part of the WBG, but will not be covered in this report.

The WBG has recently undergone major institutional change, and Transport and Digital Development are now global practice. The Bank's new nimble structure with Global Practices and Cross-Cutting Solution Areas is designed to strengthen collaboration and improve knowledge sharing across the institution. These changes are intended to improve operational efficiency, financial sustainability, and ultimately work toward meeting the twin goals of ending

extreme poverty and boosting shared prosperity.

Enhancing Mobility and Connectivity

Transport is a critical driver of economic and social development. Transport infrastructure connects people to jobs, education, and health services; it enables the supply of goods and services around the world; and it allows people to interact and generate the knowledge and solutions that foster long-term growth. The World Bank's transport investments have facilitated more efficient trade and enhanced human development through greater mobility.

As a multi-sectorial institution, the World Bank Group is uniquely positioned to support large-scale transformational projects and deliver innovative cross-cutting solutions for greater connectivity. The World Bank's strategy in the transport sector, adopted in 2008, envisioned mobility solutions for developing countries that would be safer, cleaner, and more affordable. These three principles guide the Bank's infrastructure investments and policy work. The WBG is the largest provider of development finance for transport globally, with an active portfolio of around USD 38.32 billion.

Air transport plays an important role in fostering development, particularly in facilitating economic integration, generating trade, promoting tourism, and creating employment opportunities. It facilitates integration into the global economy and provides vital connectivity on a national, regional, and international scale. However, in many countries, air transport equipment and infrastructure, regulatory frameworks, and safety and security oversight systems are inefficient or inadequate.

In view of these challenges and to assist clients in establishing a safe, secure, cost-efficient, accessible, and reliable air transport network, the Bank is mandated to undertake the following major activities:

- ◆ Operational work through projects and technical assistance.
- ◆ Economic sector work, research, and knowledge dissemination on air transport-related issues.
- ◆ External relations and collaboration with partner organizations.
- ◆ Internal services (such as the airline advisory service for WBG staff travel).

Portfolio and Project Highlights

In Fiscal Year 2022 (FY2022), WBG's Air Transport Portfolio amounted to USD 1,018 million, an increase of 9 percent from FY2021 following the COVID-19 Pandemic Crisis and the closing of larger airport infrastructure projects. The Air Transport segment makes up around 2.65 percent of the WBG's USD 38.32 billion Transport portfolio. The WBG's FY2022 Transport portfolio consisted of approximately 16.57 percent of the WBG's active portfolio of USD 369.6 billion.

In FY2022, the Air Transport portfolio included a total of 27 lending and non-lending projects or project components through the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA), including active and completed projects. The International Finance Corporation (IFC) included 11 active operations in its investment portfolio and supported 6 Advisory Mandates. MIGA provided two Guarantees for the Air Transport Sector.

One IBRD/IDA lending project implemented in Cabo Verde closed in September 2022 after an extension in the deadline. Several technical assistance (TA) activities were financed by the project in the air transport sector, including: (i) preparatory activities for the privatization of the national carrier (Cabo Verde Airlines, formerly TACV), which was concluded in March 2019, (ii) an assessment of the civil aviation legal framework, (iii) assistance to improve the Civil Aviation Authority's statistical information system, and (iv) the development of a training plan for the civil aviation sector. Through another project, the World Bank also financed advisory services for the concessioning of the country's airports, which resulted in the award of a concession contract to an international operator in 2022.

Major active projects financed by the International Finance Corporation (IFC) include Sofia Airport in Bulgaria, the Zagreb Airport in Croatia, Airport Almaty in Kazakhstan, Airports in Nosy Be and Antananarivo in Madagascar, Lima Airport in Peru, the Agila-Pacific project in the Philippines, Belgrade Airport in Serbia, and the Enfidha Airport construction in Tunisia.

In addition, IFC is active through the provision of PPP Advisory Services to government clients for Presidente Nicolau Lobato International Airport in Timor Leste, Indonesian Airports in Indonesia, and Manas Airport in Kyrgyzstan.

MIGA has been involved in the air transport sector in the past through the issuance of guarantees for two airport projects in Cote d'Ivoire, Jordan, and Madagascar.

Research and External Relations

World Bank staff members continued to represent the organization externally at various air transport conferences and events. Such events included the ICAO Global Implementation Support Symposium (GISS) in Istanbul (28 June to 1 July 2022), the FRA Air Cargo Conference (6-8 September 2022), the 41st Assembly of ICAO in Montreal (25 September – 6 October 2022), and the 2022 GAD World Conference in Amsterdam, where CES carried out the ACI-WB Masterclass Event on Airport Financing Options. Research and internal and external knowledge dissemination continue to be provided by WBG's Aviation Knowledge Area (AVKA).

The main knowledge products in FY22 were:

(i) a report on SAF titled *The Role of Sustainable Aviation Fuels in Decarbonizing Air Transport* Mobility, which highlights SAF as the primary mitigation strategy that can most quickly achieve significant GHG emission reductions for aviation in the medium future and it evaluates and quantifies global aviation decarbonization options through 2050.

(ii) a study that examines the impact of bilateral air service agreements on African air passenger transport, quantifies the consumer welfare effects of air transport liberalization, and estimates the extent to which liberalization of bilateral air service agreements affects the following: (1) passenger travel, (2) average airfares, (3) flight frequency, and (4) market competition within a country pair using an unbalanced panel of 71 African country pairs observed between 2011 and 2019.

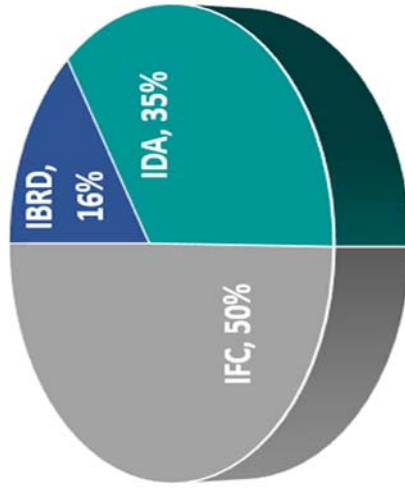
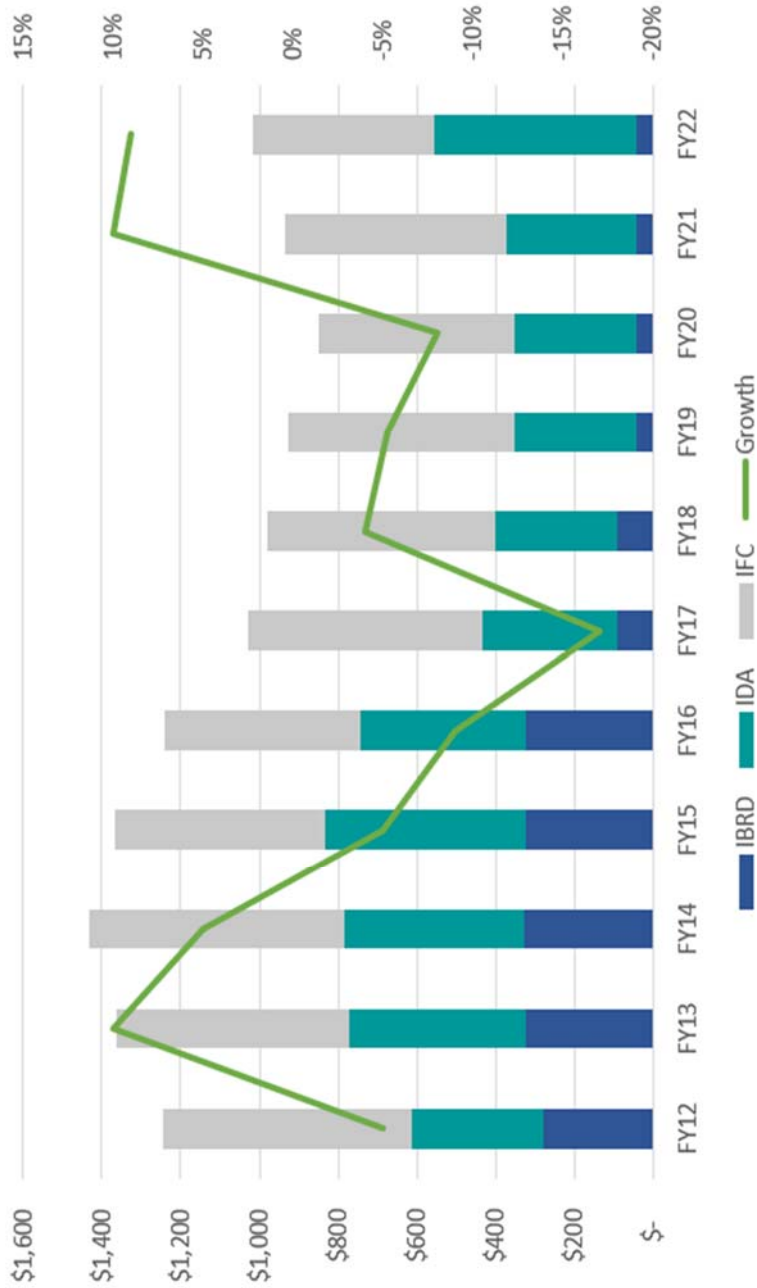
(iii) a study on Remotely Piloted Aircraft (Drones) projects and operations in Haiti, Guatemala, and Brazil, with the goal of identifying key drivers and market fundamentals for commercial operations, as well as opportunities, regulatory frameworks, market players, and barriers to developing drone applications in the Latin American context.

(iv) the ongoing preparation of the Handbook for the Development of the Air Transport Sector, whose overall objective is to build, expand, and disseminate core sector concepts and good practices fundamental to the development of air transport.

PORTFOLIO

USD1,018M

FY22 WBG AIR TRANSPORT



The WBG is a vital source of financial and technical assistance to developing countries through low-interest loans, credits, and grants. In Fiscal Year 2022, the World Bank's Air Transport Portfolio was around USD 1,018 million. This included a total of 27 lending and non-lending projects or project components through the International Bank for Reconstruction and Development (IBRD) and International Development Association (IDA), as well as the International Finance Corporation (IFC)'s Investment portfolio. In addition, IFC is supporting 32 Advisory Mandates and MIGA is providing three guarantees for the Air Transport Sector.

Active Portfolio	IBRD		IDA		IFC		TOTAL					
	FY22	FY21	Change	FY22	FY21	Change	FY22	FY21	Change			
WB Group Total Active Portfolio <i>(in millions USD)</i>	141,069	133,984	5.29%	164,719	132,813	24.02%	63,763	64,092	-0.51%	369,551	330,889	11.68%
WB Group Active Portfolio-Transport	16,905	16,325	3.55%	19,728	14,644	34.72%	1,684	1,902	-11.46%	38,317	32,871	16.57%
Transport % of Total Active Portfolio	11.98%	12.18%	-0.21 pp	11.98%	11.03%	0.96 pp	2.64%	2.97%	-0.33 pp	10.37%	9.93%	0.44 pp
Air Transport Active Projects	44.16	44.16	0.00%	512.06	328.73	55.77%	461.76	560.81	-17.66%	1,017.98	933.70	9.03%
% of Total Active Portfolio	0.03%	0.03%	-0.01 pp	0.31%	0.25%	0.07 pp	0.72%	0.88%	-0.16 pp	0.28%	0.28%	-0.01 pp
% of Total Transport Portfolio	0.26%	0.27%	-0.01 pp	2.60%	2.24%	0.36 pp	27.42%	29.49%	-2.07 pp	2.66%	2.84%	-0.19 pp

pp=percentage points

Note: Excluding the Multilateral Investment Guarantee Agency (MIGA)

For IFC, outstanding balances across all product categories (loans, quasi loans, equity at acquisition cost, quasi-equity, risk management and guarantees)

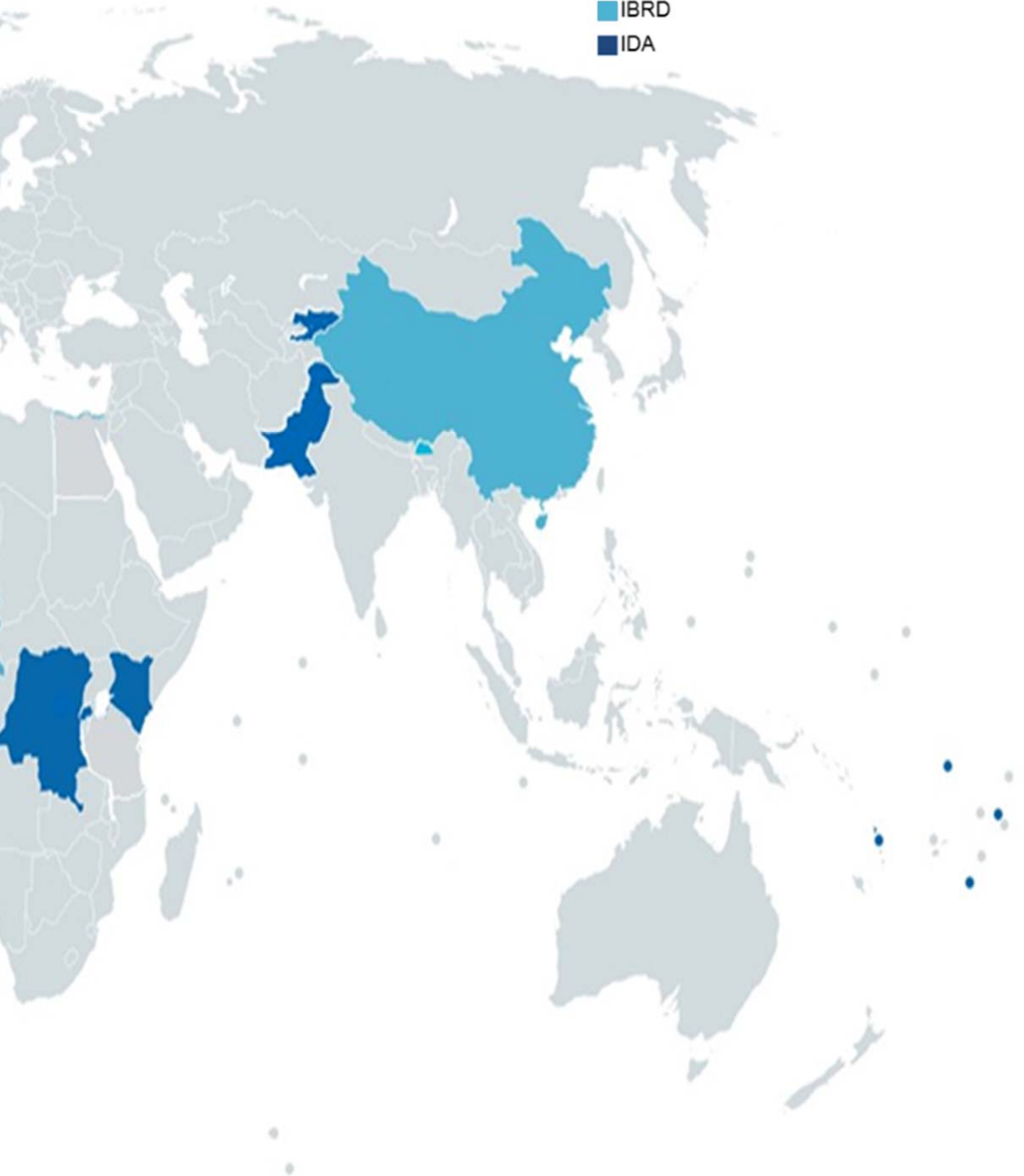
IBRD & IDA PRO-

Active Air Transport Projects in FY22: IBRD and IDA invest in a number of air transport projects worldwide focusing on regulatory reform, capacity building and infrastructure investments, as well as technical assistance and analytic/advisory services.



World Bank Commitment (Lending)

- IBRD
- IDA



IBRD AND IDA LENDING PROJECTS

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Africa	Cabo Verde	P126516	Cabo Verde - Transport Sector Reform	Institutional capacity building, technical assistance, and support of national airline.	46.1	6.92	IDA Credit	Closed
Africa	Cameroon	P150999	CMR Transport Sector Development Project	To improve safety and security at Cameroon's four international airports.	192.0	48.7	IBRD	Active
Africa	Chad	P171611	Chad Local Development and Adaptation Project	To support the improved management of OROA as well as support national efforts to fight against poaching and promote conservation of biodiversity in line with Chad's engagement in the GEF-7 Global Wildlife Program.	54.5	13	IDA Grant	Active
Africa	Democratic Republic of Congo	P159217	DRC Hydromet	Institutional and regulatory strengthening, capacity building and implementation support, as well as modernization of equipment, facilities and infrastructure for basic observation and meteorological forecasting.	8.0	0.87	IBRD	Active
Africa	Democratic Republic of Congo	P161877	DRC Transport and Connectivity Support Project	To provide resilient, safe, and sustainable connectivity in and between selected provinces in Kasaï region and Eastern part of DRC, and to increase the transparency of FONER, RVA, and the Regulatory Authority of Post, Telecommunications, and ICT.	500.0	36	IDA Credit & IDA Grant	Active

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Africa	Democratic Republic of São Tomé and Príncipe	P174274	Second STP COVID-19 Recovery and Resilience Development Policy Operation	The program supports the Ministry of Infrastructure's Directive (no. 9/2021) to overhaul STP's aviation security program (PNSAC). The Directive directs relevant government agencies (INAC and ENASA) to revise the aviation security program in order to bring it in line with EU cargo export requirements. The policy reforms envisioned in the third DPO3 trigger aim to bring STP's airport security regulations up to EU standards by defining the necessary security procedures as well as auditing requirements by STP's aviation security oversight body.	12	1	IDA Grant	Closed
Africa	Eastern and Southern Africa	P173702	Emergency Locust Response Program	To limit the growth of existing desert locust populations and curb their spread while mitigating the risks associated with control measures and their impacts on human health and the environment through continuous surveillance, control measures, and risk reduction management.	255.0	72.37	IDA Credit & IDA Grant	Active
Africa	Guinea-Bissau	P161923	Guinea-Bissau Rural Transport Project	To improve the physical access of the rural population to markets and social services in selected areas.	15.0	No info because of restructuring	IDA Credit	Active

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Africa	Kenya	P121019	Kenya Infrastructure Finance/PPP Project	To increase private investment in Kenya's infrastructure market across sectors and to sustain this participation over time with support to three key development areas: (i) the enabling environment, (ii) the PPP pipeline, and (iii) financing.	90.0	20	IDA Credit	Active
Africa	Rwanda	P151083	Great Lakes Trade Facilitation Project	Rehabilitation of Kamembe International Airport by Lake Kivu in Southwestern Rwanda.	102	14.2	IDA Credit	Active
Africa	Tanzania	P165660	Tanzania Transport Integration Project	To improve the safety, climate resilience and capacity of key road corridors and regional airports, and improve the capacity of relevant transport sector institutions to plan for and manage the sector.	550	118.65	IDA Credit	Active
East Asia Pacific	Pacific Islands	P145057	Pacific Aviation Safety Office Reform	Strengthen the Pacific Aviation Safety Office's technical and coordination capacity.	6.7	1.93	IDA Grant	Closed

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
East Asia Pacific	Samoa	P176272	Samoa Aviation and Roads Investment Project	To support investments to improve the climate resilience and safety of aviation in Samoa.	66.0	29	IDA Grant	Active
					51.0	35.39	IDA Credit & IDA Grant	Active
East Asia Pacific	Solomon Islands	P166622	Solomon Islands Roads and Aviation Project	Honiara and Munda Airports Infrastructure Investments to improve operational safety and overall infrastructure resilience to climate change at Honiara, enable Munda to receive international flights with an enhanced resilience to climatic disasters, and UXO surveys. It will also provide institutional strengthening to the aviation sector and prepare for Auki Gwaunaru'u Airport Infrastructure Investments.	89.2	72.69	IDA Credit & IDA Grant	Active
					28.9	2	IDA Grant	Active
East Asia Pacific	Tonga	P161539	Tonga Climate Resilient Transport Project	Support the aviation sector infrastructure rehabilitation.	28.9	2	IDA Grant	Active

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
East Asia Pacific	Tonga	P176208	Tonga Climate Resilient Transport Project II	Feasibility studies, detailed design, and physical works for identified aviation infrastructure to improve their climate resilience and safety.	38.0	8.35	IDA Grant	Active
East Asia Pacific	Tuvalu	P128940	Tuvalu Pacific Aviation Investment	Infrastructure investment, sector reform and training.	35.7	25.7	IDA Grant	Active
Europe & Central Asia	Kyrgyz Republic	P159220	Central Asia Regional Links Program - Phase 3	Strengthening of the aviation sector's safety and service provision. Addressing aviation safety and service provision would help the Civil Aviation Agency (CAA) to reach ICAO's international safety standards and recommended practices, as well as to overcome the current blacklist of Kyrgyz carriers by the EU, enhance local carriers' growth opportunities and ultimately increase the country's level of connectivity, a result that would benefit both local residents and international visitors.	55	4.5	IDA Grant & IDA Credit	Active
Latin America & the Caribbean	Bolivia	P122007	BO National Roads & Airport Infrastructure	Infrastructure development; improve safety, security and operational reliability of the Rurrenabaque Airport	104.0	5.48	IDA Credit	Active

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Latin America & the Caribbean	Eastern Caribbean and Sub-Region	P117871	60 Regional Disaster Vulnerability Reduction Projects	Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved Decision Making.	100.5	5.01	IDA Credit	Closed
Latin America & the Caribbean	Grenada	P172951	Grenada - Caribbean Regional Air Transport Connectivity	To improve MBIA operational safety and resilience as well as support Grenada's efforts to comply with ICAO's SARP and abide by the POS Declaration. The project also aims to strengthen the institutional capacity of GAA and Civil Aviation Division through a combination of regional and Grenada-specific technical assistance and capacity building activities with a focus on enhancing aircraft operational safety, air transport sector regulatory oversight, airport management capability, climate/disaster resilience, and gender diversity in the workplace.	17.0	15	IDA Credit	Active
Latin America & the Caribbean	Haiti	P170907	Caribbean Regional Air Transport Connectivity Project - Haiti	To improve operational safety and navigation efficiency of air transport in the Recipient's territory and increase the climate and disaster resilience of associated infrastructure at the Recipient's international airports.	84.0	84	IDA Grant	Active
Latin America & the Caribbean	Saint Lucia	P170860	Saint Lucia - Caribbean Regional Air Transport Connectivity Project	To improve operational safety and navigation efficiency of air transport, and enhance resilience of Saint Lucia's airport infrastructure to natural disasters.	45.0	41	IDA Credit	Active

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Latin America & the Caribbean	Sint Maarten	P167974	Sint Maarten Airport Terminal Reconstruction Project	The development objective to restore the passenger capacity of Princess Juliana International Airport to pre-Hurricane Irma levels with improved resilience towards hurricanes.	92.0	72	IDA Grant	Active
South Asia	Pakistan	P163924	Pakistan Hydromet & DRM Services Project	Upgrading of the monitoring and forecasting system at airports to improve aviation services, and the installation of an Aircraft Meteorological Data Relay system at 10 international airports.	188.0	11.28	IDA Grant	Active

IBRD AND IDA NON-LENDING PROJECTS

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	Status as of End of FY2022
Latin America & the Caribbean	Sint Maarten	P167974	Sint Maarten Airport Terminal Reconstruction Project	The development objective to restore the passenger capacity of Princess Juliana International Airport to pre- Hurricane Irma levels with improved resilience towards hurricanes.	Active

IBRD AND IDA PIPELINE PROJECTS

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment	Status as of End of FY2022
					Aviation Component	
Africa	Democratic Republic of Congo	P178357	DRC Transport and Connectivity Support Project ²	To provide resilient, safety and sustainable connectivity to and within selected provinces in Eastern part of DRC, and to support private capital mobilization in the road and digital sector.	50.00	Pipeline FY2022
Africa	Mauritius	P180266	Rodrigues Airport Project	To improve the island of Rodrigues' connectivity through the development of a new runway and the safety and efficiency of Plane Corail Airport's infrastructure.	140.00	Pipeline FY2022
Middle East & North Africa	Iraq	P178995	Iraq Aviation Sector Reform and Baghdad Airport Modernization Project	To promote private sector participation as a component of aviation sector reforms in Iraq.	200.00	Pipeline FY2022

IBRD AND IDA PIPELINE PROJECTS

Region	Country	Project Code	Project Name	Description of Aviation Component (s)	WBG Commitment (USD M)		Type	Status as of End of FY2022
					Total (USD M)	Aviation Component		
Africa	Kenya	P167734	Kenya Aviation Systems Improvement Project	Improvement of aviation safety, security and strengthening of air transport institutions. This will be achieved through the installation of an integrated security systems at major airports; automation of regulatory functions at KCAA; installation of air navigation system; construction of an air accident investigation workshop at JKIA and strengthening the capacity of KCAA, KAA and the State Department of Transport.	100.0	100	IDA	Pipeline FY2022

AFRICA

Project Highlights



CABO VERDE

Cabo Verde Transport Sector Reform Project (P126516)

The World Bank (WB) approved a USD 19 million International Development Association (IDA) Credit for the Cabo Verde Transport Sector Reform Project (TSRP) in FY2013, as well as a USD 27 million IDA Credit Addition Financing (AF) in FY2017. The Project Development Objective was to improve the efficiency and management of national road infrastructure while also laying the groundwork for State-Owned Enterprise (SOE) reform in the transportation sector.

The project had four components: (i) *Road Asset Preservation*, (ii) *Institutional Strengthening and Project Management*, (iii) *Road Safety*, and (iv) *Inter-Island Transport Strategy*. The fourth component of the project aimed to improve the quality of inter-island sea and air transport services, as well as port and airport management and transport SOE's efficiency. The project was completed in September 2022, after the deadline was extended.

Several technical assistance (TA) activities were financed by the project in the air transport sector, including: (i) preparatory activities for the privatization of the national carrier (Cabo Verde Airlines, formerly TACV), which was concluded in March 2019, (ii) an assessment of the civil aviation legal framework, (iii) assistance to improve the Civil Aviation Authority's statistical information system, and (iv) the development of a training plan for the civil aviation sector. Through another project, the World Bank also financed advisory services for the concessioning of the country's airports, which resulted in the award of a concession contract to an international operator in 2022.

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CAMEROON

CMR Transport Sector Development Project (P150999)

In FY2016, the World Bank approved a USD 192 million IBRD Loan for the Cameroon Transport Sector Development Project. The Project Development Objective is (i) to strengthen transport planning, (ii) to improve transport efficiency and safety on the 364-kilometer-long Babadjou-Bamenda section of the Yaoundé-Bamenda transport corridor, and (iii) to enhance safety and security at selected airports.

The project has four components: (i) *Transport Planning and Capacity Building*, (ii) *Road Transport Effi-*

ciency Improvements, (iii) *Air Transport Safety and Security Improvement*, and (iv) *Support to Project Implementation Management and Monitoring*. The third component focuses on facilitating the International Civil Aviation's (ICAO) effective implementation rating of Aerodrome and Ground Assistance at project airports (Yaoundé, Douala, Garoua, and Maroua), as well as the ICAO rating of Cameroon's security oversight system. It has three subcomponents: (i) strengthening airport safety and security infrastructure, (ii) strengthening air transport safety and security oversight, and (iii) strengthening air transport planning capacity.

The project was restructured in April 2022 to reflect the security measures agreed upon with the Cameroonian government and to allow for the completion of project activities. As of December 2022, the implementation of the aviation component is satisfactory. Important infrastructure has been completed to the required standard despite the constraints caused by the COVID-19 health crisis. Several remaining activities will be finalized during 2022, except for those related to the acquisition of security equipment, the construction of the patrol road, and the reinforcement of the security fence at Douala airport and the security fence at Yaoundé-Nismalen airport, for which the acquisition process has been delayed but will be completed before project closure.

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CHAD

Albia - Chad Local Development and Adaption Project (P171611)

In FY2020, the World Bank approved a USD 50 million IDA grant and a USD 4.45 million Global Environmental Facility (GEF) Trust Fund for the Albia-Chad Local Development and Adaption Project. The Project Development Objective is to improve the management of natural resources and the livelihoods of populations in selected climate-vulnerable areas in and around the Ouadi Rime and Ouadi Achim (OROA) reserves in Chad. The project has four components: (i) *Sustainable Natural Resources Management and Protected Areas*, (ii) *Promoting Diversified, Resilient, Sustainable Livelihoods*, (iii) *Project Management, Coordination, and Monitoring*, and (iv) *Contingency Emergency Response*.

The first component aims to support improved OROA management as well as national efforts to combat poaching and promote biodiversity conservation in accordance with the country's participation in the GEF-7 Global Wildlife Program. Subcomponent 1.1 - *Improved Management of Protected Areas (PA)* aims to support biodiversity conservation while also

strengthening key conservation institutions' capacities. The subcomponent will help the Ouadi Rimé-Ouadi Achim Faunal Reserve's management with improved wildlife monitoring, enforcement protection, and fire control and prevention, as well as raising the Reserve's profile and maximizing economic opportunities. Among the activities is the purchase of equipment to facilitate transport and communication throughout the Reserve's territory. This includes vehicles, a small plane (4-6 seats), Information and Communication Technologies (ICT) equipment (e.g., Global Positioning System (GPS) and Geographic Information System (GIS) software, solar chargers,



binoculars, cameras, cyber-tracker/Spatial Monitoring and Reporting (SMART) tablets, walkie-talkies for all patrols, Good Very High Frequency radio networks for office areas, vehicles, and aircraft), and disruptive technology for monitoring animal populations (e.g., drones for vultures, support for innovation in gazelle GPS collars, satellite tracking, etc.).

As of FY2022, the project had reached an important milestone in finalizing the procurement process for the two delegated management contracts for Subcomponent 1.1 and Subcomponent 2.2, which were signed on 27 September 2021, for the convention on Subcomponent 2.2 with SOS SAHEL International France and on 31 August 2021 for the convention on Subcomponent 1.1 with the Sahara Conservation Fund. During the supervision mission, clear action plans were developed to accelerate the implementation of activities on the ground.

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DEMOCRATIC REPUBLIC OF CONGO

Strengthening Hydro-Meteorological and Climate Services Project (P159217)

In FY2017, the World Bank approved a USD 8 million IBRD Loan for the Democratic Republic of the Congo

(DRC) Global Environment Project, with the goal of improving and strengthening the country's hydro-meteorological and climate services. Understanding hydrometeorological and climate risks is important for assessing social and economic impacts and developing appropriate policy responses to support the country's long-term development. More accurate, relevant, and timely hydrometeorological information, warnings, and services could benefit a variety of DRC economic sectors, including airfreight and aviation.

The project has four components: (i) *Institutional and Regulatory Strengthening*, (ii) *Modernization of Equipment, Facilities and Infrastructure for Basic Observation and Forecasting for Basic Observation and Forecasting*, (iii) *Improvement of Hydromet Information Service Delivery*, and (iv) *Project Management*. The first component invests in the human and institutional resources required to implement and sustain hydromet observation and forecasting, including conducting an institutional diagnosis that includes a comparative review of the roles and mandates of the various government agencies involved, such as Regies des Voies Aeriennes S.A. (RVA) and the National Agency for Meteorology and Remote Sensing (MettleSat), to assist in identifying the main actions required to increase efficiency. The second component helps to reinforce and rebuild basic observation and forecasting networks as well as the infrastructure required for MettleSat service provision.

As of January 2023, 82% of the GEF Trust Fund (TF) had been disbursed, and 96% of the Disaster Reduction and Recovery (GFDRR) TF had been disbursed, for an overall disbursement of 88%. The GFDRR TF expired on 31 August 2020. Contracts have either been completed or are nearing completion. Concerning the first component, QMS certification is currently underway and is scheduled to be completed by 30 June 2023. The draft Meteorology Law is completed. Agreements for collaboration have been signed, and MettleSat is now providing meteorological data to 12 other national agencies. The second component includes the complete rehabilitation of three MettleSat buildings. The installation of level meters in two rivers is complete. The installation of hydromet equipment in 12 airports is complete, despite delays caused by internal governance issues at MettleSat and logistical constraints related to COVID-19. The installation of equipment has been completed in twelve locations (Bukavu, Goma, Kisangani, Bunai, Isiro, Kalemie, Kindu, Beni, Kinshasa, Gemena, Mbandaka, and Lisala). Personnel training is underway. An early warning system will be operationalized based on the installed equipment. Finally, the third component, a National Framework for Climate Services (NFCS), was finalized and established by Decree on 13 May 2022. Hazard bulletins are being prepared and distributed to user groups. The ongoing operation of an online platform will ensure that hazard data is widely available. Heat, wind, and precipitation bulletins are

currently prepared daily and distributed to relevant institutions. The preservation of historic climate data is complete.

The project's completion date was pushed back to 15 January 2023.

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DEMOCRATIC REPUBLIC OF CONGO DRC Transport and Connectivity Support Project (P161877)

On 23 June 2022, the World Bank approves a USD 500 million IDA Credit and IDA Grant for the Democratic Republic of Congo (DRC) Transport and Connectivity Support Project. The Project Development Objective (PDO) is to provide resilient and sustainable connectivity in and between selected provinces in the Kouaoukou region and the eastern part of the DRC, and to increase the transparency of FONER (the Road Maintenance Fund), RVA (the Airport Authority), and the Regulatory Authority of Post, Telecommunications, and ICT. The PDO will be achieved via the following components: (i) *Sectoral Governance for Improved Connectivity*, (ii) *Transport and Digital Connectivity Improvement Program*, and (iii) *Environment and Social Measures*.

The first component will aim to improve governance in the transportation, digital, and aviation sectors. Subcomponent 1.2 – *Technical Assistance to Aviation Sector Governance* will seek to improve the aviation sector's governance, climate resilience, and private financing attractiveness. It will finance the following activities: (i) external and independent financial, organizational, and technical audits of RVA and the implementation of a time-bound corrective action plan following these audits, (ii) organizational and technical audits of AAC (the Civil Aviation Authority), (iii) a climate vulnerability assessment for key airports in the project targeted areas and a prioritized work plan to address identified vulnerabilities, (iv) a short-term sustainable strategy for private sector participation in airport investments and the identification of opportunities for financially sustainable PPP in the aviation sector, and (v) technical assistance to AAC to reinforce their regulatory function to provide support for airport certification.

The second component will finance selected physical (road and air) and digital connectivity infrastructure. Subcomponent 2.2 – *Aviation Infrastructure Improvement* will mainly finance drainage development for Eastern DRC's urban settlements in response to existing and increasing flooding risks from climate change. In addition to the drainage network, this sub-component will also finance some safety works to

improve airport safety for its certification, including the remaining construction works of the new control tower at Goma Airport from the previous Goma Airport Safety Improvement Project (P153085).

As of October FY2022, the project is not yet operational. The effective deadline has been extended from 26 October to 31 December 2022.

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DEMOCRATIC REPUBLIC OF CONGO DRC Transport and Connectivity Support Project 2 (P178357)

A new transport project is currently in the pipeline. This second phase of the DRC Transport and Connectivity Support Project is still under identification in terms of scope. The development objective of this project is to establish safe and resilient connectivity between the Eastern and Kasai regions of DRC, and to strengthen the efficiency of the transport sector institutional arrangements.

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DEMOCRATIC REPUBLIC OF SAO TOME AND PRINCIPE Second COVID-19 Recovery and Resilience Development Policy Financing Project (P174274)

By the end of FY2021, an operation in Sao Tome and Principe (STP) was proposed as the second of three COVID-19 Human and Economic Response, Recovery, and Resilience Development Policy Financings (DPFs). The series' objective is to assist the Govern-

ment of STP (GoSTP) in responding to the human and economic repercussions of the COVID-19 pandemic, as well as to support economy-wide and sectoral reforms for a stronger and longer-lasting recovery. Following a first DPF focused on STP's response to the pandemic, this proposed USD 12 million second DPF supports both crisis response and key structural reforms that underpin inclusive growth and poverty reduction.

The GoSTP has taken steps to ensure the tourism industry's safe reopening, as well as opportunities in other promising sectors like high-value-added agricultural and fishing exports. To that end, the Ministry of Tourism, Culture, Industry, and Trade formed a public-private commission to create COVID-19 health and hygiene guidelines and protocols for tourism operators, which were formalized in the "clean and safe" seal. In addition, the program supports the Ministry of Infrastructure's Directive (no. 9/2021) to overhaul STP's National Civil Aviation Security Program (PNSAC). The Directive instructs relevant government agencies (INAC and ENASA) to revise the aviation security program to meet the European Union (EU) cargo export requirements. The policy reforms envisioned in the third Development Policy Operations (DPO3) trigger seek to, among other things, bring STP's security regulations in line with EU standards by defining the standards and security procedures (e.g., cargo screening) for operators to comply with, as well as the minimum auditing capacities and obligations of STP's aviation security oversight body.

The program covers airport security rules and procedures, as well as the National Civil Aviation Safety Training requirements. These define not only competencies but also the requirements that safety oversight auditors must meet and are subject to in order to carry out their responsibilities. The World Bank provides the government with technical assistance in revising these aviation security regulations.

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GUINEA-BISSAU

Rural Transport

Project (P161923)

On 1 July 2019, a USD 15 million IDA Credit was approved for the Guinea-Bissau Rural Transport Project (RTP). The Project Development Objective is to improve the physical access of the rural population to markets and social services in selected areas. The project has three components: (i) *Transport Infrastructure Improvement to Enhance Mobility in the Areas*, (ii) *Support to Transport Sector Institutions*, and (iii) *Operational Support*. The proposed project's im-

pact area is in the north of the country, in the regions of Cacheu and Oio. Under the RTP, a National Transport and Logistics Plan (road and urban transport, maritime and river transport, and air transport) is developed with the aim of guiding major investments and sectoral policies. It will provide an analysis of supply and demand for air transport in Guinea-Bissau, appraise the existing infrastructure and services, and propose an investment plan for the short-, medium-, and long-term horizons (2020, 2025, and 2030).

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KENYA

Kenya Infrastructure Finance/PPP

Project (121019)

The investment project financing includes an original IDA Credit of USD 40 million and Additional Financing of USD 50 million approved in July 2017 by the World Bank. The Project Development Objective is to increase private investment in Kenya's infrastructure market across sectors and to sustain this participation over time with support to three key development areas: (i) the enabling environment, (ii) the Public-Private Partnership (PPP) pipeline, and (iii) financing. The project has four components: (i) *Institutional Support and Regulatory Reform*, (ii) *PPP Pipeline Preparation*, (iii) *Improvements to Fiscal Commitment and Contingent Liability (FCCL) Risk Management Framework*, and (iv) *Support for Program Management*.

As part of the second component, the project is funding the development of a Kenya national aviation policy as well as a review of the proposed medium-term investment requirements at Jomo Kenyatta International Airport (JKIA). A national aviation policy is intended to maximize the benefits and align with Kenya Vision 2030, ICAO, AFCAC, and CASSOA objectives surrounding regional and global civil aviation systems.

To date, an initial set of findings related to Kenya's air transport institutional, legislative, and regulatory frameworks has been developed in consultation with relevant aviation stakeholders. Initial recommendations include revisions to the existing primary legislation in order to adapt the Civil Aviation Act to ICAO requirements to match Kenya's current and future operational framework and lay the groundwork for an effective financing scheme.

The outcome of the JKIA infrastructure assessment and validation of the investment plan for the period 2023–2050 suggest that construction of a second parallel runway at JKIA will be necessary by 2030 to accommodate forecasted aircraft movements, whereby private sector participation and blended finance solutions are likely to facilitate private capital mobili-

zation and optimization in the sequencing of terminal and airfield investments.

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MAURITIUS

Rodrigues Airport Project (P180266)

A new project is currently in the works, awaiting World Bank approval, to improve the island of Rodrigues' connectivity through the development of a new runway and the safety and efficiency of Plane Corail Airport's infrastructure. The project has two components: (i) *Infrastructure Development*, and (ii) *Technical Assistance*.

Component 1 will finance the works, equipment, and consultancy services for the construction of a new airport runway on the island of Rodrigues and its associated facilities, which consist of the design of a new 2,100-meter runway with connecting taxiways and an apron suitable for single-aisle jet planes. This will represent the bulk of the project cost, and its final cost will be confirmed upon the completion of the ongoing detailed design studies.



In addition to the new runway, this component will finance the strengthening of the existing runway, which will be used as a taxiway. It will also finance the construction of three new aircraft parking stands for single-aisle jet planes, including the two connecting taxiways, the construction of an isolated apron including the one taxiway, and the provision of floodlighting and ground power units for the apron. The component will also fund improvements to drainage and flood control towers as well as updates to air navigation systems (provision of AGL and control systems for the new runway as well as provision of NavAids for the new runway). It will also finance ancillary buildings and facilities for safe and efficient airport operations. Such facilities include a new rescue and firefighting station with all associated amenities, a new metro building, a quarantine building, a power center building, and cold storage.

The development of a new 2.1-kilometer runway will allow the operation of jet planes and is a key connectivity project for Rodrigues, which will cut travel costs and time, offer enhanced opportunities for cargo transport, and provide direct international routes to nearby countries (Reunion, Seychelles, Madagascar, etc.), as currently most flights to Rodrigues have to connect and/or transfer to ATRs on Mauritius island.

Component 2 will finance (i) necessary studies and technical assistance for the direct management of the project, such as the recruitment of a Project Implementation Unit, environmental and social studies, and audits, (ii) studies for the development and modernization of the air transport sector in Mauritius, and (iii) assistance to the implementation of key pillars of the Rodrigues Development Plan, such as in the water and agriculture sectors, among others.

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RWANDA

Great Lakes Trade Facilitation Project (P151083)

The Great Lakes Trade Facilitation Project (GLTFP) was approved by the World Bank on 25 September 2015 and became effective in Rwanda on 25 January 2016 following a USD 79 million IDA Credit. The Project Development Objective is to facilitate cross-border trade by increasing the capacity for commerce and reducing the costs faced by traders, especially small-scale and female traders, at targeted locations in the borderlands between Rwanda and the Democratic Republic of the Congo. The aviation component of the project includes the rehabilitation of priority facilities at Kamembe Airport, specifically:

- the purchase and installation of critical navigational aids such as GNSS designed to improve safety during approach and landing, as well as appropriate aeronautical ground lighting,

- purchase and installation of critical meteorological and communication systems, including an Aeronautical Message Handling System, an automatic weather station, and a Digital Aeronautical Information Management System,
- construction of an airport perimeter fence in accordance with ICAO standards, and
- installation of a CCTV security system throughout the airfield.

The goal is to connect the Eastern Democratic Republic of the Congo to the Great Lakes Region (GLR) and beyond via Rwanda's main gateway, Kigali International Airport.

As of FY2022, the bank team carried out three project implementation support missions during this ISR period, as follows: DRC (18 May–20 June 2022), Rwanda (23-27 May 2022), and Uganda (16 May–7 June 2022). Furthermore, the team visited project sites in the Democratic Republic of the Congo, Rwanda, and Uganda and held several technical discussions with each country's implementation entities. Overall, the project met critical milestones during the review period, with full credit disbursements to Rwanda and Uganda and 86% in the DRC. The project's implementation in Uganda was nearing completion by 30 June 2022, the project's revised closing date. The deadline was then extended by six months to 30 December 2022.

The project concluded in Rwanda on 30 June 2022, at which point all agreed-upon activities were implement-

ed and completed. These included the official launch of two border markets in Bugarama and Nyamasheke in March 2022, as well as the completion of all remaining civil works at Kamembe Airport in June 2022.

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TANZANIA Transport Integration Project (P165660)

On 24 May 2022, the World Bank approved a USD 550 million IDA Credit for Tanzania's Transport Integration Project. The Project Development Objective is to improve the safety, climate resilience, and capacity of key road corridors and regional airports, as well as the capacity of relevant transport sector institutions to plan for and manage the sector. The project consists of four components: (i) *Upgrading and Rehabilitation of Trunk and Regional Roads*, (ii) *Upgrading and Rehabilitation of Regional Airports*, (iii) *Institutional Support and Capacity Building in the Transport Sector*, and (iv) *Contingent Emergency Response*.

Out of the eleven airports identified for upgrading under the Transport Sector Support Project (TSSP), the second component will finance the rehabilitation and upgrading of three priority regional airports that are exposed and vulnerable to climate change impacts. The interventions include addressing asset damage caused by climatic events as well as improving climate resilience, energy efficiency, and airport safety. Airport



capacity will also be increased to meet projected demand in the medium to long term in climate-resilient airports that meet international safety standards. All eleven airports' designs and feasibility studies were completed, and the most feasible airports that could provide medium- to long-term climate-resilient services were chosen for upgrade. Lake Manyara, Iringa, and Tanga Airports are the three regional airports proposed for rehabilitation and upgrading, with the goal of meeting air traffic demands for a design life of 20 years to address potential demand from tourism and commerce activities.

The second component will also provide support for (i) air navigation facilities, (ii) meteorological facilities, (iii) construction supervision consultants, and (iv) land acquisition, resettlement and rehabilitation. The credit will finance the construction cost of climate resilient works, the deployment of energy efficiency measures, and construction supervision consultants, while government funds will cover the costs of land acquisition, resettlement, and rehabilitation.

Lake Manyara Airport: The airport is currently a Code 2B airport with no air traffic control tower (ATC) and is being upgraded to a Code 2C airport. The improvements will include resurfacing the gravel runway, taxiway, and apron, as well as the construction of a new passenger terminal building with a control tower and safety and security facilities. Aeronautical ground lighting, navigational aids, and communications and security equipment are among the proposed safety and security facilities.

Iringa Airport. The airport investment will complement the interventions on the Iringa-Msembe Road in stimulating the tourism industry in the Ruaha National Park and serving the agriculturally rich area. The airport meets Code 3C visual requirements but only meets Code 2C instrument requirements. T

he airport will be upgraded to full Code 3C status. Among the works will be (i) the rehabilitation and improvement of deteriorated tarmac runway, taxiway, and apron surfaces, (ii) the construction of the passenger terminal building, which will include a control tower, and (iii) improved safety and security facilities. The passenger terminal building, control tower, access roads, parking, and communications and security equipment will all be paid for by the project.

Tanga Airport. The airport has a code 3C designation and an asphalt runway surface that is in poor condition and poses a safety hazard. Among the works will be (i) the rehabilitation and improvement of the tarmac-surfaced runway, taxiway, and apron, (ii) the construction of the passenger terminal building, which will include a control tower, and (iii) improved safety and security facilities.

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MIDDLE EAST & NORTH AFRICA

Project Highlights



IRAQ

Iraq InfraSap for Connectivity (Transport, Digital Development & IPG) Project (P174852)

InfraSAP is a World Bank tool that includes a structured infrastructure diagnostic as well as a pragmatic action planning exercise. This InfraSAP's development objective was to assist the Iraqi government in developing a roadmap for developing green, resilient, inclusive, and integrated connectivity infrastructure (Transport and Digital Connectivity) through private sector partnerships that can catalyze growth, investments, and private sector job creation. In this light, the purpose of this InfraSAP was to assess the state of Iraq's infrastructure through three pillars: (i) connectivity, (ii) finance, and (iii) legal/governance. Each pillar concludes with a set of prioritized policy recommendations that will be incorporated into the InfraSAP roadmap.

By the end of the project, the InfraSAP had assessed the potential to use private capital and/or expertise to deliver on priority infrastructure investments and performance improvements in Iraq's transport and digital development sectors. The activity was launched against the backdrop of Iraq's strategic priority, Vision 2030, to create a diverse economy. The InfraSAP has identified three strategic, high-potential, high-impact areas to support Iraq's diversification: agriculture, trade, and tourism. Investments in transport and digital development infrastructure will have a catalytic effect on growth in these sectors and, when combined with the removal of binding constraints in each of the sectors, will support economic diversification through growth in the non-oil economy and harness job creation to maintain the country's middle-income status. This analysis yielded a set of short- and medium-term actions to address transport and digital connectivity challenges, as well as cross-cutting governance and financing issues. Some of the key recommendations are summarized in the roadmap below:

Phase I—Transitional Phase with the Interim Caretaker Government: This interim phase will focus on engaging the interim caretaker government on the report's main findings and recommendations, as well as assisting ministries in laying the groundwork for longer-term actions with the new government. As a result, engagement with the interim caretaker government can include:

- Disseminating and socializing the InfraSAP findings with key stakeholders (including the public sector, private sector, civil society, academia, investors, and donors).
- Identifying the priority "flagship" project pipeline.
- Creating project steering committees led by sector ministries and SOEs and comprised of Ministry of Planning and Ministry of Finance representatives to conduct feasibility studies and market soundings for priority flagship projects.

- Building the capacity of technical and administrative staff in the public sector through targeted courses and certifications in PPPs, project finance, project management, procurement, and contract negotiation.
- Finalization of the draft PPP law in collaboration with the Ministry of Planning.
- The creation of a business plan for the PPP Project Facilitation Fund (PFF).
- Drafting a broad fiscal commitment and contingent liability (FCCL) management framework with the Ministry of Finance's debt department, as well as training on the PPP Fiscal Risk Assessment Model to assess fiscal costs and risks associated with PPP projects.

Phase II—Implementation Phase (12–48 months): Following a formal InfraSAP launch event, the report recommends two layers of actions, the first involving the implementation of Phase 1 preparatory work and the second focusing on sector-specific recommendations.

Overarching Actions:

- Establish the counterpart focal point Delivery Unit (DU) under the most appropriate institution to formally launch and oversee the implementation of the InfraSAP recommendations in collaboration with, and with full ownership of, concerned sectoral ministries and SOEs.
- Implement the PFF in accordance with the business plan developed during Phase I to facilitate infrastructure investments that will assist Iraq in moving toward a more balanced and diverse growth path.

Sector and Cross-Cutting Actions:

Connectivity—Transport: The Ministry of Transport, the Ministry of Construction, Housing, Municipalities, and Public Works, as well as relevant agencies and SOEs, would lead sector-specific actions. The four critical actions on the critical path to improving transport sector performance in areas aligned with a diversified economic growth pathway are: (i) planning and prioritization, (ii) a cross-sectoral approach, (iii) leveraging ongoing investments, and (iv) governance reform.

Connectivity—Digital: The Ministry of Communications, the Communications and Media Commission, and relevant agencies and SOEs would lead the following specific actions in the digital infrastructure sector: (i) improving low-quality and insufficient broadband infrastructure, (ii) improving the enabling environment, (iii) laying the groundwork for a more sustainable sectoral structure and governance, and (iv) improving links to other economic activities.

Cross-cutting Actions—Governance: Cross-cutting governance actions would be led by the Ministries of Planning and Finance, with participation from the NIC as needed. Critical governance actions include (i) strengthening the PIM framework, (ii) establishing a framework for PPPs, and (iii) improving SOE efficiency.

Cross-cutting Actions—Funding and Financing: The MoF would lead cross-cutting funding and financing actions, with participation from the Central Bank of Iraq and the Securities Commission. Actions on the critical path to enabling more diverse economic growth include: (i) supporting infrastructure investors' access to foreign exchange lines, (ii) developing a debt management strategy to manage exposure to sovereign guarantees and other contingent liabilities while ensuring the affordability of guarantees taken on by the government, (iii) strengthening the Trade Bank of Iraq to develop more capital mobilization products and improve credit risk functions and capacity in local banks to equip them with the necessary skills to finance infrastructure projects, (iv) developing a strategic plan to develop local currency bond markets, (v) exploring Islamic finance products, including sukuk and asset recycling, and (vi) restructure, modernize, and capitalize select viable SOEs to improve their balance sheets and creditworthiness.

This activity was completed after extensive consultations with various governmental stakeholders, non-governmental organizations, and the private sector to ensure that all perspectives were heard and addressed. The next step is to share the document with Iraq's current government and focus on operationalization.

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EASTERN AND SOUTHERN AFRICA (DJIBOUTI) Emergency Locust Response Program (P173702)

The World Bank's Board of Directors approved the Emergency Locust Response Program (ELRP) on 20 May 2020, with commitment authority of up to USD 500 million in IDA Credit and IDA Grant. The Program Development Objective (PDO) is to respond to the threat posed by the locust outbreak and to strengthen systems for preparedness.

Beyond program management, ELRP has three technical components to achieve the PDO:

- **Surveillance and Control Measures.** Monitoring and controlling locust population growth and limiting swarm spread while mitigating the risks associated with control measures;
- **Livelihoods Protection and Rehabilitation.** Providing livelihood protection and rehabilitation to locust-affected households in order to prevent human capital and asset loss, ensure food security, and return them to productivity; and
- **Coordination and Early Warning Preparedness.** Increasing ex ante surveillance and control operations to assist national and regional early warning systems in preventing future locust outbreaks.

To date, Phase 1 of the ELRP has committed USD 207 million to Djibouti, Ethiopia, and Kenya, including the original grants and credits and additional financings to Ethiopia and Kenya. Phase 2 was approved on 29 June 2020, committing USD 115 million equivalent (plus one

additional financing) to Somalia. Phase 3 was approved on 8 June 2021, committing USD 50.7 million equivalent to South Sudan and USD 3 million equivalent to the Intergovernmental Authority on Development (IGAD). All grants and credits are effective.

The Food and Agricultural Organization of the United Nations (FAO) declared the desert locust upsurge to be over as of March 2022. ELRP contributed significantly to swarm surveillance by financing operations on over 10 million hectares of land and swarm control (ground and aerial) on over 530,000 hectares across Djibouti, Ethiopia, and Kenya.

Investments include training over 700 frontline staff on desert locust management and directly engaging over 40,000 community members in awareness-raising activities. ELRP has financed, inter alia, the purchase of over 24,000 pieces of personal protective equipment, ultra-low volume spraying equipment for backpack and vehicle-based control teams, the lease of six airplanes, the purchase of one spray plane and drones, and the lease of helicopters. Furthermore, ELRP has provided direct income support to 1.1 million vulnerable households and helped approximately 280,000 farmers and pastoralists resume production. Additional investments are being made in national and regional preparedness under Component 3.

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LATIN AMERICA & CARIBBEAN

Project Highlights



BOLIVIA

National Roads and Airport Infrastructure Project (P122007)

The World Bank approved a USD 109.5 million IDA Credit for the Bolivia National Roads and Airport Infrastructure Project in FY2011, which became effective in FY2012. The project was extended several times. On 25 July 2022, the Government of Bolivia (GoB) requested the most recent extension to complete the works under Components 1 and 2, allowing full achievement of the Project Development Objective (PDO), and to conclude critical pending safeguard activities related to the project's works components. The PDO is to improve (i) the San Buenaventura-Ixiamas Airport's year-round transit capability and (ii) the safety, security, and operational reliability of the Rurrenabaque Airport. The project has three components: (i) *Improving the San Buenaventura-Ixiamas National Road*, (ii) *Improving the Rurrenabaque Airport*, and (iii) *Institutional Strengthening of the Road Agency, Administradora Boliviana de Carreteras (ABC), the Airport Authority, Administracion de Aeropuertos y Servicios Auxiliares a la Navegacion Aerea (AASANA), and Other Relevant Entities*.

The second component was carried out by the airport agency AASANA until November 2021 and then by the Navegacion Aerea y Aeropuertos Bolivianos (NAABOL) following a restructuring in March 2022 that changed the implementing entity. The component's original scope called for the construction of a terminal building, a control tower, technical buildings, an access road, a taxiway, and an apron. The first phase of these works was completed in the first quarter of FY2022. In November 2019, the restructuring reallocated credit proceeds from Component 1 to Component 2 for the second phase of Component 2, which includes additional civil works and equipment

required for the airport's modern, safe, and efficient operation. However, the procurement process for the second phase began only in April 2022 because (i) the effectiveness of the first amendment to the Financing Agreement based on the 2019 restructuring was delayed until October 2021 due to delays in the amendment to the ABC and AASANA subsidiary agreements and (ii) the government of Bolivia dissolved AASANA and created a new agency, NAABOL, on 1 December 2021. Due to the two-year procurement pause, the project does not have enough time to complete the second phase of Component 2 by the closing date. As a result, NAABOL devised an execution plan and determined that all activities could be completed by the first quarter of FY2023. The second phase of civil works includes clearing seven hectares within airport grounds to ensure visibility of the runway from the control tower. Given their natural habitat, these are considered environmentally sensitive. As a result, the contractor will conduct an environmental assessment and prepare a mitigation plan subject to the Bank's approval. The environmental assessment and mitigation plan implementation are expected to be completed by early 2023, allowing the works to be completed within the new timeframe.

Component 3 aimed to support the institutional strengthening of ABC and AASANA, as well as Servicio Nacional de Areas Protegidas (SERNAP) and Autoridad de Bosques y Tierra (ABT), the agencies for protected areas and forest and land, respectively. The component also envisioned the formation and operation of a participatory working group for the project area's long-term development. The coordination with beneficiary entities under the component, which was to be fully funded by the GoB, is the responsibility of the Ministry of Development and Planning (MDP). According to the MDP, some institutional strengthening activities for ABC have been carried



out under other projects. Given the difficult dialogue and time required to complete this aspect properly, ABC collaborated with SERNAP, ABT, and other local institutions, and some activities that were originally planned to be implemented under Component 3 were incorporated into the supervision contract under Component 1 within the framework of the construction of the 22 bridges. These activities include the development and implementation of a fire and environmental quality monitoring system near the San Buenaventura - Ixiamas National Road in order to identify potential impacts caused by improved accessibility following bridge construction, such as new settlements, changes in land use, and an increase in illegal logging, hunting, and fishing activities. Aside from the activities included in Component 1, there are no activities to be implemented in Component 3.

The MDP requested that the closing date for Component 1 be extended until 2 August 2023, and the closing date for Component 2 be extended until 31 March 2023. This would be the fourth extension of the project's deadline. The following timeline was provided by ABC and NAABOL in support of the request:

- Component 1: completion of civil works in four lots by November 2022, with a six-month defect liability period until May 2023;
- Component 2: completion of civil works and equipment installation by November and December 2022, respectively.

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EASTERN CARRIBBEAN SUB-REGION

Regional Disaster Vulnerability Reduction Project (P117871)

In June 2011, the World Bank approved a USD 7 million PPCR Grant, a USD 3 million Strategic Climate Fund (SCF) Loan, and a USD 10.92 million IDA Credit totaling USD 20.9 million for an Eastern Caribbean Regional Disaster Vulnerability Project. The Project Development Objective seeks to reduce vulnerability to natural hazards and the effects of climate change in the Eastern Caribbean Subregion (Grenada and Saint Vincent and the Grenadines (SVG)). The project has four components: (i) *Prevention and Adaptation Investments*, (ii) *Regional Platforms for Hazard and Risk Evaluation, and Applications for Improved Decision Making*, (iii) *Natural Disaster Response Investments*, and (iv) *Project Management and Implementation Support*.

The second component contributes to the develop-

ment of regional capacity for natural risk assessment and the integration of such assessments into policy and decision-making processes for the development of investments, disaster risk mitigation, and disaster response across sectors by providing technical advisory services, training, and the acquisition of goods. This is accomplished by (1) facilitating regional collaboration, including knowledge sharing and learning processes, in order to develop and apply construction standards and methods for critical public infrastructure and urban flood mitigation, as well as to strengthen regional collaboration for urban and flood risk reduction, reducing the risk of regional interconnectivity, and (2) carrying out related supporting studies, such as improving the international airport to maintain an adequate emergency response capacity while complying with international operational standards.

The third component will finance emergency recovery and reconstruction subprojects in accordance with an agreed-upon action plan of activities designed to implement the recipient's rapid response to an emergency. This component will fund expenditures on critical imports as well as the reconstruction/rehabilitation of damaged infrastructure (including air transport equipment).

During the project's life cycle, there were six restructurings. The first restructuring, which took place on 31 May 2013, was designed to allow Grenada to finance the Caribbean Catastrophe Risk Insurance Facility (CCRIF) insurance premium coverage from 1 June 2013 to 30 May 2015. The second restructuring, which took place on 10 August 2015, was to extend the premium payments for CCRIF coverage in Grenada for an additional year. The third restructuring occurred on 8 February 2017, as a result of the activation of the Pest Management safeguards policy, which allowed for incidental pesticide use under the project. The fourth restructuring, which occurred on 10 December 2018, extended the project's closing date by 24 months, from 31 December 2018 to 31 December 2020, to allow for the completion of activities. Due to implementation delays caused by the COVID-19 pandemic, the fifth restructuring on 3 December 2020 extended the new closing date by six months to 30 June 2021, and the sixth restructuring moves the closing date of SVG's IDA Credit (USD 10.92 million) and IDA Credit (USD 35.6 million) forward by seven months to 31 January 2022, allowing for the completion of activities that were delayed due to the eruption of La Soufriere volcano on 9 April 2021. The project's Grenada portion ended 30 on June 2021.

By FY2022, key project outcomes include increased resilience and response capacity at Grenada's Maurice Bishop International Airport (MBIA), as well as

measurable reductions in risk to regional transportation and connectivity during and after disaster impacts. This improved Grenada's ability to receive emergency supplies during a crisis and allowed the airport to serve as a backup airport for Trinidad and Tobago, Barbados, and Saint Vincent and the Grenadines. MBIA investments under the Regional Disaster Vulnerability Reduction Program (RDVRP) also helped the airport meet ICAO standards for increased safety and reduced vulnerability. The project was able to achieve nearly all of its objectives at the national and regional levels, with strong country-level indicators weighting the overall efficacy rating.

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GRENADA

Caribbean Regional Air Transport Connectivity Project (P172951)

The World Bank approved the Grenada Caribbean Regional Air Transport Connectivity Project with a USD 17 million IDA Credit on 28 May 2020. The Project Development Objective is to (i) improve air transportation operational safety and navigation efficiency, (ii) improve Maurice Bishop International Airport's (MBIA) climate and disaster resilience, and (iii) strengthen Grenada's capacity in civil aviation and airport management. The project has four components: (i) *Operational Safety and Resilience Enhancement*, (ii) *Technical Assistance and Capacity Building*, (iii) *Project Management*, and (iv) *Contingent Emergency Response*.

The first component would improve MBIA's operational safety and resilience while also assisting Grenada in meeting ICAO Standards and Recommended Practices (SARPs) and adhering to the Port of Spain Declaration. The second component aims to strengthen the Grenada Airports Authority (GAA) and the Civil Aviation Division's institutional capacity through a combination of regional and Grenada-specific technical assistance and capacity-building activities aimed at improving aircraft operational safety, air transport sector regulator oversight, airport management capability, climate/disaster resilience, and gender diversity in the workplace. The third component involves staffing for key functions in-



cluding overall project coordination, technical specialists, social and environmental safeguards, procurement and financial management, and annual audits performed by an independent auditing firm. The fourth component aims to respond immediately to an eligibility emergency. The Ministry of Infrastructure and Physical Development, Public Utilities, Civil Aviation, and Transportation is in charge of the project, which was formed by the merger of the Ministry of Infrastructure Development, Public Utilities, Energy, Transportation, and Implementation (MOIID) and the lineage agency Ministry of Tourism and Civil Aviation (MOTCA). There is close collaboration on technical aspects with the GAA, which is in charge of MBIA.

As of December 2022, implementation progress is being made, albeit slowly. The procurement process for priority activities, such as an air navigation expert to assist in the procurement and installation of equipment under Component 1, a consulting firm to design and supervise the construction of a resilient air cargo facility, and a consulting firm to design and supervise the construction of Runway End Safety Areas (RESAs) under Component 1, has begun. A COVID-19 response strategy has also been initiated recently.

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HAITI

Caribbean Regional Air Transport Connectivity Project (P170907)

The World Bank approved a USD 84 million IDA Grant for the Haiti Caribbean Regional Air Transport Connectivity Project on 28 May 2020. The Project Development Objective is to (i) improve air transport operational safety and navigation efficiency, and (ii) increase the climate and disaster resilience of associated infrastructure at Haiti's international airports. The project has four components: (i) *Port-au-Prince's Toussaint Louverture Airport (PAP) and Cap-Haitien International Airport (CAP) operational safety and navigation efficiency investments*, (ii) *PAP and CAP airfield drainage system improvements*, (iii) *Institutional strengthening and project management*, and (iv) *Contingent Emergency Response*.

The first component would support infrastructure and equipment in Haiti's two international airports in order to improve aircraft operating conditions in accordance with international safety standards as specified by the ICAO SARPs and the National Office of Civil Aviation (OFNAC) (Annex 6), as well as to improve navigation/taxiing efficiency in order to better accommodate existing traffic volumes and air traffic surges associated with post-disaster relief flights. As a result, it intends to (i) rehabilitate the CAP runway, (ii) expand PAP taxiway and aircraft parking, (iii) build ICAO-required runway end safety areas for both PAP runway ends, (iv) build a CAP air traffic control tower, as well as replace and in-

stall communication and surveillance technology, and (v) implement ADS-B for PAP and CAP.

The investments in the second component aim to reduce the risk of airfield flooding caused by the annual rainy season, hurricanes, and climate change at PAP and CAP by increasing drainage capacity and thus improving climate/disaster resilience. Through a combination of Technical Assistance (TA) activities and training, the third component aims to strengthen the institutional capacity of the Ministry of Public Works, Transportation and Communication, National Airport Authority (NAA), and OFNAC to manage, operate, and oversee airport operations and development. It also seeks to provide technical assistance (TA) to assess the capabilities, needs, and opportunities for the use of Unmanned Aircraft Systems (UAS) in Haiti in order to define the associated legal framework, to assist the Haitian government in identifying and developing potential logistic and supply chains, and to finance project implementation support. Concerning institutional capacity, the emphasis would be on improving (i) aircraft operational safety and associated air transport sector regulatory oversight, (ii) aircraft management, operations, and maintenance quality, and (iii) climate/disaster resilience and gender diversity in the aviation sector.

As of FY2022, the contract with the Maître d'Ouvrage (AMO) was signed on 2 December which will pave the way for the launching of the ABDS procurement. Consultancy services with FARC on institutional strengthening is ongoing, with Phase 1 and 2 completed on the diagnostic and road map, while Phase 3 and 4 are to be completed in FY2024. The consultant for the diagnostic analysis and recommendations related to the participation and promotion of women in the airport sector in Haiti has been hired and this consultancy is under implementation. The technical assistance for the development of Unmanned Aircraft Systems (UAS), was finalized and the final workshop was delivered in July 2022. The World Bank is conducting a follow-up activity on this that focuses on the use of drone for DRM and will conclude in June 2023. Finally, recruitment of additional PIU staff is delayed due to country context but will resume in January 2023, but it is not impacting implementation of ongoing activities.

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SAINT LUCIA

Caribbean Regional Air Transport Connectivity Project (P170860)

The World Bank approved a USD 45 million IDA Credit for the Saint Lucia Caribbean Regional Air Transport Connectivity Project on 28 May 2020. The Project Development Objective is to (i) improve air transport operational safety and navigation deficiencies, and (ii) en-

hance the resilience of Saint Lucia's airport infrastructure to natural disasters. The project has five components: (i) *Improvement of UVF Runway Safety and Resilience*, (ii) *Modernization of Air Navigation Systems*, (iii) *Institutional Strengthening*, (iv) *Project Management*, and (v) *Contingent Emergency Response*.

The first component aims to improve the operational safety and flood disaster resilience of Saint Lucia's UVF (International Air Transport Association Three-Letter Code for Hewanorra International Airport) runway, as well as support Saint Lucia's efforts to meet ICAO SARPs through a series of priority civil works and related activities. Runway rehabilitation, upgrading, marking, and Light Emitting Diode (LED) lighting system installation, paved stopways and Runway End Safety Areas (RESAs) construction, airfield drainage and flood protection improvements, and Crash Fire Rescue improvements are all part of the civil works. Technical assistance would be provided for activities related to corresponding design and supervision, environmental and social safeguards, and works under the first component. The second component aims to improve air traffic safety and efficiency by modernizing air navigation systems through (i) acquiring Instrument Landing System (ILS) and automatic dependent surveillance-broadcast (ADS-B) equipment, such as one or more ground stations, a receiver antenna, air traffic control tower monitors, and onboard transmitters for Saint Lucia-based aircraft, and (ii) providing technical assistance.

Through a combination of regional and Saint Lucia-specific technical assistance activities, the third component aims to strengthen the government's institutional capacity for managing, developing, operating, and overseeing their airports and air transport operations. These activities include (i) a review and gap analysis of airport institutional and operational management, (ii) capacity building in air traffic control and airport management, including resilience to natural disasters and climate change, as well as air traffic safety and security oversight, (iii) the promotion of opportunities for female professionals through a gap analysis, a recruitment action plan, and specialized training for potential female professionals on airport operation and management, such as air traffic control, as well as professional development for existing female staff, (iv) the preparation of a medium-term recovery strategy from the COVID-19 crisis, and (v) an assessment on the use of unmanned aircraft systems.

As of December 2022, the project's implementation pace had increased, with key action items completed successfully. This includes: (i) the Project Implementation Unit is fully staffed, (ii) the Design and Supervision of Runway Procurement is nearing completion (contract expected to be signed by November), (iii) the Airport Rescue and Firefighting Facility Design Study is complete, (iv) the COVID-19 Study is ongoing, (v) the Capacity Needs Assessment is procured, and (vi) the procurement of a check consultant is at the RFP stage. The mission agreed to improve the communication of

implementation of project activities through social media and other platforms.

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SINT MAARTEN Sint Maarten Airport Terminal Reconstruction Project (P167974)

The World Bank originally approved a USD 72 million bank-administered Sint Maarten Hurricane Irma Reconstruction, Recovery, and Resilience Trust Fund (TF) Grant for the Sint Maarten Airport Terminal Reconstruction Project on 18 September 2019. The Project Development Objective (PDO) is to restore Princess Juliana International Airport's passenger capacity to pre-Hurricane Irma levels while improving resilience against future hurricanes. The project will contribute to the Princess Juliana International Airport (PJIA) reconstruction program by restoring passenger terminal function with improved disaster resilience and airport safety. The program includes the reconstruction of the passenger terminal as well as the air traffic control tower, firefighter facilities, fuel farm relocation, and runway rehabilitation. The project will focus on the terminal reconstruction, which is the most critical and largest work, as requested by the Sint Maarten government (GoSM), while maintaining the existing building structure.

The project has four components: (i) *Reconstruction of the PJIA Terminal Facilities*, (ii) *Capacity Building of and Project Management by PJIAE*, (iii) *Capacity Building of and Project Management by the Government of Sint Maarten*, and (iv) *Support of PJIAE Operations*. The first component will assist in the reconstruction of the PJIA terminal facilities in order to restore airport function and improve hurricane resilience through termi-

nal facility restoration and equipment reinstallation (passenger boarding bridges, entrance doors, dry walls, furniture/counters, electrical and IT systems, baggage handling systems, security installations, and firefighter facilities). The second component will cover, among other things, the operating costs associated with meeting the Bank's environmental, social, and fiduciary requirements. This component will also finance capacity-building activities such as resilience and air traffic safety management, based on a need assessment during implementation. The third component will support GoSM capacity building activities such as airport management and governance, while the fourth component will support Princess Juliana International Airport Operating Company N.V. (PJIAE) operations by financing Select PJIAE Operating Expenditures, allowing PJIAE to continue PJIA operations uninterrupted during the construction period.

Additional financing of USD 20 million was approved for the Sint Maarten Airport Terminal Reconstruction Project under P177416 in December 2021 to cover cost overruns not anticipated during appraisal. The proposed additional financing was required to complete the original project activities, particularly the reconstruction of the terminal facilities, and to meet the PDO's goal of restoring PJIA passenger capacity to pre-Hurricane Irma levels with improved hurricane resilience. The funding for the parent project was based on high-level cost estimates completed in 2018, when the design was not fully completed. The current total cost of the project is USD 149 million, funded by a USD 92 million bank-administered TF Grant, a USD 50 million European Investment Bank (EIB) Loan, and USD 7 million in counterpart funds. A total of USD 126 million is allocated for the reconstruction works under the first component.

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EUROPE & CENTRAL ASIA

Project Highlights



KYRGYZ REPUBLIC

Central Asia Regional Links Program - Phase 3 (P159220)

In October 2018, the World Bank approved a USD 27.5 million IDA Grant and a USD 27.5 million Credit for the Central Asia Regional Asia Regional Links Program - Phase 3 (CARs-3). The Project Development Objective is to improve regional connectivity and long-term tourism development in Issyk-Kul Oblast. The project has three components: (i) *Regional Connection, Associated Facilities and Equipment*, (ii) *Aviation Safety and Service Provision*, and (iii) *Sustainable Tourism Development*. The project's second component assists the Civil Aviation Agency (CAA) in meeting ICAO's international safety standards and recommended practices, as well as overcoming the EU's current blacklist of Kyrgyz carriers, enhancing local carriers' growth opportunities, and ultimately increasing the country's level of connectivity, benefiting both local residents and international visitors.

Between 6-10 June 2022, a World Bank team conducted an implementation support mission for the Third Phase of the Central Asia Regional Links Program (CARs-3). In addition, the safeguards team visited the project site on 12-14 June 2022. The mission met with the Minister of Transport and Deputy Ministers of the Ministry of Transport and Communications



(MOTC), as well as officials from the State Agency of Civil Aviation, the Kyrgyz Aviation Institute (KAI), the Tourism Department under the Ministry of Culture, Information, Sports, and Youth Policy, Manas International Airport, and the state enterprise Kyrgyzaeronaviatsia.

The mission's main goals were to review the overall project implementation progress as well as the status of project activities under Components 1, 2, and 3. The aim was also to review (i) financial management and disbursements, (ii) procurement packages for all three components, (iii) pending activities from previous missions' next steps and agreed actions, (iv) compliance with environmental and social safeguards, (v) monitoring and evaluation of the Results Framework indicators, and (vi) an updated plan to expedite project implementation.

The following key milestones have been met: (i) civil works contracts have been signed, (ii) terms of reference for the second component have been drafted, with various procurement procedures in the works, and (iii) activities under the sustainable tourism development component are progressing well. The team was updated on the new structure of the Kyrgyz Department of Civil Aviation (CAD), which is responsible for regulatory oversight and direct supervision of Air Navigation Service Provider (ANSP) and airport operations, in the second component. According to the team, the CAD's priority should be to improve regulatory oversight with the goal of removing the country from the EU Safety List.

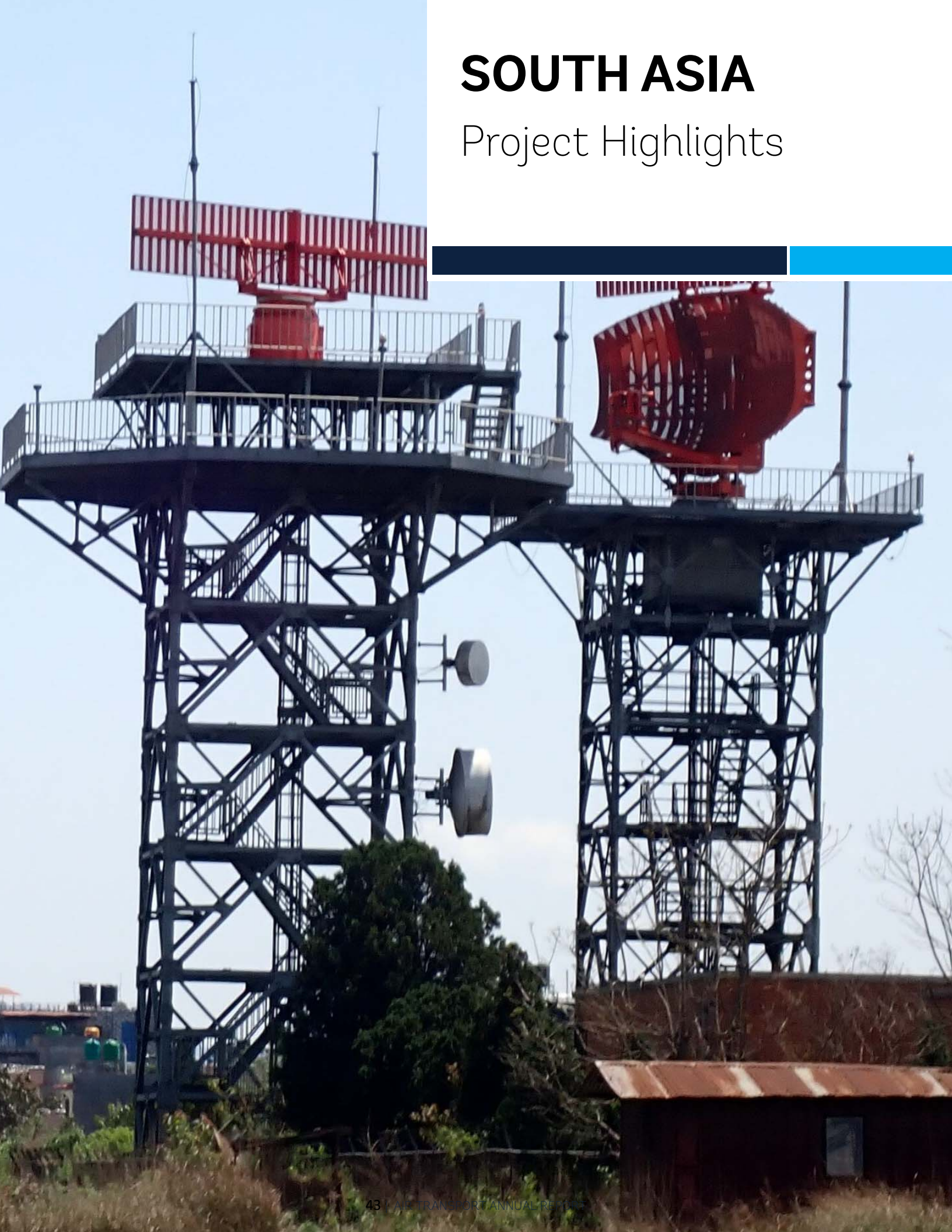
The mission also had a very productive discussion with KAI, which included a review of the repair/renovation works for KAI's facilities and equipment that are slated for financing through the project. The team visited KAI and received updates on educational programs and infrastructure conditions, as well as discussed the need for quality improvement and institutional capacity building. Overall, stakeholders agreed that project activities related to safety, particularly institutional reviews, state safety programs, and the drafting of aviation rules, are necessary and in line with government goals to facilitate the development of the country's air transport sector.

As of FY2022, a key activity under Component 2 is the review of the State Safety Program. This activity's consulting services were expected to be on board by 31 August 2022. The contract for Consulting Services for Tourism Satellite Accounts Development and Pilot Application under Component 3 was expected to be signed by the end of September 2022.

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SOUTH ASIA

Project Highlights



PAKISTAN Hydromet and DRM Services Project (P163924)

The World Bank approved a USD 188 million IDA Grant to the government of Pakistan in May 2018 for the Hydro-Meteorological and Disaster Risk Management Services (DRM) Project (PHDSP), with the development objective of strengthening Pakistan's public sector delivery of reliable and timely hydro-meteorological and disaster risk management services. One of the primary objectives is to provide aviation meteorological services, as the Pakistan Civil Aviation Authority requires improved and more automated hydromet services, including forecasts for flight operations.

The project has three main components. Component 1 – *Hydro-meteorological and Climate Services* includes four sub-components: (i) *Institutional Strengthening and Capacity Building*, (ii) *Modernization of the Observation Infrastructure, Data Management, and Forecasting Systems*, (iii) *Enhancing Pakistan Meteorological Department (PMD) Service Delivery and Building Partnerships with the Private Sector*, and (iv) *Project Management, Systems Integration, and Monitoring and Implementation Support of PMD*. Component 2 – *DRM* consists of three sub-components: (i) *Legal Policy and Institutional*

Strengthening, (ii) *Infrastructure for Resilience*, and (iii) *Project Management, Monitoring, and Implementation Support of National Disaster Management Authority (NDMA)*. Component 3 – *Contingent Emergency Response Component (CERC)* will support preparedness for a rapid response to climate and natural disasters, emergencies, and/or catastrophic events as needed.

As of FY2022, project completion had been significantly delayed. In light of the unprecedented monsoon rainfall and subsequent flooding, the Pakistani government requested that the CERC be activated to assist flood-affected populations. The restructuring was scheduled for mid-November 2022.

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EAST ASIA & PACIFIC

Project Highlights



PACIFIC ISLANDS

Pacific Aviation Safety Office Reform Project (P145057)

The Bank approved a USD 2.15 million IDA Grant for the Pacific Aviation Safety Reform (PASO) project in FY2014, as well as USD 0.95 million in Additional Funding (AF) in FY2017 and USD 3.55 million in AF2 in FY2018. The Project Development Objective (PDO) has been revised in order to strengthen the Pacific Aviation Safety Office, which provides regional aviation safety and security oversight as well as technical and advisory services to Pacific Island countries. There are four components to the project: (i) *Transitional Management and Support*, (ii) *Establishment of a Pool of Regional Aviation Inspectors*, (iii) *Quality Management*, and (iv) *Supporting Regional Aviation Infrastructure*.

As of FY2022, the project completed its third restructuring on 31 December 2021, in order to extend its closing date to 31 December 2022. The last mission was held between PASO representatives and the World Bank between 14-16 November 2022, to jointly review the Pacific Aviation Safety Office (PASO) Reform Project's implementation progress. The objectives of the mission were to (i) review the project implementation status and assess the achievement of the project development objectives before its closing date of 31 December 2022, (ii) discuss the PASO-prepared project's Implementation Completion Report (ICR), and (iii) discuss potential for future collaboration between PASO and the World Bank beyond the current project. Since the restructuring, project implementation has improved. The last two contracts were signed on 1 July 2022, and all contracts have now been completed. The mission found that the focus in the final quarter of project implementation had been on training for staff, inspectors, Civil Aviation Authority officials, and directors. PASO personnel also traveled on strategic engagement trips, such as to Montreal for the ICAO Assembly, which launched the Pacific Regional Aviation Strategy. The Project Completion Workshop with the Member States was successfully held on 30 November 2020, in Port Vila. By the project closing date, all PDO indicators have been achieved. The project disbursement rate was 98.4%. The Recipient's ICR has been submitted to the World Bank.

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SAMOA

Samoa Aviation and Roads Investment Project (SARIP) (P176272)

On 1 June 2022, the World Bank approved the Samoa Aviation and Roads Investment Project (SARIP) with a USD 66 million IDA Grant. The Project Development

Objective is to improve the climate resilience and safety of the Recipient's aviation and road sectors, as well as to respond quickly and effectively to an Eligible Crisis or Emergency. The project has four components: (i) *Climate Resilience and Safety Investment in the Aviation Sector*, (ii) *Climate Resilience and Safety Investments in the Road Sector*, (iii) *Strengthening the Enabling Environment*, and (iv) *Contingent Emergency Response (CERC)*.

The World Bank prepared a series of aviation activities under the three transport projects in the Pacific to effectively address the most common regional challenges, such as operational safety and resilience to natural disasters that limit regional air transport connectivity. These activities, collectively called the Safety of Aviation for Regional Resilience (SOARR), aim at enhancing the resilience, safety, and asset management of airport infrastructure in the region. It is critical to ensure aviation safety through these activities, particularly when international flights resume after many aircraft have been grounded and airports have not been fully operational during the COVID-19 pandemic (Subcomponent 1.3 below).



The first component, which will be implemented by the Samoa Airport Authority (SAA), will help finance investments in Samoa to improve climate resilience and aviation safety and comprises three sub-components:

- Sub-component 1.1 - *Technical Assistance*: including support for a site-level flooding resilience strategy and drainage master plan, updating key planning documents such as the masterplan and Business Strategy and the Samoa Aviation Sector Strategy to ensure resilient aviation sector investment and management.
- Sub-component 1.2 - *Physical Investments and Equipment*: including the supply and installation of new navigation systems and an Automatic Weather Station (AWS), airport infrastructure upgrades, and improvements to improve Faleolo International Airport's resilience to climate-related hazards and/or events.
- Sub-component 1.3 - *Regional Airport Maintenance*

nance Program: A Regional Airport Asset Maintenance contract will assist in improving the sustainability and resilience of airport assets through a five-year performance-based contract to maintain critical mechanical and electrical assets whose failure would compromise safety or disrupt airport operations. The multi-year, performance-based maintenance contract also aims to protect infrastructure and operational assets from extreme weather and climate events, establishing a preventative maintenance culture for the aviation sector in order to improve climate resilience and the sustainability of airport operations. The same activity has been included in the Second Solomon Islands Roads and Aviation Project (P176548) and the Tonga Climate Resilient Transport Project II (P176208), and represents Samoa's participation in SOARR.

The project became effective on 4 October 2022. SAA has commenced the procurement process for the positions vital for project implementation as well as the preparatory work on other critical project components such as the Regional Airport Maintenance Program.

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SOLOMON ISLANDS Solomon Islands Roads and Aviation Project (P166622)

In March 2019, the Solomon Islands Roads and Aviation Project (SIRAP) received a USD 30.5 million equivalent IDA Credit and a USD 20.5 million equivalent

IDA Grant to be supplemented by a USD 3.6 million counterpart funding contribution from the Solomon Islands Government (SIG). The Project Development Objective (PDO) is to improve operational safety and oversight of air transport and associated infrastructure, strengthen the sustainability and climate resilience of the Project Roads, and in the event of an Eligible Crisis or Emergency, to provide an immediate response to the Eligible Crisis or Emergency. The PDO is to be achieved through the following five components: (i) *Honiara and Munda Airports Infrastructure Investments*, (ii) *Malaita Road Improvement and Maintenance Program*, (iii) *Institutional Strengthening*, (iv) *Project Implementation Support*, and (v) *Contingent Emergency Response*.

In terms of aviation, the project is implemented by the Ministry of Communication and Aviation (MCA) and is assisting Honiara and Munda Airports Infrastructure Investments in (i) improving operational safety and overall infrastructure resilience to climate change at Honiara, allowing Munda Airport to receive international flights with enhanced resilience to climate change and natural disasters, and (ii) surveying, removing, and clearing unexploded ordnance from the Second World War at both airports. Furthermore, the project finances institutional strengthening in the aviation sector through: (i) training needs analysis, (ii) airport operational training, (iii) airport regulatory training, (iv) the development of a strategic plan for the Solomon Airlines' long-term viability (that is, airline strategy review), (v) airport master planning studies for both Honiara and Munda Airports, (vi) the development of an aviation sector strategy, (vii) technical assistance to the Solomon Islands Civil Aviation Authority (CAASI) to improve safety and security oversight, and (viii) technical assistance to



the Solomon Islands Airport Corporation Limited (SIACL) to improve airport management and operation capabilities.

SIRAP is in its fourth year of the six-year implementation period. The key achievements in relation to infrastructure investments include the completion of (i) the concept design for a new terminal building at Munda Airport in October 2019, (ii) the air traffic control tower renovation works at Honiara Airport in March 2020, with the upgraded tower being operational since July 2020, (iii) the detailed design for the runway, taxiway, and apron resurfacing at Munda Airport in September 2020, and that for the runway resurfacing and airfield ground lighting at Honiara Airport in January 2021, (iv) the clearance of unexploded ordnance at the project sites in October 2020, (v) the installation of automatic dependence surveillance-broadcast (ADS-B) ground stations at Honiara and Munda Airports in May 2021, and (vi) the runway emergency works at Honiara Airport in September 2022. In addition, progress has been made on (i) the design and construction of the new terminal building at Munda Airport, with the detailed design completed in December 2021 and the works underway, (ii) the runway, taxiway, and apron resurfacing at Munda Airport, with the contract signed in December 2021 and the works underway, (iii) the very small aperture terminal (VSAT) communications system, with the installation at Honiara Airport completed and that at Munda Airport underway, and (iv) automatic dependent surveillance-broadcast (ADS-B) equipage for aircraft on the Solomon Islands registry. Further, the investments at Honiara Airport, including (i) runway resurfacing and airfield ground lighting, (ii) design and construction of a rescue fire service vehicle station, (iii) installation of an automatic weather observation station, and (iv) provision of standby generators, have been transferred to the Second Solomon Islands Roads and Aviation Project (SIRAP2, P176548), which was approved on 1 June 2022, and became effective on 23 June 2022.

The key achievements in institutional strengthening include the completion of (i) the Solomon Airlines strategy review in October 2019, (ii) the Honiara and Munda Airports master plans in March 2020, (iii) the Aviation Sector Strategy in October 2020, and (iv) the Solomon Airlines Strategic Options Analysis in May 2021. The Strategic Options Analysis led to the ongoing Solomon Airlines Strategic Planning Workshops under SIRAP to develop its Strategic Plan over 2022–2024. In addition, a training needs assessment will be undertaken for MCA, CAASI, SIACL, and Solomon Airlines and be used to develop an agreed-upon training plan for each entity.

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SOLOMON ISLANDS Second Solomon Islands Roads and Aviation Project (P176548)

On 1 June 2022, the World Bank approved the Second Solomon Islands Roads and Aviation Project (SIRAP2), with a USD 67.69 million IDA Credit and a USD 21.52 million IDA Grant. The Project Development Objective is to improve the climate resilience and safety of the Solomon Islands' road and aviation sectors and, in the event of an Eligible Crisis or Emergency, respond promptly and effectively to it. The project has four components: (i) *Climate Resilience and Safety Investments in the Aviation Sector*, (ii) *Climate Resilience and Safety Investments in the Road Sector*, (iii) *Institutional Strengthening and Project Management*, and (iv) *Contingent Emergency Response*.

The first component, which will be implemented by the Ministry of Communication and Aviation (MCA), will support investments to improve the climate resilience and safety of identified aviation infrastructure, facilities, and equipment. Subcomponent 1.1 – *Honiara Airport Infrastructure Investments* will finance the cost overruns and financial gaps of the ongoing Solomon Islands Roads and Aviation Project (SIRAP, P166622), including: (i) the overlay of the existing asphalt paved runway, including the installation of airfield ground lighting, precision approach path indicators (PAPIs), and simple approach lighting, (ii) the design and construction of a rescue fire service vehicle station, (iii) the installation of an automatic weather observation station, and (iv) the provision of backup generators at Honiara Airport. It will also finance the design and construction of an air traffic control (ATC) tower, the construction of a new aviation complex building, the provision of crash alarms, the supply and replacement of perimeter fencing, and the provision of equipment support at the airport.

Subcomponent 1.2 – *Munda Airport Infrastructure Investments* will finance the design and construction of an ATC tower, the construction of car parking, and the provision of crash alarms at Munda airport. Subcomponent 1.3 – *Santa Cruz Airfield Infrastructure Investments* will finance drainage improvements, the construction of seawalls and base courses, and the sealing of grass/gravel runway, taxiway, and apron at Santa Cruz Airfield. Subcomponent 1.4 – *Modernization of Air Navigation Systems* will invest in the following in Makira-Ulawa and Temotu Provinces: (i) supply and installation of automatic dependent surveillance-broadcast (ADS-B) ground stations, (ii) supply and installation of very small aperture terminal (VSAT) communications systems, and (iii) provision of an alternative energy source to support ADS-B

and VSAT operations. Subcomponent 1.5 – *Regional Airport Maintenance* will finance a five-year performance-based maintenance contract to maintain critical mechanical and electrical assets at Honiara and Munda Airports, the failure of which would jeopardize safety or disrupt operations at the international airports. This subcomponent represents the Solomon Islands' involvement in Safety of Aviation for Regional Resilience (SOARR), which aims at enhancing resilience, safety, and asset management of airport infrastructure in the region.

In addition, Subcomponent 3.1 – *Technical Assistance* aims to strengthen MCA's capabilities in aviation planning and climate resilience at airports. It will finance, among other things, (i) a consulting service for the design and supervision of building and civil works under Subcomponents 1.1, 1.2, and 1.3 and Component 2, (ii) the development of a national airports development plan, and (iii) technical assistance and training to MCA and Solomon Airlines to improve aviation safety and security.

SIRAP1 became effective on 23 June 2022. The project is making steady progress with the ongoing evaluation of (i) the bids for the Honiara Airport runway resurfacing and airfield ground lighting and (ii) the proposals for the design and supervision consultancy for building and civil works.

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TONGA

Climate Resilient Transport Project (P161539)

The World Bank approved a USD 26 million IDA Grant for the Tonga Climate Resilient Transport Project (TCRTP) in November 2018. The Project Development Objective (PDO) is to improve Tonga's transport sector's climate resilience and provide an immediate response in the event of an Eligible Crisis or Emergency. The following are the PDO indicators used to assess the PDO's success: (i) identified available climate resilience planning tools, (ii) identified climate resilient investments in the aviation and maritime sectors that have been constructed/rehabilitated and are in use, (iii) implemented identified enabling environment solutions, (iv) the length of roads built or renovated with climate resilience measures, and (v) established and implemented climate resilient routine maintenance contracts.

The project's second component contributes to the rehabilitation of aviation infrastructure: *Climate Resilient Infrastructure Solutions*. The project funds feasibility studies, design, and physical works on identified aviation assets to improve their resilience to climate-

related hazards and/or events, as well as undertaking urgent resurfacing of the runway and apron at Ha'apai's Salote Pilolevu Airport, including reconstruction of pavement layers at localized soft spots, subsoil drainage as needed, and full line marking. The design of the Ha'apai airport runway was prepared, and the contractor was awarded. However, the COVID-19 pandemic has had a significant impact on the project, as has the volcano eruption in January 2022. The Ha'apai runway construction was originally scheduled to begin in 2022, but the contractor and the supervision engineer currently plan to mobilize for the civil works at the end of the rainy season around May 2023.

The third component of the project is the strengthening of the enabling environment, which includes the engagement of a technical advisor on aviation. The advisor is mobilized to support (i) an urgent safety audit and (ii) implementation support for both TCRTP and TCRTP II.

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TONGA

Climate Resilient Transport Project II Project (P176208)

The World Bank approved a USD 38 million IDA Grant for a second Tonga Climate Resilient Project in December 2021. The Project Development Objective is to improve the climate resilience and safety of Tonga's transport sector, as well as to respond promptly and effectively in the event of an Eligible Crisis or Emergency. The project has four components: (i) *Capacity Building on Transport Planning and Policies*, (ii) *Climate Resilient and Safe Infrastructure Solutions*, (iii) *Project Management*, and (iv) *Contingency Emergency Response*. In order to improve climate resilience and safety, the second component includes feasibility studies, detailed design, and civil works.

Tonga has six airports, two of which serve both domestic and international flights, and the remaining four only serve domestic flights. Tonga Airports Limited operates and manages all airports in the country. The Civil Aviation Department, which reports to the Ministry of Infrastructure, is in charge of civil aviation safety and security. Real Tonga Limited, the domestic service provider, ceased operations in May 2020 due to COVID-19 pandemic concerns. In September 2020, the Government of Tonga (GoT) granted an air operator's certificate to a new airline, Lulutai Airlines, which began domestic flight operations. The GoT owns and operates the airline entirely. Through the 2011-2019 Tonga Aviation Investment Project

(TAIP), the World Bank was involved in the completed improvement of Lupepau'u International Airport (Vava'u) and Fua'amotu International Airport (Tongatapu), as well as the upcoming resurfacing of the runway at Salote Pilolevu Airport in Ha'apai through the Tonga Climate Resilient Transport Project (TCRTP). Airport infrastructure has been rehabilitated and upgraded over the last decade, but improvements in airport safety and resilience are still required. TCRTP II aims to improve the safety and resilience of Tonga's transportation infrastructure.

Component 2c of the project includes the following aviation sector activities: (i) regional airport asset maintenance to improve safety and climate resilience of airport operation at international airports in Tongatapu and Vava'u through a multi-year performance-based contract to maintain critical mechanical and electrical assets, (ii) acquisition of safety equipment and facilities such as rescue fire trucks and bird strike risk mitigation equipment for international airports, (iii) detailed design and resurfacing of the runway at the Kaufana Airport in 'Eua, and (iv) acquisition of safety equipment and facilities such as rescue fire trucks, construction of a storage facility, and provision of ancillary equipment and goods at the domestic airport.

The January 2022 volcanic eruption and tsunami, combined with the February 2022 COVID-19 lockdown, have slowed progress of the project implementation. 'Eua Airport design and supervision consultants are being procured. The technical specifications of the Regional Airport Asset Maintenance Program (RAAMP) are under preparation.

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TUVALU Pacific Aviation Investment Project (P128940)

The Tuvalu Aviation Investment Project (TvAIP), which is part of the Pacific Aviation Investment Program (PAIP), was approved on 13 December 2011 and became effective on 20 March 2012. The original approved funding was USD 12.02 million, with IDA funding of USD 11.85 million and Pacific Regional Infrastructure Facility (PRIF) funding of USD 0.17 million. The project received four Additional Financings (AFs): in 2013, 2016, 2017, and 2021, additional IDA Grants of USD 6.06 million, USD 2.88 million, USD 8.75 million, and USD 6 million were provided, respectively, and the total approved funding for the project is now at USD 35.7 million. The Project Development Objective is to improve the safety and security of air transport and associated infrastructure. The

project has three components: (i) *Aviation Infrastructure Investments*, (ii) *Aviation Sector Reform and Training*, and (iii) *Strengthening Airport Operations*.

The following are the objectives of the four AFs:

- The first AF in 2013 was to scale up the ongoing TvAIP to support the resurfacing of roads leading to Funafuti Airport and the construction of a water cistern beneath the new terminal.
- The second AF in 2016 was to close a funding gap in the project and extend the deadlines for all funding sources.
- The third AF in 2017 was to find the best solution to repair the damage caused by water pressure beneath the resurfaced runway and to finance: (i) associated supervision costs of remediation works, (ii) Tuvalu's participation in ICAO, (iii) activities related to Gender-Based Violence and Violence against Children Occupation Health, and (iv) Safety and Environmental Social Management Plan monitoring tools and training for civil works contracts.
- The fourth AF in 2021 was to address the cost overruns associated with runway rehabilitation works at Funafuti Airport.

The original closing date of the project was 31 December 2016, which has been extended following each additional financing and is now 15 June 2023. The last extension of the project is seen as necessary for the Government of Tuvalu (GoTv) to have resources for preparing a new World Bank-funded project that will provide sufficient funds for the proposed rehabilitation works of the Funafuti Airport runway. A majority of the project activities had been completed by 2019, and the activities that remain to be completed are: (i) the rehabilitation works of the Funafuti Airport runway and its associated activities—the Project Management and Supervision Engineer consultancy services—and (ii) the Airport Certification, for which the consultant recruitment process has been agreed to start after the contract for the runway rehabilitation has been awarded.

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IBRD/IDA: AIR TRANSPORT ADVISORY



BOTSWANA

Air Botswana Privatization Viability Analysis Project (P180478)

A new project is in the works to assist the Government of Botswana in its efforts to privatize Air Botswana by conducting an initial assessment of Public Private Partnership (PPP) and Private Sector Participation (options), and due diligence through:

- (i) Deep-dive analysis of Air Botswana. This will involve preparation of a high-level business report by evaluating its financial and commercial viability and determining if the airline represents a fiscal risk to the government; operational profitability analysis of the carrier in the context of the current and expected future realities of the airline industry and other local market conditions in Botswana and surrounding region, and fiscal exposure of the airline, debt composition, contingent liabilities, arrears, foreign currency exposure and any other element of financial risk.
- (ii) Benchmarking analysis of Air Botswana with other State-owned airlines that have been privatized.
- (iii) Preparation of a Private Sector Participation

roadmap to improve performance and value creation in the air transport sector. The roadmap will include analysis on the merits and demerits of a number of potential transactions with private sector participation, including Strategic Equity Investor options for Air Botswana.

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BRAZIL

Brazil Infrastructure Policy Assessment (P174544)

The Brazil Infrastructure Policy Assessment's development objective was to formulate innovative and thought-provoking policy advice to stimulate air transport infrastructure and increase competition in Brazil while supporting the country's COVID-19 recovery process and promoting long-term sustainable and equitable growth. The report presented high-level research on Brazil's air transport sector, with a particular focus on recent policies and the identification of future actions for policy setting. Through background research on recently enacted policy reforms and a general view of the sector, the document pro-

vides a preliminary understanding of the sector, its potential, and the main issues identified by industry stakeholders.

The ASA contained the following assessments related to the sector's performance in recent years:

- Identification of the main critical issues regarding the sector's institutional framework and potential conflicts of interest.
- Assessment of Brazil's alignment with international safety standards (ICAO USOAP compliance levels).
- Existing environmental remediation plans by ANAC and INFRAERO.
- Assessment of existing air transport infrastructure, description of public and private airport networks.
- Market assessment, including:
 - Regional outlook
 - Recent evolution, development of air connectivity, and competition trends
 - Analysis of the country's largest airports and airlines.
 - Assessment of private sector involvement, with a focus on concessioned airports.
 - Major projects or programs ongoing or planned in the sector.
 - Indicative investment needs in the sector.
 - Recent policy developments.
 - Analysis of the main issues identified by

airlines and the Government of Brazil.

By the project's end date, a synthesis report provided a brief summary of the analytical work done to investigate areas that have a significant impact on the performance and sustainability of the infrastructure sector but are frequently overlooked in conventional analyses. The results of the assessment have been combined to form the following core policy recommendations to stimulate long-term economic growth in Brazil:

- (i) To stimulate the economy, reorient fiscal policy, and increase public infrastructure investments.
- (ii) Establish a set of strategic investment and policy priorities to reduce costs while increasing productivity and global competitiveness.
- (iii) Create and implement a comprehensive infrastructure governance strategy that focuses on building technical capacity at the subnational level in order to increase private participation.

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CENTRAL ASIA

CA Infrastructure Governance Assessments (P177090)

The objective of this project is to improve infrastructure governance in selected Central Asian countries



through analytical work, recommendations, and technical advice. Using the GGP's InfraGov framework, assessments in Uzbekistan, the Kyrgyz Republic, and Tajikistan are currently underway. The primary goal of these assessments is to identify the main governance bottlenecks impeding the quality, cost efficiency, and sustainability of infrastructure service provision in each of the countries. These assessments also "deep-dive" into one to two sectors per country in order to gain further clarity on sector-specific bottlenecks and provide actionable recommendations.

In Tajikistan, the aviation sector has been chosen as the "deep-dive" sector. Preliminary analysis and the initial fact-finding mission have identified tremendous potential in the aviation sector in Tajikistan, but more work is needed to ensure competition. Currently, the country is struggling under a closed air transport policy. As a result, the whole economy is being deprived of the benefits of better connectivity, such as trade, travel, and technology transfer, and aviation infrastructure is not receiving the financing or maintenance required for efficient service delivery. The final report will expand on these initial findings, develop targeted recommendations, and identify areas that require additional research and funding.

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DECARBONIZING AVIATION THROUGH THE SCALE-UP OF SUSTAINABLE FUELS (P180229)

A new project for Advisory Services & Analytics (ASA) work on Decarbonizing Aviation Through the Scale-up of Sustainable Fuels is currently in the works, awaiting appraisal and approval by the World Bank. The Project Development Objective of this ASA is to identify business and development opportunities in select client countries from the production and rapid scale-up of sustainable aviation fuels.

Building on a recently completed Bank report titled "The Role of Sustainable Aviation Fuels in Decarbonizing Air Transport," this Advisory Services and Analytics (ASA) activity explores opportunities for World Bank Group (WBG) client countries in the sphere of air transport decarbonization. It will have the following four main components:

Component 1: Country and Regional Deep-dives

This component aims at identifying business and development opportunities from the production and rapid scale-up of SAF in select client countries. Working with ambitious governments and private sector organizations, the team will identify specific opportunities to scale up SAF through public and private solutions to

have a direct positive impact on local economies as well as an indirect impact on global greenhouse gas emissions.

Component 2: Support to the International Civil Aviation Organization (ICAO)

This sub-activity will support ICAO's efforts to implement the recently adopted "Long-Term Global Aspirational Goal (LTAG)" for international aviation of net-zero carbon emissions to align aviation to the Paris goals.

Component 3: Outreach and Partnership Building

This activity will deepen existing partnerships with development partners, the private sector, and academia to strengthen the WBG's role as a thought and financial leader in clean air transportation. This will involve two main activities: Global Knowledge curation and synthesis, and collaboration with the Federal Aviation Administration.

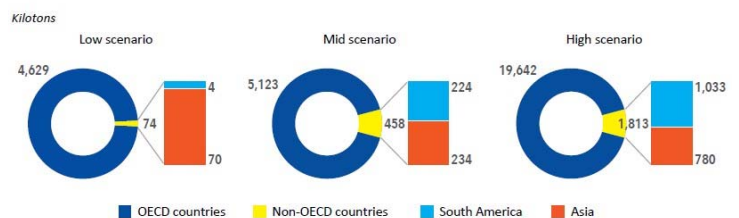
Component 4: Bridging the Gap in Availability of Financing Sources for SAF Development

This component assesses existing funding mechanisms (IFIs, GEF, IPA, etc.) as well as exploring the use of innovative financial solutions, including private sector participation, for implementing sustainable aviation fuels and other policies identified to decarbonize the sector.

The ASA is led by the Transport Global Practice's (GP) global unit (ITRKG), which aims to collaborate internally with relevant colleagues from the Transport GP's regional units, the Energy Transport GP, the Agriculture GP, the Climate Change Group, the Environment, Natural Resources, and Blue Economy GP, and the International Finance Corporation (IFC). Externally, the team will collaborate with existing and new partnerships with aviation stakeholders from the public sector, private sector, and civil society.

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Figure 3.3. SAF Production in 2025, by Scenario, OECD and Non-OECD Countries



Source: Original figure produced for this publication.

LATIN AMERICA

Support for Remotely Piloted Aircrafts (Drones) Projects and Operations in Haiti, Guatemala and Brazil (P176634)

The GIF is assisting the World Bank in funding a PricewaterhouseCoopers (PwC) consultancy to develop innovative pilot activities for Remotely Piloted Aircrafts (RPAs) usable in the LAC region, with a focus on three main pilot countries: Haiti, Guatemala, and Brazil, owing to their respective governments' interest in exploring this innovative initiative and their potential to benefit from future sector initiatives. The project will include a brief examination of successful existing examples, such as the African Drone Forum (Lake Kivu Challenge) organized by the World Bank Transport GP as part of the Unlocking Drones for Development Project (P171737), previous drone applications in LAC, and the Zipline project experience in Rwanda and Ghana.

The review's goal is to identify key drivers and market fundamentals for commercial operations, as well as opportunities, regulatory frameworks, market players, and barriers to developing drone applications in the Latin American context. Although some countries are investigating the use of drones to deliver medicine and goods, operations are still rare. The primary objective is for the World Bank to learn about a developing sector and provide potential future operational support by including drone subcomponents in future implementation in the region, as well as to create a Regional Forum and Challenge in the same way that one was established in Africa. The World Bank team is currently working with consultants to define pilot projects in the three countries.

PwC was chosen to carry out this work through a competitive and open tender process that is divided into the following phases:

- Phase I: the Latin American and Caribbean Regional (LCR) drone ecosystem, international experiences and best practices, and future planning - analyzing the current LCR drone ecosystem and establishing benchmarks based on global best practices.
- Phase II: Drone Operations in LCR - business model analysis and assessment of market potential value and size in LCR.
- Phase III: Pilot Project Proposals and Report - a strategic roadmap with recommendations for changes/evolution of drone initiatives, drone regulation, and drone-related processes for each proposed country.

The following were included in the original scope of work:

- International experiences and future thinking: an evaluation of successful and commercially viable international drone operations, identification of key factors, and potential adaptation to the LAC context.
- Understanding potential market players.
- Understanding the regulatory requirements for launching a commercial drone operation, minimum

security and infrastructure requirements, required elements to unlock commercial drone operations in the region, and an assessment of minimal required regulations and existing applicable regulations in Guatemala, Brazil (primarily in the State of Tocantins), and Haiti.

- Business models: determining the most advantageous and commercially appealing business models (such as concessions) for developing viable drone operations in the LAC context, particularly in pilot countries.
- Preliminary assessment of potential investment requirements at the prefeasibility stage.
- Government involvement: an evaluation of the government's involvement in the project (for the pilot countries).
- Citizen engagement: business models for potential project implementation should consider incorporating a citizen engagement angle, such as technology development, fabrication of drones or components, pilot training, and maintenance of necessary infrastructure and drones.
- Contribute to the development of pilot drone initiatives by the governments of Guatemala, Tocantins, and Haiti by funding preliminary activities associated with the implementation of pilots that can be replicated across the continent. This could include regulatory sandboxes and novel approaches to procuring drone equipment or services, resulting in the incorporation of emerging technologies into their toolkit.

The project now includes the following additional scope of work:

- Quality assurance entails verifying, analyzing, and providing comments and recommendations to the Tocantins government on the technical deliverables of the pilot project.
- Specifying the exact data parameters and hardware requirements.
- Analyzing the scalability of the results and making recommendations for future large-scale drone projects.
- Analyzing and recommending resources needed by the Tocantins government to implement the technology (e.g., human, software, IR infrastructure, etc.).
- Summary of lessons learned from the preparatory and procurement phases
- Analyzing the applicability of the drone technology for all selected scenarios.
- Defining the next steps and the high-level implementation roadmap.

PwC has already delivered and presented Phase I and II reports, which include World Bank comments as of FY2022, and Phase III is currently being implemented and will be finished in January 2023. In order to begin implementing the pilots in both countries, PwC met with the governments of Guatemala and Haiti and conducted additional research on country-specific issues. In Guatemala, the team met with the Ministry of Health, which

expressed interest in promoting commercial drone operations to overcome logistical and road infrastructure barriers to the supply of priority goods such as medical supplies and other health facilities. PPIAF provided support to develop UAV regulations in Haiti during FY2023, and PWC will be conducting the work until June 2023 with the focus on understanding the potential use of drones for meeting climate-specific objectives (e.g., resilience and Disaster Risk Management).

PwC met with local government institutions in the state of Tocantins for several months to determine the scope of the pilot activity, which was included as part of the Tocantins Integrated Sustainable Regional Development Project (PDRIS), which was funded by the World Bank and ran until the end of December 2021. It was agreed that the pilot would support three Tocantins government agencies (Naturatins, SEAGRO, and SEMARH) and would focus on environmental protection, deforestation monitoring, and wildfire prevention also assisted the State of Tocantins in pilot planning, identifying the right technological provider, and assisting the local government in justifying the hiring of a local drone company (Xmrobots) to gather and process drone data, testing different technologies to allow for a deeper analysis for future deployment and scalability.

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NEPAL

Provincial and Local Roads Improvement Program (P171839)

The World Bank Group (WBG) has agreed to provide advisory support services to Nepal's aviation sector based on the WBG's extensive experience supporting similar processes in other countries, as well as expertise and knowledge of best practices worldwide. The project is grant-funded by the Australian Government's Department of Foreign Affairs and Trade and is intended to assist the Government of Nepal (GoN) in enhancing the safety of the air transportation sector, the efficiency of its airport system, and improving strategic planning related to major airport infrastructure investments. Overall, the support is intended to assist the GoN in developing appropriate policy, regulatory, and institutional frameworks to economically, sustainably, and safely meet the increasing long-term demand for domestic, regional, and international air connectivity and support the post-pandemic recovery of the aviation sector.

Concerns about aviation safety oversight in Nepal prompted the EU to include all Nepali airlines on its air safety list in December 2013. Over the last 10 years, the GoN has implemented many changes to improve aviation safety, resulting in an increase in ICAO

USOAP scores from 47.0% in 2009 to 66.8% in 2017. However, Nepali airlines remain on the EU's air safety list given ongoing concerns about some aspects of Nepal's aviation safety performance. As a result, WBG intends to assess GoN's aviation safety practices and improvement plans in order to further improve aviation safety performance, including addressing any outstanding ICAO standards deficiencies and EU concerns.

One of the ASA's essential focuses will be to provide an independent expert assessment of Nepal's civil aviation safety performance and improvement plans to the Civil Aviation Authority of Nepal (CAAN) and the Ministry of Culture, Tourism, and Civil Aviation (MoCTCA). This will be accomplished through a process of gap analysis, the identification and evaluation of potential solutions, and the development of an action plan. The evaluation will begin broadly but will gradually narrow in on identified key gaps and the most promising solutions, highlighting the following challenges and opportunities:

- The inclusion of Nepali airlines on the EU's air safety list, including the reasons for inclusion and potential solutions.
- Any remaining safety concerns from the ICAO USOAP audit process.
- Any ongoing safety deficiencies related to the probable causes of past accidents in Nepal, with a focus on STOL and helicopter operations.
- Any unimplemented safety recommendations of past accident investigation commissions.
- Any other critical gaps (not identified through the above objectives) between Nepal's aviation safety practices and standard approved procedures.
- Instilling a strong safety culture in Nepal's aviation industry.
- Any new or emerging issues that may have a negative impact on Nepal's future aviation safety performance.
- New or emerging technologies, systems, or best practices that would improve Nepalese aviation safety.

Furthermore, the professional assessment will look for ways to improve critical ongoing and planned aviation safety improvement activities, such as the implementation of safety management systems (SMS) in key elements of the aviation system.

Beyond aviation safety, the other priority for the ASA in 2022 is support for enhancing the efficiency of Nepal's airport system. The support involved assessing three representative airports to understand airport-specific and system-wide improvement opportunities, including evaluating one major international airport (Tribhuvan International Airport, TIA or KTM), one medium-size hub airport (Biratnagar, BIR), and one small airport (Simikot, IMK).

A deeper assessment of KTM was conducted given



that it is the most important aviation asset in Nepal and its performance is critical to the health of the entire system. The assessment included developing an EBITDA-level financial model, conducting performance benchmarking vs. similar airports (operational/financial; aeronautical charges; jet fuel pricing), and assessing improvement opportunities including infrastructure, technologies, policies, and business/operating models. The support resulted in the identification of priority actions to improve the performance of KTM and the entire airport system.

Beyond 2022, the ASA will also, but not exclusively, include:

- Review Nepal's current model for subsidizing essential air services and assist in developing a tailored air service subsidy model better suited to Nepal,
- evaluate Nepal's current approach to prioritizing major airport capacity investments and assist in the development of a tailored investment prioritization framework based on an assessment of industry best practices, including considerations for private sector participation, and
- prepare a strategy for improving air transport services in Nepal, including assessing opportunities for new routes and low-cost airlines and improving the operating environment for domestic and foreign carriers.

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SINT MAARTEN

Support to the Sint Maarten Airport Corporate Governance Task Force (P171480)

The World Bank recently completed an evaluation of Princess Juliana International Airport's corporate governance. The assessment was prepared at the request of the Sint Maarten Recovery, Reconstruction, and Resilience Trust Fund's Steering Committee. The report was made available to the Steering Committee, and a summary of the assessment's recommendations was presented to the government.

In response, the government authorized the formation of a task force to implement the assessment's recommendations. The task's ultimate objective was to enhance corporate governance at the airport and its holding company. This task was a follow-up to the Princess Juliana International Airport's (PJIA) corporate governance assessment, which was completed in February 2019. That assessment was prepared at the request of the Steering Committee of the Sint Maarten Recovery, Reconstruction, and Resilience Trust Fund and is a requirement for the NL agreement to allocate Trust Fund financing to the airport's reconstruction, which will have a significant impact on Sint Maarten's development.

The World Bank Assessment for 2019 examined corporate governance policies and practices in airport operating and holding companies and made several recommendations.

The assessment made three key recommendations:

- Drafting a "CG Implementation Plan" to implement the report's recommendations, such as strengthening the role, composition, and documentation of the supervisory board(s), upgrading control functions, and increasing transparency and information disclosure.
- Removing the holding company's oversight of the airport operating company's corporate governance.
- Upgrading the ownership structures of all government-owned companies in Sint Maarten.

The task force's mandate included two deliverables: (i) creating a corporate governance improvement plan for the holding company and (ii) creating a corporate governance improvement plan for the operating company. This was later combined into a single implementation strategy. The task force was made up of four local experts (lawyers and consultants) and two PJIAE representatives. The task force's members were recruited in August/September of 2019.

The task's specific goals were met. The task contributed to the Task Force's work, which was considered and, in some cases, incorporated. The task provided periodic updates to the CMU, responded to National Recovery Program Bureau requests, and responded to questions from the Prime Minister's office. Two key deliverables were drafted and presented to the COM by the task force:

- (i) A "Protocol" for all government-owned businesses in Sint Maarten—a set of policies and principles outlining how the government should exercise its ownership rights (including over the airport companies). The WB report had three major differences. The Protocol maintained the airport's holding company structure based on a government decision not to change the structure of the current airport companies, it supported the status quo of the key

institutions designed to improve SOE governance (specifically, the corporate governance council), and it proposed the formation of a third airport company, PJAA (designed to own the assets of the company).

- (ii) A draft CG implementation plan that was subjected to multiple rounds of WB feedback. The Protocol's key elements were incorporated into the plan.

The task's ultimate goal, to raise the airport's corporate governance to a higher level, reduce perceived political interference, and clarify roles and responsibilities, is still in the works. Schiphol Airport is not "twinning" with the airport operating company to help with airport reconstruction but has lent staff (including a CFO) to the airport. These included improved financial oversight and key internal control functions.

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SOUTH AFRICA

COVID-19 and Air Transport: Analyzing Policy and Operational Responses for Quicker Economic Recovery in Selected Southern African Countries (P176752)

The objective of this Advisory Services and Analytics (ASA) project was to assess the current and anticipated needs of the aviation sector in Namibia, Botswana, and South Africa, as well as to explore various strategies and policies that would ultimately guide the World Bank Group's policy position and potential operational responses.

By the deadline, the ASA had accomplished its goal of exploring policy and operational strategies to rebuild a safe and competitive transport sector in selected Southern African countries in the aftermath of the COVID-19 crisis. It specifically examined the sector's status in Botswana, Eswatini, Lesotho, Namibia, and South Africa. It focused on the region's state-owned airlines and proposed reform options and policy directions for airlines to re-build an air transport sector that meets international, regional, and local demands.

The region's main policy responses to the crisis and legacy problems in the air transport sector are phased in two steps: (i) Immediate policy actions for air travel recovery and (ii) a menu of short- to medium-term actions for a competitive and safe air transport sector. The three main immediate policy directions for faster air travel are: facilitating airline market access, establishing a common travel and cross-border control for tourism restart, and providing direct financial aid.



SOUTH AFRICA TRADE AND CONNECTIVITY PROJECT (P164847)

On 27 April 2021, the World Bank approved a Southern Africa Trade and Connectivity Project with a USD 75 million IDA Credit and a USD 305 million IDA Grant. The Project Development Objective is to support Malawi and Mozambique in increasing regional trade coordination, reducing trade costs and time, developing regional value chains, and improving access to infrastructure. The project has four components: (i) *Reduce Trade Costs*, (ii) *Strengthen Regional Coordination and Project Implementation*, (iii) *Strengthen Value Chains for Regional Integration*, and (iv) *Strengthen Transport Infrastructure to Improve Market Access*.

Subcomponent 1.3 – *Strengthening Trade and Connectivity Institutional Capacity* will help transport ministries in both countries, and the Public Private Partnership Commission (PPPC) in Malawi, to improve institutional capacity and strategies for the better development of the transport, connectivity, and logistics sectors. In Malawi, technical assistance will be provided to the Ministry of Transport and Public Works (MoTPW) to, among other things, support the implementation of the National Transport Master Plan by updating the roadmap for implementation, identifying and developing priority projects, which includes determining investment needs, building capacity, and finalizing the institutional mechanisms for governance. This support will be provided through technical assistance, consultancies, training, and the purchase of required equipment and software.

The project will also support the Ministry of Transport (MTC) in (i) crafting a national logistics strategy that provides a holistic national view for logistics and transport development, (ii) preparation of ports master plan, (iii) development of civil aviation master plan, and (iv) capacity building, including through a technical advisor and an assessment, update, and roadmap of the current Strategy for the Integrated Development of Transport Systems.

Component 2 will help implement improved transport, transit, logistics, and immigration procedures. Activities will support the harmonization of key transport-related policies, laws, regulations, and standards across borders in line with the Tripartite Transport & Transit Facilitation Program (TTTFP), 2017. The project will support operational improvements in logistics systems, faster turnaround time and destination, increased automation of borders, and increased transit visibility through cargo tracking. Streamlined immigration procedures that encourage trade and tourism will also be implemented.

A World Bank team conducted a second implementation support mission for the SATCP from 1-19 August 2022. The mission conducted technical meetings, reviewed fiduciary aspects, environmental and social

The following eight strategic directions are covered by the menu of short- to medium-term policy responses:

1. Development of industrial policy for air transport
2. Promotion of private sector solutions
3. Liberalization of market access
4. Liberalization of foreign ownership and control
5. Provision of essential/lifeline connectivity
6. Restructuring of state-owned carriers and routes
7. Facilitation of market consolidation
8. Improvement of safety standards and oversight capacity

This ASA collected a significant amount of data and analysis, which will be useful input for future similar engagements. These are easily linked to ongoing State-Owned Enterprise (SOE) reform interventions and upcoming CPF consultations in the region.

The World Bank team has identified two potential follow-up interventions thus far:

1. Botswana: During a recent mission, the World Bank team discussed and agreed with government officials to conduct a closer examination into Air Botswana's performance in order to provide options for the airline's future operational and ownership structure. It is necessary to conduct an objective and fundamental assessment of Air Botswana's viability based on realistic assumptions. This will have to be done with the Ministry of Transport's approval and guidance.
2. Lesotho: During a recent mission, a World Bank team identified serious safety deficiencies at Maseru Airport (MSU) and proposed the following interventions:
 - (i) Engineering cost estimate for runway, taxiways, apron, and lighting system repairs;
 - (ii) Technical evaluation of the cost of ATC infrastructure improvements and repairs, as well as the RFFS staff's capacity improvement needs and operational procedures; and
 - (iii) Financial consulting to analyze MSU operations in terms of revenues and expenses, followed by discussions about MSU corporatization.
3. The team is considering additional engagements in South Africa, Namibia, and Eswatini, as well as targeted dissemination activities in all countries.

Overall, the analytical outputs of this ASA are being used to explore operational opportunities with colleagues in Africa and clients. The work has also served as a foundation for providing technical advice to counterparts in Mozambique and the Seychelles, as well as other clients outside Africa, in their efforts to mitigate the pandemic's devastating impact on their aviation industry.

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safeguards progress, and revised and updated the existing implementation plans and timelines. The mission also found that the project advanced on key activities in both countries, including joint regional activities.

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TAJIKISTAN

Support to Tajikistan Aviation Sector Modernization (P179839)

The World Bank is supporting the transport sector of the Republic of Tajikistan by building capacity and providing other resources to enable the implementation of its transport sector development strategy, of which civil aviation is a key component. As articulated in the strategy, the main priorities of the government for the aviation sector include the development of the sector for economic growth, increasing competitiveness, and improving quality of life to transform the landlocked geographic feature of the country into a competitive advantage.

The strategy recognizes that implementing these priorities requires reforms in the aviation sector, both for safety and liberalization. In preparation for achieving this objective, certain actions, systems, and infrastructure are going to be needed as part of an overall roadmap for reaching the strategic goals for the sector. Therefore, this ASA will support the Government of Tajikistan in developing a detailed Market/Traffic Development Roadmap to meaningfully go to open skies by 2026 and specifying, together with a cost-benefit analysis, the necessary actions related to:

- Legal Regulatory and Institutional Reforms
- Systems Transformation
- Physical Infrastructure Improvements

For each of the above three areas, the ASA outputs will include, but not be limited to, a detailed description and assessment of the extant situation, the endpoint needed to be reached for open skies in 2026, and a detailed time-bound step-by-step roadmap for getting there, always keeping in the line of sight the climate implications of each action.

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UNLOCKING DRONES FOR DEVELOPMENT

(P171737)

The Unlocking Drones for Development Project aims to unlock the lower skies for mobility and digital service in African markets by (i) creating a platform for knowledge exchange, networking, and partnership around African

market needs and opportunities, (ii) summarizing lessons learned, and (iii) operationalizing best practices to support the phased development of at-scale drone services in Africa.

In Rwanda in 2020, the African Drone Forum (ADF, formerly the Lake Viktoria Challenge) facilitated a first-of-its-kind event in Africa, attracting over 1000 registered participants from 53 countries, including more than 60 regulators from 26 African countries. The ADF 2020 program comprised a series of activities leading up to and following the main event to create the right enabling environment, including addressing regulatory and infrastructure needs:

- (i) Lake Kivu Challenge flying competitions, which brought the ten best-suited electric vertical take-off and landing (e-VTOL) drone services from seven countries to Karongi, Rwanda, to compete across three real-world use cases for the African market: Laboratory Sample Pick-up, Emergency Package Delivery, and Find and Assess through Rural Asset Mapping.
- (ii) A regulators summit was held in conjunction with an industry symposium and expo to kick off a regional dialogue among neighboring nations on safe analogous UAS rule sets, facilitated by the World Economic Forum.
- (iii) A symposium and expo with more than 1000 participants and over 100 speakers covering a wide range of topics across the broader ADF themes of regulations, technology, logistics, and connected skies.
- (iv) A business challenge to highlight African entrepreneurs that have identified new and innovative commercial use cases for drone applications with high potential for local impact.

Building on the momentum, partnerships, and knowledge generated by the 2020 ADF and the collaboration with Korean entities on Drones for Africa, several analytical studies focusing on pertinent topics related to drone ecosystems were conducted, including:

- (i) Playbook for Enabling Civilian Drone Operations provides an end-to-end overview of activities re-



quired to enable safe and sustainable drone ecosystems and high-frequency drone operations, from initial use case identification and feasibility analysis to long-term service provision;

- (ii) Review of Drone regulations in African Union Member States as a basis for future discussions and endeavors to support regulatory development and harmonization in the African Union;
- (iii) Toward Harmonization of Drone Regulations Framework to determine the sustainable development impact of enabling drone use cases and assess regulatory readiness and harmonization potential to address bottlenecks to scaling drone use cases;
- (iv) Uncrewed Traffic Management (UTM) systems may differ in low- to middle-income countries and areas of low-to-no surveillance, connectivity, and data availability;
- (v) Unlocking the Lower Skies cost-benefit study for deploying drones for different cargo, mapping, and data collection use cases in East Africa.

This activity will further support the Government of Malawi with technical assistance for scaling drone services to strengthen health supply chain resilience. Furthermore, given South Korea's goal of becoming a global leader in the drone industry, including support for emerging markets and frontier applications, this activity will accelerate knowledge exchange between Korea and neighboring countries. The ultimate objective is to open up the digital skies for development.

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UZBEKISTAN

Support to Aviation Sector Reforms Phase 2 (P171028)

The World Bank has continued to assist the government of Uzbekistan in reforming the aviation sector through the second phase of the Reimbursable Advisory Services (RAS Phase 2) agreement signed on 17 January 2020. The second RAS is concerned with developing aviation sector policies, increasing the competitiveness of national airlines, ensuring the sustainability of air transport service providers, and strengthening institutional capacity in sector governance. Finally, the reform is expected to better prepare the sector to meet rising tourism demand while also stimulating increased competition.

This work is a continuation of the first RAS (RAS Phase 1), which was completed in 2019, and under which the World Bank Group (WBG) advised the Government of Uzbekistan (GoU) on introducing a modernized aviation sector organizational structure in line with international practices, assessed all core business areas of the national airline company and recommended business model options for the airline's sustainability, and con-

ducted a preliminary assessment of airport PPP models in Uzbekistan. The RAS's support resulted in the GoU embarking on fundamental aviation reform with the enactment of Presidential Decree 5584 on 27 November 2018. This resulted in the unbundling of the previously vertically integrated monopoly National Air Company ("Uzbekistan Airways"), the establishment of a policy-making body known as the Ministry of Transport (MOT), and the separation of the airline from airport operations as well as policy-making and regulatory functions. The reform also sent a strong message to the private sector, opening up PPP opportunities in Uzbekistan's airports. A strategic advice on various options for attracting the private sector into airport modernization and operations was also provided through an effective partnership with IFC and GIF.

The second phase of support has been assisting the GoU in the implementation of the ongoing sector restructuring by: (i) strengthening sector capacities, including policymaking and regulatory oversight, (ii) developing a National Aviation Policy, (iii) improving the performance and sustainability of SOEs in the aviation sector in the context of current unbundling efforts, and (iv) facilitating private sector investment in the sector. The RAS Phase 2 is organized around the following components:

1. Part 1 consists of necessary institutional and regulatory reform actions, such as:
 - Component A: Support for establishing policy-making functions in the newly established Ministry of Transport; and
 - Component B: Support for strengthening the technical regulatory oversight capacity of the Civil Aviation Agency (CAA).
2. Part 2 is concerned with the implementation of unbundling activities and the restructuring of State-Owned Enterprises (SOEs) and it covers the following topics:
 - Component C: Support for establishing and commencing operations of "Uzbekistan Airport" Joint-Stock Company and its subsidiaries;
 - Component D: Support for the restructuring process of "Uzbekistan Airways" Joint-Stock Company and the preparation of a detailed Business Plan; and
 - Component E: Support to the restructuring of "Uzbekistan Airways Technics" (UAT) LLC.

On 19-24 September 2022, a World Bank mission was held in which discussions with the MoT, Uzbekistan Airways JSC, Uzbekistan Airways Technics, the Civil Aviation Agency, Uzbekistan Airports JSC, and other entities in the sector that participated in the RAS, such as the Public Private Partnership Agency, revolved around the activities delivered during the RAS2. The team held closing meetings and presented the MoT, the Ministry of Economic Development and Poverty Reduction, and

the Ministry of Finance with the final results of the RAS work. The mission also followed up on invoices for the RAS final outputs by the Ministry of Transport and discussed the implementation of policy and state-owned enterprise reforms with various entities in the context of the Bank's technical assistance, as well as possible next steps to continue the policy dialogue and implementation of the reform in the aviation sector.

The mission specifically presented the final delivery under RAS2, the National Aviation Policy, which summarizes the policies that Uzbekistan could develop. The areas include: (1) an institutional framework, (2) regulatory safety oversight, (3) market access and ownership of air operations, (4) airports development, and (5) air navigation. Several key topics were also highlighted and discussed with the appropriate counterparts:

Regulatory oversight: Urgent action required to strengthen the capacities of the Civil Aviation Agency in preparation for the ICAO safety audit (USOAP) in May 2023. On 30 September, Charles Schlumberger and the Director General of the Uzbek CAA met with the ICAO Deputy Director in charge of the audit in Montreal and discussed the upcoming USOAP. It was concluded that it was better to maintain the date, and the Director General was given specific recommendations on how to prepare for the audit. Furthermore, once the audit was completed, the development and implementation of an action plan could have a positive impact on the FAA and EASA reviews.

Uzbekistan Airways: The privatization of the national carrier Uzbekistan is premature. Priority should be given to continuing the airline's restructuring and modernization process in order to prepare it for private investors.

The institutional framework: As previously stated, the institutional framework must be strengthened in order to solidify reforms and strengthen the MoT's capacity as a policymaker. Furthermore, SOE governance requires enhancements, such as better alignment of aviation public enterprises with government policies.

Recent greenfield airport development initiatives run the risk of overburdening the government's finances, given that existing infrastructure is underutilized and adequate to meet projected demand in the near future.

The establishment of an airline subsidiary by Uzbekistan Airports JSC runs counter to the achieved reform and jeopardizes the government's DPL commitments. This issue was also discussed under the governance aspect, and there was general agreement on the aforementioned.

Finally, the mission discussed potential areas for further support. These could include (i) the development of a Domestic Air Connectivity Program, (ii) support for the Uzbekistan Airways restructuring and privatization process, (iii) an airport network rationalization strategy, and (iv) the development of Economic Regulation of the

infrastructure (airport and air navigation charges). The client expressed a strong interest in further technical dialogue in various areas.

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ZAMBIA Transport Sector PPP-Support (P170276)

The Zambian government requested assistance from the Bank in reviewing potential options for using PPP-based transactions to develop/operate/maintain several infrastructure investments in the transport sector. These include (i) the operation and maintenance of Kenneth Kaunda International Airport and other linked airports, (ii) the upgrading, operation, and maintenance of selected road corridors, and (iii) a study to improve public transport in Lusaka.

The study brought together key government stakeholders to investigate Public-Private Partnership (PPP) options for reducing the country's debt exposure to prioritized aviation infrastructure investments. The study relied heavily on stakeholders from the government's Ministry of Finance, Ministry of Transport, PPP Development, and Zambia Airports Company Limited.

The motivation for using PPP was the potential benefits it offered in assisting the government in managing its debt. The private sector can make upfront debt payments in the form of cash payments, annual concession payments, or revenue sharing. PPPs also enable asset operational and financial performance to be maximized through efficient risk allocation. After analyzing four potential PPP options, the study recommended concessions as the most feasible option in line with the study objectives: (i) concessions, (ii) management contracts, (iii) initial public offering divestiture, and (iv) divestiture with trade sale.

In October 2020, the Ministers of Finance and Transport convened a high-level virtual meeting to discuss study recommendations. The meeting concluded that the government would deliberate on the two options of concessions and management contracts. However, the government changed in August 2021, and the World Bank is re-engaging the present government on study recommendations and action items adopted following the October 2020 high-level meeting.

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ZIMBABWE

Transport Sector Support to ZIMREF Capital Budget TA (P157125)

This activity's development objective is to assist public transport sector institutions in laying the groundwork for increased efficiency and effectiveness in their public investments. The result is the prioritization of reforms and investments within the sector ministry, the Ministry of Transport and Infrastructure Development (MoTID), and selected sector parastatals. One of the sectors that received support under ZIMREF was Zimbabwe's civil aviation sector, and the beneficiary was the Civil Aviation Authority of Zimbabwe (CAAZ). The TA contributed policy recommendations as part of the country's adoption of the Civil Aviation Amendment Act, 2018 (No. 10 of 2018).

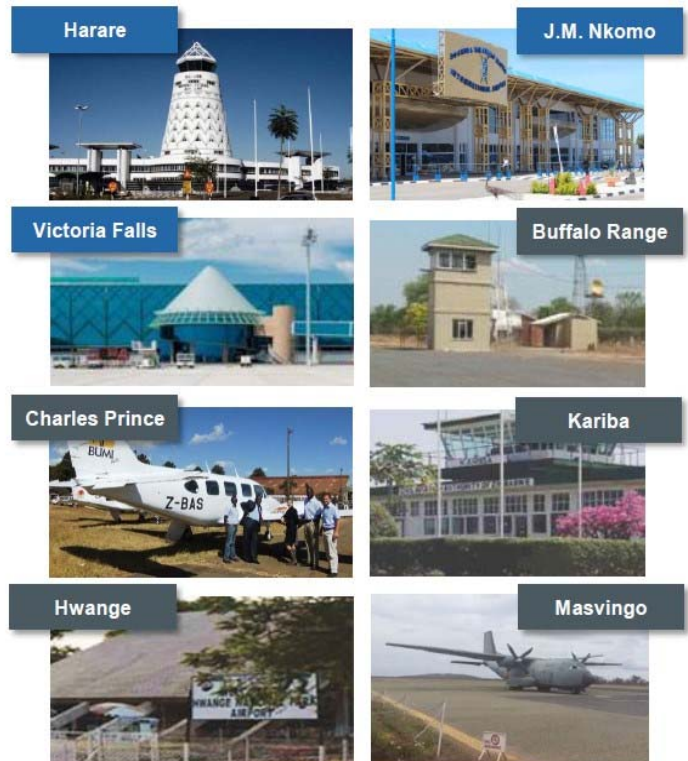
The four main policy recommendations are: (i) hosting of Air Navigation Services (ANS) outside of CAAZ to achieve clear separation of operations and regulatory functions, (ii) impartiality and independence of the accident investigation function, (iii) reviewing the fees and charges structure to make CAAZ financially viable, and (iv) clarity on the creation and functions of successor entities, particularly identifying ANS and management of airports as separate functions.

The government concurred with the TA's policy recommendations, and the status of the recommendations is as follows:

- The independence of the accident investigation function from CAAZ was incorporated into the final legislation. MoTID has appointed a consultant to oversee the setup of the accident investigation unit.

- The main objective of unbundling has been achieved with the creation of two entities to oversee regulation and operations, respectively. CAAZ solely oversees regulation, while the new Airports Company of Zimbabwe oversees operations. The government, however, decided to keep ANS within CAAZ due to security concerns and limited financial resources to create a standalone ANS entity. In its continuous engagement with governments, the World Bank will continue to raise the need to create firewalls for ANS. There is also a lack of clarity on when and how successor entities created from unbundling will be affected. The creation of these entities, as well as the review of fee and charge structures proposed by the TA, are currently hampered by the effects of COVID-19 on aviation in Zimbabwe. Relevant stakeholders are committed to considering these remaining recommendations in the next phase of reform implementation.
- There is potential for future collaboration in the aviation sector, especially in the implementation of the reforms and the identification of opportunities to improve commercial revenue inflows within the sector.

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IFC PROJECTS

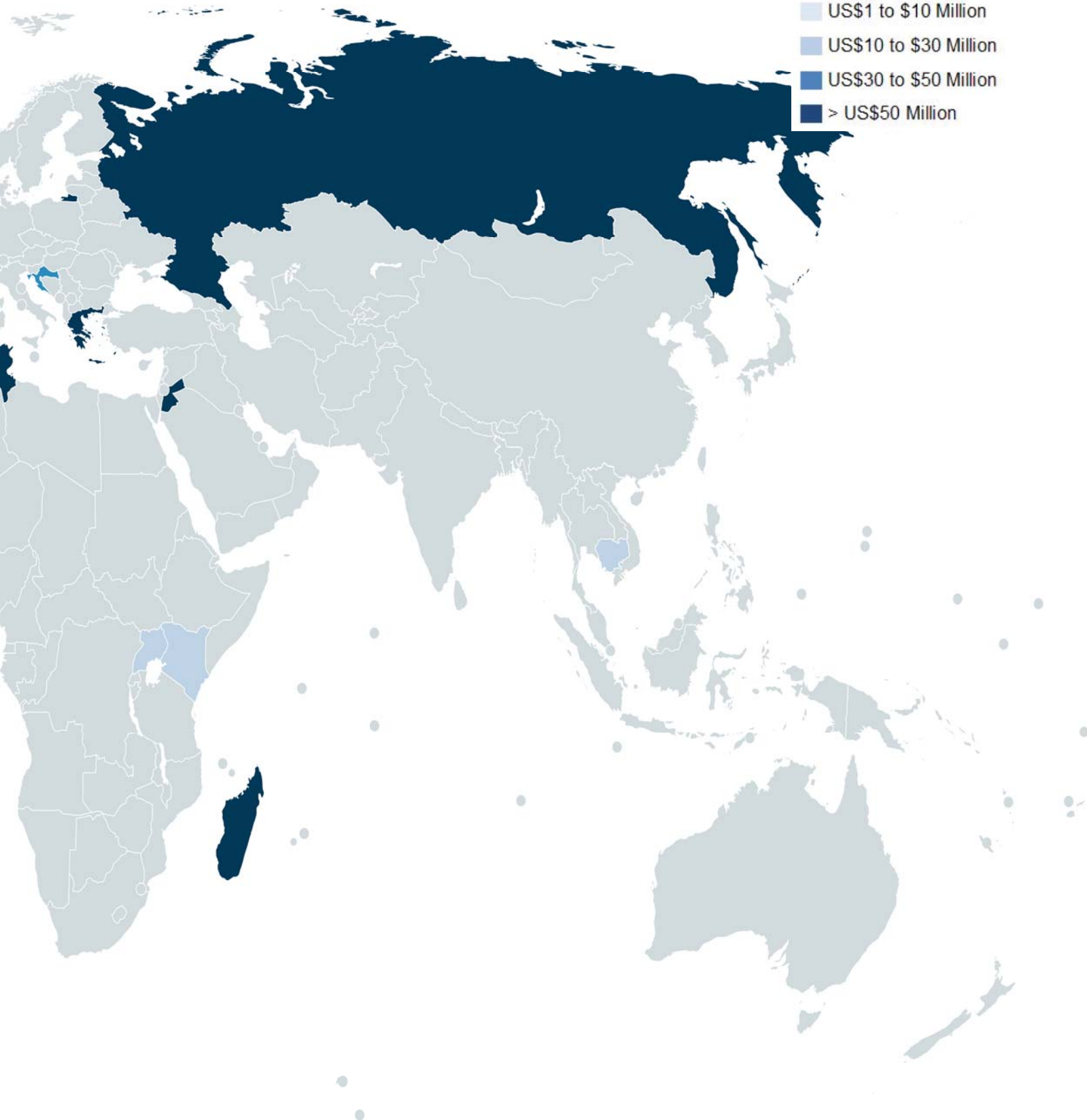
IFC AIR TRANSPORT PROJECTS: The IFC provides financing to private sector companies and has traditionally financed air carriers and airport infrastructure projects.

IFC ACTIVE AVIATION PORTFOLIO: Major active projects financed by the International Finance Corporation (IFC) include Almaty Airport in Kazakhstan, Sofia Airport in Bulgaria, Queen Alia Airport in Jordan, the Zagreb Airport in Croatia, the Enfidha Airport construction in Tunisia, as well as Belgrade Airport in Serbia. In addition, the IFC investment portfolio also includes Lima Airport in Peru.

In addition, IFC is active through the provision of PPP Transaction Advisory services to government clients for Presidente Nicolau Lobato International Airport (Timor Leste), Indonesian Airports (Indonesia), and Manas Airport (Kyrgyzstan).

IFC Commitment

- US\$1 to \$10 Million
- US\$10 to \$30 Million
- US\$30 to \$50 Million
- > US\$50 Million



IFC PROJECTS

COUNTRY	PROJECT CODE	DESCRIPTION	AMOUNT (USD)	IFC'S EXPOSURE (as of end of FY2022) USD*	TYPE
Jordan	26182, 34536, 26864, 26685	Queen Alia International Airport: Rehabilitation of both airside and landside facilities	USD 295 million; USD 148.4 million for IFC's own account	USD 99.3 million in loans, and USD 5.8 million in swaps	IFC A Loan USD 141.2 million; USD 160 million B Loan (26182) and (34536) IFC Client Risk Management - Cross Currency Swaps (26864, 26685)
Kenya	31650	KQ Airways: Expansion program consisting of the acquisition of 9 Boeing 787 Dreamliner aircrafts and 10 Embraer 190 aircrafts	USD 25 million	USD 19.4 million	Equity
Peru	24489	Lima Airports Partnership: Financial restructuring and assistance in conjunction with Fraport	USD 20 million	USD 13.4 million	Equity
Tunisia	26913	TAV Tunis Equity: Construction of a new airport in Enfidha, with an initial capacity of 7 million passengers per year, and rehabilitation of the airport in Monastir	USD 253 million; USD 184 million for IFC's own account	USD 28.4 million in loans	IFC A Loan, Subordinated Loan, Syndicated B Loan, Equity

IFC PROJECTS

COUNTRY	PROJECT CODE	DESCRIPTION	AMOUNT (USD)	IFC'S EXPOSURE (as of end of FY2022) USD*	TYPE
Croatia ⁴	31969, 34380	Zagreb Airport: Construction and operation of a new passenger terminal and related infrastructure at Zagreb Airport and the existing facilities.	USD 72.65 million for IFC's own account	USD 3.2 million in loans and USD 14.4 million in equity	A Loan, Equity, and C Loan (31969)
Madagascar	36882	FCS RE-Ravinala: Upgrade and expansion of the two international airports of the country, with the help of the Emerging Africa Infrastructure Fund.	USD 43.5 million A Loan, USD 109.4 million Parallel Loan and USD 71.3 million MIGA Guarantee	USD 24.3 million in loans and USD 1.8 million in guarantees	A Loan, Parallel Loan and MIGA Guarantee
Serbia	41123	Belgrade Airport: Capacity increase and upfront concession fee for the airports authority	EUR 72 million A Loan for IFC's own account plus EUR 110 million B Loan	USD 64.0 million in loans	A Loan and B Loan
Bulgaria	25713	Sofia Airport: Financing capex for modernization and upgrade of airport's infrastructure, and concession fees	EUR 30 million A Loan for IFC's own account	USD 10.4 million in loans	A Loan

IFC PROJECTS

COUNTRY	PROJECT CODE	DESCRIPTION	AMOUNT (USD)	IFC'S EXPOSURE (as of end of FY2022) USD*	TYPE
Philippines	44179	Agila (Cebu Pacific): The financing will provide Cebu Pacific with a longer liquidity runway to help the company withstand the effects of the COVID-19 pandemic until economic activity and travel demand recover	USD 125 million for IFC and IFC AMC Emerging Asia Fund, Indigo Partners for USD 125 million, for a USD 250 million total convertible bond	USD 62.5mn in quasi-loan	Quasi-loan (convertible bond)
Kazakhstan	43007	Almaty Airport: The financing will cover the construction of a new international terminal at the Almaty airport, busiest airport in Central Asia. IFC is also helping the airport become EDGE certified, which is an IFC certification for green buildings that reduce resource use	USD 150 million for IFC own account, USD 72.2 million from IFC's Managed Co-Lending Portfolio Program. This USD 222.2 million portion is IFC's OA + mobilization. Additional financiers include USD 150 million EBRD, and USD 77.8 million other parallel loans	USD 114.7 million in loan	loan

*Exposure is defined as outstanding balance as of 30 June 2022

IFC: PROJECT HIGHLIGHTS

BULGARIA Sofia Airport Project (25713)

In 2020, SOF Connect signed a 35-year concession with Bulgaria's Ministry of Transport, Infrastructure, Information Technology and Comms to expand, operate, and maintain the Sofia Airport. The project company is owned by Meridiam and Strabag and supported by Munich Airport as a third-party operator.

In FY21, IFC committed a EUR 30 million loan to modernize and upgrade the airport's infrastructure, including refurbishing and optimizing terminal facilities, as part of a total EUR 480 million project cost. As the lead advisor, IFC's CTA department helped the government design a competitive, transparent tender for this public-private partnership (PPP)—the first major PPP in Bulgaria in a decade. IFC's funding will go towards the upfront concession fee, refurbishment, and optimization of the existing terminal facilities and aircraft gates to boost efficiency and provide quality passenger services and commercial offerings, among others. Closed in early 2021, this project was one of the first major airport sector transactions to close in the region since the onset of COVID-19.

CROATIA Zagreb Airport Project (31969)

The IFC is supporting the development of a terminal at Zagreb International Airport as part of a public-private partnership (PPP). The new USD 450 million terminal, built by a consortium supported by IFC, is expected to contribute to economic growth and tourist activity. Tourism is a major driver of employment in Croatia, and improved infrastructure will develop the sector and boost GDP. IFC is committing USD 72.65 million to the project, including a loan of up to USD 47 million and an equity investment of nearly USD 26 million. The concession includes financing, design, and construction of the terminal, along with airport operation until 2042.

The new terminal is 65,000 square meters and has welcomed 5 million travelers per year since it opened in March 2017, compared to its previous capacity of 2 million. An average of 400 new jobs were created during construction, and up to 700 at peak. For the first time in Croatia, private firms involved in a transport concession project have assumed passenger volume risks, enabling the country to upgrade essential infrastructure without adding a burden to state finances.



KAZAKHSTAN Airport Almaty Project (43007)

In FY22, IFC led a USD 450 million financing package for the Almaty airport's owners, a consortium led by Turkey's TAV Airports. The funding will support the construction of a new international terminal at the airport, the busiest air transportation hub in Central Asia. The project is expected to bolster Kazakhstan's links to the world and, in doing so, create thousands of jobs across the Kazakh economy. It will also set a new standard for environmentally friendly airport construction in Kazakhstan. The project represents the largest private investment in an airport in Central Asia.

IFC is providing a financing package to Almaty International Airport that totals USD 222.2 million and comprises a USD 150 million loan from IFC's own account and USD 72.2 million from IFC's Managed Co-Lending Portfolio Program. The European Bank for Reconstruction and Development (EBRD) is also providing a USD 150 million loan. As well, IFC and EBRD jointly mobilized parallel loans from DEG, the German development finance institution, and the Eurasian Development Bank (EDB), valued at a total of USD 77.8 million.

Almaty International Airport served 6.4 million passengers and carried more than 69,000 tons of cargo in 2019, making it the region's busiest airport. Despite

that, Kazakhstan's air traffic volumes and connectivity lag similar-sized economies, and its airports have had only limited renovations over the years. The financing will support significant upgrades by TAV Airports, a long-term IFC client, and the construction of a new international terminal. That is expected to help strengthen Kazakhstan's connectivity and economic competitiveness, positioning the country for a stronger post-COVID recovery.

The airport will also be the first in Central Asia to be certified under IFC's Excellence in Design for Greater Efficiencies (EDGE) program, which recognizes environmentally friendly buildings. IFC expects the upgraded airport will be more energy efficient, produce less waste, and emit fewer greenhouse gases once it is upgraded and expanded.

MADAGASCAR Airports in Nosy Be and Antananarivo Project (36882)

In FY17, IFC approved the project for airports in Madagascar. The project consists of a 28-year Design, Build, Finance, Operate, and Transfer ("DBFO") concession to rehabilitate, upgrade, expand, operate, and maintain the two largest airports in Madagascar: Ivato Airport, serving the capital city of Antananarivo, and Fascene Airport, located on the island of Nosy Be, the country's busiest tourist destination. The concession was awarded through an international competitive tender to Ravinala Airports. The project company's



shares will be owned by four reputable investors, three of whom are existing IFC clients. It represented an opportunity for IFC to invest in one of the poorest countries in the world. The investment aimed to expand the airports' capacity while they remained operational.

PERU **Lima Airport** **Project (24489)**

In FY07, IFC approved the Lima Airport equity investment. It was for a 19.99% stake for USD 20 million. At the time IFC considered the investment, Lima Airport Partners S.L.R. (LAP) had a 30-year concession to operate the Jorge Chavez International Airport in Lima, Peru. The concession term can be extended to 40 years at LAP's option and to 60 years by mutual agreement between LAP and the government of Peru. JChIA is the only commercial airport serving Lima and is Peru's primary international airport, operating on a 24-hour schedule. It was and remains the principal hub for domestic routes in Peru. IFC's investment intended to support the private operation of an international airport hub in one of Latin America's best-performing economies and enabled the transfer of control from a shareholder (Singapore Airport/Bechtel) to a strategic investor and airport operator (Fraport AG), committed to the airport's expansion and increased efficiency.

Fraport AG Frankfurt Airport Services Worldwide ("Fraport") owns and operates the Frankfurt Airport in Germany, the seventh largest airport in the world and the second largest airport in Europe. Fraport's management was meant to add airport operation and management know-how and result in an upgrade of the skills of the local workforce. MIGA also provided Fraport with a guarantee for USD 11.5 million to cover its USD 12.8 million counter guarantee for a performance bond posted for the privatization of Lima's airport.

PHILIPPINES **Agila—Cebu Pacific** **Project (44179)**

A leading player in the Philippine aviation industry for 25 years, Cebu Pacific is the largest airline in the country, providing low-cost air transport services within the Philippines as well as to the rest of Asia and the Middle East. In FY21, IFC, the IFC Emerging Asia Fund, a private equity fund managed by the IFC AMC, and Indigo Partners, a private equity firm focused on air transport investments, invested USD 250 million in Cebu Pacific in the form of convertible bonds. Affordable air travel is essential to continued growth in the Philippines, an archipelago nation of over 7,000 islands that is deeply dependent on tourism (~12.7% of GDP in 2019). Closed in early 2021, the investment will provide Cebu Pacific with a longer



liquidity runway to help the company withstand the effects of the COVID-19 pandemic until economic activity and travel demand recover. IFC played a key role in mobilizing Indigo, a globally experienced third-party investor and strategic partner.

SERBIA Belgrade Airport Project (41123)

In 2018, Vinci Airports won a 25-year concession for the upgrade, expansion, operation, and maintenance of Belgrade's Nikola Tesla Airport. In FY19, IFC committed a EUR 182 million financing package for the airport's development, including a EUR 72 million senior loan for its own account and EUR 110 million in mobilized funds from six commercial banks as part of a total EUR 420 million project cost. Well-managed airports are economic engines that connect people and goods to spur regional growth. As Serbia's main hub, the Belgrade Airport received 5.6 million passengers in 2018 and is set to nearly triple its capacity by the end of the concession.

The airport's upgrades and operation are expected to generate ~41,000 indirect jobs, enhance regional economic integration, and unlock the country's tourism potential. The concessionaire transferred EUR 501 million in upfront concession fees to the government and will invest EUR 400 million to upgrade the airport. The fiscal benefit of the upfront fee would be equivalent to 1.4% of Serbia's annual GDP in 2017. This is Serbia's first infrastructure PPP, and the transaction has the potential for a strong demonstration effect in the region.

TUNISIA Enfidha Airport Construction Project (26913)

In FY08, IFC arranged a full financing package of EUR 135 million from IFC's own account and a EUR 255 million syndicated loan, underwritten by ABN, Société Générale, and Standard Bank.

This was for a new airport at Enfidha, in central Tunisia, which would have an initial capacity of 7 million passengers per year. This was also to rehabilitate the existing airport at Monastir and operate both under a 40-year concession. The airports were set to serve major tourism areas around the towns of Monastir, Sousse, and Hammamet on the Mediterranean Coast. This was the first PPP in the air transport sector in Tunisia and, more broadly, in North Africa.

Contact persons for all IFC Investment projects is Maria Lopez Conde at mlopezconde@ifc.org.



IFC: AIR TRANSPORT ADVISORY MANDATES

The Infrastructure Advisory Services Department of the IFC provides advisory assistance to governments on structuring and implementing (tendering) Public-Private-Partnerships (PPPs) in infrastructure. IFC has undertaken more than 100 advisory transactions in over 67 countries over the last 20 years. IFC/World Bank's reputation for competence, transparency, and fairness allows it to play the role of neutral partner to balance each party's interests, thus reassuring foreign investors, local partners, other creditors, and government authorities. The two main domains in air transportation advisory services are private sector participation in airports and air carriers.

1) IFC Public-Private Partnerships (PPP) Advisory Mandates in Airports

Only a fraction of the world's commercial airports are managed or owned by private sector entities. However, as passengers carried by air transport neared 4.1 billion in 2017 and more than one-third in value of all merchandise and goods were air freighted – Public-Private-Partnerships (PPPs) in airport infrastructure will grow to meet investment and required service standards. Airport PPPs are useful approaches to meeting both private and public sector objectives.

Of the various airport PPP models available, experience shows that concessions and full divestiture are most effective:

- Concession Contracts (BOT, BOO, BOOT, BTO, etc.): The state retains ownership of the airport but transfers investment as well as operations and management responsibilities to the private sector.
- Full Divestiture: Ownership, operations, and investment responsibilities are fully transferred to the private sector.
- In certain cases, a blend of a first-phase BOT followed by a public offering can maximize benefits.

In certain cases, a blend of a first-phase BOT followed by a public offering can maximize benefits.

2) IFC Public-Private Partnerships (PPP) Advisory Mandates in Airlines

As the airline industry has proceeded along this privatization path over the last 30 years, IFC has participated in nearly a dozen airline transactions. Unfortunately, many have proved to be difficult projects due to important sector-specific structural reasons:

- Fixed-cost structure: Airlines tend to build up a legacy-cost base (staff and fleet) that is difficult for a new owner to manage. In addition, fuel costs are beyond management's control. During the period of higher oil prices in 2011-2014, they accounted for as much as 30 percent of the cost base (up from 15-20 percent in 2009), and have since dropped with declining oil prices (variations according to individual airline hedging strategies).
- Price-sensitive product: Demand for travel is highly elastic, especially in tourist markets. In recessions, people forgo vacations for other consumer goods. Conversely, price reductions increase passenger numbers dramatically.
- Complicated demand chain: Customers often purchase tickets through travel agents, frequently in a package with hotel accommodations. Since airlines rely on these other actors for their sales, if there are bottlenecks elsewhere, the aviation sector suffers.
- Overregulation: Bilateral agreements between governments, still prevalent in many parts of the world, prevent competition from functioning normally. Open skies are being adopted, but not in all countries.

3) IFC Air Transportation Experience

When undertaking a transaction advisory mandate, IFC provides a one-stop solution to governments covering all aspects of the proposed transaction. One of the distinguishing features of IFC's value addition is its ability to balance private and public sector interests and take into account sustainable long-term economic and social effects.

Selected IFC Advisory Mandates in Airports

PROJECT NAME	COUNTRY	YEAR	MANDATE/RESULT
Manas Airport	Kyrgyzstan	2021-ongoing	Due Diligence / Project Structuring - ongoing
Iraqi Airports	Iraq	2019-ongoing	Market assessment - ongoing
Dili Airport	Timor-Leste	2022-ongoing	Due Diligence / Project Structuring - ongoing
Indonesian Airports	Indonesia	2021-ongoing	Due Diligence - ongoing
Madinah Airport II	Saudi Arabia	2021-2022	Restructuring / Refinancing
Grantley Adams Airport	Barbados	2019-2022	Due Diligence / Project Structuring / RFQ
Montenegro Airports	Montenegro	2018-2020	Due Diligence / Project Structuring / RFQ
Beirut Airport	Lebanon	2018-2020	Due Diligence / Project Structuring
Sofia Airport	Bulgaria	2017-2020	Awarded to Munich Airport
Nepal Airports	Nepal	2016-2019	Strategic Assessment Completed
Clark Airport	Philippines	2018	Awarded to Changi led consortium
Norman Manley Airport	Jamaica	2018	Awarded to GAP led consortium
Samoa Airline JV	Samoa	2017	JV Options Analysis
Jacksons Airport	Papua New Guinea	2017	Strategic Options Analysis
Jeddah Airport	Saudi Arabia	2016	Due Diligence / Project Structuring / Tender process
Taif Airport	Saudi Arabia	2016	Due Diligence / Project Structuring
Saint Lucia Airport	Saint Lucia	2016	Due Diligence / Project Structuring
Croatia Airlines	Croatia	2015	Strategic Partnership analysis
Brazilian Airports	Brazil	2014	Galeao and Confins Airports successfully awarded to Changi and Zurich Airport led consortiums respectively
Dili Airport	East Timor	2014	Feasibility Study Completed

Selected IFC Advisory Mandates in Airports

PROJECT NAME	COUNTRY	YEAR	MANDATE/RESULT
Madinah Airport	Saudi Arabia	2012	Successfully awarded to TAV, Saudi Oger, Al Rajhi consortium
Male Airport	Maldives	2010	Successfully awarded to MAHB —GMR
Queen Alia Airport	Jordan	2007	Successfully awarded to Aéroports de Paris, ADIC, J&P, Noor consortium
Hajj Terminal	Saudi Arabia	2007	Successfully awarded to Saudi Bin Laden Group, Aéroports de Paris con-sortium
Abuja Airport	Nigeria	2006	Successfully awarded to Abuja Gate-way consortium (Airport Authority and equity part-ners)
Air Jamaica	Jamaica	2009	Awarded to Caribbean Airlines
Drukair	Bhutan	2008	Strategic analysis
JAT	Yugoslavia	2006	Strategic analysis
Polynesian Airlines	Samoa	2005	49% sold to Virgin Blue
Cameroon Airlines	Cameroon	2005	Awarded but cancelled by Govt.
Air Tanzania	Tanzania	2002	49% sold to SAA
Kenya Airways	Kenya	1996	76% sold to KLM, financial investors

ADVISORY MANDATE EXAMPLE: DILI AIRPORT



On the back of the successful tendering and closing of Tibar Bay Port PPP by IFC CTA-PPP teams, and an earlier engagement in the airport sector in 2012-15, IFC was mandated by Government of Timor Leste (“GoTL”) in 2019 to undertake a prefeasibility exercise and update the project technical due diligence and Airport Masterplan for Presidente Nicolau Lobato International Airport (“Dili Airport” or the “Airport”). The project is a key priority under GOTL’s Strategic Development Plan (“SDP”) for 2011-2030, and Transport Sector Master Plan (“TSMP”), 2018.

A revised Master Plan was completed and presented to the Council of Ministers (“CoM”) of GOTL, where it was approved to serve as a blueprint for airport development going forward, which includes the development of both the runway (multi-phased extensions), a new passenger terminal, and other related facilities. As of today, the infrastructure remains inadequate, with operating and maintenance standards that could be optimized – this is a major barrier to the government’s efforts to boost aviation connectivity and tourism and trade. The infrastructure gaps both on the terminal and airfield areas also limit the options to attract new carriers.

This project is expected to support private sector-led growth in infrastructure development and aviation sector to improve air connectivity and thereby raise productivity and promote tourism and trade, which should help the country diversify its growth beyond oil and gas. Efficiency, security and safety standards compliance at Dili Airport will be improved to help markets such as tourism that rely on air connectivity. Furthermore, it will bring capacity building and institutional development to the GoTL. In addition, this project is also expected to increase competitiveness by encouraging international airport investors and operators to participate in the development and operation of Dili International Airport. The successful implementation of the PPP will present demonstration effects to encourage competition in other sectors in the country.

The Private sector engagement in the project is expected to ensure that Timor-Leste is able to provide increased quality of service matching international standards, and the capacity to handle a greater number of passengers from the pre-pandemic level of around 246,000 (2018) to about 500,000 in 2032, and 1 million by 2055. It is also expected that increased capacity to handle people and larger planes which could come from longer distances will be one of the critical components in helping boost tourism in the country and would encourage the Government to replicate similar projects through the PPP mode.

The value add of this PPP includes:

- Expanding and upgrading the Airport to meet international design and safety standards
- Transferring significant risk in design, construction, operation, maintenance, and finance to the private sector
- Negotiating with airlines forming new routes to and from Dili, especially in light of plan to extend runway length
- Minimizing the life-cycle cost through competitive selection process and risk transfer
- Improving the quality of service delivery and operation efficiency
- Encouraging technology innovation
- Reducing government's fiscal liabilities and increase affordability

Given the various components that require investment and the potential size of this investment relative to traffic, the project is being implemented as a multi-donor effort. The Asian Development Bank (ADB) is supporting a runway upgrade, the Japan International Cooperation Agency (JICA) is investing in a new terminal and the Australian Government is supporting other infrastructure elements. IFC's role is to assist the government to engage a PPP partner to be responsible for operations and maintenance and long-term capex investments. IFC has also helped GoTL with the engagement of a Project Management Consultant to support on coordination and interface challenges and operational oversight of the multi-donor engagement.

Contact person for all IFC Advisory Services is Alexandre Leigh at aleigh@ifc.org.



MIGA GUARANTEES

Guarantees provided by the Multilateral Investment Guarantee Agency (MIGA) cover projects in a broad range of sectors, with projects in infrastructure accounting for an important share of the agency's portfolio. Infrastructure development is an important priority for MIGA given the estimated need for USD 230 billion a year solely for new investment (maintenance needs are of a similar magnitude) to deal with rapidly growing urban centers and underserved rural populations in developing countries. MIGA is currently involved in three aviation projects: Henri Konan Bedie Bridge, the Madagascar Airports, and the Queen Alia International Airport.

COTE D'IVOIRE

Henri Konan Bedie Bridge (4138)

On 28 June 2012, MIGA issued USD 145 million in guarantees covering equity investments and subordinated loans from Bouygues Travaux Publics of France and Pan African Infrastructure Development Fund of South Africa, subordinated and senior loans from Africa Finance Corporation of Nigeria, and senior loans from BMCE Bank International Plc of the United Kingdom and FMO of the Netherlands. MIGA's coverage is for a period of 15 years against the risks of transfer restriction, expropriation, war and civil disturbance, and breach of contract.

The investments are supporting the design, construction, and operation of the Henri Konan Bédié Toll Bridge (HKB Bridge), over the Ebrié lagoon in Abidjan, with access roads to the north and south between the residential area of Riviera and the industrial area of Marcory. The total length of the full road connection will be around 6.6 kilometers, with the bridge itself spanning 1.5 kilometers. To the north, construction will consist of a 2x2 lane dual carriageway that will connect with the junction of the Boulevard Mitterrand and Est-Ouest roads and on which will be the toll plaza. To the south, construction will consist of a 2x3-lane dual carriageway with lateral access roads that will connect to Boulevard Giscard d'Estaing, the main road that joins Abidjan airport. There will be an interchange (VGE Interchange) built, not part of this project, that will connect the access road to the bridge with Boulevard Giscard d'Estaing. Pont Hou-

phouët-Boigny (HB Bridge), one of the existing two bridges that cross the lagoon, will close for urgent repairs after the HKB Bridge opens. Initial work on the project, funded by the government of Côte d'Ivoire, started in October 2011.

The bridge will help address significant congestion and pollution in Abidjan. The existing bridges and infrastructure are under severe strain and unable to manage the city's growing traffic. The bridge is also expected to reduce congestion and pollution in Abidjan and will result in a reduction of carbon dioxide emissions due to lower fuel consumption. The project will also provide important demonstration effects for future initiatives in the transport sector. It is one of the first private-sector-led foreign direct investments in the country since the civil strife. Approximately 840 direct jobs will be created during the construction phase.

MIGA's participation in the project is aligned with the agency's commitment to supporting investment in the world's poorest countries, investment in infrastructure, investment in conflict-affected countries, and South-South investments.

MADAGASCAR

Madagascar Airports (13482)

On 29 May 2017, MIGA issued an USD 85 million guarantee covering equity and shareholder loan investments by Aéroports de Paris Management S.A., Bouygues Bâtiment International S.A.S., Colas S.A., and Meridiam Infrastructure Africa Fund, Meridiam Infrastructure Africa Parallel Fund FIPS, and Meridiam Infrastructure Africa Parallel Fund SCsp into Ravinala Airports S.A. in Madagascar. The coverage is for a period of up to 15 years against the risks of transfer restriction, expropriation, war and civil disturbance, and breach of contract.

The project consists of the financing, rehabilitation, expansion, operation, and maintenance of the Ivato airport in Antananarivo and the Fascene airport in Nosy Be, which are currently being managed by the state-owned enterprise Aéroports De Madagascar (ADEMA). Works include (i) works at Ivato in preparation of the Francophonie summit (expansion of apron and presidential pavilion as well as establishment of a dedicated process path in the existing terminal for arriving/departing delegations), to be held in Antana-

narivo (the country's capital) at the end of November; (ii) construction of a new passenger terminal at Ivato airport and limited refurbishment works in the existing terminal; (iii) renovation of the runway and Tarmac II to host aircrafts Code E and one Code F at Ivato; (iv) renovation of the runway and limited expansion of the current passenger terminal at Fascene airport; and (v) rehabilitation of landside facilities at both airports, including the construction of new wastewater treatment plants, improvement of the existing incinerator at Fascene airport to meet emission standards, improvement of surface water drainage, construction of a new waste water treatment plant and installation of an oil water separator at Ivato airport

Environmental Categorization

The project is a category A under MIGA's Policy on Environmental and Social Sustainability.

Development Impact

The project's major expected development impact is to help upgrade and improve Madagascar's most important international and local gateways by implementing much-needed investment, delivering better services, and offering more efficient air travel options. It will thus contribute to facilitating tourism, a key sector for unlocking economic growth in the country, as well as helping develop linked economic activities and creating jobs. The project is also expected to have a significant demonstration effect for investors in the country as well as provide a platform for the implementation of further public-private partnerships.

MIGA's proposed support for this investment is aligned with the Agency's priorities of supporting investments in countries eligible for financing from the International Development Association (IDA) as well as conflict-affected states (FCS). It is also aligned with the 2015 World Bank Group Systematic Country

Diagnostic (SCD) for Madagascar, which emphasizes the importance of unleashing private sector potential and the financing of high-impact investments in the country.

JORDAN

Queen Alia International Airport (14068)

On 30 March 2018, MIGA agreed to issue guarantees of up to USD 195,154,839 to Meridiam Eastern Europe Investments 2 SAS (Meridiam) of France for its equity/quasi-equity investment into Airport International Group (AIG), the current concessionaire of the Queen Alia International Airport (QAIA) in Jordan. The guarantees are issued for a period of up to 15 years against the risks of transfer restriction, expropriation, war, civil disturbance, and breach of contract.

The project consists of the acquisition by Meridiam of a 32% stake in AIG, which entered a 25-year concession agreement with the Government of Jordan (GoJ) in 2007 to rehabilitate, expand, and operate QAIA, with the possibility to extend the concession by an additional 5 years (until 2037).

Environmental Categorization

The project is a category B under MIGA's Policy on Environmental and Social Sustainability.

Development Impact

The proposed investment by Meridiam will enable capital expenditures to be directed towards optimizing the commercial activities of Jordan's principal airport (e.g., duty-free shopping, specialty retail, food and beverages), which is expected to lead to higher non-aeronautical revenues, thereby generating additional revenues for Jordan over the duration of the REOA while enhancing the passengers' travel and retail shopping experiences.

The airport is an important infrastructure asset for Jordan, used by over 7 million passengers in 2017, supporting the country's economic growth and development, notably through the tourism sector. The acquisition is expected to reinforce the role of QAIA, consistent with the Jordan Economic Growth Plan spanning 2018–2022. The acquisition will support existing and new direct employment opportunities at QAIA as well as indirect employment by domestic suppliers and service providers.

Contact person for MIGA portfolio information is Damien Matthias Valentin Boucher at dboucher@worldbank.org.



AVIATION KNOWLEDGE AERA (AVKA)

The Role of Sustainable Aviation Fuels in Decarbonizing Air Transport Mobility and Transport Connectivity Series

The growth and development of the economy are directly related to the air transportation industry. The decarbonization of aviation is essential to reaching climate targets by the middle of the century as demand for air travel rises steadily. Options for global aviation's decarbonization through 2050 are presented in this research. It takes into account a variety of factors, such as the following: the shift in demand for air travel; technological advancements made to aircraft systems; advancements made to airline, air traffic management (ATM), and ground operations; and the use of sustainable aviation fuels (SAFs). The report's geographic coverage is global, and it takes both domestic and international aviation's GHG emissions into account.

This paper highlights SAF as the primary mitigation strategy that can most quickly achieve significant GHG emission reductions for aviation in the medium future (for example, in the next 5 to 10 years). The aviation industry refers to a group of fuels that can be generated responsibly and have lower life-cycle carbon dioxide (CO₂) emissions than traditional kerosene as sustainable aviation fuels. SAF is specifically described as a renewable or waste-derived aviation fuel that satisfies a set of Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) sustainability criteria, including a GHG emission reduction criterion, in the context of global regulation created under the International Civil Aviation Organization (ICAO).

Despite being widely acknowledged as essential for separating emissions increases from market growth in the airline industry, SAF accounts for only 0.1 percent of global aviation fuel demand and is 2-5 times more expensive than conventional jet fuel (IATA 2020a). SAF production and consumption have accelerated significantly in recent years, but these efforts are primarily focused on higher-income countries. Looking ahead to 2050, SAF production has the potential to satisfy a significant portion of the anticipated jet fuel demand and halt the growing trend in air transport emissions—but only if it expands outside of the Organization for Economic Cooperation and Development (OECD). Large-

scale SAF deployment will need to be combined with technological and operational advancements if aviation travel is to be emissions-free by 2050.

While the majority of SAF production is currently and in the near future planned for high-income countries, significant unrealized production potential is emerging in low- and middle-income countries. The development of a SAF sector in developing countries may provide considerable economic and environmental advantages. Developing countries may not be able to afford the massive capital expenditures (CAPEX) necessary to meet predicted SAF production volumes without help. SAF-specific marginal abatement cost curves (MACC) for the years 2030 and 2050 demonstrate that SAF can be a cost-effective solution for decarbonizing air transport despite the high CAPEX requirements. To scale up SAF production and use, policymakers, industry, and financiers must work together to overcome economic and technological obstacles.

Through green and climate finance, the public and private finance sectors can also influence how much money is invested in SAFs. Policies for reducing the carbon footprint of aviation, particularly those that support the SAF sector, should be incorporated into countries' larger climate targets and initiatives for energy transition, agricultural sustainability, and environmental sustainability. The development of sustainable aviation fuels also requires ongoing support.

As a result, this report evaluates and quantifies global aviation decarbonization options through 2050. It concludes that a combination of different measures is required to achieve the industry's goal of zero net carbon air transport by 2050. Sustainable aviation fuel will need to play a significant role in this mix of measures, as it is the only in-sector option that can already generate significant greenhouse gas (GHG) emission reductions in the medium term. According to the report's SAF market diffusion analysis, a production path for SAF out to 2050 would reduce aviation GHG emissions by up to 57 percent compared to the business-as-usual forecast. This would necessitate a rapid expansion of the SAF industry after 2020, as well as the use of low-GHG intensive fuels derived from waste oils, municipal solid waste (MSW), and agricultural and forestry residues, which would

require strong policy support. When large-scale deployment of SAF occurs in tandem with significant technological and operational improvements in the air transport system, up to 78 percent of aviation's CO₂ emissions could be avoided in 2050, with the remaining reduction gap potentially filled by the use of SAF with even lower life-cycle GHG emissions than assumed in this study and out-of-sector solutions, such as carbon offsets.

SAF-specific marginal abatement cost curves for 2030 and 2050 show that marginal abatement costs could be negative in 2030 for a highly mature and low-cost feedstock pathway, such as hydroprocessed esters and fatty acids (HEFA). Other types of SAFs, depending on feedstock type and assumptions about future conventional jet fuel prices, would still result in abatement costs of more than USD 100 per metric ton of CO₂ equivalent (tCO₂e) abated. For the year 2050, and assuming aggressive climate change mitigation policies that drive up the price of conventional jet fuel and set working incentives to improve SAF GHG performance, our results show that large volumes of SAF could be provided at abatement costs of zero or close to zero.

A review of current and near-future SAF production revealed a strong dominance of facilities planned in OECD countries, while developing countries also have significant production potential. The lack of planned SAF production capacity in developing countries is particularly unfortunate given the potential environmental, economic, and social benefits that SAF

production could provide in these countries. Building on the recent momentum that has laid a strong foundation for SAF, the next decade has the potential to be transformative as the aviation industry and others grapple with the effects of climate change. SAF and biofuels in general are potential mitigation levers that could be used in both developed and developing countries to reduce GHG emissions in the transportation sector. Countries can improve the financial viability of SAF production by combining market-based measures, mandates, and cost-cutting measures with increased use of climate financing to build on previous experiences in the biomass and bioenergy sectors in general.

As aviation is a significant and growing contributor to climate change, aviation decarbonization policies, including those aimed at promoting the SAF industry, should be an essential component of countries' broader climate targets and actions on energy transition as well as agricultural and environmental sustainability. A comprehensive public policy and regulatory framework should define the production incentives required to increase supply and lower costs while encouraging the use of SAF. High-level policy commitments must be accompanied by the development of financing schemes (including guarantee instruments), the easing of environmental licensing, and the promotion of exports to meet the growing demand for SAF. If increased SAF production necessitates an increase in cultivation area, public and private institutions must ensure that such expansion occurs sustainably within the agricultural frontier and has no significant impact on natural ecosystems. Finally, ongoing funding for SAF research and development is required. This should include the development of feedstock supply chains, new and innovative production technologies, and innovative business models that increase the value of all SAF production operations' products and by-products. As the global network of SAF production and distribution expands, deeper analyses will be required to design the structure of biomass feedstock and refined fuel product transportation, whether distributed or centralized, in streamlined supply chains. The study discovered that using multiple modes of transportation in the chain reduces transportation costs and GHG emissions over long distances.

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Toward a Competitive Air Transport Market in Africa: The Role of Bilateral Air Service Agreements Liberalization

This study examines the impact of bilateral air service agreements on African air passenger transport and quantifies the consumer welfare effects of air transport liberalization. The paper estimates the ex-



tent to which liberalization of bilateral air service agreements affects the following: (1) passenger travel, (2) average airfares, (3) flight frequency, and (4) market competition within a country pair using an unbalanced panel of 71 African country pairs observed between 2011 and 2019. The empirical analysis employs the difference-in-differences estimation method and pays special attention to endogeneity concerns caused by simultaneity and reverse causality in pricing, demand, and frequency decisions. The findings show that both partial and full liberalization of bilateral air service agreements reduce airfares while increasing air travel demand and flight frequency. The study finds no evidence that market competition, as measured by the number of airlines in operation, increases after liberalization. After quantifying all of the channels through which the policy environment can affect African air transport markets, the findings show that aviation liberalization generates consumer benefits equivalent to a 40–42 percent decrease in airfares, i.e., the price equivalent effect of air liberalization.

The African air passenger transport market is operating at far below capacity. Despite having 17 percent of the world's population, the continent only accounts for 2–3 percent of global passenger flows. This underperformance is all the more surprising given the continent's lack of alternative transportation infrastructure, such as major highways and railway networks. All of this has a direct negative impact on cross-national market connectivity, slowing economic growth and development.

While there are many possible explanations for the underdevelopment of intra-African aviation markets, this study focuses on the role of regulations and government restrictions. Historically, international air passenger transportation has been governed by a complex set of rules established through bilateral air service agreements (BASAs). In terms of airline entry, market access, flight capacity, flight frequency, or pricing decisions, a typical BASA can be restrictive. Nonetheless, concerted efforts have been made at all levels—global, regional, and national—to advance a liberalization agenda for air passenger transport. While this agenda is still a work in progress across the globe, it is clearly one of the African Union's key initiatives, as evidenced by the Yamoussoukro Decision and the establishment of the Single African Air Transport Market. At the moment, however, African countries vary in their level of air transport liberalization as they implement BASAs ranging from restrictive to partially or fully liberalized.

Using data from 71 bilateral country pairs in Africa from 2011 to 2019 and information on the degree of air transport liberalization for the corresponding BASAs, the study estimates several difference-in-difference models explaining the impact of aviation liberalization on: 1) passenger travel, 2) average airfares, 3) flight frequency, and 4) the number of air-

lines operating within a country pair. Endogeneity concerns arising from the simultaneity and reverse causality surrounding pricing, demand, and frequency decisions are also addressed in the analysis.

According to the study's findings, both partial and full BASA liberalization have a direct negative impact on airfares while having an indirect positive impact on flight frequency and air travel demand (no direct effects, however). We find no evidence that market competition increases with air liberalization, as measured by the number of operating airlines. It is believed that the non-binding nature of policy restrictions in thin aviation markets may explain some of the insignificant effects of liberal BASAs on African aviation market outcomes. Liberal policies, on the other hand, have the potential to lower fares by making aviation markets more competitive, allowing airlines to capitalize on scale economies from higher volumes, and facilitating cooperative arrangements with non-African airlines.

After quantifying all of the channels by which air transport liberalization can affect air service provision in Africa, the study finds that liberal BASAs generate consumer benefits equivalent to a 40 to 42 percent reduction in average airfares. This ad-valorem price-equivalent measure of air liberalization results in significant consumer welfare gains, ranging from 29 to 37 percent of air travel revenues among the sample countries for the final year of the study's sample, 2019.

Finally, it is important to note that the liberalization of the international air transport market occurred as a natural result of deregulated domestic airline markets in many parts of the world (Abate and Christidis 2020; Borenstein and Rose 2007; Kahn 1988). The main policy dilemma facing many African countries is the coexistence of a regulated domestic market alongside liberal international policies such as the Yamoussoukro Decision (YD). Because of this policy duality, they have been unable to make an organic transition from domestic deregulation to regional and continental open skies. To reap the full benefits of liberalization, policymakers must also strive to level the playing field for all players and achieve meaningful private sector participation and competition in both domestic and international markets.

Handbook for the Development of Air Transportation (P176540)

The World Bank Transport Global Practice intends to produce a Handbook for the Development of the Air Transport Sector. The overall objective of this knowledge product is to build, expand, and disseminate core sector concepts and good practices fundamental to the development of air transport. The ra-

tionale for providing such a handbook, both internally and externally, is the current lack of understanding among many transport generalists, government and civil service professionals, and the general public about air transport sector challenges. The intended audience consists of development and sector professionals in government and the private sector, primarily in developing and emerging markets.

The intermediate result will be the publication of a Handbook that aims to provide a concise yet comprehensive guide to the foundational principles of air transport by outlining the basic elements of the air transport system, including policy, regulatory, and operational considerations in the prospects of sustainable solutions in air transport provision. By providing knowledge to practitioners and policymakers worldwide, the Handbook will be relevant to both developing and advanced economies. It will be designed as a reference book to provide a high-level overview of sector dynamics while also directing readers to other technical resources as needed. It will also discuss key emerging issues such as aviation decarbonization and new technologies.

The Handbook is also intended to serve as a staff resource for framing complex technical regulatory requirements, international and regional obligations, and the implications of competition and access policy in the public-private provision of infrastructure and services. The Handbook will draw on lessons learned from the Bank's recent and previous sector engagements to provide an easy-to-read resource that introduces key institutions, critical infrastructure requirements, oversight accountability, and the diverse range of players involved in the aviation value chain and supply chains involved in services and operations. External peer reviewers from partner organizations, such as other multilateral development banks, Airports Council International, the International Air Transport Association, and the International Civil Aviation Organization, will be sought as part of a quality enhancement review.

The Handbook will begin with an overview of the air transport system. It will approach key aspects of sector outlooks from the top down, using the lens of national aviation policy settings such as air transport development strategies, political-economic endorsements, and state obligations in meeting international commitments. It will address civil aviation regulations and oversight, including an introduction to international standards and recommended practices established by the International Civil Aviation Organization (ICAO), requirements for enabling legislation, the role of civil aviation authorities as guided by national safety regulatory requirements, and expectations of state safety and state security programs.

The Handbook will take into account air transport finance and economics, including competition policy

(domestic air traffic) and access rights (international air traffic), air service agreements, and open skies policies. An overview of demand forecasting for both passengers and freight will be presented, as well as revenue structures for airlines, airports, and air navigation service providers, including the establishment of fees and levies. Aspects of corporate governance structures, oversight and compliance requirements, infrastructure and facilities, business development, finance, economics, and operational management considerations will be covered in relevant chapters on air traffic management, airports, and airlines.

The Handbook will also encompass regulatory and operational aspects of measuring and managing environmental impacts such as noise, emissions, and water pollution, as well as sector implications for climate change such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA), the Airports Council International Airport Carbon Accreditation Programme, and sector contributions to Nationally Determined Contributions (NDCs).

As of FY2022, two volumes of the Handbook are in the works, covering topics such as (i) National Aviation Policy, (ii) Civil Aviation Regulations and Oversight, (iii) Air Transport Finance and Economics, (iv) Air Traffic Management, (v) Airlines, (vi) Air Cargo and Logistics, (vii) Airports, and (viii) Managing Environmental Externalities.

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AIR CARRIER ADVISORY SYSTEM WORLD BANK STAFF AIR TRAVEL

The Bank has maintained an evaluation tool for assessing risks associated with air travel for mission travel since 2008. The air carrier advisory system developed by the Bank’s General Services Department and Air Transport Team was launched in FY2011. Airline ratings/risk are based on the following *Risk Criteria*:

1. *Serious accident in the last 3 years (defined as any incident that results in injury or death of a passenger, or substantial damage to the aircraft)*
2. *Registered in a country with poor oversight (based on the ICAO safety audit)*
3. *A flag-of-convenience airline (an airline that is registered and maintained in a country other than where it operates)*
4. *Use of aircraft over 20 years old*

Overall, there were 50,689 flights booked

by American Express for Bank staff in Fiscal Year 2022 (from HQ), representing a post-COVID increase in travel by 229 percent compared to Fiscal Year 2021, which is still about 75% below pre-COVID. The majority of flights booked were with airlines considered “good to fly”. This data does not capture trips arranged in the regions.

Travelers should be aware that surface transportation may not always be possible or may represent more risks than air travel in some client countries. The advisory team continues to provide on-demand assessments and safety advice for operational staff.

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	DESCRIPTION	RECOMMENDATION FOR STAFF
1	All airlines that are industry certified by having passed an IATA IOSA audit, unless subsequent safety experience indicates a safety problem.	Good to fly. The Bank has no objection to using these airlines.
2	All airlines that though they are not industry certified are either licensed by a country with an FAA IASA rating of Category 1, or are known to the Bank as safe carriers.	Good to fly. The Bank has no objection to using these airlines.
3	All airlines that are not in (1) or (2) above, or are on any blacklists, or are deemed to be unsafe for other reasons.	<p>3a. Airlines that do not qualify for Category 1 or 2, but have been reviewed by the Bank’s air transport specialist and considered good to fly.</p> <p>3b. Airlines that have 1 of the 4 risk criteria listed below, or some other safety factor that has been raised by the Bank’s air transport specialist. Check to see if there are any viable and safer transport alternatives before selecting this airline for mission travel.</p> <p>3c. Airlines with significantly elevated risk and 2 or more of the 4 risk criteria listed below, or some other safety factor that has been raised by the Bank’s air transport specialist. Use only for essential missions and only if no viable and safer transport alternatives are available.</p>



**ICAO GLOBAL IMPLEMENTATION
SUPPORT SYMPOSIUM ISTANBUL,
TÜRKIYE**
27 - 1 July 2022

Charles E. Schlumberger (CES) participated in the ICAO Global Implementation Support Symposium (GISS) in Istanbul, Türkiye, from 28 June to 1 July 2022.

The objective of the GISS was to discuss ICAO's latest digital tools, key initiatives, and collaborative endeavors to support aviation recovery, innovation, resilience, sustainable development, and operational solutions beyond the COVID-19 pandemic. The context was that the air transportation industry had been experiencing prolonged turbulence on its road to recovery due to pandemic resurgence and economic uncertainty. This underscores the need for airlines, airports, air navigation service providers, regulators, international organizations, and partners to work together to adapt to a new normal while providing a safer, more secure, and sustainable travel experience. It further requires unprecedented collaboration, greater data sharing, and more digitalization across the industry.

The GISS united key aviation stakeholders in Istanbul for the first time since the onset of the pandemic to address these critical recovery priorities and capacity building, as well as how aviation adapts to become more resilient over the longer term. Finally, the event also focused on the importance of enhancing partnerships for efficient and inclusive implementation support activities and of leveraging the pandemic for new training opportunities.

GISS hosted several interactive panels on the theme "Reconnecting the World: Runway to Aviation Recovery" and included discussions on how ICAO supports Member States in the implementation of ICAO Standards and Recommended Practices (SARPS) and Global, Regional, and National Aviation Plans through innovative implementation support and training activities.

The symposium hosted over 800 participants, which included Ministries, Directorates General of Civil Aviation, international and regional organizations, high-level participants representing aviation service providers (i.e., air navigation service providers, airport operators, airlines), financial and development institutions, human resources departments, project and procurement sections, and academic

institutions.

CES participated in a panel on *Resourcing Implementation Support: Funding and Collaboration with Resource Partner States and Multilateral Organizations*. The panel discussed the importance of taking a strategic approach to mobilizing resources and addressing capacity shortfalls in aviation through forging new and strengthening existing partnerships with resource-partner States, multilateral funding institutions, and industry stakeholders.

The panelists included Reynaldo Fioravanti, Group Head Transport Sector, Interamerican Development Bank (IDB), Eric Ntagengerwa, Acting Head of Transport Mobility Infrastructure and Energy, African Union Commission (AUC), Philippe Martou, Director Aviation Services, United Nations World Food Programme, and Tao Ma, Regional Director, Asia and Pacific Office of ICAO. The panel concluded that deeper cooperation between multilateral development organizations, donor states, industry, and client countries was necessary in order to better mobilize and bundle resources.

While it was recognized that resource mobilization for the air transport industry was somewhat more difficult than for other sectors affected by the COVID-19 pandemic, addressing climate change by implementing concrete measures was high on the agenda of governments and donors. CES also mentioned that WB was actively cooperating with the AUC on air transport matters and that he would meet with the IDB to discuss areas of air transportation of common interest and possible cooperation.



FRA AIR CARGO CONFERENCE FRANKFURT, GERMANY 6 - 8 September 2022

Charles E. Schlumberger (CES), ITRGK, participated as a keynote speaker in the FRA Air Cargo Conference and outlined the current stage of the air transport industry with a special focus on air cargo development. CES concluded his presentation with the following:

1. Global Air Cargo benefitted well during COVID-19, but now that it is recovering, the risk of overcapacity rises.
2. Passenger air travel is increasing, but it is determined by economic realities (GDP, stock markets, and inflation).
3. The Ukraine conflict causes competitive distortions, longer routes, higher fuel costs, and economic uncertainty.
4. The economic outlook is gloomy and more uncertain: will global trade and demand for air cargo continue to rise?
5. Pressure to implement environmental measures for air transportation is rising and will increasingly affect the global air transport industry.

CES further interviewed several candidates who may author the chapter on air cargo in the *ASA Handbook for the Development of Air Transport*.

41st ASSEMBLY OF THE INTERNATIONAL CIVIL AVIATION ORGANIZATION (ICAO) - MONTREAL, CANADA 25 September–6 October 2022

Charles E. Schlumberger (CES) and Megersa Abera Abate (MAA), represented the World Bank Group as observers at the 41st Assembly of the International Civil Aviation Organization (ICAO). A total of 184 Contracting States and 57 international and regional organizations participated in the Assembly, which is held every three years.

1. Summary of the main outcomes of the 41st Assembly of ICAO:

(a) Environmental Objectives and Measures

ICAO Contracting States have almost unanimously agreed on a long-term aspiration goal (LTAG) to get aviation to net zero emissions in 2050. The agreement at the 41st Assembly has been hailed as a success by industry representatives, but environmental-

ists remain critical of an empty goal. The ICAO Assembly agreed on the resolution on the final day of its 41st Assembly. The main objective has been to reach unanimity among the 193 member states on the roadmap to net zero in 2050. Ahead of the Assembly, stakeholders like IATA and the Air Transport Action Group (ATAG) called for clear decisions on two main pillars of the strategy: the Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) and a plan to incentivize the production of sustainable aviation fuels (SAF). While CORSA is seen as a means to compensate for emissions through administrative actions, SAF will have a major role in actually getting to net zero.

The Assembly reinforced its commitment to CORSA, which is on a voluntary basis until 2027. Much debate was spent on confirming the baseline year for the emission reduction scheme when it enters Phase 1 in 2024. The original plan was to use 2019 and 2020 as baseline years, but IATA and ATAG opposed this idea. In their view, the COVID-19 year of 2020 with very low levels of traffic would reflect unrealistically low carbon emissions. The ICAO Council agreed in August that only 2019 data would be used. Subsequently, it was agreed to define 85 percent of emissions from 2019 as the new baseline for CORSA from 2024. Emissions on international flights above this level need to be offset. Domestic flights are excluded from the program. Also agreed upon were revised percentages for sectoral and individual growth factors to calculate offsetting requirements beginning in 2030.

IATA has welcomed the agreement on CORSA, as the Assembly's agreement strengthens CORSA. The lower baseline will place a significantly greater cost burden on airlines, and States must now honor, support, and defend CORSA against any proliferation of economic measures, as these would only undermine CORSA and the collective effort to decarbonize aviation. Nevertheless, the non-governmental organization Transport & Environment considers the outcome of the Assembly "hugely disappointing," especially the 85-percent rule of CORSA: "In its original design, before the watering down by the Assembly, CORSA was already an ineffective scheme, using cheap offsets with no environmental gains. New calculations by T&E show that with this 85 percent baseline, a mere 22 percent of total international aviation emissions would be covered by the scheme and therefore offset in 2030. The price of offset is so low that there will be no incentives for the decarbonization of the industry or the uptake of green fuels."

In terms of SAF, the long-term aspirational goal calls on ICAO Contracting States to come up with incentives for the production of SAF and low-carbon aviation fuels (LCAF).

While embracing SAF, the Assembly still mandated the ICAO Council to actually study and stimulate the production of SAF, assist states with SAF programs, define and promote the transition to SAF, and facilitate access to financing for states actually study and stimulate the production of SAF, assist states with SAF programs, define and promote the transition to SAF, and facilitate access to financing for states. This is especially important in developing countries in Africa, which mostly lack the resources to fund the infrastructure on their own. The Assembly also called on the Council to accelerate the certification of SAF made from new feedstocks. Currently, eleven different procedures have been certified. ICAO should also foster the certification of 100 percent SAF in commercial aircraft. This is given that engine makers have demonstrated that they can operate with pure SAF, but current regulations allow only a 50/50 percent blend on commercial flights. Another request to member states was to support the delivery infrastructure of SAF at airports. A third ICAO conference on aviation and alternative fuels should address a number of requests and present concrete steps.

(b) Enhancement of the safety and efficiency of the international air transport system

At the Assembly, state aviation regulators reached a number of landmark agreements and decisions that will enable them to enhance the safety and efficiency of the international air transport system. States endorsed the latest editions of ICAO's Global Aviation Safety Plan (GASP) and Global Air Navigation Plan (GANP). These strategic plans guide states on cooperation and actions on the basis of global aviation targets and technology roadmaps. The President of ICAO's Council noted the adoption of the safety recommendations that had resulted from ICAO's High-Level Conference on COVID-19 held in October 2021 and the endorsement of the evolution of ICAO's Universal Safety Oversight Audit Programme (USOAP).

The Assembly also endorsed the new ICAO Implementation Support Policy, which will enhance efforts to assist states in implementing the international standards contained in the nineteen Annexes to the Convention on International Civil Aviation.

The Assembly further agreed that regional aviation safety organizations and accident investigation bodies should be better supported through more sustainable funding and legal frameworks. This cooperation is seen as fundamental to enabling cost-effective ICAO compliance for many countries, improving local and regional oversight, and realizing air transport's socio-economic benefits for civil societies.

During a special ceremony at the 41st Assembly, Pacific Island States officially launched a new Pacific Regional Aviation Strategy. The new strategy is a major turning point for the Pacific Sub-region and will

help its participating states work together more effectively with ICAO and the Pacific Aviation Safety Office (PASO) to assure the safe, secure, and sustainable growth of regional air connectivity and socio-economic development. The World Bank has supported many Pacific Island States and PASO in the Pacific Aviation Investment Program (PAIP).

(c) Facilitation and Health

The Executive Committee of the Assembly reviewed several agenda items on health, facilitation, and crisis response. There were many papers dealing with the outcomes of the High-Level Conference on COVID-19, including many calls for the rapid implementation of the outcomes. The main issue highlighted was the need for a crisis response framework and harmonization of measures.

(d) Security

The need for a holistic, risk-based, and consistent approach to aviation cybersecurity across the civil aviation sector was highlighted, especially with the rapid evolution of technology, airspace, and automation. Subsequently, an update to the resolution on cybersecurity was agreed upon.

(e) Economic and various issues

The Economic Commission recognized the need to keep investing in long-term infrastructure and to support the review of existing policies on airport charges, given the impact of the pandemic on the airport industry. ACI will continue to provide in-depth evidence to support the need for a shift in global policy frameworks on airport charges towards ones that incentivize sustainability, efficiency, and investment in infrastructure and that generate a multiplier of socio-economic benefits and connectivity.

The Assembly further adopted the first ICAO Resolution on accessibility of air transport to persons with disabilities and persons with reduced mobility, spearheaded by ACI and developed in cooperation with several states and industry partners. The Resolution acknowledges that dignity and non-discrimination are universal rights that apply to all people and calls for the development of an effective ICAO accessibility strategy and work program.

Furthermore, the Assembly approved amending Resolution A40-16 to include provisions to address trafficking in wildlife, which was recommended in the ACI-IATA Working Paper on Wildlife Trafficking.

2. Elections to the Council of ICAO

The ICAO Council is a permanent body that reports to the Assembly. It has numerous functions, notable among which are to submit annual reports to the Assembly, carry out the directions of the Assembly, and discharge the duties and obligations that are laid on it

2022 GAD World Conference 13 October - 14 November 2022

by the Chicago Convention on International Civil Aviation (1944). In the election of the Council, which is held every three years, adequate representation is given to states of chief importance in air transport, states not otherwise included but which make the largest contribution to the provision of facilities for international civil air navigation, and states not otherwise included whose designation will ensure that all major geographic areas of the world are represented on the Council.

The election process is divided into three parts, with the following states having been elected:

Part I: States of chief importance in air transport: Australia*, Brazil*, Canada*, China*, France*, Germany*, Italy*, Japan*, the United Kingdom*, and the United States*.

Part II: States that make the largest contribution to the provision of facilities for international civil air navigation: Argentina*, Austria, Egypt*, Iceland, India*, Mexico*, Nigeria*, Saudi Arabia*, Singapore*, South Africa*, Spain*, and Venezuela.

Part III: States ensuring geographic representation: Bolivia, Chile, El Salvador, Equatorial Guinea*, Ethiopia, Ghana, Jamaica, Malaysia*, Mauritania, Qatar, the Republic of Korea*, Romania, the United Arab Emirates*, and Zimbabwe.

*Indicates re-election.

In Amsterdam, Charles E. Schlumberger (CES) organized and carried out the *ACI-WB Masterclass Event on Airport Financing Options* and participated in the 2022 GAD World Conference. The Masterclass was an official ACI training session, which was attended by several high-level airport managers and professionals. He prepared a generic case study, which four groups discussed, and an action plan competing for the "best airport management team." The event had excellent reviews and resonated well on social media.

The GAD World Conference focused on the following key strategic priorities: (i) decarbonization of the airport/aviation industry, (ii) building resilience back into the business after the COVID-19 pandemic, (iii) evaluating the new landscape for airport investment and finance, (iv) supercharging airport revenues to make up deficits, (v) navigating regulatory developments, and (vi) future opportunities in digitalization, automation, and Advanced Air Mobility (AAM), which are new transportation systems that can help increase access to areas underserved by the current aviation industry. One interesting conversation was held with McKinsey & Company (Ms. Jasperina de Vries and Ms. Moira Goulmy), who presented their work on decarbonizing airports. It was agreed that they would present their concept to the World Bank Group at an AVSA webinar in January 2023.



COMMUNITY SERVICE

Several World Bank staff members are licensed and active pilots, certified by the US FAA and/or European Aviation Authorities (EASA). To remain current on their pilot qualifications, they regularly fly and undergo the required refresher training. The most rewarding way of keeping current is to engage in community service by providing free air transportation to people of all ages whose medical needs – evaluation, diagnosis, and treatment – can only be met by health care facilities far from their homes.

In the US, the not-for-profit organization Angel Flight provides timely travel to patients who cannot withstand traveling long distances by automobile, rail, or bus or who do not have the financial means to use suitable alternative transportation. Oftentimes, transport in smaller, private aircraft can better accommodate patients whose conditions could worsen if exposed to the recirculated air on commercial flights, or who need efficient point-to-point transport.

One example of such an Angel Flight mission, which was carried out by Charles E. Schlumberger, Lead Air Transport Specialist, Aigerim Shalekenova, Aviation Industry Expert, and Oghenevwogaga Udjo, Airline Expert, was a flight to transporting a brain cancer patient from Manassas, Virginia, to her home town Myrtle Beach in South Carolina.

The WBG's contribution, in accordance to Staff Manual 9.10, consisted of one day of administrative leave to carry out this rewarding community service.

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For more information visit:
www.angelflighteast.org



The airline industry is expected to continue its recovery in 2023 from the COVID-19-induced crisis and reach overall profitability. The industry is forecast to generate a global net profit of USD 9.8 billion on revenues of USD 803 billion, which represents a 1.2% net margin. The recovery is primarily driven by passengers who are eager to return to air travel and is helped by a lower oil price given the slowdown of the global economy. However, the thin profit margin of the industry represents a significant risk, as a small event could impact the recovery and have the industry return to losses.

Passenger traffic is expected to generate revenues of USD 546 billion globally, but not all regions will be profitable in 2023. North American carriers are expected to continue to grow RPK by 16.5%, resulting in a profit of USD 11.5 billion. European airlines should grow by 19.6% and reach a joint profit of USD 5.1 billion in 2023. Middle East carriers are expected to generate a profit of USD 2 billion given a forecasted passenger demand growth of 2.8%. However, Asia-Pacific carriers are expected to reduce their losses to a USD 6.9 billion loss in 2023, despite strong passenger demand growth of 63.0%, which will outpace capacity growth of 48.5%. Latin American airlines are expected to reduce their losses to USD 1.4 billion in 2023, with a passenger demand growth of 14.2%. Africa, finally, which is still experiencing strong macro-economic challenges induced by the COVID pandemic, is experiencing a slower recovery. The airline's losses will reach USD 484 million in 2023, despite passenger demand growth of 30.1% outpacing capacity growth of 22.7%.

Air Cargo markets, which enjoyed strong growth and increased profits during COVID, are forecast to decline in 2023. Revenues are expected to be USD140 billion, which is still 40% above the 2019 level.

In terms of global connectivity, unique city pairs are expected to grow 8% to 19642 in 2023, and the industry at large is expected to fully recover from the COVID crisis in 2024.

The rebound of the air transport industry bears opportunities but also risks. The oppor-

tunities lay in the prospective of rebuilding global connectivity by including emerging and developing countries and bringing them up to global standards in terms of safety, governance, and reliability. This, however, requires investments in human capital and infrastructure to meet the required standards and levels of service. Following the COVID pandemic, there is a global shortage of qualified personnel, including pilots and mechanics in some countries of pilots and mechanics. Especially developing countries are often challenged that they don't find enough qualified personnel for operators or regulators.

Another challenge is the fact that some less developed states still experience poor regulatory oversight and frequent accidents. The industry overall has reached an unprecedented level of safety, primarily thanks to improved oversight and the introduction of modern technology. Nevertheless, the modernization of infrastructure, namely airports and air navigation service providers, will require substantial funding. The transition to next-generation air traffic management systems are an important prerequisite to cope with growing traffic and the entrance of new types of operators, such as unmanned aerial vehicles and VTOL aircraft.

In terms of sustainability, the greatest challenge for air transport is addressing climate change. Since the signing of the Paris Agreement in 2015, global awareness of the climate challenge has risen significantly, and climate news and forecasts have become more alarming. The international air transport sector's commitment to net-zero CO2 emissions in 2050 is of existential importance to the industry. The currently most promising measure for the industry is the introduction of sustainable aviation fuels (SAF), which requires significant investments in feedstocks and infrastructure and a conducive policy regime to finance production.

Given these challenges but also the opportunities of the air transport sector in developing and emerging countries, the WBG will continue to support its client countries in building connectivity provided by sustainable, safe, and affordable air transport services.

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