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Business Environment Update Newsletter

Bogotá Airport City: Strategic Specialization That Drives Investment and Transforms the Aeronautical Industry in Latin America.

BOGOTÁ

BOGOTÁ CIUDAD AEROPUERTO

Invest in Bogotá

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It gives me great pride and enthusiasm to present this Business Environment Newsletter today. Over the last few months, Invest in Bogotá, in close collaboration with our institutional partners, has worked intensively on the development of the **Bogotá Airport City project.**

More than an infrastructure initiative, this strategy represents a comprehensive transformation of the capital's economic, logistics, and urban model. We are convinced that Bogotá is destined to become the most competitive logistics hub in Latin America, leveraging the unique potential of El Dorado International Airport, the regional leader in cargo and passenger movement.

In this edition, we present five chapters through which we lay out a comprehensive vision of the project. We begin with a historical review of foreign investment in the aeronautical sector over the last fifteen years and a comparative analysis of the world's main aeronautical hubs (Querétaro, Toulouse, Singapore, and Dubai), highlighting the conditions that have allowed them to consolidate as investment-attracting ecosystems.

We continue with the description, characterization, and mapping of opportunities, needs, and requirements to make Bogotá an airport city. We conclude with some specific conclusions and recommendations.

We believe that promoting Foreign Direct Investment and attracting anchor companies to the airport environment will be fundamental pillars of this strategy. We also believe that the regional competitiveness of El Dorado International Airport today gives us a magnificent opportunity to build a logistics hub that is unique in the region.

We recognize that the success of this major project depends largely on our capacity to advance enabling infrastructure, train human capital, ensure public-private coordination, offer tax/non-tax incentives, and create institutional conditions that give investors confidence.

We invite foreign companies that see the potential of this historic transformation to count on Invest in Bogotá as their trusted strategic partner. We are prepared to accompany them with our specialized knowledge, strategic connections, and the ability to surface exclusive opportunities at each stage of their investment process. Let us be the bridge that connects your global vision with the competitive advantages of our market.

We categorically reaffirm our commitment to this shared vision for the city and ratify our strategic leadership in the internationalization of the project, the attraction of anchor companies, their connection to a convergent and sustainable value chain, and the development of the human capital required for this transformation.

Content.

1. Foreign Direct Investment in the Aeronautical Industry

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1. Foreign Direct Investment in the Aeronautical Industry

1.1. Investment Dynamics in the Aeronautical Industry, 2010–2024

According to fDi Markets data, Foreign Direct Investment (FDI) in the aeronautical industry showed remarkable dynamism between 2010 and 2024, with more than 2,200 projects representing capital investment of approximately USD 88.4 billion and the creation of about 330,000 jobs. On average, each project generated 148 jobs and attracted USD 39 million in investment.

The historical trend of FDI in the sector was marked by strong growth that peaked in 2019, with 204 recorded projects. This boom responded to unprecedented demand for commercial aircraft—with cumulative orders exceeding 14,000 units worldwide—optimization of transnational supply chains, and a wave of industrial relocation.

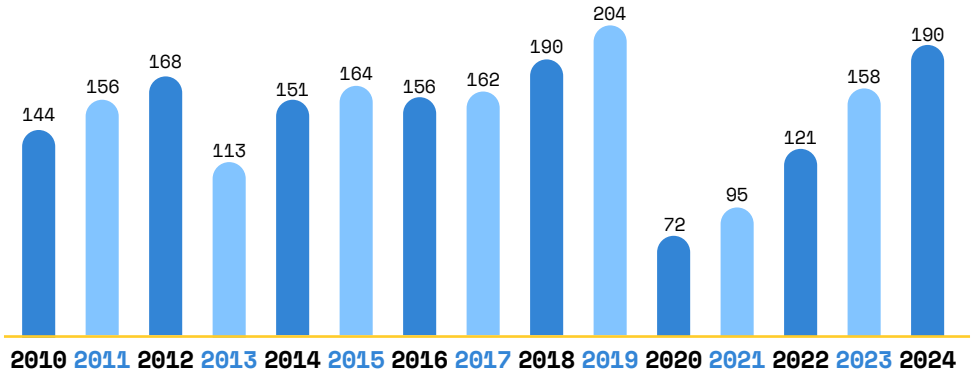
However, this momentum was drastically interrupted in 2020 by the pandemic, when the number of projects fell to 72, a 65% contraction from the previous year that underscored the sector's vulnerability to systemic crises.

The industry's investment recovery was gradual during the post-pandemic period (2021–2024). After reaching its lowest point with 72 projects in 2020, the number of projects has increased steadily, with a particularly notable rebound in 2024 to 190 projects, almost returning to the pre-crisis record.

Capital investment behavior in the aeronautical industry during the period analyzed (2010–2024) shows high volatility, marked by an initial peak and a subsequent shift that reflects a new strategy by companies in the sector. The period began with the largest capital inflow in 2010, reaching USD 10.396 billion, and remained at relatively high levels through 2019 (USD 5.581 billion). The 2020 crisis dramatically interrupted this trend, reducing total investment to its lowest point: USD 2.079 billion. After this trough, capital recovered strongly, especially in 2023, which recorded USD 8.709 billion—the highest value in more than a decade—driven by a robust average investment of USD 55.1 million per project.

Employment figures associated with FDI confirm the aeronautical industry's high capacity to generate specialized jobs. Although job creation registered its lowest efficiency per project in 2021 (89 jobs), the post-pandemic recovery showed high labor intensity, peaking in 2023 with 30,325 jobs and an average of 191 jobs per project.

Figure 1. Global Aeronautical Industry Investment Projects, 2010–2024



Source: fdi Markets.

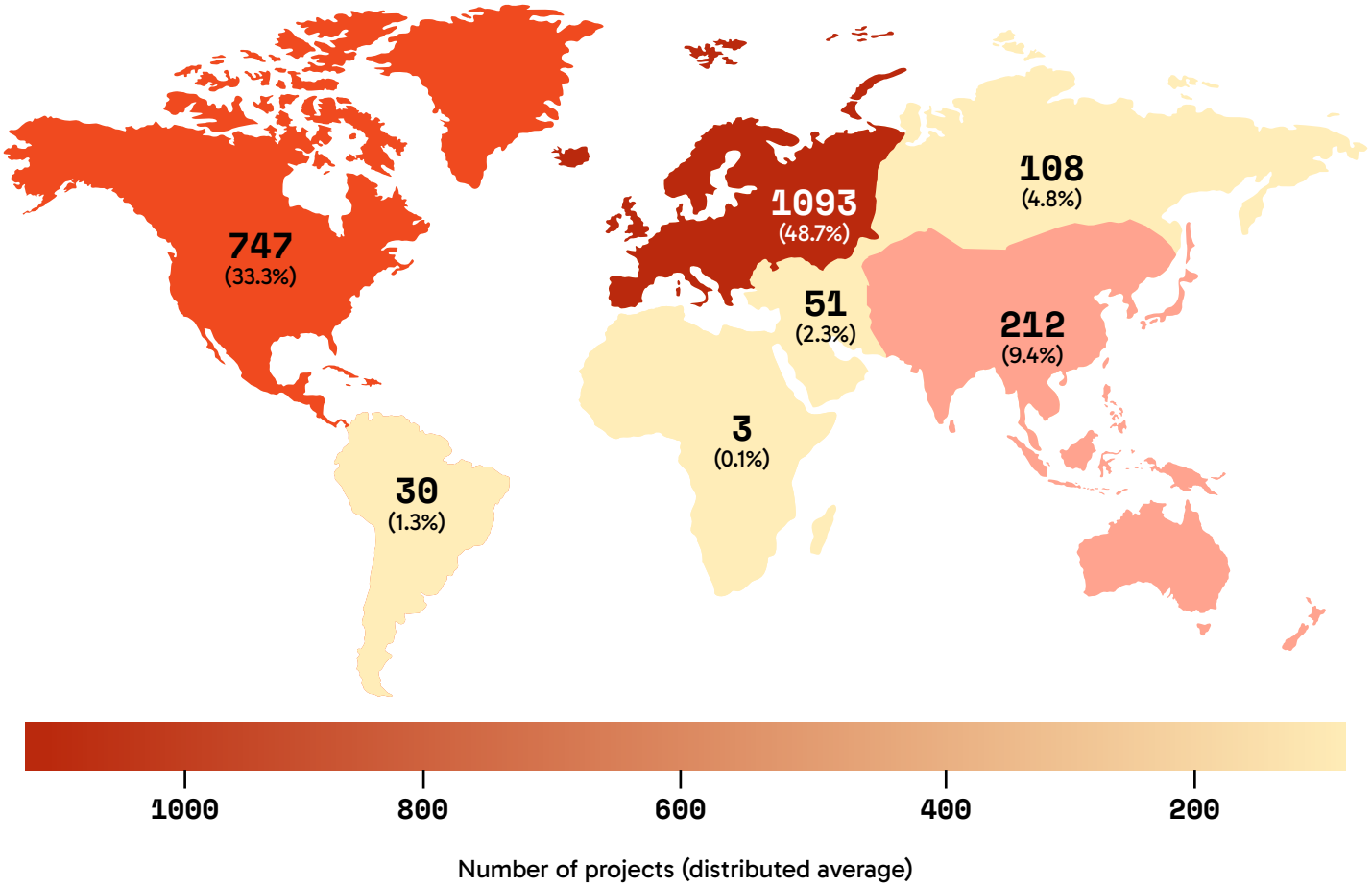
Manufacturing stands out as the main investment activity in the aeronautical industry, accounting for 29.4% of all projects (657). The segment reached its maximum performance in 2015 and 2019, with 61 projects each year, generating the greatest number of jobs (158,758) and capital invested (USD 43,370.6 million). Other notable activities include maintenance and services (515 projects, equivalent to 23% of the total), which are evolving toward high-tech models, as shown by Safran's engine center of excellence in Belgium (USD 55.8 million), where artificial intelligence and robotics are integrated. Sales, marketing, and support (504 projects) and research and development (201 projects) are also relevant.

As for modality, new (greenfield) projects predominate, accounting for 66.4% and outpacing expansions and relocations. An emerging phenomenon in this industry is the growth of innovative subsectors such as commercial drones—exemplified by Embention's USD 58.7 million investment in the United Arab Emirates—and Urban Air Mobility (with Skyports developing four projects in Dubai). Although still a minority, these niches have seen annual growth of 18% in committed capital since 2020.

1.2. Geographic Distribution of Foreign Direct Investment

The concentration of aeronautical projects is mainly in Western Europe and North America, with 1,093 and 747 projects, respectively; these regions also lead in total investment and job creation. In contrast, regions such as Asia-Pacific, Emerging Europe, and the Middle East show moderate figures, while Latin America and the Caribbean and Africa register the lowest participation and invested amounts.

Figure 2. Percentage of Investment by Region Worldwide



The United States is the top destination, with 324 projects that generated 33,097 jobs and an estimated investment of USD 9.32 billion. It is followed by the United Kingdom, Mexico, India, and France. Mexico stands out for having the highest average jobs per project (317), reflecting its specialization in low-cost aeronautical manufacturing. The following table summarizes these dynamics:

Table 1. Top 5 Destination Countries by Attractiveness, 2010–2024

Country	Project	Total Investment (USD M)	Employment / Project	Competitive Advantage
EE.UU.	324	9,320	102	Domestic market, military R&D
Mexico	129	5,948	317	Labor cost, proximity to the U.S.
India	127	7,597	294	Human capital, incentives
China	123	9,697	285	Domestic demand, subsidies
Emiratos	110	2,721	83	Logistics hub, tax-free regime

Source: fdi Markets.

Singapore leads as a destination city, with 104 projects (4.65% of the total). However, Bangalore (India) stands out for having received the highest total investment—just over USD 3.6 billion—and the greatest job creation (13,706 jobs), as well as registering the highest average project size in both investment and job creation.

Other cities that stand out in attracting FDI include Dubai (73 projects), Querétaro (32), Abu Dhabi (29), Dublin (28), Shanghai (26), and Toulouse (26). These cities have developed specialized aerospace ecosystems that combine manufacturing capabilities, maintenance services, and, in some cases, research and development centers.

1.3. Leading Investing Companies

The sector shows a well-defined oligopolistic structure. Between 2010 and 2024, only 848 companies invested in the sector—less than 1% of the 108,459 companies that carried out global FDI—evidencing high technological and capital barriers to entry. Within this group, the top ten companies account for 18.8% of total projects (421 out of 2,241) and 35.3% of cumulative capital investment. These companies also generated 27.8% of sector employment, with an average of 229 jobs per project—55% above the sector average of 148 jobs.

Table 2. Top 10 Investing Companies in the Aeronautical Industry, 2010–2024

Ranking	Company	Country of Origin	Projects in the Sector	% of Global Total**	Projects Last 12 Months
1	Airbus	Netherlands	124	75,1 %	9
2	Boeing	United States	74	36,6 %	7
3	Bombardier	Canada	42	51,8 %	2
4	CAE	Canada	31	81,5 %	0
5	GE Aerospace	United States	28	33,3 %	5
6	Lufthansa Technik	Germany	27	67,5 %	2
7	Rolls-Royce Holdings	United Kingdom	27	30,6 %	2
8	Airbus Helicopters	Netherlands	24	48,9 %	3
9	Bombardier Aerospace	Canada	22	62,8 %	0
10	FL Technics	Lithuania	22	100,0 %	1

Source: *fdi Markets.*

The leadership of Airbus and Boeing is particularly noteworthy. Airbus leads with 124 projects, followed by Boeing with 74. Together, these two companies account for 198 projects and USD 16,225.5 million in capital investment, consolidating their dominant position in both commercial aircraft manufacturing and cross-border investment in the sector. Their geographic strategy combines the consolidation of traditional clusters—Toulouse for Airbus, Seattle for Boeing—with strategic expansions in emerging markets such as Querétaro (Mexico) and Bangalore (India).

Beyond the major manufacturers, a group of specialized suppliers controls critical segments of the value chain. Companies such as GE Aerospace (28 projects, USD 1,909.1 million), Rolls-Royce (27 projects, USD 1,693.2 million), and Safran Group (with an average investment of USD 71.7 million per project) dominate the manufacture of engines and propulsion systems. This vertical, oligopolistic configuration generates operational interdependencies: aircraft manufacturers depend on a limited number of suppliers of critical components, while those suppliers concentrate production among a few main customers.

2. Main Aeronautical Hubs Around the World

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2. Main Aeronautical Hubs Around the World

To identify replicable models that can guide development of the Bogotá Airport City strategy, four aerotropolis with different but successful trajectories are analyzed: Querétaro (Mexico), Dubai (United Arab Emirates), Singapore, and Toulouse (France).

The analysis examines their structural characteristics, strategic development approaches, the profile of foreign companies established there, and the mechanisms for generating added value that have consolidated their aerospace ecosystems. This comparative approach yields lessons on different development paths: from specialization in component manufacturing to the integration of high-value services, including global logistics models and technology-innovation clusters. Each case represents a particular configuration of competitive advantages, industrial policy, and public-private coordination that has attracted Foreign Direct Investment (FDI) and positioned these territories as relevant nodes in global aerospace value chains.

The selection of these four aerotropolis reflects their proven effectiveness in attracting aerospace FDI and their relevance to the Colombian context. Querétaro provides the most successful Latin American benchmark for attracting foreign investment, having brought in more than USD 2 billion in aerospace FDI through competitive tax incentives, rapid development of technical human capital, and proximity to the North American market—factors that can be replicated to position Colombia in regional integration.

Dubai and Singapore represent hub models that have captured massive investments in Maintenance, Repair, and Overhaul (MRO) services and global logistics operations, leveraging their strategic geographic position—a critical dimension for attracting FDI given Bogotá's location as a South American connectivity node.

Toulouse constitutes the European standard for technology clusters, where the presence of OEM Airbus has catalyzed the arrival of hundreds of international suppliers, foreign R&D centers, and advanced manufacturing operations.

2.1. The Querétaro Aeronautical Hub: A Pillar of the Aerospace Industry in Latin America

Continent	North America
Country	Mexico
Approximate distance to city center	22 km from Santiago de Querétaro
Country GDP (USD)	USD 1.79 trillion (2023)
City population	794,789 (2020)
Total city area	363 km² (2020)
Total annual passengers 2024	2,074,950
Logistics areas or industrial parks	Querétaro Aerospace Cluster

Configuration of the operations center

Querétaro Intercontinental Airport (AIQ) is Mexico's principal aeronautical operations center and a strategic hub for the regional aerospace industry. Its positioning is based on a comprehensive model that articulates specialized infrastructure, sectoral industrial concentration, and an innovation ecosystem.

The complex is home to more than 120 companies in the sector—including Bombardier, Safran, Airbus, and GE Aviation—and offers a complete value chain that ranges from component design and manufacturing to Maintenance, Repair, and Overhaul (MRO) services. Logistics connectivity, via two operational runways and access to free trade zones, facilitates international operations and links to global distribution centers such as Miami, Houston, and Panama.

Synergy between academia and industry is a determining factor in the hub's development. The Aeronautical University in Querétaro (Universidad Aeronáutica en Querétaro, UNAQ) provides specialized technical training, while technology-transfer programs with countries such as Canada and France drive sector innovation.

This public-private coordination has positioned Querétaro as the world's fourth largest aeronautical exporter, with annual sales exceeding USD 8 billion.

Foreign Investment and Industrial Development

The Querétaro aeronautical hub has established itself as the principal recipient of Foreign Direct Investment (FDI) in the Latin American aerospace sector. Between 2010 and the present, it has attracted more than USD 1.5 billion across 32 projects, generating more than 9,000 specialized jobs. This growth has been driven by corporations such as Safran, Bombardier, and GE Aviation, which have installed advanced manufacturing centers with global reach.

The hub's specialization focuses on components that are critical to the aeronautics industry. Safran produces landing gear for Airbus and Boeing aircraft; Bombardier manufactures complex fuselage structures; and GE Aviation develops components for propulsion systems. The ecosystem is supported by tax incentives, including 25% income-tax deductions for research and development activities, supplemented by partnership with UNAQ for continuous training of specialized talent.

Foto: https://www.aiq.com.mx/

Economic Impact and Diversification

The aerospace sector represents 12% of state GDP, with export rates above 90% in specific facilities. Projects such as the Safran Landing Systems Campus—with USD 200 million in investment—exemplify the hub's capacity to attract high value-added operations.

Querétaro is currently diversifying its portfolio toward emerging sectors such as advanced air mobility and manufacture of unmanned systems, consolidating its position as Mexico's leading aeronautical cluster and a Latin American benchmark.

Strategic Framework and Institutional Coordination

Development of the Querétaro aeronautical hub reflects coordinated policy among the federal government, the state government, and private enterprise. Coordination among government, industry, and academia has been fundamental, materialized in agreements between UNAQ and companies in the MRO sector that cover both university education and technical high-school training.

This coordination is part of the National Strategic Program for the Aerospace Industry (Pro-Aéreo), which brings together public and private actors to strengthen human-capital capabilities, promote domestic and foreign markets, and advance sector technology.

Components of the program include: Mexico's participation in international aircraft and engine manufacturing programs; design of strategic national procurement programs; the inauguration of a specialized testing laboratory; and implementation of a management entity to coordinate and execute the plan's strategic activities.

Pro-Aéreo reflects a coordinated strategy to integrate policies that drive development of the national aerospace industry, with the aim of positioning Mexico among the world leaders in sector investment and sales volume.

Photo: https://www.aiq.com.mx/

Table 3. Sectors and Companies in the Querétaro Aeronautical Hub

Sector	Company (Origin)	Focus/Products	Example Clients
Aerospace	Safran Group (France)	Landing gear, engines	Airbus, Boeing
	GE Aviation (United States)	Commercial aviation engines	Delta, United Airlines
	ITP Aero (Spain)	Turbines and components	Rolls-Royce, Airbus
	Bombardier (Canada)	Fuselages and structures	Regional airlines
	Honeywell (United States)	Electronic systems and controls	Bombardier, Embraer
	Liebherr Aerospace (Germany)	Flight-control systems	Airbus A350, Boeing 787
Automotive	Tremec (Mexico/ United States)	High-performance transmissions	Ferrari, Ford
	Magna (Canada)	Assembly and electronics	BMW, Tesla
Electric Mobility	Continental (Germany)	Autonomous braking and sensors	Volkswagen, Mercedes-Benz
	Nemak (Mexico)	Lightweight components for EVs	GM, Ford EVs
	Brose (Germany)	Door and seat systems	Tesla, BMW
Technology	Microsoft Azure (United States)	Data centers and cloud solutions	Global companies
	KIO Networks (Mexico)	IT infrastructure and security	Banks, government

Source: Invest in Bogotá based on fDI Markets.

2.2. The Toulouse Aeronautical Hub:

Heart of the European Aerospace Industry

Continent	Europe
Country	France
Approximate distance to city center	6.7 km from Toulouse
Country GDP (USD)	USD 3.05 trillion (2023)
City population	511,684 (2022)
Total city area	118 km² (2022)
Total annual passengers 2024	7,800,000
Air operations (annual)	66,578 movements
Logistics areas or industrial parks	Aerospace Valley / Airbus Blagnac Zone (adjacent industrial area)

Configuration of the operations center

Toulouse is Europe's principal aeronautical center and a global reference in the aerospace sector. Its strategic position is underpinned by the presence of Airbus, whose headquarters and main assembly lines are located in the city, where models such as the A320, A350, and A380 are produced. The complex hosts more than 1,200 sector companies, including Thales, Safran, Liebherr Aerospace, and Collins Aerospace, forming a specialized supply chain. This ecosystem is organized around Aerospace Valley, one of the world's largest aerospace clusters, employing more than 140,000 professionals and facilitating collaboration among industry, academia, and government.

A defining feature of the hub is its capacity to integrate the entire aerospace value chain, from conceptual design to aircraft maintenance. The city concentrates centers of excellence in composite materials, advanced propulsion systems, and digitalization technologies applied to aeronautical manufacturing. This vertical integration optimizes production processes, reduces development times, and improves the competitiveness of firms established in the region.

Airport and technology infrastructure are fundamental to the ecosystem. Toulouse-Blagnac Airport, connected to more than 100 international destinations, includes terminals dedicated to executive aviation and air cargo, facilitating transport of critical components such as fuselages and wings. The Francazal Aeronautical Zone functions as a technology park specializing in R&D, reinforcing the hub's innovation capacity.

Synergy between academia and industry is a determining factor in the hub's development. The specialized training system includes institutions such as ISAE-SUPAERO (Institut Supérieur de l'Aéronautique et de l'Espace) and ENAC (École Nationale de l'Aviation Civile), which supply specialized human resources to the industry.

Foreign Investment and Industrial Development

The Toulouse aeronautical hub has attracted more than USD 1.8 billion in investment since 2010, across 26 projects that have generated more than 3,400 specialized jobs.

These projects include expansion of Airbus assembly lines for the A320 and A350 families and production of LEAP engines by Safran in collaboration with CFM International. Thales has developed advanced avionics systems, while Liebherr Aerospace manufactures air-conditioning systems for the A380 and A400M.

The hub's specialization focuses on components that are critical to the aeronautics industry. Foreign investment has helped diversify production capabilities. ITP Aero produces components for Rolls-Royce and Safran engines, while Thales Alenia Space leads satellite projects for ESA and NASA. The ecosystem is supported by tax incentives, such as a 30% research tax credit, and collaboration with research centers such as ONERA (Office National d'Études et de Recherches Aérospatiales) and CNES (Centre National d'Études Spatiales).

Toulouse is advancing projects in Sustainable Aviation Fuel (SAF), hydrogen aircraft, and artificial intelligence applied to manufacturing, consolidating its position in aerospace production and innovation.

Photo: https://n9.cl/63onu

Table 4. Sectors and Companies in the Toulouse Aeronautical Hub

Sector	Company (Origin)	Focus/Products	Example Clients
Aerospace	Airbus (France)	A320/A350 aircraft assembly	Lufthansa, Qatar Airways
	Safran (France)	LEAP engines	CFM International
	Thales (France)	Avionics systems	Airbus, Boeing
	Liebherr Aerospace (Germany)	Air-conditioning systems	Airbus A380, A400M
Automotive	Continental (Germany)	Sensors for autonomous vehicles	Tesla, BMW
Space	Thales Alenia Space	Satellites and space systems	ESA, NASA
Technology	Capgemini (France)	Digital solutions	Airbus, Dassault

Source: Invest in Bogotá based on fDI Markets.

Strategic Framework and Development Programs

France 2030 Plan

Development of the hub is part of this national investment plan, which allocates EUR 54 billion to strengthen the capacity of companies, universities, and research centers to respond to future environmental challenges. The plan includes investments in innovation and transformation of strategic sectors of the French economy.

Its objectives include training 11,000 students in five years, creating ten new qualification programs, and raising awareness among 300,000 people regarding sector challenges. Total investment amounts to EUR 45 million, of which EUR 20 million is financed by the French government through France 2030.

Programa COMETES

As part of the France 2030 Plan, the COMETES (“Compétences et Métiers de l’Espace”) program was launched in May 2025, to meet the space sector’s skills requirements identified by industry. The program is a specialized training strategy for technicians, engineers, and experts in the sector, coordinating universities, research centers, industry representatives, the French government, and local authorities.

Sustainable Aviation Initiative

Toulouse is developing a sustainable aviation initiative through coordination among the French government, the Occitanie region, Toulouse-Blagnac Airport, Airbus, ATR, and the Aerospace Valley association, aimed at developing Sustainable Aviation Fuel (SAF).

The European Union, as in several countries—including Colombia—plans progressive incorporation of SAF. This initiative sets faster adoption targets than those proposed by the European Union, with the aim of positioning Occitanie as a benchmark region in sustainable aviation.

Tax Incentives

The French government offers a research tax credit that allows companies to deduct up to 30% of research and development expenses from their taxable base. Although not exclusive to the aeronautical sector, this incentive applies across the aerospace production chain.

2.3. The Singapore Aeronautical Hub: Excellence in Aviation and Aerospace Technology

Continent	Asia
Country	Singapore
Approximate distance to city center	20 km from Changi
Country GDP (USD)	USD 501.4 billion (2023)
City population	5,920,000 (2024)
Total city area	734 km² (2024)
Total annual passengers 2024	67,700,000
Air operations (annual)	366,000 movements (2024)
Logistics areas or industrial parks	Airport Logistics Park Singapore (ALPS) and Changi Air Cargo Centre (FTZ)

Configuration of the operations center

Changi Airport serves as the base of this ecosystem, with capacity for 85 million passengers annually and a logistics system connecting 140 global destinations. Seletar Aerospace Park is a specialized complex that hosts more than 60 companies such as Rolls-Royce, ST Aerospace, and Boeing. The park concentrates high-value activities in MRO, component manufacturing, and research into new technologies, offering facilities for engine development and composite materials.

Singapore accounts for 10% of the global MRO market, generating USD 2.5 billion annually. Companies such as SIA Engineering Company provide specialized services to airlines and cargo operators. The country has developed capabilities in component manufacturing for Airbus and Boeing, supported by research centers in materials and propulsion systems. Its position as the world's second-largest air-cargo hub is underpinned by digitized processes that include blockchain for goods traceability.

Synergy between academic institutions and industry is decisive in the hub's development. Institutions such as Nanyang Technological University and the Agency for Science, Technology and Research (A*STAR) provide specialized training and research support, facilitating transition toward emerging technologies such as Urban Air Mobility (eVTOL drones), additive manufacturing, and sustainable fuels.

Foreign Investment and Industrial Development

Singapore's aeronautical hub has attracted USD 2.2 billion in foreign investment since 2010, across 104 strategic projects that have generated 8,200 specialized jobs. Notable projects include Rolls-Royce's engine center for the Trent XWB and ST Engineering's maintenance facilities.

The hub specializes in MRO services and critical components for the aerospace industry. Companies such as Airbus and Pratt & Whitney have established digital-innovation centers and facilities for state-of-the-art engines. The ecosystem is supported by tax incentives and the infrastructure of Seletar Aerospace Park, consolidating local technological capabilities.

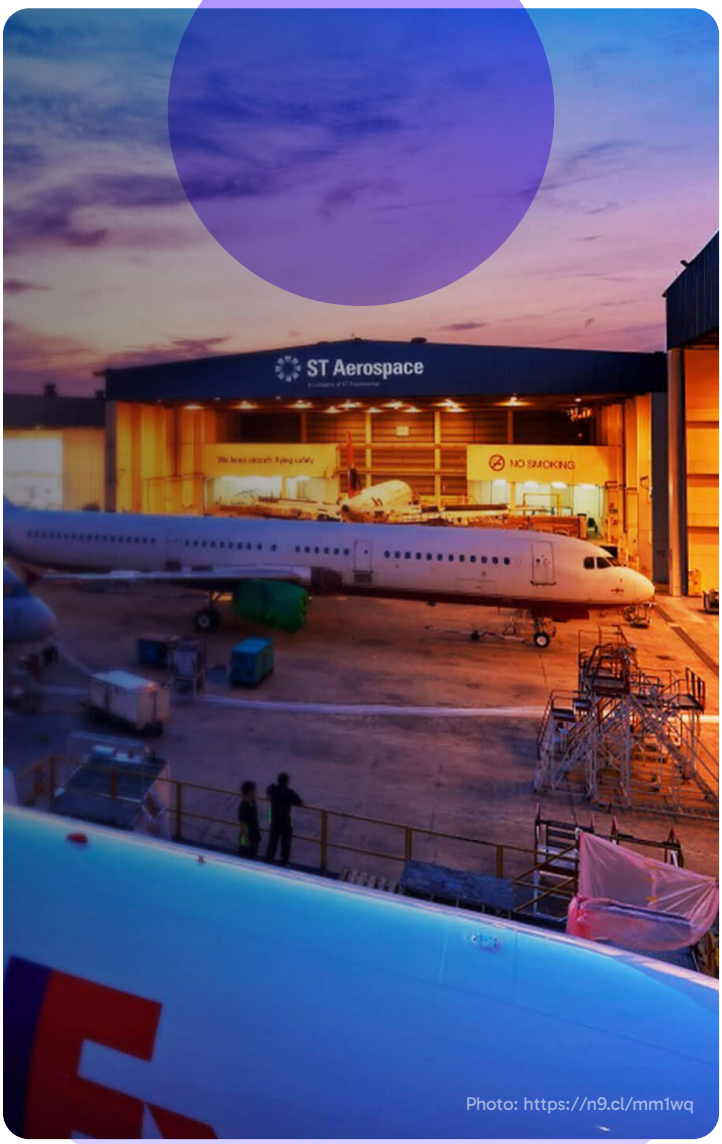


Photo: https://n9.cl/mm1wq

Singapore is advancing projects in Urban Air Mobility, additive manufacturing, and sustainable fuels, consolidating its position as an innovation center in global aviation.

Table 5. Sectors and Companies in the Singapore Aeronautical Hub

Sector	Company (Origin)	Focus/Products	Example Clients
Aerospace	Rolls-Royce (United Kingdom)	Trent XWB engines	Singapore Airlines, Airbus
	ST Engineering (Singapore)	Fleet maintenance	DHL, FedEx
	Pratt & Whitney (United States)	Commercial aircraft engines	AirAsia, VietJet
	Airbus (France)	Digital Innovation Center	Global airlines
	FL Technics (Lituania)	MRO para aerolíneas low-cost	Scoot, Lion Air
	Diehl Aerospace (Germany)	Avionics and cabin systems	Airbus A320, Boeing 737
Logistics	DHL Aviation (Germany)	Global air cargo	Amazon, e-commerce
	SATS (Singapore)	Cargo and passenger handling	Emirates, Qantas
Technology	Thales Group (Francia)	Avionics systems	Singapore Army
	IBM (United States)	AI solutions for maintenance	Boeing, ST Engineering

Source: Invest in Bogotá based on fDI Markets.

Strategic Framework and Institutional Coordination

Aircraft Leasing Scheme & Aircraft Investment Manager Incentive

The Government of Singapore implements tax incentives aimed at developing the aviation industry. This incentive offers preferential income-tax rates of 8%–10% on income generated from leasing aircraft or engines.

The scheme provides tax exemptions on qualified income from: i) operating or finance leases of aircraft or engines to third parties, ii) services related to aviation investment management, such as advisory or structuring of leasing contracts, and iii) capital gains from aircraft sales. This incentive facilitates capital attraction, cross-border operations, and the presence of global players in the aeronautical ecosystem.

Complementary Incentives

The Government offers additional incentives applicable to the aeronautical sector:

- **Pioneer Certificate Incentive (PC):** allows total or partial income-tax exemption for an initial period of five to fifteen years for companies engaged in manufacturing high-tech products or providing high value-added services. Requirements include: i) a minimum investment of SGD 44 million by year five of the project and ii) employment of at least 30 additional qualified personnel based in Singapore.

- **Development and Expansion Incentive (DEI):** allows companies undertaking high value-added investment and productive expansion projects to receive a reduced tax rate on profits (5%, 10%, or 15%) for five years, renewable in increments of up to five years, up to a maximum of 40 years.

- **Investment Allowance (IA):** allows income-tax exemption of up to 100% of capital investment made in eligible projects or activities, for a maximum period of five years (up to eight years for assets acquired via installment purchase). It applies to companies investing in industrial automation and modernization, with a limit of SGD 10 million per project.

Foto: https://n9.cl/bmic94

2.4. The Dubai Aeronautical Hub: Axis of Global Connectivity and Platform for Logistics Innovation

Continent	Asia
Country	UAE
Approximate distance to city center	4.7 km from the financial district
Country GDP (USD)	USD 504.2 billion (2023)
City population	3,650,000 (2024)
Total city area	4,114 km² (2024)
Total annual passengers 2024	92,300,000 (2024)
Air operations (annual)	440,300 movements (2024)
Logistics zones or industrial parks	Dubai Cargo Village and Dubai South Logistics District (adjacent free zone)

Configuration of the operations center

Dubai has established a global aviation model, positioning itself as a hub connecting East and West. This hub combines specialized infrastructure, airport services, and a technology-innovation strategy backed by public and private investment.

Dubai International Airport (DXB) handled 86.9 million passengers in 2023 and offers connections to more than 240 destinations in 100 countries. Terminal 3, operated by Emirates, is the world's largest terminal under one roof.

Dubai World Central (DWC) is projected to have capacity for 260 million passengers annually by 2030 and is among the world's six busiest airports for air cargo. The Dubai South economic zone, with tax incentives and 100% foreign ownership, complements this infrastructure ecosystem.

Emirates, the airline with the highest international traffic and a fleet of more than 250 aircraft, operates from this hub alongside flydubai. Dubai Aerospace Enterprise (DAE) ranks among the ten largest aircraft lessors globally. The Dubai Logistics Corridor provides a customs-free connection between DXB and DWC, with automation systems that include robotic baggage management and blockchain technology in customs processes.

Investments focus on sustainability—Emirates National Oil Company (ENOC) leads Sustainable Aviation Fuel (SAF) projects—and on digitalization, with deployment of 3D baggage scanners and facial check-in systems. Dubai Future Accelerators finances start-ups in emerging areas such as drones and Urban Air Mobility (eVTOL).

Synergy between academic institutions and industry is evident in the Education and Training Center and the Emirates Flight Training Academy in Dubai South. Emirates Aviation University provides specialized training for the sector.

Foreign Investment and Industrial Development

Dubai's aeronautical hub has attracted USD 1.6 billion in strategic investment since 2010, generating more than 6,000 specialized jobs. Notable projects include Emirates Engineering's maintenance facilities for the A380 fleet, Strata Manufacturing's composite-components plant (supplier to Airbus and Boeing), Boeing's innovation center, and Lufthansa Technik's MRO center for executive jets.

The hub's specialization includes component manufacturing and MRO services. Companies such as dnata rank among the top three in global cargo handling. The ecosystem is supported by free-zone regimes with tax exemptions and access to global talent via the Golden Visa program.

Dubai is advancing projects in sustainable fuels, airport-process digitalization, and Urban Air Mobility, consolidating its position as the region's aeronautical center.

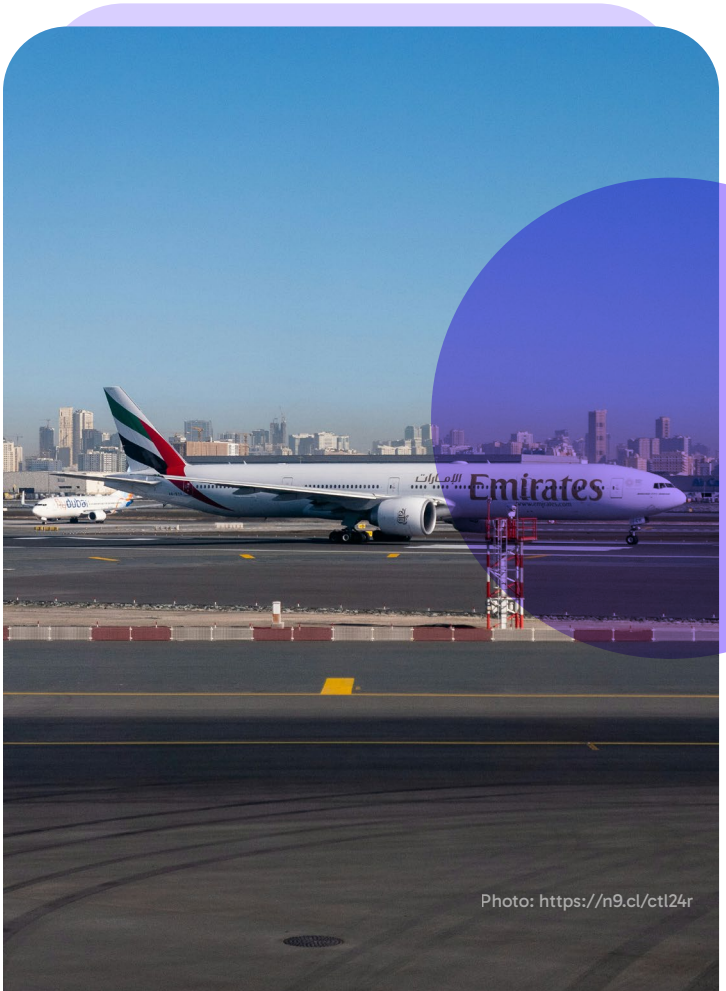


Photo: https://n9.cl/ctl24r

Table 6. Sectors and Companies in the Dubai Aeronautical Hub

Sector	Company (Origin)	Focus/Products	Example Clients
Aerospace	Emirates Engineering (EAU)	Airbus A380 maintenance	Emirates, flydubai
	Strata Manufacturing (UAE)	Composite components	Airbus, Boeing
	Boeing (United States)	Innovation Center	Global airlines
	Lufthansa Technik (Germany)	MRO for executive jets	VistaJet, NetJets
	Rhinestahl (United States)	Ground support equipment	Emirates, Etihad
	Diehl Aerospace (Germany)	Cabin management systems	Airbus A380, Boeing 777
Logistics	dnata (UAE)	Cargo handling (Top 3 worldwide)	FedEx, UPS
	SkyCargo (UAE)	Air-cargo transport	Pharma, electronics
Energy	ENOC (UAE)	Sustainable Aviation Fuel	Global airlines

Fuente: Invest in Bogotá con base en FDI Markets

Strategic Framework and Institutional Coordination

Specialized Free-Zone Model

Dubai's free-zone model is specialized by sector. For the aeronautical field, four zones operate: Dubai Airport Freezone (DAFZ), Dubai South (Aviation District), Jebel Ali Free Zone (JAFZA), and Dubai Multi Commodities Centre (DMCC).

This model offers a tax environment that includes income and profit-tax exemptions for up to fifty years. Companies have flexibility in hiring foreign personnel, allowing sponsorship and aligning requirements with those applicable to Emirati citizens. Administrative processes include simplified registrations, licenses, and permits, although access requires compliance with specific conditions.

Dubai South – Aviation District

Dubai South is a specialized initiative for the aeronautical and aerospace industries. It offers aerospace services that include hangars, warehouses, R&D centers, education centers, MRO providers, and offices. Its free-zone status and proximity to Al Maktoum International Airport and the Logistics District facilitate foreign trade by air and sea.

Among the district's components, an electronic access system streamlines pass management for export goods, reducing time, costs, and paperwork in logistics operations.

The link between academia and industry is evidenced in the Education and Training Center and the Emirates Flight Training Academy, which provide specialized technical and professional training for the aeronautical sector.

Foto: https://n9.cl/m9gd9c

2.5. Comparative Summary of the Hubs

Querétaro, Singapore, Dubai, and Toulouse represent different models of aeronautical development, each with a distinct strategic approach and key sectors that drive their competitiveness.

Querétaro is positioned as a center for advanced manufacturing and an integrated supply chain, excelling in electric mobility, data center technology, and aerospace-automotive, with companies such as Safran, GE Aviation, and Nemak as success stories.

Meanwhile, Singapore is committed to excellence in maintenance, repair, and overhaul (MRO) and digital innovation, driving sectors such as Logistics 4.0, aeronautical fintech, and Urban Air Mobility, with Rolls-Royce, ST Engineering, and Airbus as key players.

Dubai has consolidated its position as a global and sustainable logistics hub, leading the way in green fuels (SAF), airport real estate, and commercial drones, with Emirates Engineering, Strata Manufacturing, and dnata as international benchmarks.

Finally, Toulouse stands out for its approach to integrated research and development and the training of specialized talent, excelling in civil space, aeronautical electrification, and composite materials, with Airbus, Safran, and Thales Alenia Space as pillars of its ecosystem.

Each hub reflects a unique combination of strategic factors, emerging sectors, and iconic companies that position it as a global benchmark in the aeronautical industry.

Singapore

Dubai

Toulouse

Querétaro

Table 7. Resumen hubs

Hub	Strategic Approach	Emerging Sectors	Iconic Companies (Success Stories)
Querétaro	Advanced manufacturing and integrated supply chain	– Electric mobility – Tech (Data Centers – Aerospace-automotive	– **Safran:** Landing gear for Boeing/ Airbus – **GE Aviation:** CFM56 Engines – **Nemak:** Lightweight components for EVs
Singapore	Excellence in MRO and digital innovation	– Logistics 4.0 – Aeronautical fintech – Urban Air Mobility (UAM)	– **Rolls-Royce:** MRO Center for Trent Engines – ST Engineering Maintenance for FedEx/DHL – **Airbus:** Skywise (predictive analytics)
Dubai	Global logistics hub and sustainability	- Green fuels (SAF) - Airport real estate - Commercial drones	– **Emirates Engineering:** MRO para A380 – **Strata Manufacturing:** composites para Boeing – **Dnata:** top 3 mundial en handling
Toulouse	Integrated R&D and specialized talent	– Civil space – Aeronautical electrification – Composite materials	– **Airbus:** A320/A350 final assembly – **Safran:** LEAP Engines – **Thales Alenia Space:** Satellites for ESA

Source: Invest in Bogotá.

3. **Bogotá Is an Airport City:** An Unprecedented Investment Platform in Latin America

3. **Bogotá Is an Airport City:** An Unprecedented Investment Platform in Latin America

According to this comparative analysis and global air transport trends, Bogotá has assumed a strategic role in the region, consolidating itself as the most important airport city in Latin America and an international benchmark.

3.1. Context and Justification for Bogotá Airport City's Commitment

El Dorado International Airport is the main air terminal in Latin America, with 45 million passengers transported in 2024 and nearly 800,000 tons of cargo managed in the same period. The terminal accounts for 80% of the country's air travel and is positioned as a key component of the transport system and the national economy, supported by its strategic geographical location in terms of air navigation.

Bogotá is the epicenter of the Colombian economy. The Central Region contributes more than 40% of national Gross Domestic Product (GDP), while the capital accounts for 25% of this indicator. This economic dynamism is based on available human capital and a specialized business ecosystem. Cundinamarca, one of the world's leading flower exporters, exemplifies the integration of the regional logistics chain.

It is estimated that each Colombian peso invested in air transport generates 3.6 Colombian pesos in the economy, a multiplier applicable to Bogotá's context given that 80% of the country's travel passes through El Dorado.

The Bogotá Airport City (BCA) program is established in the 2024–2028 District Development Plan as a development model that links the city with El Dorado International Airport. The program represents the first systematic initiative in more than seven decades aimed at recognizing the airport as a strategic driver of urban and regional competitiveness.

The strategy is based on strengthening Bogotá's position in cargo and passenger transport through a coordinated planning system designed to promote growth and competitiveness.

Territorial Planning Framework

The two main urban planning instruments—the Land Use Plan (POT for the Spanish acronym) and the District Development Plan—have been aligned with the BCA objective. The POT has prioritized the Actuaciones Estratégicas del Distrito Aeroportuario Fontibón y Engativá (Strategic Actions for the Airport District: Fontibón and Engativá), which incorporate master plans that facilitate land management and development in the El Dorado area, ensuring orderly growth.

The District Development Plan has established a specific program with a governance model focused on the airport and its urban-regional environment. This coordination between the two instruments provides institutional and legal certainty for business investment, with the aim of maintaining and expanding El Dorado's positioning.

The territorial development model represents a medium- and long-term commitment to the transformation and specialization of the airport area. Its design facilitates the articulation of key actors, diverse interests, and existing capacities, aimed at strengthening and specializing economic activities that complement airport operations.

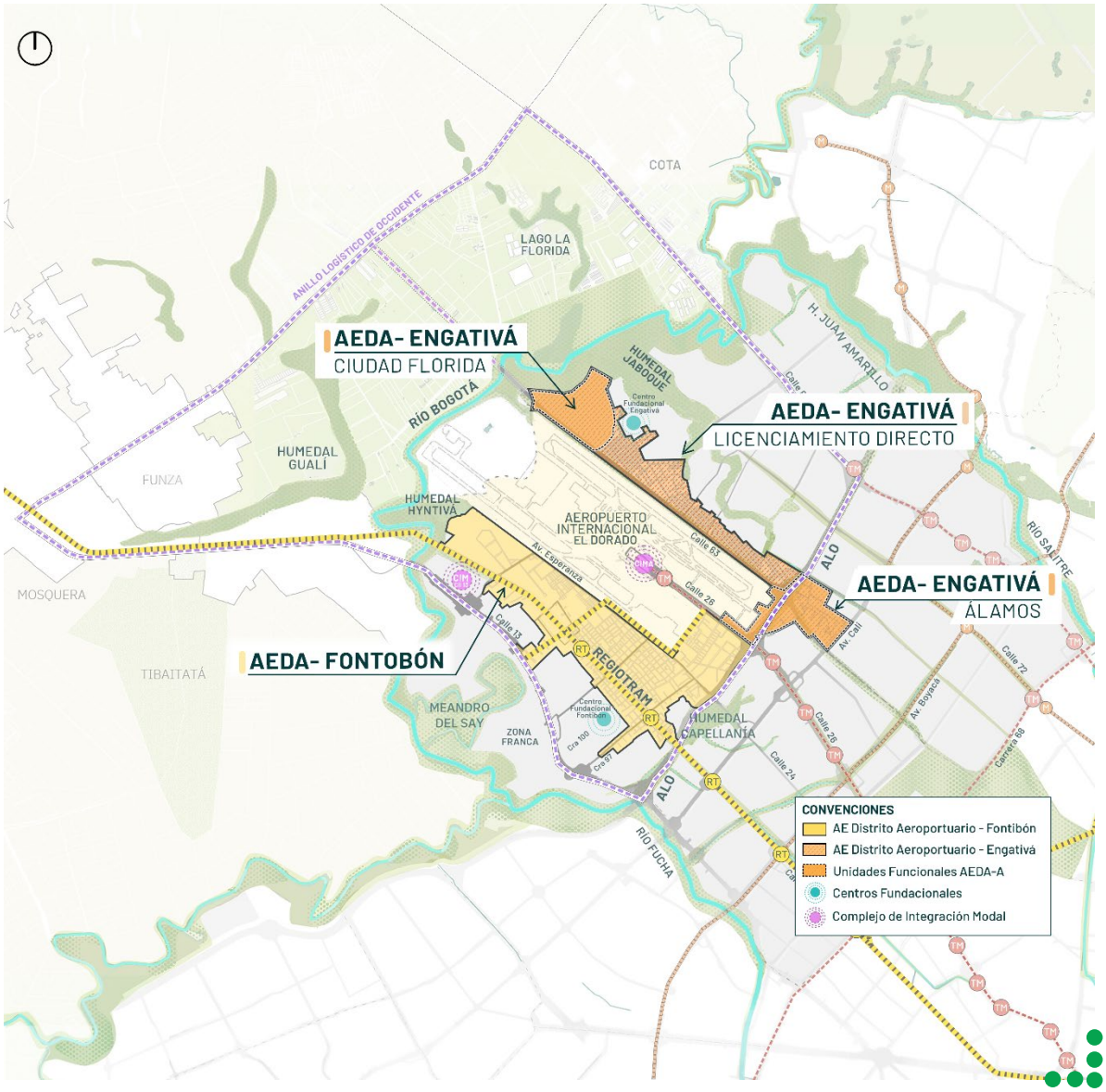
The program establishes an ecosystem where the airport functions as a connector of business opportunities and a center of logistical efficiency for the region, integrating components of urban development, specialized infrastructure, and aeronautical services.

3.2. Incentives to Attract Investment

Bogotá is developing a framework of tax incentives aimed at consolidating a competitive environment in the El Dorado Airport area. The proposal contemplates exemptions from the Property Tax, the Industry and Commerce Tax (ICA, for the Spanish acronym), and the urban delineation for strategic investments located in the airport action areas of Engativá and Fontibón.

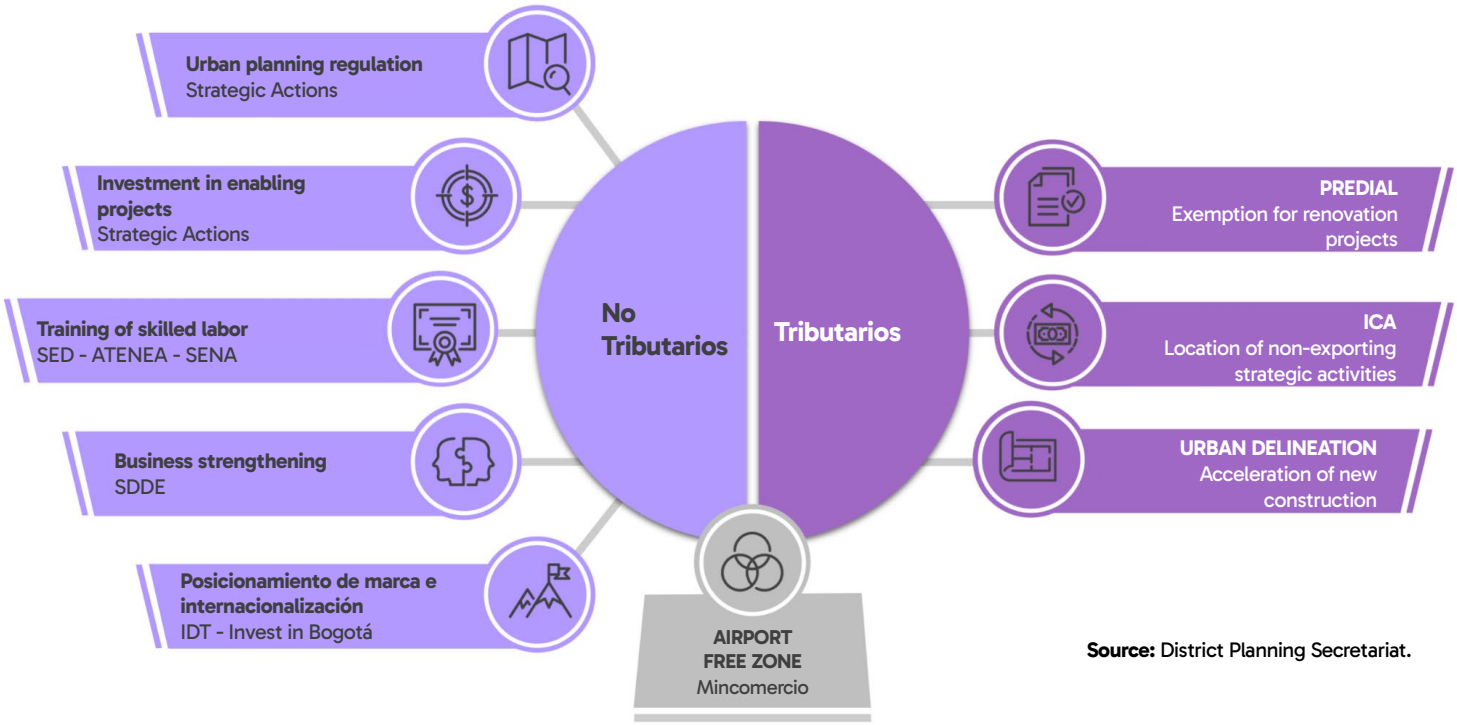
The benefits are conditional on investment and job creation targets, which are monitored by the Intersectoral Commission for Bogotá Airport City. This initiative is aligned with international practices to attract anchor companies and leverage regional logistical and economic capacity.

Figure 3. Strategic Action for the Airport District (AEDA): Engativá and Fontibón



Source: District Planning Secretariat.

Figure 4. Incentives for Attrracting, Locating, and Forming Bussiness Linkages



Source: District Planning Secretariat.

Bogotá's land-use planning recognizes the strategic nature of the airport environment. The city has a land-use framework and specific conditions for logistics, trade, and industry projects, articulated through two Strategic Actions—planning and management instruments—that include public projects aimed at providing territorial infrastructure such as roads, public space, and social services. This strategy is being implemented in collaboration with the private sector.

In the short term, 30 hectares will be made available for business, logistics, and industrial uses, and 7 additional hectares for facilities such as the aeronautical university and the development of road infrastructure and public services.

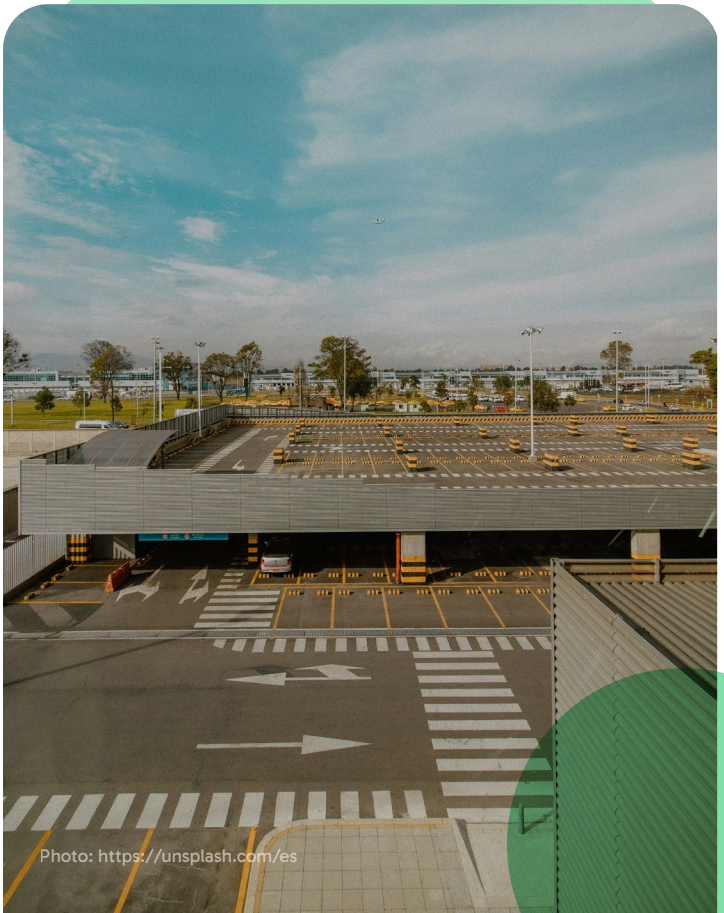


Photo: https://unsplash.com/es

4. Characterization of Human Capital Needs to Strengthen the Bogotá Hub

Invest in Bogotá

4. Characterization of Human Capital Needs to Strengthen the Bogotá Hub

In line with the BCA project, Invest in Bogotá carried out a strategic analysis to determine current and future specialized human capital needs, on the basis of two key sources:

- **Strategic needs of the global aeronautical industry:** trends and competency requirements expressed by the main players in the sector worldwide were analyzed to ensure that local training meets international standards and the technological evolution of the sector.

- **Demand from foreign companies in BCA's area of influence:** the human-capital requirements of international firms already established in the area were mapped, identifying training opportunities aligned with their operations.

This exercise makes it possible to establish a roadmap for developing technical, operational, and innovation skills that strengthen the BCA ecosystem. The objective is to position Bogotá as a competitive hub, attractive to foreign investment, and prepared for the demands of the aerospace industry.

4.1. Strategic Human Capital Requirements for Attracting Anchor Companies in the Aeronautical Industry

Based on the analysis of the main companies that have developed projects in the four hubs studied in the second section of this report, a group of ten companies was identified that, due to the oligopolistic structure of the aeronautical industry, have a presence in most of these centers.

The objective of this selection is to determine what type of human capital these companies require for their operations and, from a prospective perspective, to identify the efforts that must be made from Bogotá to attract them to the Bogotá Airport City project. The selected companies are:

Table 8. Selected Companies

Company (Origin)	Dubai	Singapore	Toulouse	Querétaro
Airbus (France/ Europe)	– Technical support for Middle East fleets – Training center for A380 pilots and technicians	– Digital innovation center (Skywise) – Development of IoT solutions for predictive maintenance	– Final assembly of A320/A350 – Design of new technologies for zero-emission aircraft	– Engineering center for electrical systems (since 2022)
Bombardier (Canadá)	– Service center for Global 7500 jets – Sale of executive aircraft	– MRO for Challenger 650 aircraft – Spare parts hub for Asia-Pacific		– Fuselage manufacturing for Global 7500 – Composite materials research center
Liebherr Aerospace (Germany)	– Air-conditioning systems for A380 cabins – Regional distribution center		– Hydraulic system manufacturing for A350 – R&D in electronic flight controls	– Supply of control systems for GE engines
ITP Aero (Spain)		– Blade manufacturing for Trent XWB engines – Turbine repair center		– Production of components for LEAP engines – Research into sustainable turbines
Safran Group (France)		– Engines for military helicopters – Avionics systems for drones	– Manufacture of A320 landing gear – Development of hydrogen engines	– Manufacture of components for CFM56 engines – Center of excellence in composite materials
Airbus Helicopters (France)				– Final assembly of H125/H130 – Maintenance center for Latin America
FL Technics (Lithuania)	– Maintenance hangars for Emirates – Line services for Boeing 777	– Maintenance base for AirAsia – Cabin conversion center		
Diehl Aerospace (Alemania)	– In-flight entertainment systems for A380 – Control panels for Boeing 777X	– Development of A320neo cabin management systems	– Manufacture of components for A400M	
Rhinestahl (United States)	– Ground refueling equipment – Engine maintenance solutions	– Distribution of MRO tools in Asia		

Source: Prioritized companies' websites, jobs section. Prepared by the authors.

The jobs required by these companies were identified through their recruitment websites. Below are the 15 most in-demand job types, consolidated from this analysis.

Table 9. Consolidated Jobs in the Aeronautical Industry

Consolidated Position	Specific Skills (Prioritized)	Key Certifications	Relevant Companies
Aerospace Design Engineer	– CAD proficiency (CATIA V5, NX, SolidWorks) – FEA/CFD analysis (ANSYS, NASTRAN) – Composite materials/metals	– EASA Part 21 Certification (Design) – CS-25/FAR 25	Airbus, Bombardier, ITP Aero
Avionics Software Engineer	– DO-178C (Level A/B) – C++/Ada/Python – ARINC 429/AFDX – MBSE (SysML)	– INCOSE Certification (CSEP) – CISSP for critical systems	Safran, Diehl, Airbus
Lean Production Specialist	– Lean Manufacturing/Six Sigma – AS9100/NADCAP – Automation (KUKA/FANUC robotics)	– Six Sigma Black Belt – Welding certification (EN 287)	Airbus, ITP Aero, Safran
Maintenance Technician (B1/B2)	– EASA Part-66 license – Boeing/Airbus Systems (AMM, IPC) – NDT (Ultrasound, Penetrant Testing)	– Type Rating (A320, B787) – OSHA 30	FL Technics, Airbus, Bombardier
Avionics Cybersecurity Engineer	– DO-326A/ED-202 – Penetration testing (Kali Linux) – ARINC 429 system hardening	– CISSP/CISM – GSEC/GIAC Certification	Safran, Airbus, Diehl
Aerospace Project Manager	– PMBOK/PRINCE2 – MS Project/Primavera P6 – Gestión riesgos (FMEA)	– PMP/IPMA Level B – SAFe/Scrum	Airbus, Safran, ITP Aero
Composite Materials Specialist	– - AFP/RTM processes – - Composite repair – - Mechanical testing (ASTM D3039)	– - SAE AC7109 Certification – - Level II NDT	Airbus, Safran, ITP Aero
Flight Test Engineer	– Telemetry (MATLAB, LabVIEW) – Part 23/25 Certification – FAT data analysis	– ATPL license (desirable) – ETPS/NFTC	Airbus, Bombardier, Safran
Advanced Manufacturing Technician	– 5-axis machining (DMG Mori) – EBW/TIG welding – 3D metrology (FARO)	– NADCAP Certification (AC7004) – ISO 9001:2015	ITP Aero, Airbus, Rhinestahl
Avionics Specialist	– Sistemas embebidos (VxWorks) – Pruebas IMA (ARINC 653) – Cableado EWIS	– EASA Part-66 Avionics – ISTQB Advanced Level	FL Technics, Diehl, Bombardier
Aerospace Data Analyst	– Python/R – Machine Learning (TensorFlow) – IoT (Health Monitoring)	– AWS/Azure Certification – PLM (Windchill, Teamcenter)	Airbus, Safran, ITP Aero
Ingeniero de propulsión	– CFD combustión (ANSYS Fluent) – Motores turbofan – Combustibles SAF	– Certificación EASA Part 33 – ITAR/EAR	Airbus, Safran, ITP Aero
Aeronautical Logistics Specialist	– SAP MM/EWM – ITAR/EAR – Aircraft on Ground (AOG) management	– APICS CSCP Certification – INCOTERMS 2020	Airbus, Bombardier, Rhinestahl
Aerospace Quality Inspector	– AS9100D – 3D Metrology – APQP/PPAP	– AS9100 Lead Auditor – CQI/9 (Heat Treat)	Airbus, ITP Aero, Safran
Sustainability Consultant	– CORSIA/EU ETS – LCA Analysis – Circular Economy	– GRI/LEED Certification – ESG (SASB)	Airbus, Safran, Bombardier

Source: Prioritized companies' websites, jobs section. Prepared by the authors.

The aeronautics industry is shifting toward more technical and specialized jobs. The most important positions, such as avionics software engineering, cybersecurity, and flight testing, require very specific certifications and in-depth knowledge.

Companies such as Airbus, Safran, and Bombardier are no longer looking for general knowledge alone, but rather experts with highly advanced technical skills. This shows that aircraft systems are becoming increasingly complex and require highly trained specialists.

The table shows how traditional aviation knowledge is being combined with new technologies. There are now positions such as Aerospace Data Analyst and Sustainability Consultant that did not exist before. These jobs combine aviation experience with technologies such as artificial intelligence, data analysis, and environmental regulations.

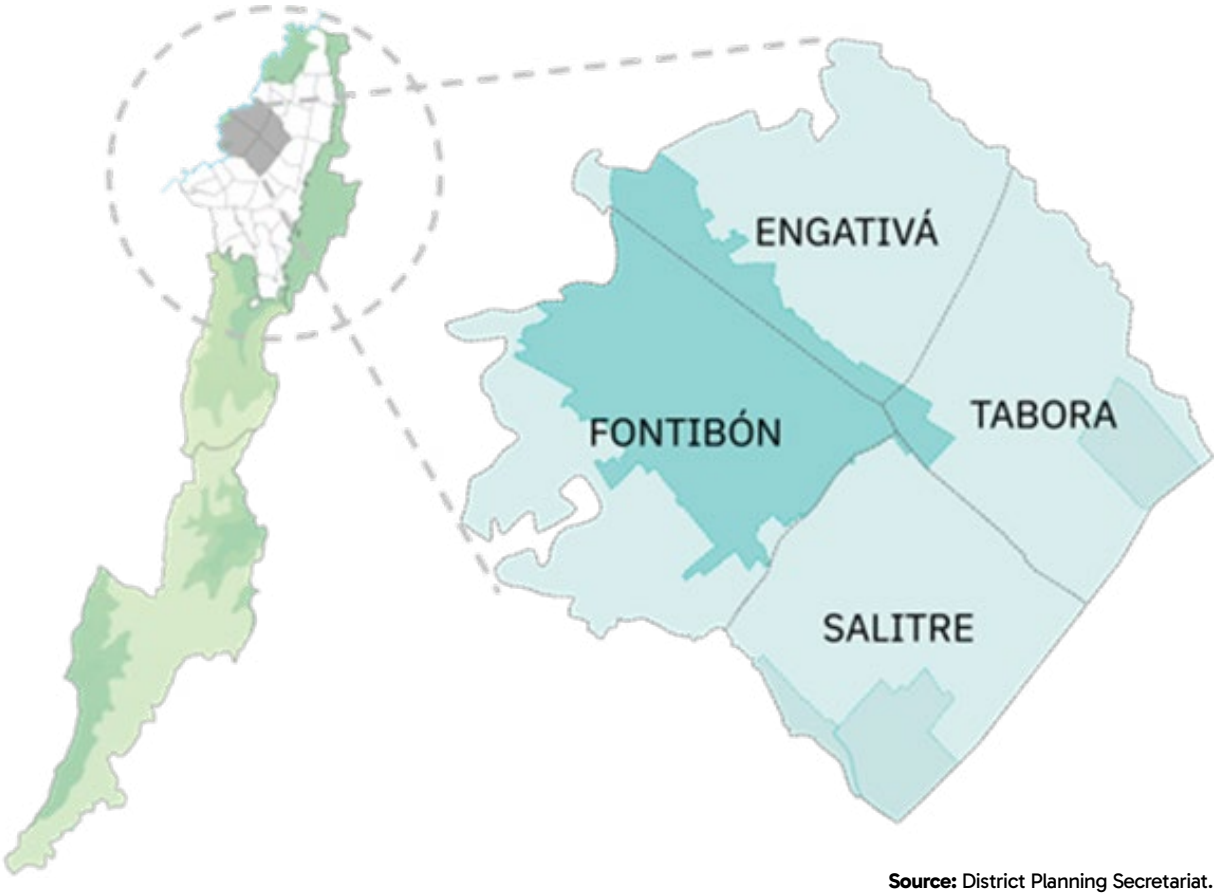
Companies are looking for professionals who know both aircraft and modern technologies, creating a job market where one must constantly adapt to technological changes.

4.2. Needs of Companies Located in the Airport Area

A total of 492 companies with foreign capital (more than 51% ownership) were identified in the Bogotá Region that are linked to priority sectors for the BCA project. Of these, 21 companies (4.2%) are located in Local Planning Units (UPL, for the Spanish original) of Fontibón and Engativá, the project's primary area of influence.

Photo: District Planning Secretariat

Figure 5. Local Planning Units (UPL) in the Western Sector



Source: District Planning Secretariat.

The sectoral distribution of these companies indicates that 33.3% are engaged in activities complementary to transport, followed by storage and warehousing (14.2%), and airport activities, air navigation services, and activities connected to air transport (9.5%). The main countries of origin are Germany (19.0%), Brazil (14.2%), Denmark, Japan, Chile, and the United States (9.5% each).

Grouped by major economic activities, Transportation and Storage companies (13) predominate, followed by Software and Services (2), Chemicals (2), Corporate Services (1), Hotels and Tourism (1), Consumer Products (1), and Electronic Components (1). Of the 21 companies identified, 1 is located in the UPL of Engativá and 20 in the UPL of Fontibón.

Job Profiles and Required Skills

An analysis of vacancies at the companies identified makes it possible to determine the need for specialized talent by sector:

Logistics sector

Companies in the logistics sector require specific knowledge of customs regulations, DIAN regulations, marine insurance, warehouse management, international routes, and forklift operation, supplemented by advanced English and Excel skills.

Specific technical knowledge includes:

- **ATS (Applicant Tracking Systems):** management of personnel selection processes.
- **BizTalk:** Microsoft business integration platform.
- GDP (Good Distribution Practices): guidelines for storage and transport of pharmaceutical or health products.
- SAP: integration of logistics, inventory, and purchasing.
- Incoterms: international trade terms.
- OHSMS: Occupational Health and Safety Management System.
- TMS (Transportation Management System): planning and optimization of the movement of goods.
- WMS (Warehouse Management System): management of warehouses and distribution centers.

Required certifications include:

- **IATA-DGR:** management of dangerous goods by air.
- **AVSEC (Aviation Security):** security training for airport personnel.

Table 10. Company Needs – Logistics Sector (based on current vacancies)

Profile	Requirements
Dangerous Goods Agent	IATA-DGR Certification
Foreign Trade Analyst	Incoterms, DIAN regulations, customs procedures, advanced Excel, advanced English
Logistics Cost Analyst	Advanced Excel, Power BI
Risk Analyst	Marine insurance, English
Cold Chain Coordinator	GDP, temperature control
Transport Coordinator	Land routes, SAP
Account Executive	MS Office
Customs Specialist	Knowledge of regulations
Logistics Specialist	SAP, intermediate English
Warehouse Manager	Knowledge of OHSMS
Traffic Manager	International routes
MCO and Contingent Hiring Specialist	English B2-C1, experience with Applicant Tracking Systems (ATS), MS Office
Forklift Operator	Forklift experience
Logistics Operator	Warehouses or freight transport, WMS management, customs regulations.
Solutions Design & Implementation Specialist	MS Office, Visual Studio, BizTalk
Warehouse Supervisor	Warehouse experience
Port Supervisor	Knowledge of air cargo

Source: Prioritized companies' websites, jobs section. Prepared by the authors.

Aviation sector

The aviation sector requires personnel with specific licenses and certifications, as well as experience in airport operations:

- **FAA/EASA License:** authorization granted by the Federal Aviation Administration (United States) or the European Union Aviation Safety Agency to perform certified aircraft maintenance under international standards.

- **FAA Part 145 Certification:** authorization for maintenance, repair, or overhaul (MRO) centers for aeronautical components.

- **EASA Part-66 Certification:** European license for aircraft maintenance engineers, classified by aircraft type and level of intervention.

- **SAP or ERP:** integrated management systems for business processes (purchasing, logistics, maintenance, inventory).

- **CSCP (Certified Supply Chain Professional):** international certification in supply chain management.

Table 11. Company Needs – Aviation Sector (based on current vacancies)

Profile	Requirements
Maintenance Technician	FAA/EASA License
Ground Supervisor	Airport experience
Aircraft Maintenance Technician	FAA Part 145, EASA Part-66; intermediate English.
Logistics Specialist	Aeronautical supply chain, SAP or ERP. Supply chain certification (CSCP optional).

Source: Prioritized companies' websites, jobs section. Prepared by the authors.

Technology sector

The technology sector demands personnel with knowledge of web development platforms, automation and visualization tools, programming languages, and application development:

SQL (Structured Query Language): relational database management and querying.

Power BI: data visualization and business intelligence.

MM/SD (Materials Management/Sales & Distribution): SAP modules for inventory and sales process management.

TOGAF (The Open Group Architecture Framework): framework for enterprise architectures.

Flutter: Google framework for cross-platform application development.

Dart: programming language used with Flutter.

Spring Boot: Java framework for enterprise applications.

API (Application Programming Interface): communication interfaces between systems.

Java: programming language for enterprise, mobile, and web applications.

Certifications include:

PSPO (Professional Scrum Product Owner): certification in product management under the agile Scrum framework.

Photo: https://n9.cl/itj0fr

Table 12. Company Needs – Technology Sector (based on current vacancies)

Profile	Requirements
Mobile Developer	Flutter, Dart
UX Researcher	Qualitative methodologies
Product Owner	PSPO Certification
Tech lead	Software architecture
BI Analyst	Power BI, SQL
Java Developer	Spring Boot, microservices
SAP MM Specialist	Purchases, inventories
Solutions Architect	Microservices, API

Source: Prioritized companies' websites, jobs section. Prepared by the authors.

5. Conclusions and Recommendations

Invest in Bogotá

Conclusions

This comprehensive analysis of the global airport environment highlights the potential and ambition that BCA represents for investment and strategic alliances. By examining success stories such as Querétaro, Toulouse, Singapore, and Dubai, evidence is provided of how governments, at different levels, have promoted highly competitive and sustainable airport ecosystems. These global hubs are the result of strategic investments in world-class infrastructure, the development of specialized human capital, and the creation of "tailor-made" incentives for the industry.

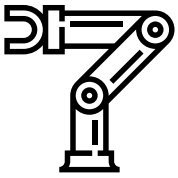
This comparative analysis not only justifies **BCA's** commitment as a comprehensive development strategy but also highlights its ability to create an ideal institutional environment that attracts investment and promotes territorial development. To capitalize on this potential, the following key recommendations are presented, aimed at ecosystem actors, with the objective of positioning BCA as the country's most ambitious initiative and a true platform for productive transformation:

1. Foster a formal aerospace education ecosystem

The shortage of trained human capital with specialized technical skills and bilingual competencies is a significant barrier to competitiveness and the attraction of new investments. Although there is already a collaborative agenda between national and district entities, academia, and industry, it is necessary to intensify these efforts and turn them into an articulated public policy at the district and national levels.

This strategy must actively involve key players such as SENA, Atenea, the Secretariat of Economic Development, Invest in Bogotá, and universities with aeronautical programs (such as Indoamericana and San Buenaventura). The objective is to build a true formal aerospace education ecosystem, with a strong emphasis on technical bilingualism, preferably integrated within the Strategic Action BCA.

2. Promote industrial coordination



The BCA initiative does not seek to simply replicate international models; its value lies in building on existing productive strengths in Colombia and Bogotá, and in developing new capacities. It is essential to look within the country to enhance national capacities in manufacturing and MRO (maintenance, repair, and overhaul) services, with a high-tech approach to generating high added value. This will make it possible to establish solid productive linkages with national industries, especially SMEs that can become suppliers to the aeronautical and logistics sector, generating a significant economic impact.

To achieve this, it is recommended to:

- Establish a strong sectoral industrialization policy that includes robust programs for the development of national suppliers.
- Leverage existing national programs, such as those of Colombia Productiva, to facilitate the obtaining of international quality certifications.
- Identify, in coordination between the national and district governments, those industrial and service sectors with installed capacities and competitive human capital, in order to strengthen them.
- Create an aeronautical cluster with public-private-academic participation to lead initiatives that strengthen both the industry and BCA's commitment.
- Strengthen the Intersectoral Commission for BCA, raising its relevance at the national and district levels as a key body for coordination, monitoring, and articulating proposals for the success of the Strategic Actions for the Airport District: Fontibón and Engativá.

3. Implement strategic tax and non-tax incentives

Incentives are a key component of any investment attraction strategy. Although they represent an initial fiscal cost, international experience shows their positive impact on job creation, technology transfer, increased trade, and the creation of productive linkages with local industries. The success of the world's main airport hubs has been based on implementing both tax and non-tax incentives.

In this regard, the design and definition of specific sectoral incentives for the aeronautical industry or geographical incentives for BCA could attract anchor companies and accelerate productive transformation projects, benefiting public finances in the medium and long term. It is crucial that the tax benefits designed differ from those already offered under the free trade zone regime.

4. Streamline the regulation of airport free trade zones

Expediting the regulation of Decree 278 of 2021 is a strategic step toward unlocking the immense potential of the Strategic Action for BCA and of the aeronautical sector in general. As long as there is no clear regulatory framework, Colombia will continue to lose competitiveness relative to countries that already operate airport environments with tax, customs, and logistical advantages.

The MRO sector, in particular, is very interested in this mechanism. Having a strategic location within an airport free trade zone would facilitate its growth, positioning Bogotá as an indispensable center for the aeronautical industry, with the capacity to meet the sector's needs in a timely and efficient manner from the airport.

Decree 278 of 2021 relaxed the restriction on declaring free trade zones in state concessions (except port concessions), now allowing their application also in airports and railways. This opens a great opportunity to attract large investments to Bogotá. Currently, the Ministry of Commerce is working on this regulatory decree, but the absence of a roadmap or a draft could postpone its issuance until 2026.

While this framework is being defined, there is a viable alternative for interested MROs: request an area extension from the Ministry of Commerce as industrial services users within an existing free trade zone, evaluating each case individually.

The active participation of industry and the public sectors (national and regional) is essential in developing this regulation, given the capacity of airport free trade zones to integrate logistics, commercial, and service activities, improving operational efficiency and optimizing companies' tax planning.

https://es.investinbogota.org

https://www.sdp.gov.co/

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