DEPARTMENT OF TRANSPORT

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NATIONAL AIRPORTS DEVELOPMENT PLAN

- NADP -

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transport

Department:
Transport
REPUBLIC OF SOUTH AFRICA

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ACRONYMS

AAA-SA	AIRPORT AND AERODROME ASSOCIATION OF SOUTH AFRICA
AASA	AIRLINES ASSOCIATION OF SOUTHERN AFRICA
ACAP	AIRPORTS CAPITAL ASSISTANCE PROGRAM
ACC	AIRPORTS COORDINATING COMMITTEE
ACDM	AIRPORT COLLABORATIVE DECISION MAKING
ACI	AIRPORTS COUNCIL INTERNATIONAL
ACN	AIRCRAFT CLASSIFICATION NUMBER
ACSA	AIRPORTS COMPANY SOUTH AFRICA
AENA	AEROPUERTOS ESPAÑOLES NAVEGACIÓN AÉREA
AIP	AIRPORTS IMPROVEMENT PROGRAM
AMO	AIRCRAFT MAINTENANCE ORGANISATION
ANAC	AGÊNCIA NACIONAL DA AVIAÇÃO CIVIL
ARFF	AIRPORT RESCUE AND FIRE FIGHTING
ASDA	ACCELERATED STOPPING DISTANCE AVAILABLE
ASK	AVAILABLE SEAT KILOMETRES
ASLC	AIR SERVICES LICENSING COUNCIL
ASP	AIRPORT SECURITY PLAN
ATC	AIR TRAFFIC CONTROL
ATFM	AIR TRAFFIC FLOW MANAGEMENT
ATM	AIR TRAFFIC MOVEMENT
ATNS	AIR TRAFFIC AND NAVIGATION SERVICE
ATZ	AIR TRAFFIC ZONE
BAA	BRITISH AIRPORTS AUTHORITY (NOW CALLED HEATHROW AIRPORT HOLDINGS)
BASA	BILATERAL AIR SERVICES AGREEMENT
BEE	BLACK ECONOMIC EMPOWERMENT
BMA	BORDER MANAGEMENT AUTHORITY
BOOT	BUILD, OWN, OPERATE, AND TRANSFER
BRICS	BRAZIL, RUSSIA, INDIA, CHINA, SOUTH AFRICA
BRT	BUS RAPID TRANSIT
CAASA	COMMERCIAL AVIATION ASSOCIATION OF SOUTHERN AFRICA
CAGR	COMPOUND ANNUAL GROWTH RATE
CARS	CIVIL AVIATION REGULATIONS
CATS	CIVIL AVIATION TECHNICAL STANDARDS
CBA	COST BENEFIT ANALYSIS
CBC	CAPITAL BUDGETS COMMITTEE
COGTA	DEPARTMENT OF CO-OPERATIVE GOVERNANCE AND TRADITIONAL AFFAIRS
CPI	CONSUMER PRICE INDEX
CPPP	CONTRACTUAL PUBLIC-PRIVATE PARTNERSHIP
CTIA	CAPE TOWN INTERNATIONAL AIRPORT
CTR	CONTROL ZONE
DBSA	DEVELOPMENT BANK OF SOUTHERN AFRICA
DFI	DEVELOPMENT FINANCE INSTITUTION
DG	DIRECTOR GENERAL
DHA	DEPARTMENT OF HOME AFFAIRS
DOT	DEPARTMENT OF TRANSPORT
DPI	DEPARTMENT FOR PLANNING AND INFRASTRUCTURE
DRC	DEMOCRATIC REPUBLIC OF THE CONGO
DTI	DEPARTMENT OF TRADE AND INDUSTRY
DVOR	DOPPLER VERY HIGH FREQUENCY OMNIDIRECTIONAL RADIO RANGE
EDZ	ENTERPRISE DEVELOPMENT ZONE

EIA	ENVIRONMENTAL IMPACT ASSESSMENT
EU	EUROPEAN UNION
FAA	FEDERAL AVIATION AUTHORITY
FBO	FIXED-BASE OPERATOR
FDI	FOREIGN DIRECT INVESTMENT
GDP	GROSS DOMESTIC PRODUCT
GIS	GEOGRAPHICAL INFORMATION SYSTEM
GVA	GEOGRAPHIC VALUE ADD
HIAL	HIGHLANDS AND ISLANDS AIRPORT LIMITED
HITRANS	HIGHLANDS AND ISLANDS TRANSPORT PARTNERSHIP
HOV	HIGH-OCCUPANCY VEHICLE
IACF	INTER-AGENCY CLEARING FORUM
IATA	INTERNATIONAL AIR TRANSPORT ASSOCIATION
IBSA	INDIA, BRAZIL, SOUTH AFRICA
ICAO	INTERNATIONAL CIVIL AVIATION ORGANISATION
ICT	INFORMATION AND COMMUNICATIONS TECHNOLOGY
IDP	INTEGRATED DEVELOPMENT PLAN
IDZ	INDUSTRIAL DEVELOPMENT ZONE
IEM	INTEGRATED ENVIRONMENTAL MANAGEMENT
IFR	INSTRUMENT FLIGHT RULES
IFRS	INTERNATIONAL FINANCIAL REPORTING STANDARDS
IIPSA	INFRASTRUCTURE INVESTMENT PROGRAMME FOR SOUTH AFRICA
IRPTN	INTEGRATED RAPID PUBLIC TRANSPORT NETWORK
IPO	INITIAL PUBLIC OFFERING
IPP	INTERNAL RATE OF RETURN
IPPP	INSTITUTIONAL PUBLIC-PRIVATE PARTNERSHIPS
ISRDP	INTEGRATED SUSTAINABLE RURAL DEVELOPMENT STRATEGY & PROGRAMME
ITP	INTEGRATED TRANSPORT PLAN
KMIA	KRUGER MPUMALANGA INTERNATIONAL AIRPORT
KSIA	KING SHAKA INTERNATIONAL AIRPORT
KZN	KWAZULU-NATAL
LAG	LIQUID, AEROSOL, AND GEL
LCC	LOW COST CARRIER
LCN	LOAD CLASSIFICATION NUMBER
LED	LOCAL ECONOMIC DEVELOPMENT
LEED	LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LIA	LANSERIA INTERNATIONAL AIRPORT
MFMA	MUNICIPAL FINANCE MANAGEMENT ACT
MOU	MEMORANDUM OF UNDERSTANDING
MSA	MUNICIPAL SYSTEMS ACT
MTEF	MEDIUM-TERM EXPENDITURE FRAMEWORK
NATMAP	NATIONAL TRANSPORT MASTER PLAN
NASCOM	NATIONAL AIRSPACE COMMITTEE
NASP	NATIONAL AVIATION SECURITY PROGRAMME
NCAP	NATIONAL CIVIL AVIATION POLICY
NDP	NATIONAL DEVELOPMENT PLAN
NPIAS	NATIONAL PLAN OF INTEGRATED AIRPORTS SYSTEMS
NPV	NET PRESENT VALUE
NM	NAUTICAL MILE
NSDP	NATIONAL SPATIAL DEVELOPMENT PERSPECTIVE
NTF	NATIONAL TRANSPORT FORUM
NTS	NATIONAL TRANSPORT STRATEGY

OECD	ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT
ONDA	MOROCCAN AIRPORTS AUTHORITY
ORTIA	O.R. TAMBO INTERNATIONAL AIRPORT
PAL	PLANNING ACTIVITY LEVEL
PAN	PLANO AEROVIÁRIO NACIONAL
PBN	PERFORMANCE BASED NAVIGATION
PCN	PAVEMENT CLASSIFICATION NUMBER
PFMA	PUBLIC FINANCE MANAGEMENT ACT
PGDS	PROVINCIAL GROWTH AND DEVELOPMENT STRATEGY
PLZ	PORT ELIZABETH AIRPORT
PPP	PUBLIC PRIVATE PARTNERSHIP
RA	RISK ASSESSMENT
RADS	REGIONAL AIRPORTS DEVELOPMENT SCHEME
RASS	REMOTE AIR SERVICE SCHEME
ROD	RECORD OF DECISION (FOR EIA)
SACAA	SOUTH AFRICAN CIVIL AVIATION AUTHORITY
SA	SOUTH AFRICA
SA	SUSTAINABILITY ASSESSMENT
SAA	SOUTH AFRICAN AIRWAYS
SAAF	SOUTH AFRICAN AIR FORCE
SACAA	SOUTH AFRICAN CIVIL AVIATION AUTHORITY
SACU	SOUTHERN AFRICAN CUSTOMS UNION
SADC	SOUTHERN AFRICA DEVELOPMENT COMMUNITY
SALGA	SOUTH AFRICAN LOCAL GOVERNMENT ASSOCIATION
SANDF	SOUTH AFRICAN NATIONAL DEFENCE FORCE
SAPS	SOUTH AFRICAN POLICE SERVICE
SARPS	STANDARDS AND RECOMMENDED PRACTICES
SARS	SOUTH AFRICAN REVENUE SERVICE
SDF	SPATIAL DEVELOPMENT FRAMEWORK
SEZ	SPECIAL ECONOMIC ZONE
SKA	SQUARE KILOMETRE ARRAY
SLA	SERVICE LEVEL AGREEMENT
SPLUMA	SPATIAL PLANNING AND LAND USE MANAGEMENT ACT OF 2013
STAC	CIVIL AVIATION TECHNICAL CENTRE
TBVC	TRANSKEI, BOPHUTHATSWANA, VENDA, AND CISKEI
TC	TRANSPORT CANADA
TETA	TRANSPORT EDUCATION TRAINING AUTHORITY
TMA	TERMINAL AREA
TODA	TAKE-OFF DISTANCE AVAILABLE
TSA	TRANSPORTATION SECURITY ADMINISTRATION
UK	UNITED KINGDOM
UNODC	UNITED NATIONS OFFICE ON DRUGS AND CRIME
US	UNITED STATES OF AMERICA
VOIP	VOICE-OVER IP
WSG-84	WORLD GEODETIC SYSTEM 1984

EXECUTIVE SUMMARY

The National Development Plan (NDP) 2030 is a plan for South Africa to eliminate poverty, unemployment and reduce inequality by 2030. The Plan has highlighted structural weaknesses to overcome including poor transport links and infrastructure which raise the cost of doing business and hobble both trade and investment. It further states that South Africa need to invest in a strong network of economic infrastructure designed to support the country's medium- and long-term economic and social objectives.

The Integrated Urban Development Framework, which draws from the National Spatial Development Framework states that integrated transport and mobility is a vital component of South Africa's economic infrastructure investment. It contributes to a denser and more efficient urban form, supports economic and social development, and is crucial for strengthening rural-urban linkages. The framework further states that cities need to identify core public transport nodes, corridors and other infrastructure investments in those areas. These should be reflected in the Spatial Development Frameworks (SDFs) and zoning regulations, to ensure that new growth is concentrated along core transport corridors.

Transport plays a significant role in the social and economic development of any country; and also play a leadership role in acting as a catalyst for development, and in correcting spatial distortions. The National Transport Masterplan (NATMAP) 2050 is a bold, comprehensive, multimodal, integrated and long-term plan that seeks to improve the efficiency and effectiveness of multimodal transportation systems; and to ensure an overall system that is well regulated and well managed. The Masterplan has also highlighted that there is a lack of consistency between transport and land-use planning; which means that many transport projects that can derive increased economies of scale and efficiencies from integration, are being planned and implemented in isolation.

The NATMAP has acknowledged the role of the aviation infrastructure, particularly the role of airports and airspace, as outlined in supporting documents such as NCAP, NADP and the National Airspace Master Plan (NAMP). It has analyzed the airport infrastructure and its capabilities, and has also provided guidance with respect to the proposals for infrastructure interventions that would be required to address future capacity needs. It further recognized the role of aerotropolis, in which airports offer connectivity to suppliers and customers across the globe. Additionally; in modern cities, airports have become major drivers of urban form, economic activity and city's competitiveness.

Civil aviation is vital to international trade, investment and tourism, as well as contributing to domestic transport, sports and recreation. An efficient, reliable and sustainable South African aviation industry should be promoted while maintaining control over international and domestic air transport services within a well-defined regulatory framework

The Draft Comprehensive Civil Aviation Policy acknowledges that the present airport infrastructure is an integral part of the South African transport system. This infrastructure contributes to the socio-economic development of the country by facilitating domestic and international tourism and trade. The Policy further acknowledges that these airports are currently not integrated into a meaningful airport network and therefore the national planning and integration of airports into the broader transport network, in respect of modal integration as well as in the context of the total air transport system, need to be coordinated with the other spheres of government. Airport planning and development need to be incorporated into the planning initiatives of relevant provincial and municipal governments, as an airport may influence provincial and municipal socio-economic development. All stakeholders, including the local authority, will be consulted in the planning of airports. The planning for airports must be included in a provincial land transport framework which, in turn, would form part of the economic development plan for the province.

The National Airports Development Plan (NADP) has been initiated by the Draft Comprehensive Civil Aviation Policy as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key airport stakeholders. Airports are catalysts to economic growth; as they generate employment opportunities, act as gateways for tourism and business and attract commercial development there by stimulating new investment and promoting local economic activity. Investment in airport infrastructure provides significant socio-economic benefits, providing local jobs during construction as well as long-term benefits. An integrated airport network system has the potential to support the NDP's objective through contributing to growing the wealth of the country and ensure that potential investments are utilised effectively and efficiently. It could facilitate economic initiatives such as the aerotropolis concept, airport cities, special economic zones (SEZ's) linked to international airports aimed at promoting economic growth, trade and tourism and job creation. It could further facilitate the expansion of tourism, including sport and adventure tourism. The NADP will also provide more detail regarding the airport planning aspects of NATMAP.

South Africa has more than 1,500 airports, which include licenced, unlicensed and registered airports. In order to understand and describe the airport network, a number of airport attributes need to be taken into account. These include airport infrastructure and facilities (both aeronautical and non-aeronautical), licence/registration and designation as an international port of entry, nature and level of activity (including traffic volumes), ownership, proximity to the strategic transport network, as well as airspace.

In terms of infrastructure and capacity, runways are one of the most significant considerations. In South Africa, the majority of runways fall within International Civil Aviation Organisation (ICAO) Codes 1 and 2 (short and narrow runways), typically unpaved (grass or gravel) runways. There are at least 39 Code 3 and 4 runways (longer and wider runways), typically paved. These include airports such as OR Tambo International Airport, Cape Town International Airport, King Shaka International Airport, Upington International Airport, Lanseria International Airport, Kruger Mpumalanga International Airport and Mafikeng Airport. Other capacity considerations include passenger handling capacity, and airspace co-dependencies between airports.

As at October 2024, there are 10 International Aerodromes certified under SACAA Regulations and Technical Standards – Part 139 Subpart 2, in line with ICAO Annex 14 and ICAO Annex 19 (SMS/SSP); 11 Licensed (Domestic) Aerodromes licensed under SACAA Regulations and Technical Standards – Part 139 Subpart 2, in line with ICAO Annex 14 and ICAO Annex 19 (SMS/SSP); Approved Aerodromes approved under SACAA Regulations and Technical Standards – Part 139 Subpart 5; Registered Aerodromes published on the SACAA Website www.caa.co.za and registered under SACAA Regulations and Technical Standards – Part 139 Subpart 6[1].

With regards to ownership of airports**,** currently there are 9 Airports Company South Africa (ACSA), 9 provincial government, 38 military, around 100 municipal (local and district) airports, numerous privately owned licensed airports with the vast majority of the remainder of the airports being private (business, non-profit, individual).

Activities at airports include movement of people, goods and aircraft (including both scheduled and non-scheduled traffic). The purpose of this movement can be commercial, flight training, public good (including medical rescue and emergency services), diplomatic, educational, agricultural, sport and recreation related, and for private access. Other activities at airports include cargo handling; aircraft storage, maintenance and repair, fuelling; retail, food service and hospitality/hotels; conferences and events; and offices. Pre- Covid-19 pandemic, the airport network was estimated to handle over 39 million departing and arriving passengers[2], and around 470,000 tonnes of freight annually.

In terms of airspace and airport congestion, only three airports are slot coordinated through the Airport Slot Regulations. These are OR Tambo International Airport, Cape Town International Airport and King Shaka International Airport. Congestion is primarily experienced in the vicinity of the Johannesburg Terminal Area (TMA).

In order to achieve the airport network planning and airport planning related policy direction of the NCAP, and to take into account relevant international trends, the NADP has assessed the policy and trends gaps (PART C), and provides guiding principles (PART D) that cover both airport network planning and individual airport planning.

Airport network planning guidance includes the most effective techniques for addressing capacity constraints, the use of airport categories, knowledge management and processes for airport licensing, registration, selection and approval. A more evidence-based and collaborative approach to airport network planning is needed. Existing infrastructure capacity should be optimised to deal with activity levels, including by: a) prioritising alternative approaches to addressing capacity pressures rather than major infrastructure expansions or green-field investments (such as reviewing aircraft mix, improving airspace management and

[1] SACAA, 2023
[2] ACSA Statistics, 2016/17

design, refining infrastructure to speed up throughput); b) proactive identification of capacity gaps; and c) the use of Planning Activity Levels.

Where airports are expected to exceed their ultimate capacity in the next 40 to 60 years, provision should ideally be made to safeguard suitable land for the required additional airport, and the zoning around the area also needs to be aligned to avoid encroachment of incompatible land use. In line with the National Infrastructure Plan's planning horizon, any major infrastructure projects required within the next 20 years to address the capacity gap should be identified and reviewed every 5 years.

For the next five years, a reactive process to applications for international, "regional-international", and national airports will be used within application window periods, to enable comparison between applications taking into consideration airspace, transport master-plans, economic viability and sustainability, security imperatives and other data-gathering systems. The Department of Transport (DOT) will work together with other national departments and agencies to amend or develop the processes for international airports (including the sub-set for "regional-international" airports, (*factoring in all relevant national security implications and imperatives*), licensing, registration, green-field airports, and national airports.

Provincial government and local municipalities may want to identify which of the airports in their jurisdictions cannot become commercially viable, but are serving a particular public service and can be justified on a socio-economic basis in order to inform available budget allocations. In order to address airports that are financially unsustainable, the NADP provides guidance on the development of airport precincts for aerotropolis and airport cities to enhance revenue for the airport. Furthermore, the NADP has developed an Annexure that deals with Aerotropolis and Airport Cities from the international benchmarking that was conducted.

The guidance for individual airport planning includes good practice for forecasting demand, optimising socio-economic impact, facility design, minimising environmental impacts and integrating requirements from financiers. Balancing these considerations into airport planning and design is complex and requires significant planning capacity. DOT recommends an increased focus on user-experience design and user co-design methodologies. DOT also recommends development of shared technical capacity, knowledge systems and guidelines to support individual small airport planning, as well as finding ways to tap into private sector expertise.

The NADP also presents initiatives as part of a five-year implementation plan (PART E). The following initiatives have been identified to help give effect to the guiding principles over the next five years:

1. Integration of airport network planning into transport and spatial planning coordination structures;
2. Consultations towards the formalisation of selection processes for international, "regional-international" and national airports, and pre-approval process for green-field airports, factoring in all relevant national security implications and imperatives;
3. Mechanism to reserve land for key long-term airport requirements;

4. Development of a preferred option to provide for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation within the national airport network;
5. Development of a knowledge management system and DOT capacity to inform airport network planning;
6. Development of airport planning technical capacity at a national and provincial government level that can support individual airport planning;
7. Development of a detailed guide to support airport development and planning within their surroundings;
8. Exploration of potential mechanisms to involve the Department of Defence and the private sector in airport planning and design;
9. Joint identification with relevant entities of the most viable approach to securing funding to support airside safety and security compliance for airports; and
10. Collaboration to create networking and information sharing platforms for airport designers and planners.

The Department of Transport will work closely with other airport role players to implement these initiatives.

PART A: INTRODUCTION

1 Purpose

The National Airports Development Plan (NADP) for South Africa was first raised in the White Paper on National Policy on Airports and Airspace Management of 1997. It was considered and confirmed in the White Paper on National Civil Aviation Policy (2017); and affirmed in the Draft Comprehensive Civil Aviation Policy. It has been initiated as the plan to address the gaps between the current airport network and the future desired state. It will guide and support both overall network planning and the development of individual airports integrated within their broader spatial and transport contexts, in consultation with key airport stakeholders. Operational aspects of airports are dealt with through other mechanisms, including through Civil Aviation Regulations and Technical Standards (CARS and CATS).

2 Background to the National Airports Development Plan (NADP)

2.1 The potential socio-economic contribution of airports

Airports are catalysts to economic growth; as they generate employment opportunities, act as gateways for tourism and business and attract commercial development there by stimulating new investment and promoting local economic activity. Why prioritise airport development? Airports have been shown to contribute to socio-economic develop in a range of ways, including[3]:

- Gateway to Improving accessibility for people to geographical areas, whether for personal, essential services, trade, business or tourism reasons;
- Allowing for “time critical” in- and outbound freight;
- Making a location more attractive for investment by certain sectors, in particular knowledge intensive industries, such as biotechnology, pharmaceuticals, universities, and financial services;
- In the case of large airports, also having significant direct impacts on the airport precinct in terms of employment and spend, as well as multiplier effects from employment and spend;
- Stimulating infrastructure and property development in the vicinity of the airport;
- Contributing to the image of a country; and
- Ensuring availability of facilities and provision for training, recreational and sport aviation to create pilots and related profession for the future of aviation.

These impacts can be significant. For example:

[3] Source: Airport Cooperative Research Programme (2007) Airport Economic Impact Methods and Models

- Heathrow Airport is already one of the biggest single site employers in the entire country with 76,500 people directly employed at the airport. Up to 40,000 jobs in the local area are expected to be created with expansion and it will double the number of apprenticeships at Heathrow, to a total of 10,000. Together, these opportunities will have the potential to provide every unemployed young person in five local boroughs with an apprenticeship, training or a job. Heathrow expansion will create up to 180,000 jobs and up to £211bn in economic benefits across the UK by 2050, Airports Commission analysis found. Of the up to 180,000 jobs across the UK set to be created by Heathrow, over 100,000 are outside of London and the South East. As much as £114bn of economic benefits from Heathrow would be spread outside London and the South East to Scotland, Wales and Northern Ireland.[4]
- Oxford Economics conducted a study on 'Economic Benefits from Air Transport in South Africa' in cooperation with the International Air Transport Association (IATA). According to the latest report issued by IATA on "The Importance of Air Transport to South Africa", air transport supports 490 000 jobs and contributes $12bn (about R154.8bn) to South Africa's gross domestic product (GDP). Europe and Asia-Pacific are the largest sources of arrivals to SA after Africa. In 2014, 3.3 million passengers arrived to South Africa from Europe (16.3% of the total) and 1.3 million passengers arrived from Asia-Pacific (6.5%). Airlines, airport operators, airport on-site enterprises (for example restaurants and retail), aircraft manufacturers and air navigation service providers employed 70 000 people in South Africa in 2014. In addition, by buying goods and services from local suppliers the sector supported another 130 000 jobs. On top of this, the sector is estimated to have supported a further 57 000 jobs by paying wages to its employees, some or all of which are subsequently spent on consumer goods and services. Furthermore, foreign tourists arriving by air in South Africa, who spend their money in the local economy, are estimated to have supported an additional 230 000 jobs in 2014. During the same year, foreign tourists spent $9.2bn in South Africa, supporting restaurants, hotels, transport providers and others who cater to tourists[5].
- In 2017, Airports Company South Africa (ACSA) contributed R9.5bn to the South African economy. ACSA has further supported 14950 jobs in South Africa and supported R2.8bn of income to workers in SA[6]. Using a custom-designed model to measure the job opportunities created through its capital and operational expenditure, Airports Company South Africa (ACSA) created 24,018 job opportunities through the airports themselves. In addition, ACSA forecast that as a result of its future expansion plans, it will create an additional 50,000 job opportunities by 2025; adding as much as 0.8% to the South African GDP on an average annual basis[7].
- According to Oxford Economics, research conducted in the US suggests that every 100 000 million dollars invested in aerospace yields an extra $70 million in GDP annually. Additionally, airports continue to foster closer links with local residents and neighbourhoods, through their community outreach efforts. Successful cases of airport-

[4] Source: https://heathrowexpansion.com/local-community//local-benefits
[5] Source: https://fin24.com/Economy/air-transport-adds-r1548bn to sas-gdp-report-20170624-2
[6] ACSA Integrated Report, 2018
[7] Source: ACSA 2017 Integrated Annual Report

community cooperation have led to decreased crime rates, greater employment, and an increase in the number of successful firms in and around the airport.[8]

2.2 Policy origins of the NADP

A *National Development Strategy for Airports* was first raised in the White Paper on National Policy on Airports and Airspace Management (1997). Further detail and direction is provided in the White Paper on Civil Aviation Policy (NCAP) and affirmed in the draft Comprehensive Civil Aviation Policy, where the following principles are set out with respect to airport development:

- *Airport development should not be considered in isolation, but be integrated into all national, provincial and municipal economic and spatial development initiatives. At the same time, airport development should also meet the social needs and objectives of local communities. There should therefore be synergy between airport development and the development strategies of all spheres of government, with emphasis on the following:*

    - *The national planning and integration of airports into the broader transport network in respect of modal integration as well as in the context of the total air transport system, should be co-ordinated with the other spheres of government.*

    - *Airport development and planning should also be incorporated into the planning initiatives of the appropriate sphere of government as an airport may influence provincial and municipal socio-economic development. Aviation knows no borders. There is therefore a possibility of conflict between airport planning initiatives of two neighbouring provinces, where their planning involves two different airports close to each other and which may consequently be detrimental to the system as a whole, from a safety and operational as well as an economic point of view.*

    - *Planning for airports should furthermore be included in a provincial transport plan which, in turn, should form part of the economic development plan for the province.*

    - *The socio-economic "value" of an airport in relation to the total system as well as from a more localised point of view, is another consideration when making decisions about seamless transport systems, private investment and the designation of additional, or the reduction of the number of, international airports or the allocation of public funding.*

    - *Airport development should be planned holistically in accordance with a structured National Airports Development Plan, which would support national, provincial and local community objectives. Such development should*

[8] http://www.aviationbenefits.org, 2017

> *complement the airport system, and in some cases, may even allow for competition within the system, to the benefit of the user.*

The draft Comprehensive Civil Aviation Policy also states that the Department of Transport (DOT) should develop a National Airports Development Plan which would guide all present and future airport development in consultation with all relevant stakeholders. Macro planning and integration of airports into the broader transport network should be co-ordinated through the National Airports Development Plan.

3 Vision for the South African airport network

The vision for a South African airport network includes that it:

- Has sufficient capacity to handle air traffic, passenger, and freight volumes;
- Is integrated into the strategic transport network, spatial development and land use planning;
- Is able to balance and meet the needs of airport users;
- Is financially sustainable;
- Complies with safety, security and environmental regulation, including noise and emissions;
- Optimises contribution to socio-economic development and meeting government's wider objectives, both directly and indirectly through airport precinct development, aerotropolis and airport cities and thereby helps to position South Africa competitively both on the continent and globally;
- Is responsive to changing technologies; and
- Is able to meet demands of high visibility events and military operational requirements.

4 Approach to the development of the NADP

The development of the NADP has involved extensive research and consultation. Research has included:

- Data gathering on the existing airport network;
- Demand forecasting for passengers, freight and air traffic movements;
- Understanding of international trends impacting on airports and airport network planning; and
- Benchmarking on lessons learned from international approaches.

Consultations have involved over 120 organisations, including:

- Agencies involved in airports and related aviation;
- Local and provincial government;
- Airport operators;
- Aviation-related industry associations and companies;
- Regulators;
- Funders, including Development Finance Institutions; and
- Support entities.

Extensive input was also obtained during a national consultative workshop held on 6 March 2015. Following this, written comments were submitted to the Department of Transport which have been considered in preparation of this final NADP document.

Additional input was considered during the review of the NCAP in 2022, which identified additional aspects pertaining to airport infrastructure development from an economic and revenue perspective, for consideration in the NADP.

In addition to the drafting of the NADP, the approach has included the development of various tools to equip the DOT for evidence-based decision-making and planning.

PART B: NADP CONTEXT

Part B sets out the key issues that inform the NADP. This includes:

- What South Africa already has in terms of airport infrastructure and facilities;
- Estimates of the future demand that the airport network will need to serve;
- Requirements set out by policy, legislation and regulation;
- Institutional roles that will impact on the approach to joint planning and development of airports;
- Global trends that are shaping airport infrastructure, facilities, and systems; and
- Impact of Covid-19 pandemic and the road to recovery.

All of these issues provide the basis for a gap assessment, which is captured in Part C.

5 South Africa's existing airport network

South Africa has more than 1,500 aerodromes base on the research that was conducted, which include licenced, certified, approved, and registered airports. There are no unlicensed in South Africa because Part 91.07.3 (1)(b) states: A Pilot of an aeroplane shall not use or authorise the use of an aerodrome as a destination unless that aerodrome is certified, licensed, approved or registered in terms of Part 139 regulations.

The section below describes South Africa's airports, in terms of airport infrastructure and facilities (both aeronautical and non-aeronautical), licenced, registered and international port of entry status, nature and level of activity (including traffic volumes), ownership, proximity to the strategic transport network, and airspace.

5.1 Infrastructure and facilities

5.1.1 Runway capacity

Runway capacity is the most significant consideration when assessing airport capacities for handling various aircraft[9]. This capacity is determined by a range of factors including:

- Runway strength, length, width and surface type, lateral visibility, as well as associated exits, taxiways, apron and parking capacity;
- Inter-dependant airspace procedures e.g. runway conflicting orientations, initial approach altitudes and shared TMA;
- Aeronautical obstructions and horizontal visibility;
- Elevation above mean sea level, reference temperature, surface condition and slope of the runway (which all affect aircraft performance);
- Operational compliance with fire-fighting, safety and security requirements;

[9] Additional physical considerations include apron and parking capacity

- The type and availability of approach and departure navigational aids (radio and visual); and
- Other factors include aircraft traffic mix, type of air traffic control service provided and resultant runway occupancy times.

Airports are primarily classified by its ICAO Aerodrome (Runway) Reference Code based on the extent of the lateral, longitudinal, and sloping planes of the airspace and ground surfaces surrounding each runway that should be kept free of obstacles. This code comprises two elements[10]:

- A number determined by selecting the higher value of declared Take-Off Distance Available (TODA) or Accelerated Stopping Distance Available (ASDA), ranging from 1 (less than 800m) to 4 (more than 1,800m); and

- A letter which corresponds to the wingspan or main gear outer-wheel span, whichever is the more demanding, of the largest aircraft likely to be operating at the aerodrome ("A" representing a wingspan of up to 15m, "F" a wingspan up to 80m.)

The South African commercial aerodromes' topographical information, required to determine Runway Longitudinal Slopes, complies with WGS-84, as required by ICAO. Commercial airports now have to submit type terrain charts.

In terms of runway surface, construction and strength, ICAO requires that these be reported for runways (and taxiways and aprons) using standard engineering methodology to determine Pavement Classification Numbers (PCN). However, in South Africa, many airports do not currently employ the methodology, test, or report their pavement structures or condition. This is not a necessity for airports which do not accommodate any commercial flights. For airports accommodating commercial flights these are assessed during inspection. For this initial analysis, the reported type of runway surface is therefore used as a rough indicator of initial capacity.

However, as discussed above, the reference air temperature and elevation of a runway are key factors when determining aircraft performance and thus runway capacity. For example, Upington and OR Tambo International require long runways in part because of their high reference air temperatures and high elevation. Additionally, the Aeroplane Reference Field Length refers to the minimum field length required for take-off at a maximum certified take-off mass, at sea level, in standard atmospheric conditions in still air and zero runway slope.

ICAO fire-fighting and rescue capability does not affect runway capacity but does impact on the type of aircraft and scope of operations. There is an unsurprising correlation between the airports with longer runways and fire-fighting provision to accommodate aircraft Code C and higher. Once the aerodrome license category is determined, the Aerodrome Rescue and Fire

[10] Annex 14 - The determination of a runway's reference code is for the identification of the horizontal and vertical parameters of the surfaces associated with that runway, and is not intended to influence the pavement strength - pavement strength being determined by the design aircraft i.e. the largest/heaviest aircraft intended to depart from the aerodrome. The Pavement Classification Number (PCN) should be higher and certainly not less than the Aircraft Classification Number (ACN).

Fighting Services (AR&FFS) category is established. This is based upon the criteria contained in ICAO Doc 9137-AN/898 Part 1, Chapter 2 and in ICAO Annex 14, Chapter 9. Since 2005 the AR&FFS category is the same as the license category. Further, ICAO requires licensed international aerodromes to be certified. In the South African context, licensed and certified are synonyms. The Civil Aviation Regulations use licensed aerodromes not certified, to align with the Civil Aviation Act. In addition, SACAA use the five phases of Certification as per ICAO Annex 14 to license the aerodromes. SACAA has initiated the process of certifying all international airports, to align with ICAO requirements. Four (4) international airports have been certified to date. Certification of remaining airports is in progress.

The length of the runway determines the size of aircraft the runway can accommodate and that determines the Category of Aerodrome Rescue and Fire Fighting Services as contained in ICAO Doc 9137-AN/898 Part 1, Chapter 2 and in ICAO Annex 14, Chapter 9.

South Africa's licensed aerodromes are categorised as follows:

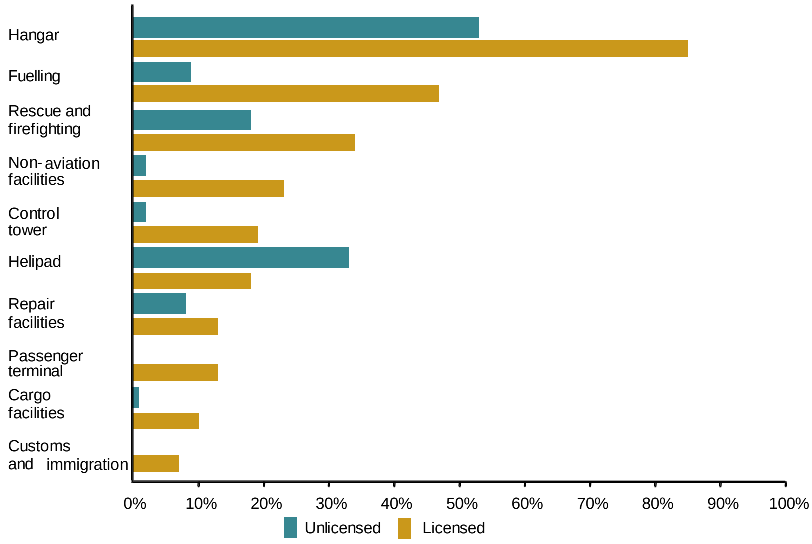
Table 1: Licensed airports within ICAO fire-fighting and rescue categories

Aerodrome category for rescue and fire fighting	Aeroplane over-all length	Maximum fuselage width	# licensed aerodromes in SA
1	18 m up to but not including 24 m	4 m	4
2	24 m up to but not including 28 m	4 m	8
3	28 m up to but not including 39 m	5 m	1
4	39 m up to but not including 49 m	5 m	2
5	49 m up to but not including 61 m	7 m	2
6	61 m up to but not including 76 m	7 m	3
7	76 m up to but not including 90 m	8 m	1

5.1.2 Other airport infrastructure and facilities

(a) Approved Aerodromes
Aerodromes that submit a Risk assessment and Standard operating Procedures to be approved by SACAA
(i) Type A – charter operations
(ii) Type B – Part 61 training for Pilots excluding gliders and balloons
(iii) Type C – Proximity (under CTR) to certified or licensed aerodromes may conflict or cause hazard to existing aerodromes

(b) Registered Aerodromes
Aerodromes that are for private use, not commercial.



In addition to the above physical infrastructure, there are a number of airports with training schools and associated training facilities.

5.1.3 Identified physical capacity constraints and planned developments

A wave of capacity upgrades took place in the build-up to the 2010 FIFA World Cup. Remaining physical capacity constraints have been identified at some airports. There are also various current and planned developments which could impact on future airport infrastructure and facilities, ranging from construction of new airports to upgrades to equipment and facilities, at all sizes and levels of airports. Please see Appendix 2 for examples.

5.1.4 Distribution of airports

Locations of these airports across South Africa have been assessed in relation to the following[11]:

a) Provincial breakdown; and
b) Rural or urban areas, including land use.

Provincial breakdown

The table below summarises airports within each province.

[11] Drawn from data provided by DOT, the CSIR and the Demarcation Board

Table 2: Provincial Breakdown

Province	% of airports	% area	% of population[12]	% GDP[13]
Limpopo	16%	10%	9.8%	7.7%
Mpumalanga	14%	6%	7.8%	8.0%
Northern Cape	14%	31%	2.2%	2.2%
Eastern Cape	11%	15%	11.0%	7.6%
KwaZulu-Natal	11%	8%	19.0%	15.9%
Free State	9%	11%	4.8%	4.9%
Gauteng	7%	1%	26.6%	33.1%
North West	7%	9%	6.9%	6.6%
Western Cape	11%	11%	11.9%	13.9%

Only in Limpopo and Mpumalanga, the provincial share of airports is higher than the share of area, population and Gross Domestic Product (GDP). This is likely to be related to the predominance of game reserves, forestry, agriculture and mining in these provinces, as well as their positions on South Africa's border. A high number of airports in these provinces serve, amongst others, the hospitality industry.

The majority of airports are located close to urban areas (either within urban areas, or within 5km of urban areas), as shown below.

Table 3: Airports near urban areas

Total % of airports in and near urban areas	
Urban	16%
Within 1km of main town	19%
Within 5km of main town	59%
Within 1km of other town	68%
Within 5km of other town	87%

5.2 Licenced, certified, approved and registered airports

As at October 2024, South Africa's airport network includes:

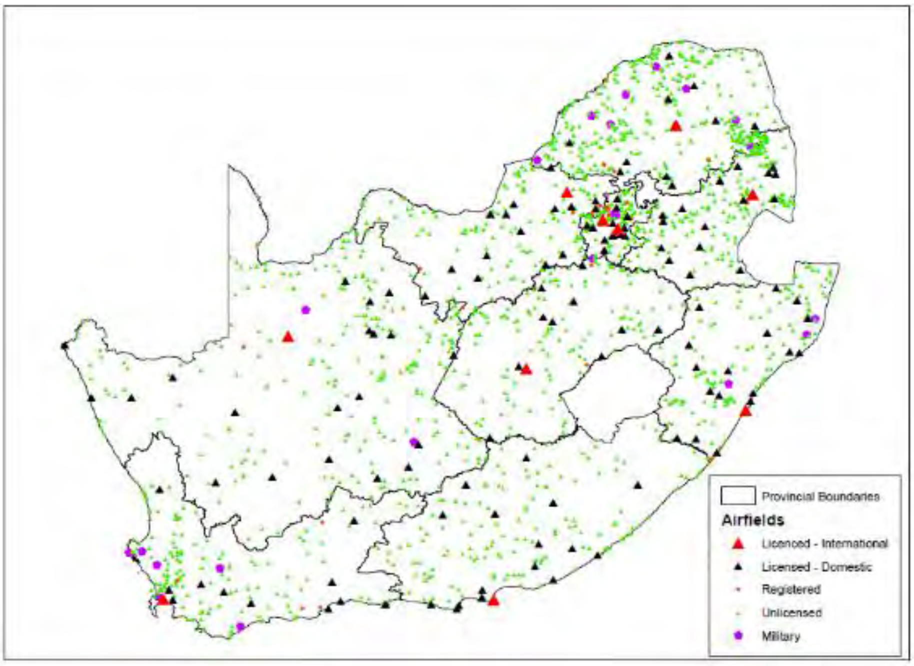
- International Aerodromes (10), certified under SACAA Regulations and Technical Standards – Part 139 Subpart 2, in line with ICAO Annex 14 and ICAO Annex 19 (SMS/SSP)
- Licensed (Domestic) Aerodromes (11), licensed under SACAA Regulations and Technical Standards – Part 139 Subpart 2, in line with ICAO Annex 14 and ICAO Annex 19 (SMS/SSP)

[12] Mid-year population estimates 2022, Stats SA, https://www.statssa.gov.za/publications/P0302/P03022022.pdf
[13] https://www.statssa.gov.za/wp-content/uploads/2023/09/ProvGDPPc1.jpg

- Approved Aerodromes (93), approved under SACAA Regulations and Technical Standards – Part 139 Subpart 5
- Registered Aerodromes published on the SACAA Website www.caa.co.za registered under SACAA Regulations and Technical Standards – Part 139 Subpart 6
- 38 military airports

These airports are distributed as shown in the map below:

Figure 1: Overview of South Africa's licensed, international and registered airports



5.3 Nature and level of airport activity

Activities at airports include movement of people, goods and aircraft (including both scheduled and non-scheduled traffic). The purpose of this movement can be commercial, flight training, public good, diplomatic, educational, agricultural, sport and recreation related, and for private access. Other activities at airports include cargo handling, aircraft storage, maintenance and repair, fuelling, retail, food service and hospitality/hotels, conferences and events, and offices. In the South African context, many or the large and medium-scale airports have a wide range of activities, rather than being single-purpose. For example, there are no cargo-only airports.

The NATMAP has also acknowledged the role of the aviation infrastructure, particularly the role of airports and airspace, as outlined in supporting documents such as NCAP, NADP and the National Airspace Master Plan (NAMP).

Over 39 million departing and arriving passengers[14] were processed through the South African airport network as at March 2017. In 2022, the South African airport network handled 30 million total passenger traffic, ranking the second in Africa after Egypt with 37.9 million total passenger traffic[15]. Scheduled traffic currently takes place at 20 airports. The OR Tambo - Cape Town route is the 10th busiest in the world[16].

Key characteristics of scheduled activity are as follows:

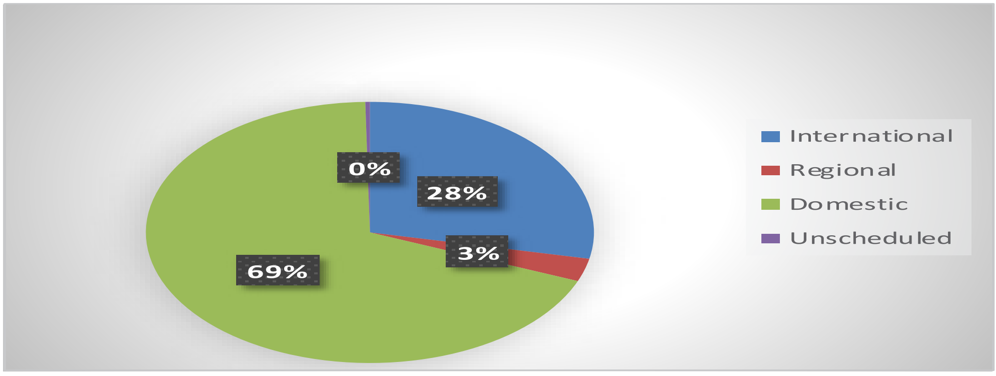
- *Dominance of domestic traffic:* By far the largest share of the South African aviation market is made up of movements of domestic passengers – approximately 27 million passengers; for example, more than two-thirds of all passengers moving through the ACSA network are on domestic flights (these numbers include both arrivals and departures). There were 12.4 million travellers on international flights in 2016[17].

- During the 2018/19, financial year, the movement of international passengers through the 10 international airports, were as follows:

International AIRPORT	TOTAL INTERNATIONAL PASSENGER MOVEMENTS[18]
OR Tambo International	8,666,450
Cape Town International	2,631,137
King Shaka International	390,484
Lanseria International	39,555
Kruger Mpumalanga International	32,659
Polokwane International	4,624
Bram Fischer International	2,536
Pilanesberg International	2,117
Upington International	2,061
Port Elizabeth International	440
TOTAL	**11,777,126**

[14] Source: ACSA Statistics 2016/17
[15] Source: ACI-Air Traffic Performance for Africa https://www.aci-africa.aero/files/Africa-Air-Traffic-Performance-2022-EN-Final-270423.pdf
[16] Source: Amadeus Air Traffic Travel Intelligence
[17] Source: 2016, Department of Home Affairs
[18] Source: 2019, Department of Home Affairs

Figure 3: Mix of passengers across the ACSA airports network (2016/17)[19]

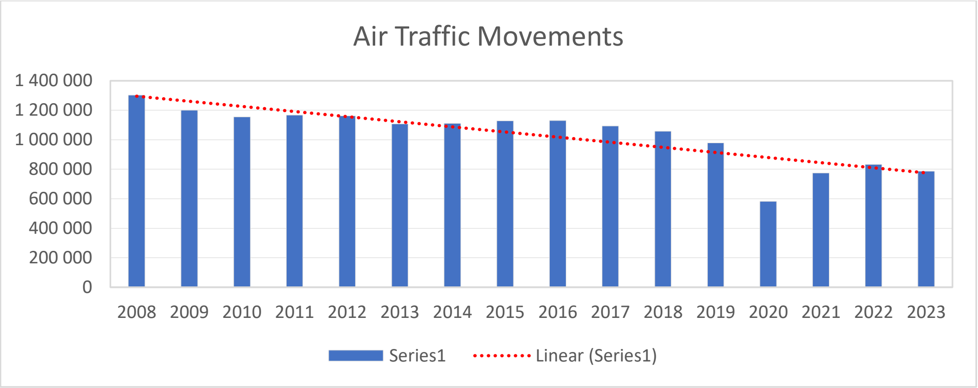


- *High seasonal variance*: The South African airports network experiences relatively high seasonal variance compared to international norms, primarily due to the coincidence of the domestic holiday and international tourist seasons. International passenger flows generally peak in December and January, while domestic flows peak in March, October and December, and both experience troughs in February, May, and June.
- *Heavy concentration of traffic in the network*: Approximately 86% of passenger volume is facilitated through the ACSA network. Within the ACSA network, O. R. Tambo International Airport (ORTIA), Cape Town International Airport (CTIA) and King Shaka International Airport (KSIA) facilitate 91% of the traffic whilst the other airports handle only 9%. Within these main three airports, ORTIA manages 54% of the traffic, CTIA 24%, and KSIA 12%. Transfer activity is concentrated at ORTIA. Within the ACSA network, Port Elizabeth International Airport is the only other airport handling more than one million passengers annually. With respect to airports outside of the ACSA network, the majority of passenger volumes are found in Lanseria International Airport, Kruger Mpumalanga International Airport and, to a lesser extent, Polokwane International Airport and Pietermaritzburg Airport.

The direction of passenger movements across the South African domestic market maps closely onto the ACSA airports network to form what is, in effect, a hub and spoke system**.** The concept of “hub-and-spoke” operations is where aircraft operators based at larger airports (hubs) serve many smaller airports, with links between the airports referred to as “spokes”). The hub airport therefore consolidates passenger and freight traffic from its catchment area as well as flights from smaller airports. The traffic is then conveyed to other hubs and smaller airports in the relevant airport network.

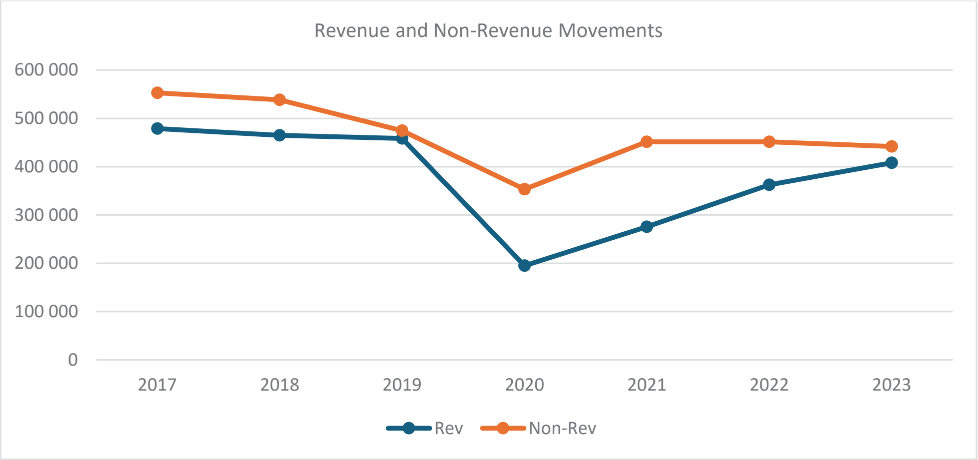
In terms of air traffic movements, data are not readily available on the entire network. Within the ATNS operated network there were just over one million movements between 2013 and 2018, excluding military flight movements as depicted in the table below.

[19] Note that “regional” flights in the data refers only to SACU volumes, and therefore under-represents the regional opportunity as a sub-set of the international opportunity



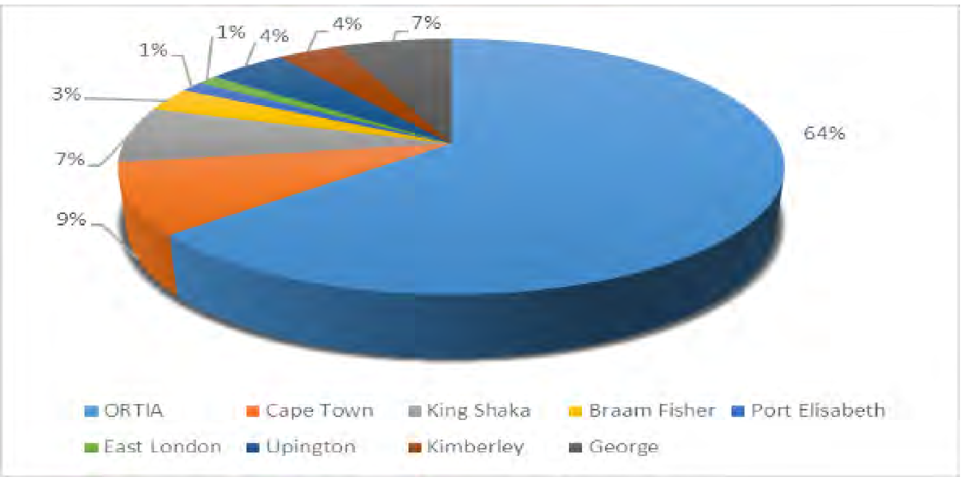
Non-commercial aviation is a large and important part of airport activity, and contributes significantly to air traffic movements. Based on 2014 data from ATNS, nearly 50% of all aircraft movements in the South African airports network were non-commercial flights. The vast majority of airports in the country interact only with non-commercial sports, recreation and private flights. This type of traffic is significantly less concentrated. Based on the 2014 ATNS data, the “big 3” airports represent less than 13% of total non-commercial movements and ACSA airports as a whole, less than 20%. Adding in training and recreational flights beyond the ATNS network, this type of activity is likely to account for at least two-thirds of all aircraft movements in the country.

Over the years, the number of Non-Revenue movements have been higher than the Revenue movements. In 2017 and 2018, 54% of the movements were Non-Revenue while Revenue movements was 46%. In 2019, 51% of the movements were Non-Revenue movements, while Revenue movements improved by 3% compared to the past two years to 49% of total movements. With restrictions imposed due to COVID-19, Revenue movements also decreased from 2020 recording the lowest to 36% of total movements. In 2021, Revenue movements a recorded 38% and Non-Revenue movements recorded 62% of total movements. With restrictions lifted, Revenue movements showed a better recovery in 2022 with an improvement of 8% with a total of 45% of total movements while Non-Revenue movements recorded 55% of total movements. In 2023 the movements were close with Revenue movements recording 48% and Non-Revenue movements 52% of total movements. The graph below shows the trend between Revenue and Non-Revenue movements.



In the 2016/17 financial year[20], non-scheduled traffic, totalling 131 274 passengers, accounted for less than 1% of the total passengers travelling through ACSA Airports. ORTIA facilitated approximately 64% of the non-scheduled passengers, totalling 83 609 passengers. CTIA had 9% of non-scheduled passengers which totalled 11 796 passengers and KSIA accounted for 7% accounting for 9279 passengers. The ACSA regional airports combined, accounted for 20% of non-scheduled passenger traffic totalling 26 590 passengers.

Figure 4: Non-scheduled traffic through the ACSA network



Key characteristics of non-scheduled, general air services and non-commercial aviation activities include:

[20] ACSA Statistics 2016/17

- *High variance:* Seasonal variation in non-scheduled, general air service and non-commercial traffic is more pronounced than for scheduled passenger traffic. This is driven by the variety of types of flights, with each type being sensitive to a different set of factors, for example seasonality in the case of tourist charters (essentially during the spring and early summer), or the importance of good, stable weather in encouraging recreational aviation.
- *Greater dispersion of traffic across the airports network*: ACSA's international airports are much less dominant in non-scheduled traffic than scheduled traffic. The ACSA national network, non-ACSA international airports, and "regional-domestic" airports by contrast play a considerable role in non-scheduled movements. Medium-sized airports (within the ATNS network) handle more than half of all GA traffic.
- *Importance of "secondary" airports:* Not only does a high share of charter activity take place in secondary airports in major centres (e.g. Lanseria International Airport, Rand Airport, Wonderboom Airport, Grand Central Airport, and Virginia Airport), but these airports also handle very large volumes of training and private aircraft movements. Forty percent of total aircraft movements at Lanseria International Airport are training related flights with a further 40% of traffic comprising charter, corporate and private flying. Sixty five percent of flights at Wonderboom Airport, and more than 85% of flights at Virginia Airport are comprised of training-, private- and public use flights. When these movements are considered, it becomes apparent that these are very busy airports. To put it into perspective, Wonderboom, Rand Airport, Grand Central Airport, and Port Elizabeth each handle more aircraft movements than KSIA. Smaller flying sites and informal fields also provide the facilities for a number of entry level aviation and tourism activities and handle many sport-aviation movements per annum.

Flight training is concentrated in airports that serve as the bases for flight training schools. Similarly, airports that are the base for aeroclubs typically have higher recreational aviation activity. At least 50 airports primarily serve the purpose of business access (including mines). There are an estimated 60 airports that provide access to game lodges and resorts. The smaller unpaved airfields are typically used for agricultural and private access purposes.

A relatively new area of activity within the South African aviation network is Remotely Piloted Aircraft Systems (RPAS) within both military and civilian spheres. Unmanned aircraft may be remotely piloted, fully autonomous or a combination. Current efforts of integrating UAS into civil airspace exclude fully autonomous unmanned aircraft. There is significant interest in the use of RPAS for applications such as monitoring, aerial photography, game management and anti-poaching. The sizes of remotely piloted aircraft vary significantly, and therefore their requirements in terms of take-off and landing infrastructure also vary.

Limited reliable airfreight volume data is gathered within the South African airport network. Data compiled from across the ACSA network indicates that the total air cargo processed through ORTIA in 2017 was 394 430 398 tonnes[21].

[21] ACSA 2017 Integrated Annual Report

Key characteristics of the **airfreight** activity include:

- *Dominance of international traffic:* International freight, which accounted for 83% of all volumes. Of the 70,000+ tons of domestic freight, a very large share appears to be international origin or destination cargo flying on domestic trunk routes to link with international flights (mainly at ORTIA).
- *Heavy concentration at ORTIA:* Airfreight is even more heavily concentrated into ORTIA than is the passenger sector: more than 82% of all freight in the ACSA network goes through ORTIA. For the international segment, ORTIA holds an 89% share, with the majority of remaining volumes at CTIA (and small volumes at KSIA and Upington). Although the domestic market is more dispersed, more than 70% of domestic cargo volumes are still concentrated in the three international hubs.
- *Directional imbalance:* Estimates from the five largest airports handling cargo in the ACSA network indicate the inbound volumes have been running approximately 20% higher than outbound volumes (55% of all volumes are inbound) in recent years. The two main freight hubs – ORTIA and CTIA – experience opposite problems of imbalance. ORTIA shows a strong bias toward imports, with inbound volumes 40-50% higher than outbound volumes; this includes large volumes of electronics and specialist components from Europe, Japan, and the USA. In CTIA, which is the hub for the Western Cape's agricultural economy, outbound volumes (mainly perishables) are 30-40% higher than inbound volumes.
- *Reliance on passenger belly hold:* It is estimated that between 15% and 25% of South Africa's airfreight volume is transported via dedicated freighters (versus in the belly hold of passenger flights); this compares to a global average of around 50%. The low share of freighters in the South African market is largely driven by the imbalance of northbound and southbound volumes, the limited scale of volumes to specific outbound destinations, and the existence of a relatively large supply of belly hold capacity, which increases the relative cost competitiveness of this option. The international express mail market has grown rapidly over the last decade and now accounts for 18% of global airfreight volumes (60% within the US); as this sector develops more in the region, a move toward greater use of freighters may result.

Non-aeronautical activity is concentrated in the higher traffic commercial airports, including retail, food service and hospitality/hotels; conferences and events; and offices.

Whether an airport is located in an urban or rural area has implications for the catchment area which the airport serves, both in terms of mix of activities demanded, catchment area size, and level of services demanded. For example, in rural areas people may be more willing to travel further to access an airport. Airports in rural areas tend to serve purposes such as farming, mining or industrial sites, nature reserve/game farm access, or fire-fighting (in forest areas).

5.4 Ownership

The table below captures available information on ownership of airports within South Africa's network.

Table 4: Ownership of airports

	Licensed	Approved	Registered
ACSA	9	0	
Provincial government	5	4	
Local government	75		
Military	0		
Private	46		
Unknown (assumed private)	-	Approx. 1,200	

It must be acknowledged that ACSA has the over-riding percentage ownership with respect to South African airports with significant passenger and aircraft movements. ACSA was established in terms of the Airports Company Act, 1993 (Act No. 44 of 1993) to undertake the acquisition, establishment, development, provision, maintenance, management and control or operation of any airport, any part of any airport, or any facility or service at any airport normally related to the functioning of an airport. As illustrated above, ACSA operates a system of nine (9) airports (6 international airports and 3 domestic airports). ACSA airports which are not financially sustainable, are cross-subsidized within the ACSA network to ensure fiscal responsibility and that safety, security and environmental standards are maintained.

Findings of a desk-top study on airport ownership, operation and funding options in the US, Europe, Australia, Japan, India, illustrate that corporatisation, commercialisation and privatisation of airports had become a world-wide trend. This brings considerable change in airport ownership, governance and institutional settings. It shows that airports are no longer positioned solely as public utilities delivering airside services to airlines, terminal retail, access services to passengers and additional ancillary services. There is increasing involvement of the private sector in the management and the financing of airports, both in developed- and emerging markets.

Publicly-owned airports are offered an opportunity to become sustainable through; the selection of the best management model which is key in maintaining safety compliance, attracting activity, revenue-generation and optimisation of costs.

Management model options include:

i) Contracting in airport expertise to manage the airport (this option may be constrained by available budget);
ii) Collaborating with other airports to contract/bring in expertise;
iii) Establishing a municipal entity to manage a municipal owned airport through Section 84 of the Municipal Finance and Management Act;
iv) Tapping into private sector expertise;
v) Allocation of some maintenance responsibilities to significant tenants;

vi) MOUs for operation and maintenance with primary airport users e.g. airlines or charter operations; and

vii) Transfer through a tender/ concession process to people interested in running the airport e.g. flying clubs, flying schools.

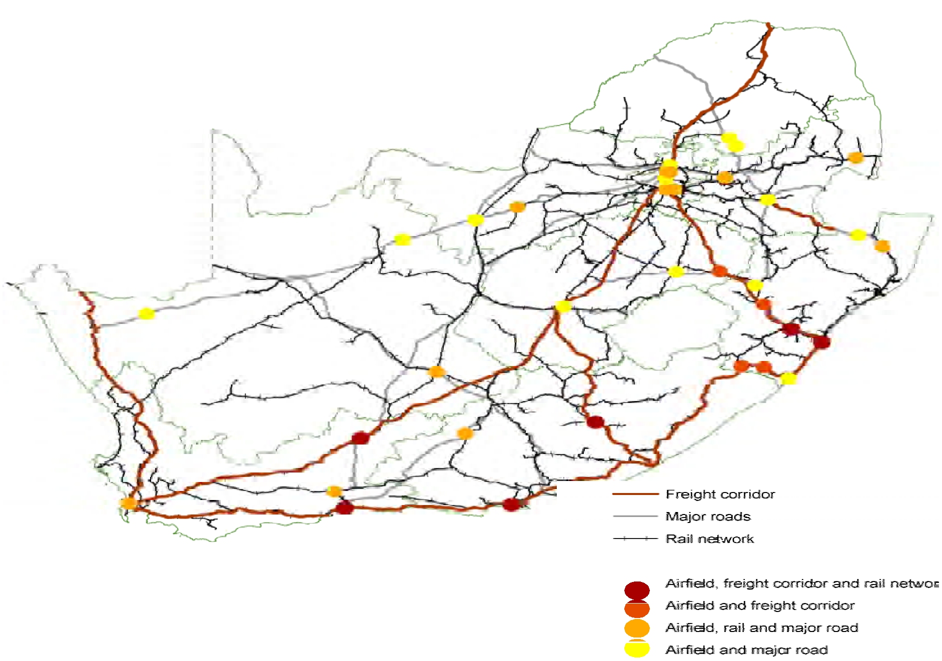
In summary, guiding principles are offered to airport owners-, managers- and operators of particularly smaller airports for facilitate applicability to the airport concerned and sustainability of operation. These principles would include provincially- and locally owned airports.

One of the initiatives for the next five years, as outlined in Part E, is the exploration of potential mechanisms to involve the private sector in airport planning and design, including concession models, long-term leases with associated responsibilities for upgrading infrastructure and technical input from specialist infrastructure private financiers. It must be noted, however, that the potential privatization of major airports will require special attention and approval from the appropriate authorities.

5.5 Proximity to the strategic transport network

An assessment of the **proximity of airports to South Africa's strategic road rail and port network** and corridors provides an indication of the scope for improved intermodal connections. When looking specifically at proximity to freight corridors and the rail network, a number of airports in the Western Cape, Eastern Cape and KwaZulu-Natal have potential for developing intermodal links, as indicated in the map below.

Figure 6: Airports within 2 km of strategic transport network



In recent years, **public transport access to major airports has been improved**, including rapid rail (OR Tambo) and IRT bus services (Cape Town). In terms of freight corridor integration, various plans are under development for improved intermodal linkages, including break-bulk, value-add and redistribution centres. The National Transport Master Planning (NATMAP) process with a time horizon of 2050 is also expected to increase inter-modal integrated planning in future.

5.6 Airspace

The National Airspace Master Plan (NAMP) sets outs the current and future approach to airspace management, which incorporates the ICAO Global Air Traffic Management Operational Concept[22]. It provides the strategic view and direction of airspace organization and management within South Africa. The airspace organisation function will provide the strategies, rules and procedures by which the airspace will be structured to accommodate the different types of air activity, traffic volume, differing levels of service and rules of conduct. The organisation, flexible allocation and use of airspace will be based on the principles of access, equity, capacity, efficiency, flexibility and cost-effectiveness. While airspace master-planning takes global interoperability into account, it must ensure that the National ATM System meets the expectations of the ATM Community. This is done through the provision of integrated services and includes the following operational system components:

- Airspace organisation and management: The establishment of airspace structures to accommodate the different types of air activity, volume of traffic and the various levels of service;
- Airport operations: The provision of the necessary ground infrastructure, including lighting, taxiways, runways and runway exits, and precise surface guidance to improve safety and enable the efficient use of an airport's capacity; and
- Demand and capacity balancing: The strategic evaluation of system-wide traffic flows and airport capacities to allow airspace users to determine when, where and how they will operate, while mitigating conflicting needs for airspace and airport capacity.

A slot allocation system is currently operational in South Africa to ensure the efficient and safe use of scarce resources, as represented by airport and airspace slots. The slot allocation system is applicable to OR Tambo International, King Shaka International and Cape Town International Airports which are the three busiest airports in South Africa; in order to enable coordination of arrival and departure times. It is foreseen that access to and departure from South Africa's airports will require proper planning in order to meet the needs of the economy and the further growth expected in air traffic. As in the case with any other transport infrastructure, civil aviation facilities may also have peak-time traffic and congestion. There are also some airspace pressures in relation to airports with high volumes of non-scheduled, flying training, general air services, and non-commercial aviation activity. Airspace (particularly controlled airspace) could become congested. Physical constraints such as the capacity of the runway(s) and other airport facilities (including availability of aircraft parking bays) could

[22] Available at http://www.icao.int/

cause airport congestion. Traffic peaking at airports generates an overcrowded environment with severe economic repercussions, such as the under-utilisation of costly airport facilities and services, and delays to aircraft and passengers. As such, Slot Coordination involves both a safety case and a business case. The allocation of airspace slots and priorities for airspace use is done on a first-come, first-served basis. Additionally, the slot allocation system should be fair, non-discriminatory and transparent, while taking the interests of all stakeholders, into account. Allocated slots should also be globally compatible, with the aim of maximizing the effective use of airport capacity in a sustainable manner. According to Regulation 25 of the Airport Slot Regulations of 2012, an aircraft operator is accorded the right to use the infrastructure at the airport. The Airport Slot Regulations, 2012 govern the framework used for the allocation, use and misuse applications of slot at slot coordinated airports. ATNS is the Slot Coordinator.

5.7 Financial standing and viability

The majority of key Provincial and Municipal owned airports are not sustainable without on-going financial support based on allocations from the fiscus. Airports that have attracted more than one scheduled operator regular charter operations, or a number of flying schools and clubs, are typically closer to being sustainable. Furthermore, some smaller airports are focusing on precinct development to improve viability through increased non-aeronautical revenues.

According to the 2017 Integrated ACSA Annual Report's[23] audited financial statements, the ACSA Group achieved a revenue of R8.6 billion. Aeronautical revenue increased to R5.4 billion (2016: R5.2 billion) as a result of improved passenger numbers, particularly over the 2016 festive season. Non-aeronautical revenue contributed R3.2 billion (2016: R3.1 billion) based predominantly on the performance of customer-facing services and commercial revenue for the year.

The financial standing of military airports, which are funded through the budget of the Department of Defence, are difficult to assess as financial information on these airports are not publicly available. Diversion airports are mainly military airports namely; Langebaanweg, Waterkloof, Hoedspruit and Overberg. Some military airports are co-used by civilian operators, such as Hoedspruit AFB/Eastgate Airport.

6 Demand forecasts

This section provides an overview of the demand forecasting model, including global and South African demand growth patterns, drivers of underlying demand in South Africa, assumptions informing future growth scenarios, and outputs of the demand model.

[23] The ACSA Integrated Annual Report, 2017.

6.1 Global demand patterns

Global air traffic demand, including both **passenger and cargo traffic**, is driven by a range of factors as shown in the table below:

Table 5: Global demand patterns

Leisure travel	Business travel	Cargo
• GDP and disposable income • Population growth • Urbanisation, migration and regional integration • Airfares and dynamic ticket pricing • Distance / time to access air services and alternative transport modes available • Exchange rates	• GDP levels and value added share • Airfare and dynamic ticket pricing • Trade levels and growth rates (in particular for international flights) • Distance / time to access air services and alternative transport modes available • Exchange rates	• GDP levels and value-added share • Trade levels and growth rates (in particular for international flights) • Trade agreements, • Growth of global production chains and lean inventory strategies • Alternative transport modes available and comparative freight costs and time • Exchange rates • Value to volume ratio of traded goods and share of traded goods that are time / temperature sensitive

By far the most important drivers for leisure travel are GDP levels and (related to this) disposable income and the air services availability (i.e. the time and cost trade-off involved in accessing and travelling by air versus using an alternative mode of transportation). For business travel, GDP levels and trade play a greater role, as does the exchange rate (through its impact on the relative cost of exports and imports). Global downturns such as the 9/11 terrorist attacks, global financial crisis, pandemics etc are likely to have a significant impact on passenger volumes.

In recent years, worldwide air travel has grown at a historically sharp pace. Year-over-year passenger travel growth for the past five years has averaged 6.2%. Low air fares, higher living standards with a growing middle class in large emerging markets, and the growth of tourism and travel relative to total consumer spending in major economies are all driving strength in the demand for air travel. Further, economic and income growth in large emerging markets such as China and India have been a primary driver of global GDP growth and also demand for air travel. China has contributed significantly to world traffic growth for several years, as its passenger growth has increased at an average rate of more than 10% per year. India's emergence as a high-growth economy has produced more than 20% passenger traffic growth per year in its domestic market. India is expected to become the third largest commercial aviation market by the early 2020s. The middle class in China and India grew from 80 million in 2000 to 135 million in 2016, an increase of nearly 70%.[24]

Current forecasts indicate that air traffic volumes will double by 2032, characterised by an annual growth rate of 4.6% for passenger traffic and 4,4% for freight.[25].

In terms of airfreight, the most fundamental amongst these factors are GDP growth and trade growth. It is acknowledged that the development of freight is an excellent early indicator of the direction in which economies are developing. Since 2011, the two principal causes of weak growth of air cargo have been a weak world economy and poor growth in trade[26]. For the first time since the financial crisis, world trade in 2016 is expected to grow slower than GDP, with total global merchandised trade estimated to have grown by 1.7% [27]. During 2016-17, the movement of air cargo accelerated gradually and is forecast to grow by an average of 4.2% per year for the next twenty years, to reach a total of more than twice the number of Revenue Tonne-Kilometres (RTK's) logged in 2015.[28]

Global GDP is expected to average at 2.9% for the next two decades.[29] It is of note that some emerging markets continue to experience a challenging economic environment, including low oil prices. Advanced economies are also undergoing a slow recovery. However, despite these challenges and political risk, fundamental growth factors including an increase in productivity through technology, economic reform and available production resources are still prevalent. This is particularly true for non-OECD markets, which will account for a higher share of GDP growth between now and 2020 than OECD economies; and Asia will increase its share of world GDP from 35% in 2005 to 43% in 2020[30]. Asia, including the Pacific Rim Countries, will lead with an average annual growth rate of 5.5% with respect to air cargo transport, between 2015 and 2035[31] The mature market regions of North America and Intra-Europe, currently the fifth largest market, are expected to grow at 2.2% for the next twenty years; while air cargo between the Middle East and Europe has been forecast to grow at 3.9% in this same period[32]. China's domestic air cargo is expected to grow by 6.2% annually[33].

Air Cargo trade between Africa and Europe, Asia and North America is forecast to grow at differing rates for the period of 2015 to 2035. The Average Annual Growth for this period to Europe is 3.8%; Asia will be at 6.5% and North America at 5.3%. It must be noted that the base market between Africa and North America is smaller than that of Europe and Asia.[34].

Population growth will also affect air traffic demand. The United Nations expects global population to increase 35% until 2050, which is slower than in the past, but still significant. Africa, however, will see unprecedented population growth with its population more than

[24] Boeing Current Market Outlook 2017 - 2036
[25] Aviation Benefits, 2017.
[26] World Air Cargo Forecast 2016-17: Boeing
[27] IATA CARGO CHARTBOOK, Q4,2016
[28] Boeing, World Air Cargo Forecast, 2016-17
[29] Boeing, World Air Cargo Forecast, 2016-17,
[30] Source: Economist Intelligence Unit Foresight 2020
[31] Boeing, World Air Cargo Forecast, 2016-17
[32] Boeing, World Air Cargo Forecast, 2016-17
[33] Boeing, World Air Cargo Forecast, 2016-17
[34]Rre43 Boeing, World Air Cargo Forecast, 2016-17

doubling. Africa's population is expected to achieve 2.2 billion and will account for 50% of world population growth through 2050[35].

Increased global integration, through trade, capital and labour markets, and through culture and tourism are driving aviation demand at levels well above the rate of GDP growth. A counter-trend, however, is the development of communications technologies which reduce the need for face-to-face contact (e.g. improved videoconferencing and voice-over IP (VOIP). Greater regional integration and cooperation opens up new travel options for passengers e.g. reduced visa requirements within regions and trade agreements affecting freight movements.

Urbanisation is also expected to continue, with 66.6% of the world's population living in an urban environment by 2050. This will positively affect air traffic demand because populations living in urban environment will be concentrated in the middle class due to higher wages in urban centres[36]. Africa's population is the youngest among all the continents, with large numbers of people ready to enter the workforce during the coming years. Literacy rates are improving, and Africa is becoming highly urbanized. The United Nations predicted that 56% of Africans will live in urban areas by 2050, up from 40%.[37].

Almost all long-haul traffic is concentrated within a few select cities across the world, often referred to as "Aviation Mega Cities". Aviation Mega Cities handle over 10,000 long-haul passengers on a daily basis. Currently, there are 42 Aviation Mega Cities, with 94% of long-haul travellers using at least one of these airports each trip; Johannesburg is currently the only one in Africa[38]. Long-haul traffic is expected to remain concentrated within Aviation Mega Cities, but by 2033 the number of cities is expected to increase to 91 with 99% of long-haul travellers using at least one of these airports each trip[39]. Out of those 91 cities, six are expected to be in Sub-Saharan Africa, including: Johannesburg, Accra, Addis Ababa, Lagos, Luanda, and Nairobi[40].

Concerns about the environmental impacts of air travel, fluctuating fuel prices and security fears are not expected to significantly dampen demand. The aviation industry is actively addressing this through operational improvements. For example, to offset rising fuel prices and carbon emission concerns, airlines have looked for ways to save fuel (e.g., flying at optimum weight, altitude and routes, and better review of weather conditions) and upgrading to more fuel-efficient aircraft[41].

A standard measure for assessing passenger demand for air travel is "propensity to fly". Propensity to fly determines future demand for air travel with respect to business- and leisure travellers. It is further noted that the faster demand grows; there is a need for safe and efficient airports, transportation and communication networks around the airports as well as other forms of aviation infrastructure.

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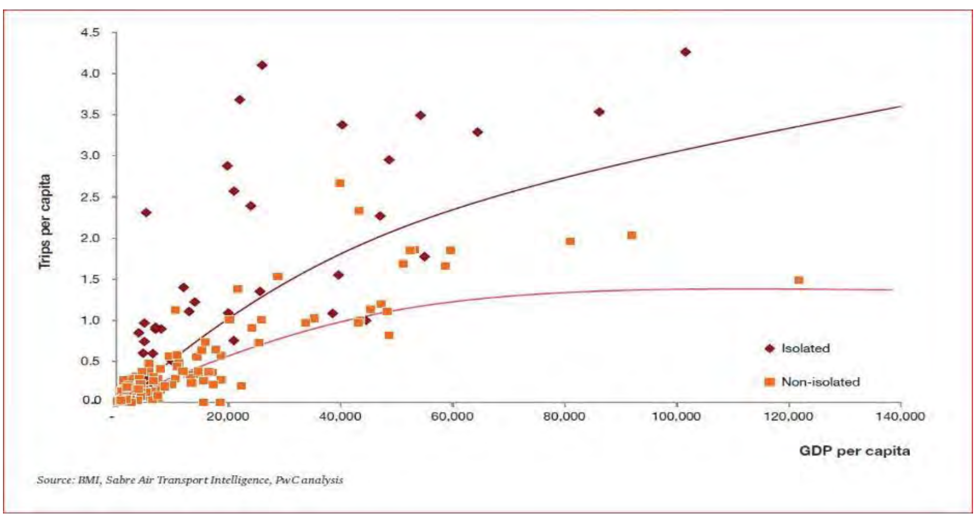
[35] *Flying on Demand: Global Market Forecast 2014-2033 booklet*, Airbus, p. 20
[36] *Flying on Demand: Global Market Forecast 2014-2033 booklet*, Airbus, p. 21
[37] *Boeing Current Market Outlook, 2017-2036*
[38] *Flying on Demand: Global Market Forecast 2014-2033 booklet*, Airbus, p.27
[39] *Flying on Demand: Global Market Forecast 2014-2033 booklet*, Airbus, p.27
[40] http://www.theafricancourier.de/business/ghana-airport/
[41] *Flying on Demand: Global Market Forecast 2014-2033 booklet*, Airbus, p.16

A study conducted by PricewaterhouseCoopers (PwC) focussed on compound annual growth rates (CAGR) and correlations between per-capita GDP and the number of flights per capita, focussing on factors which affect the propensity to fly, including economic health, demographic changes, market maturity, crises, geographical features, competition and airport hub status. In analysing the correlation between per-capita GDP and the number of air trips; PwC based on their analysis of the number of one-way trips by residents, with point of sale in a particular country. In drawing a relationship between propensity to fly and per capita GDP, it was determined that the ranking within the top twenty countries might change by 2020[42]. This relationship has been used to forecast aviation market growth, and to show that there will be a major increase in propensity to fly by 2020; however, each of these markets, which include China, India, Brazil, Indonesia and Turkey, would need significant upgrade in infrastructure.

Figure 7: Relationship between air trips per capital and GDP per capita, 2013



In terms of competition from alternative modes of transport, in some locations, passengers have shifted to high speed rail for some "regional-international" routes. In the case of cargo, innovations in ocean shipping technologies, including the development of "fast ship" technology and "atmosphere controlled" sea freight containers threaten the competitiveness of airfreight in certain sectors and markets. Delays involving customs and border controls constrain all forms of trade. To the degree that these constraints are unblocked, trade levels may improve substantially. This can have both positive and negative effects on airfreight, driving some additional demand but also allowing road transport to compete more effectively on some regional routes.

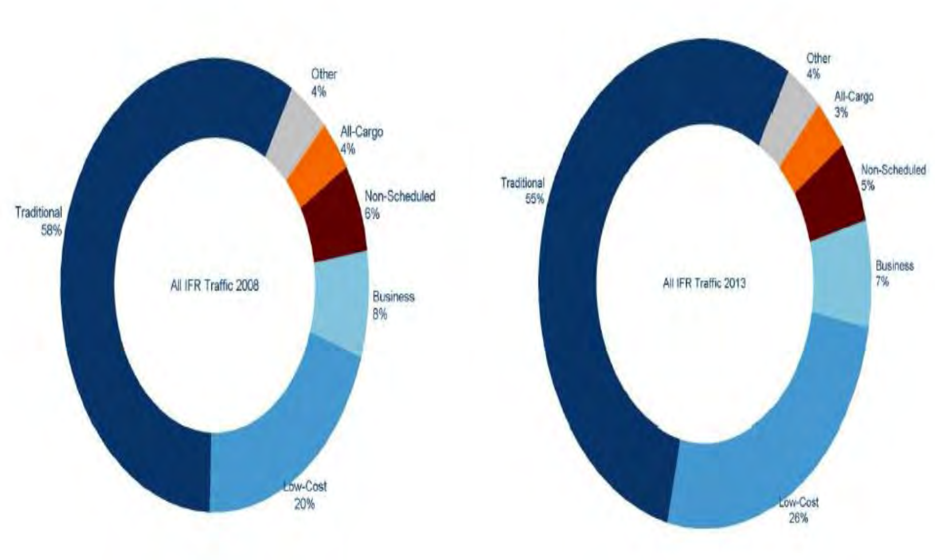
In Europe (2016), traditional scheduled flights account for the majority of IFR air traffic, having grown by 2.1%, totalling 52.8% of total flights (this excludes LCCs). LCCs, however, increased

[42] Source: PwC, Connectivity and Growth "Propensity to fly in emerging economies: What do the trends mean for aviation infrastructure investment, 2013"

their share of flights by 7.5% to 30.1%[43]. Globally, commercial airline carries approximately 4 billion passengers in 2017; more than the 3 810 billion passengers carried in 2016.[44]

Non-scheduled flights (Charter flights) accounted for 3.4% of total IFR flights in Europe in 2016, down by 15.3% in 2015.[45] Whilst the U.S. and Europe have traditionally been the market for non-scheduled flights, due to the recent economic challenges and recession, non-scheduled flights have been on the decline. However, in India, **non-scheduled flights** have been increasing steadily due to a growing economy, business need for private flights, increasing corporate revenues, and more high net worth people. Additionally, since most commercial flights only fly between large cities, non-scheduled flights have been playing in the small city space[46].

Figure 8: Market segments share of all IFR flights (ESRA) in 2008 and 2013



The EUROCONTROL market segments rules have been reviewed and updated to better reflect the distribution of the IFR movements across different types of traffic. The “Traditional Scheduled” segment, which accounts for more than 50% of the European traffic (before Covid-19) has been split into “Mainline” and “Regional”. All-Cargo” and “Low-Cost” rules have been revised; and helicopter flights have been moved from “Charter” to “Other”. The “Business Aviation” rule has been refined too. There are now eight market segments (Figure 8): “Mainline”, “Regional”, “Low-Cost”, “Business Aviation”, “All-Cargo”, “Charter” (Non-Scheduled), “Military” and “Other”. The last time the market segments had been fully reviewed was in 2016 as shown in previous paragraphs.

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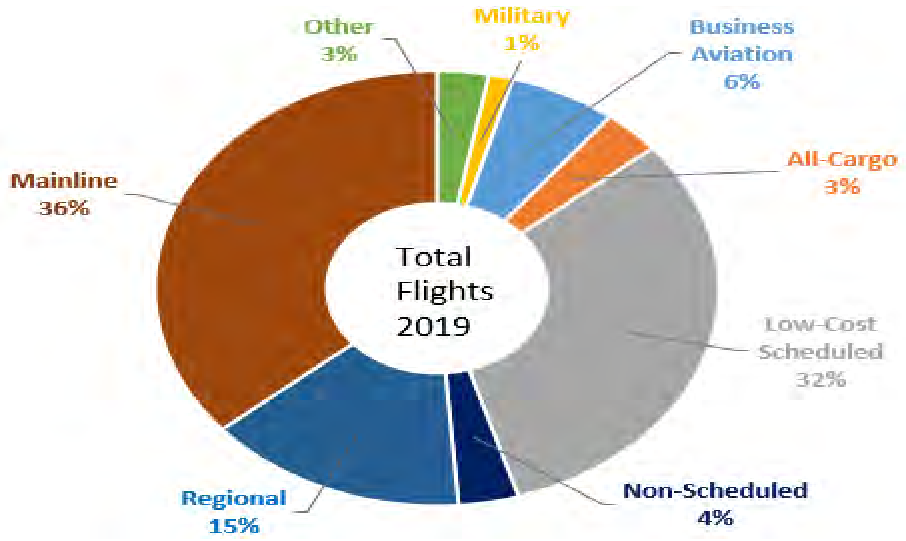
[43] Source: Eurocontrol Stratfor: Flight share by Market segment in 2016 (Compared with 2016).
[44] https://www.statista.com/statistics/564717/airline-industry-passenger-traffic-globally/ - 2017 Number of scheduled passengers boarded by Scheduled Airlines 2004 – 2018.
[45] Source: Eurocontrol Stratfor: Flight share by Market segment in 2016 (Compared with 2016).
[46] Source: https://www.pwc.in/assets/pdfs/industries/general-aviation-070312.pdf

Figure 9: Share of 2019 flights according to the new market segments



Flights under the “Regional” rule account for 15% of the total traffic; whereas flights under the “Mainline” rule correspond to 36%. In the past, most flights of these categories were falling under the “Traditional Scheduled” segment which accounted for 53% of all flights. “Low-cost” share has slightly increased to 32% (from 30%) as some aircraft operators have been added in the definition. “Business Aviation” share is now 6% (slight decrease from 7%) as some flights were thought better to belong in the “Military” segment. For example, the TBM7 aircraft was defined as a “Business Aviation” aircraft type while it is widely used by the French Air Force. The priority of the rule has been modified by selecting military flights first, then business aviation. “Charter” (4%) (non-scheduled) remained stable, a slight decrease of 0.5 p.p. reflecting helicopter flights moved to “Other”. All-Cargo” (3%) remained stable on the previous rule as minor changes have been brought to the definition. “Military” (1%) remained stable too, even if a limited number of additional flights have been considered[47].

6.2 South African demand patterns

Growth in air transport in South Africa was strong before the 2008 crisis but uneven in recent years. The figure below shows the annual growth in passengers between 2000 and 2014 in comparison to GDP growth during that period. From 2000 to 2007, passenger growth averaged a strong 9.4% annually, or 2.2x GDP growth; however, since 2008, passenger growth has barely matched GDP growth and even turned negative in years of slowing economic growth.

[47] https://www.eurocontrol.int/publication/market-segment-rules

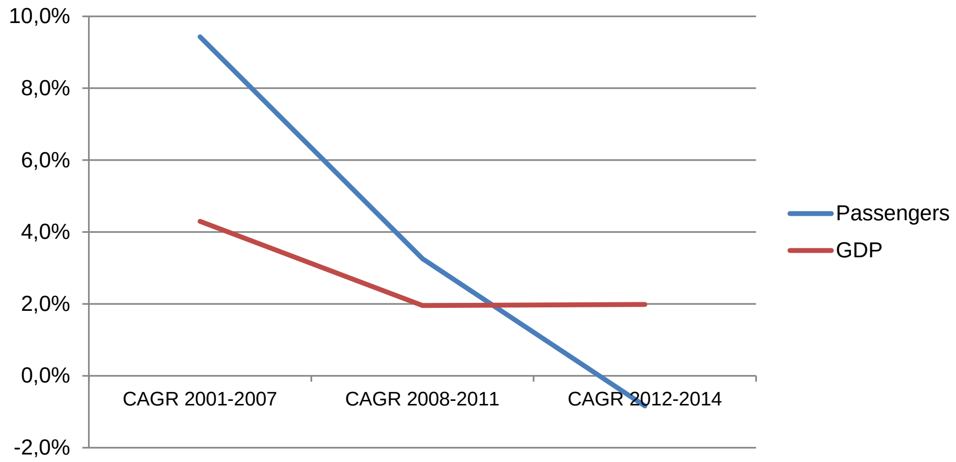
The growth in passenger traffic from 2000 to 2007 was unprecedented, and a substantial acceleration over historical levels, and it was above levels predicted by most in the industry. Linked to that was the growth of the Low Cost Carrier (LCC) sector, which brought fares within reach of more South Africans and stimulated much of the growth in demand. In only a few years, LCCs have grown to take 30-40% of the domestic market. During 2015, the domestic low-cost carriers operating in South Africa, which had included South African Airways subsidiary, Mango, Comair's Kulula and stand-alone carrier FlySafair, would account for just under half the available seats on domestic flights. Given the limited demand for domestic aviation elsewhere in Africa, the South African low-cost carrier market remains by far the most congested on the continent[48]. While consumers might benefit from more aggressive competition, demand in the South African aviation market might be too small to support existing budget carriers given that three low-cost carriers, 1time, Skywise and Velvet Sky, have ceased operations due in part to overcapacity in the market.

The International Air Transport Association (IATA) forecast that the number of air passenger journeys to, from and within South Africa will be more than double from the 23.6-million last year to more than 54-million by 2036. This will be the result of an average annual growth rate in the country's local and international air travel of 4.3%, significantly above the expected rate of 3.5% for the aggregated global industry.[49]

Real growth in GDP is a key driver of traffic volume growth. Over the past two years performance was not aligned to the GDP growth of South Africa or its major trading partners. The domestic traffic volume growth of 11.4% in 2016 was a direct result of additional low fare airline capacity on a number of South African routes by new entrants. This was supported by new, more efficient and larger aircraft which created broader accessibility to flights for the South African domestic market. In 2017 this additional capacity was increased, resulting in a further 2.2% increase in domestic traffic volume growth. International traffic volume continued to grow by 4.7%, with Cape Town International Airport growing by 27% year-on-year[50]

[48] https://brandsouthafrica.com/investments-immigration/busines/low-cost-airlines 310315
[49] http://www.engineeringnews.co.za/article/iata-forecasts-strong-growth-in-south-african-air-traffic-and-cites-its-role-in-the-economy-2017-06-20/rep_id:4136
[50] ACSA Integrated Annual Report 2017

Figure 10: Growth in passenger volumes – South African airports: 2000-2014



CAGR – Compound Average Growth Rate

Table 6: Passenger and GDP growth

	CAGR 2000-2007	CAGR 2008-2011	CAGR 2012-2014
Passengers	9.4%	3.3%	-0.8%
GDP	4.3%	2.0%	2.0%
Ratio Passengers growth / GDP growth	2.2	1.7	-0.4

A double-logarithmic regression over the 2000-2014 period shows that passenger growth is related to GDP growth by a ratio of 1.9x, with an R-square of 97% (i.e. there is a very strong correlation).

In terms of freight, average annual growth from 2006 to 2014 for the ACSA network has been 2.2%, on the backdrop of a soft economy. This was in contrast to average annual growth of about 5.2% at ORTIA and CTIA between 2004 and 2007.

According to industry estimates, airline goods transportation accounts for 35% of global trade value, confirming the contribution of cargo to economic and socio-economic development. Infrastructure, intermodal connectivity and capacity position of ACSA's airports are ideal gateways to Africa for trade and development. In 2017, the total air cargo processed through the O.R. Tambo International gateway was 394 430 398 tonnes (2016: 376 854 575 tonnes). O.R. Tambo International Airport consistently meets the needs of international and local cargo operators, as reflected in the fourth consecutive year of receiving the "Airport of the Year" award at the Air Cargo Africa Conference and Exhibition. This award is a result of continuous real-time support to meet the business needs of cargo stakeholders. O.R. Tambo International

Airport will look to develop the western precinct and the midfield cargo terminal to create opportunities for various stakeholders in the aerotropolis supply chain.[51]

The relationship between passengers, freight and air traffic movements is determined by operational factors, i.e. the average size of aircraft (number of seats) and the load factor (measuring capacity utilisation), which when combined, result in an average number of passengers per flight, directly linking total passenger number to traffic movement. For the ACSA network for the 2010-2014 period:

- Scheduled international flights have averaged between 139 and 142 passengers per flight;
- Scheduled regional-international flights have averaged between 40 and 47 passengers per flight; and
- Scheduled domestic flights have averaged between 90 and 97 passengers per flight;

Owing to the relative stability of these passenger-per-flight ratios, scheduled commercial air traffic movements tended to track quite closely the passenger growth pattern over the recent few years.

In contrast, non-scheduled flights have reported since 2010 an average number of passengers varying in a range of 1.4 to 2.2 from year to year. While this is explained by key differences between categories, this small and unstable ratio makes it difficult to relate non-scheduled air traffic movements to passenger growth patterns.

With the Air Traffic Management (ATM) industry being strongly linked to growth in air traffic movements and overall economic growth, ATNS project its revenue based on expected growth in air traffic movements (ATMs). The ATMs have a high correlation to Gross Domestic Product (GDP) at approximately 80%. The largest anticipated contributor to the growth in aircraft movements between 2015 and 2024 will be within the Africa-Europe trade region, followed by Intra-Africa. From 2015 to 2024 the average annual compound aircraft movement growth in Africa-Europe and Intra-Africa will be 4,5% and 7,5% respectively. This growth is primarily due to anticipated increases in trade in Africa. As a fully commercialized entity operating in the African market, ATNS could also be a beneficiary of the increase in trade flows between BRICS nations and the rest of the African Continent[52].

The Air Traffic Movements for 2018 decreased by 2,69% to 1 087 694 ATMs compared to 1 089 471 ATMs in 2017. The decrease in ATMs is attributed to the reduction of flights by some airlines and the grounding of some airlines due to safety concerns[53]. From 2019 the air traffic movements decreased below the 1 000 000 and below as illustrated in table 9.

[51] ACSA Integrated Annual Report, 2017
[52] ATNS Integrated Annual Report 2016
[53] ATNS Integrated Report 2018

Table 7: All air traffic movements including arrival, departures and training for 2017/18

	April 2017	May 2017	June 2017	July 2017	Aug 2017	Sept 2017
Movements 2017/18	92 158	99 832	94 311	101 783	94 983	91 173
Cumulative Movements	92 158	191 990	286 301	388 084	483 067	574 240
	Oct 2017	**Nov 2017**	**Dec 2017**	**Jan 2018**	**Feb 2018**	**Mar 2018**
Movements 2017/18	91 721	93 350	78 907	82 777	79 503	87 196
Cumulative Movements	665 961	759 311	838 218	920 995	1 000 498	1 087 694

Table 8: Air Traffic Movements

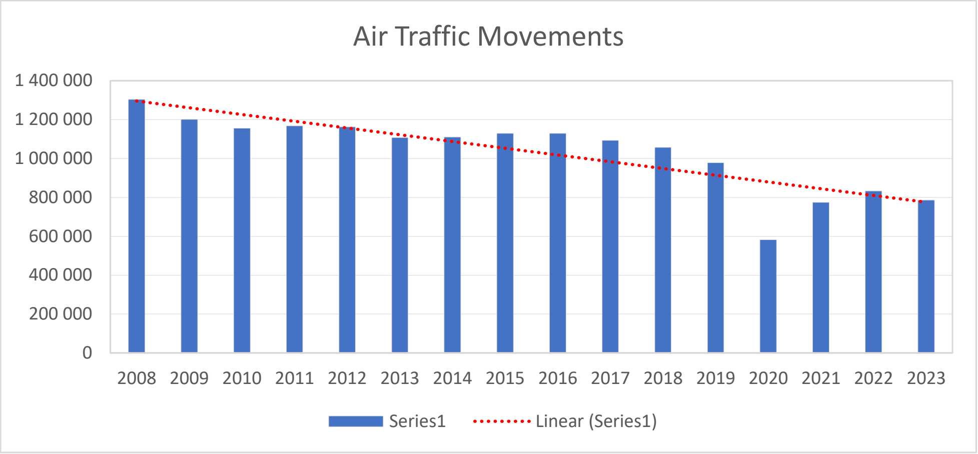
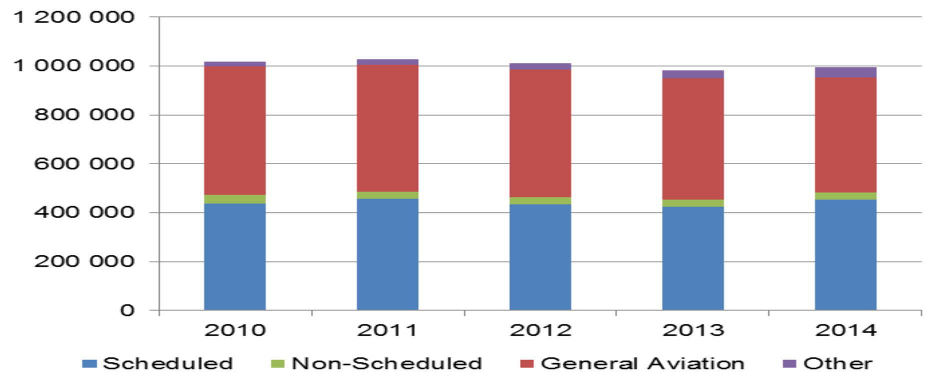


Figure 11: Air traffic movement estimates based on ATNS flight plan data and categories, 2010-2014[54]



In order to get a better picture of how the airport network serves the country today and how it is positioned to do so in the future, it is important to understand the geographical spread of demand for air services across the country. As the spatial spread of demand does not exactly match current traffic movements at airports because of variations in available infrastructure and services, it is referred to here as "**underlying demand**". A number of factors influence the relative demand for air travel in different parts of the country. Amongst the most important are:

- **Population size**: This is the most important determinant of overall demand levels.
- **Disposable income**: As discussed with regard to "propensity to fly", disposable income is a very important factor influencing demand. Data on household expenditures indicates

[54] ATNS data are based on flight plans rather than operational data, and may therefore have inaccuracies due to inaccurate or incomplete information on flight plans. Please note, in terms of ATNS categories, "non-scheduled" refers to commercial non-scheduled traffic, "General Aviation" and "other" relate to non-commercial traffic.

CONTINUES ON PAGE 130 OF BOOK 2

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that air travel is almost exclusively limited to households in the top income decile, although this might shift in the long term if affordability of air travel shifted significantly.

- **Geographic Value Add (GVA)**: In addition to indicating the presence of higher disposable incomes, GVA is an indication of the relative degree of economic activity. This not only shapes business travel demand but also demand for airfreight, particularly where GVA is as a result of production of high-value (such as certain minerals) or perishable (such as fruit or fish) goods.
- **Tourism and migration**: Districts with substantial tourism are likely to have demand for air services far above what would be otherwise expected based on population and incomes. In addition, greater demand will exist between districts and provinces where there has been significant migration over the past decade (in particular this is between Gauteng and most provinces and between the Eastern Cape and the Western Cape).
- **Accessibility and alternatives:** Relative demand will also be determined in part by the accessibility of the district by other means of transportation (e.g. road and rail); although it is normally the case that low levels of accessibility coincide with relatively sparsely populated rural areas.

6.3 Future growth assumptions and projections

Building on the historical relationships between economic growth and air traffic, and based on forecasts of South Africa's real GDP[55] over future years, the key parameters of air traffic have been projected in relation to passenger, freight and ATMs.

6.3.1 Passengers

South African propensity to fly tends to track already above the cross-country regression line, but GDP per capita levels are not forecast to reach, over the next 30 years, the level where saturation has been observed in other countries. Evidence from the sector and from the most recent household survey on income and expenditure indicate that only about 10% of South Africans are flying today; in developed markets like the UK, the figure is around 50%. This suggests there is considerable scope left for new demand to come into the market as income levels rise.

Looking forward, the two biggest considerations regarding the future growth of the aviation sector in South Africa (over and above GDP trends) are the levels of market penetration and the degree to which low cost carriers can continue to grow. Over the medium term, as long as the macro economy supports continued widespread growth in income levels and as long as the economics of the sector do not shift dramatically (e.g. with rising fuel prices), the LCC sector should be able to continue to grow by opening up access to flying to more and more South Africans.

The figures below trace the possible evolution of passenger volumes in the South African market, based on three scenarios in the demand model, with different relationships to GDP growth:

[55] GDP growth forecasts for 2015 through 2017 are based on data from Treasury's 2014 Medium Term Budget Policy Statement; forecasts for 2015 and from 2017 through 2050 are private providers

- *Growth at a level slightly above GDP growth*: Over the forecast period, growth in air passenger demand is highly unlikely to fall below this trend line, unless some unexpected, industry-specific event occurs. As such this can be viewed as a relatively pessimistic growth case over the medium and long term.
- *Growth at 1.5x GDP*: This is the base case, implying strong growth but below global averages for the industry in emerging markets, reflecting a more penetrated market situation and more recent unfavourable trends.
- *Growth at 1.9x GDP*: This is in line with the growth experienced in the South African market from 2000 to 2014. Although that pattern of growth was unprecedented, it should not be viewed as overly optimistic in the short to medium term. Over the long term, however, it is most likely to be in the outer bands of expected growth.

Figure 2: Total passenger volume forecast: 2015-2050

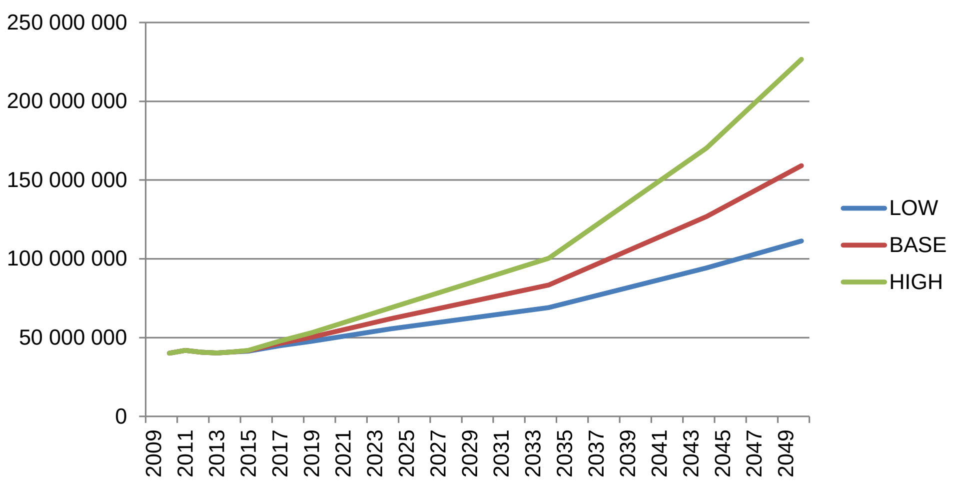


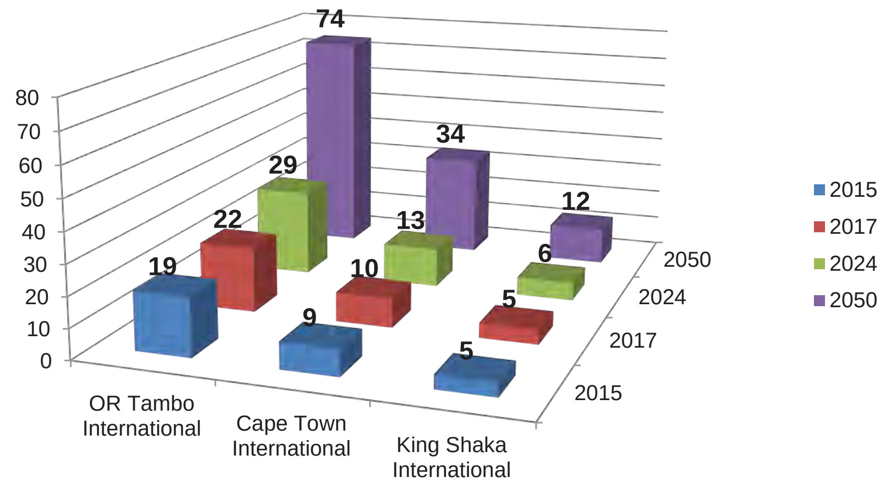
Table 9: Passenger growth with different scenarios

	CAGR 2014 - 2015	CAGR 2014 - 2017	CAGR 2014 - 2024	CAGR 2014 - 2050
Low	1.35%	3.08%	3.10%	2.82%
Base	1.84%	4.21%	4.23%	3.85%
High	2.33%	5.33%	5.36%	4.87%
GDP Growth forecast	1.23%	2.80%	2.82%	2.56%

Under the base case scenario, volumes would grow at 4.21% annually over the next three years, but at a 3.85% average annual rate through 2050. International passengers would make up around 16 million of the 62 million total passengers forecast in 2024, and 41 million of the 159 million total passengers forecast in 2050.

The three largest airports will show this growth pattern under the base scenario:

Figure 3: Passenger growth (millions)



A number of factors will shape the development of demand, and result in risk or uncertainty to these forecasts. Most important is the expectations concerning the GDP growth rate, which reflects recent global and national trends. Other important factors are the developments of air liberalisation in African regional markets (full implementation of the Yamoussoukro Decision) and effectiveness of the implementation of tourism growth strategies.

6.3.2 Freight

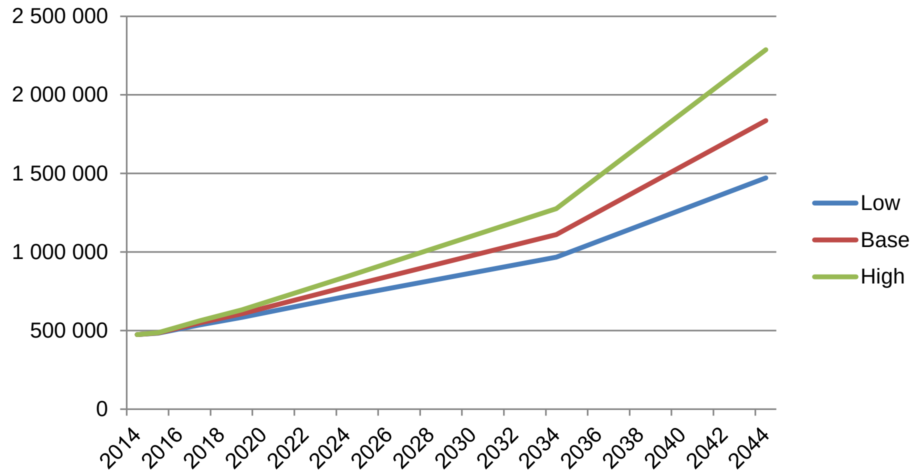
Looking forward, the most important factor driving growth in the cargo sector will be GDP and trade growth. Over the long-term, trade has tended to grow at a rate of about 1.5 to 2 times that of GDP growth. However, airfreight is a niche transport mode in volume terms and one which is highly sensitive to factors like price and technology. Factors such as fuel prices and specific actions within key export or import sectors can substantially alter growth expectations.

The figure below traces the development of airfreight volumes (total of inbound and outbound) across the ACSA network based on three alternative growth scenarios in the demand model:

- *Low case – Growth at 1.5x GDP*
- *Base case – Growth at 1.8x GDP*
- *High case – Growth at 2.1x GDP*

The base case scenario implies annual cargo growth of 4.6% and results in a doubling of current cargo volumes by 2030.

Figure 4: Cargo growth forecast (tonnes 2014-2044)



	CAGR (2014 – 2044)
Low case	3.85%
Base case	4.61%
High case	5.38%

6.3.3 Air traffic

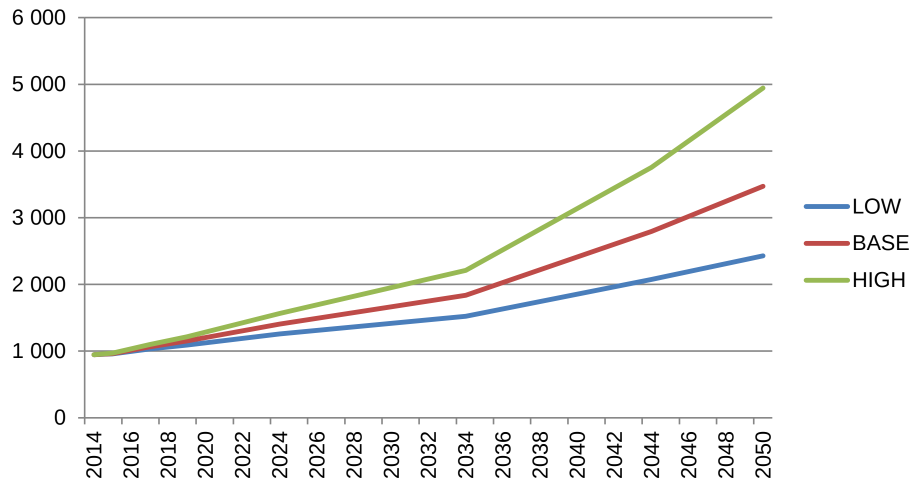
Scheduled traffic movements should grow largely in line with the growth of passenger traffic, with perhaps a very slow growth in utilisation levels over the period. In the base scenario, annual scheduled movements would increase from just over 400,000 in 2014, to over 600,000 by 2024 and over 1.2 million by 2044.

Growth in the non-scheduled portion of ATMs is being driven by increased demand for flexibility and convenience on the part of high-end business travellers, as well as strong growth in the tourist sector. The “regional-international” charter market also appears to be growing, driven by growth in the regional mining and construction sectors and growing tourism (especially into Mozambique). However, many smaller regional charter operators are being squeezed by the growth of low cost airlines (which are attracting travellers to drive further to airports, where in the past they might have used charters) and the expanded use of road transport. Outside of charters, significant growth is expected in the market for aviation training. Role players in the industry estimate that this market could grow at 10-15% annually over the next five years.

In the base scenario, non-scheduled movements would increase from 538,000 in 2014 to around 800,000 by 2024 and around 1.6 million by 2044.

Hence, total ATMs, being the sum of scheduled and non-scheduled, is expected to rise from about 950,000 in 2014 to more than 1.4 million by 2024, and 2.8 million by 2044, although these forecasts would be very sensitive to potential changes in the type mix of flights (i.e. affecting the non-scheduled component).

Figure 5: Air traffic movements forecast (2014-2050): base, low, and high case scenarios ('000)



7 Summary of relevant policy context and institutional arrangements

The section below provides a summary of the most relevant aspects of the policy, strategy, regulatory and institutional context within which the NADP is situated, and which it needs to respond to. The policy and strategy framework is separated into wider policy, legislation, and regulation documents and transport-specific policy, legislation, and regulation documents.

This section also summarise how this context plays out at an institutional level, in terms of current roles and processes as it relates to airports.

7.1 Overall policy, legislation and regulation

The overall policy, legislation and regulation documents have been organised into 5 categories which reflect the potential contribution and operation of airports in South Africa:

- Socio-economic priorities
- Spatial development objectives
- International relations and national security objectives
- Environmental Sustainability objectives
- Cooperative governance

Socio-economic priorities

South Africa's overall socio-economic policy framework aims to achieve economic growth, job creation, poverty reduction, removal of obstacles to competitiveness and transformation of participation in the economy; to address past imbalances.

The National Development Plan (NDP) is a plan for South Africa aimed to eliminate poverty and reduce inequality by 2030, which includes transport infrastructure developments. These goals can be realised by drawing on the energies of its people, growing an inclusive economy, building capabilities, enhancing the capability of the State, and promoting leadership and partnerships throughout society[56]. The NDP's enabling milestones include, amongst others, the following:

- Establish a competitive base of infrastructure, human resources and regulatory frameworks.
- Establish effective, safe and affordable public transport.
- Play a leading role in continental development, economic integration and human rights.
- Focus trade penetration and diplomatic presence in fast-growing markets (Asia, Brazil and Africa).

Provincial prioritisation through Provincial Growth and Development Strategies (PGDS) and industrial development or micro-economic strategies includes many of the same focus area as have been identified at a national level, with the addition of some sectors, such as trade, services, and leather products and other initiatives stipulated in various sector masterplans such as aerospace and defence, automotive, textile and leather, poultry, tourism etc. It is significant for airport development planning that the two sectors where airports potentially have the highest contribution to make (namely tourism and agriculture/agri-processing), have been prioritised by all provinces.

In addition, particular airport-related initiatives have been identified in PGDSs and other provincial strategy documents as drivers of socio-economic development. Examples include:

- Gauteng: Growth and Development Strategy and Gauteng 25 year Integrated Transport Master Plan, 2013. In addition, the various metropolitan municipalities also developed growth and development strategies, such as the Tshwane Vision 2055 which is aligned with the Gauteng PGDS, with a strong focus on local economic development strategies and initiatives. Some of the initiatives relate to Rosslyn Automotive SEZ and Wonderboom Airport, OR Tambo International Airport Aerotropolis Development in collaboration with the City of Ekurhuleni.
- Mpumalanga: An industrial park with associated cargo facilities at KMIA has been proposed. In addition, there is an existing Aviation Growth Fund to attract more airlines to KMIA (tourism focus) at the provincial level. The Province has commissioned a study to develop Airlift Strategy whereby air transport in Mpumalanga can be stimulated and expanded so that existing airports are utilised to capacity, new capital investment is optimised and demand for air transport (from both a freight and passenger perspective) is effectively managed; and to define the role that the relevant Provincial Departments, District Municipalities and other stakeholders should play in the coordination of air transport with other transport modes in the province, to ensure optimal sustainability of transport infrastructure. Other considerations include the Komatipoort SEZ initiative, the Tourism Business Council initiative, in conjunction with National Ministry of

[56] Executive Summary, National Development Plan – Vision for 2030

Tourism, to stimulate source-destination tourism flights to SA from India and China and the potential for regional flights into SADC and sub-Saharan Africa.

- Northern Cape: Planned multimodal Upington Airport Cargo Hub. Key activities that will boost traffic at the airport include the Square Kilometre Array (SKA) telescope, potential manufacturing projects for a fertilizer plant, hoodia extraction facility, and recycled plastic pipes that are being facilitated by the Northern Cape Chamber of Commerce & Industry.
- Western Cape: City of Cape Town Aerotropolis and land development around the Airport; and development of other airports such as Cape Winelands to facilitate aviation training and cargo.
- KwaZulu-Natal: The Dube Trade Port, as a mega-project for the province.
- Limpopo: There is a proposal to develop Polokwane International Airport into a logistical hub for passenger and freight. A turnaround strategy has been developed to mobilise funding and to embark on initiatives that will drive the airport into the envisaged hub.
- North West Province: NWP PGDS/ aviation strategy and will cater to the air transport needs of the Mafikeng Special Economic Zone (SEZ), once established.
- Eastern Cape: A Blue SkyWay Aviation Strategy has been developed, which targets in particular the development of Bhisho and Mthatha airports.

In terms of tourism, whilst no long-term target numbers have been set, the 2012 Tourism Growth Strategy targets various market segments, including leisure, business and event-related visitors. Geographical target markets are summarised in the table below[57]:

Table 10: Geographical tourism target markets

	Market type	**Target markets**
Primary Markets and Strategic Hubs	**“Core” markets**	• Domestic, Botswana, Kenya, Angola, Nigeria, USA and UK, Australia, India, France, Germany and the Netherlands
	Strategic Hubs	• Egypt, Ethiopia, Ghana, Mauritius, Senegal, Tanzania, UAE, Malaysia, Bahrain, Oman, Qatar, Saudi Arabia and Singapore
Secondary Markets/Potential Growth Markets	**“Tactical” and “Investment” markets**	• DRC, Mozambique, Canada, China (including Hong Kong), New Zealand, Brazil, Belgium, Japan, Italy, Sweden, Lesotho, and Russia
Tertiary Markets	**“Watch-list” markets**	• Malawi, Namibia, Zambia, Zimbabwe, Argentina, Republic of Korea, Austria, Denmark, Portugal, Spain and Switzerland

The investment and watch-list markets may represent the medium to long-term shape of tourism arrivals to South Africa. The needs of these visitor groups should therefore ideally be considered in airport planning and operations.

[57] South African Tourism through the National Department of Tourism (2012)

Table 11: South African Tourism Source Market Portfolio

Market Type		REGIONAL		
	Africa	Americans	Asia & Australasia	Europe & UK
Cor Markets	Domestic Angola Kenya Mozambique Nigeria Tanzania	Brazil USA	Australia China India	France Germany Netherlands UK
Investment Markets	Botswana DRC Ghana Lesotho Uganda Zimbabwe	Canada	Japan South Korea	Italy Russia
Tactical Markets	Namibia UAE Zambia		Singapore	Switzerland
Watch-list Markets	Ethiopia Malawi Swaziland	Argentina	New Zealand	Austria Belgium Denmark Finland Norway Spain Sweden Turkey

The Table above indicates the current portfolio of priority source markets. SA Tourism is currently revising and enhancing its Tourism Growth Strategy (Enhanced Strategy for Growth) including its market and segmentation prioritisation model. The outcome of Phase 1 of the process is the overarching goal of attracting 5 million additional tourists within the next five years (informally referred to as "(5-in-5-by-5") - increase international trips (4 million) and domestic holiday trips (1 million) by five million tourists and trips over a period of five years using five strategic thrust). SA Tourism will be investing its marketing budget in strategically important regions that will deliver the maximum return on investment.

Also leverage on the role played by the Department of International Relations and Cooperation (DIRCO) and its Diplomatic and Consular Missions through the development of a coherent International Tourism Relations Plan/Strategy. The Plan/Strategy could explore opportunities presented by Missions based in South Africa and South African Missions abroad as well as dedicated campaigns to lobby expatriates to communicate positive messages about South Africa. Also leverage on opportunities created by large South African Corporations with global footprint. Additionally, the plan identifies interventions to support the attainment of the African Union's objectives within the Framework of the AU Agenda 2063 as well as the United Nations' Sustainable Development Goals.

Spatial development objectives

Spatial development objectives exist at numerous levels in South Africa, including both efforts to redistribute activity within the national system, as well as to promote integrated spatial planning within local areas. The Spatial Planning and Land Use Management Act of 2013 (Act No. 16 of 2013) (SPLUMA) specifies the relationship between the spatial planning and the land use management system and other kinds of planning e.g. to address past spatial and regulatory imbalances; promote greater consistency and uniformity in the application procedures and decision-making by authorities responsible for land-use decisions and development application.

Spatial transformation should also embrace projects aimed at creating smart cities through connecting villages, towns, and cities with provincial, national and continental economies through transportation infrastructure and information technology. It should also unlock development potential in various regions through exploiting endowments levers such as tourism, oceans economy, mineral resources, renewable energy etc. A good example is the Eastern Seaboard Development, a flagship District Development Model project, which will be declared as a Region in terms of SPLUMA.

The Integrated Urban Development Framework states that integrated transport and mobility is a vital component of South Africa's economic infrastructure investment. It contributes to a denser and more efficient urban form, supports economic and social development, and is crucial for strengthening rural-urban linkages. The framework further states that cities need to identify core public transport nodes, corridors and other infrastructure investments in those areas. These should be reflected in the Spatial Development Frameworks (SDFs) and zoning regulations, to ensure that new growth is concentrated along core transport corridors[58].

The Municipal Systems Act requires spatial development frameworks and detailed plans reflecting actual land use and provincial planning ordinances and municipal by-laws must be followed during airport development planning processes.

In addition, the designation of Special Economic Zones and Spatial Development Initiatives has generated a spatial prioritisation of investments.

The following documents identify specific geographical areas as priority development areas:

- Integrated Sustainable Rural Development strategy and programme (ISRDP).
- National Development Plan (NDP).

The ISRDP focused on development and the complementary measures that support it such as skills development, land reform, community income generation projects, social assistance and safety nets, and rural finance. Subsequently, the NDP indicates that new urban development and infrastructure investments should be focused around corridors of mass transit and around existing and emergent economic nodes. The major concentrations of urban poor should be spatially linked into the mainstream of city life through investments in transport infrastructure and connecting corridors of development.

The Department of Provincial and Local Government's/COGTA Local Economic Development (LED) Framework and associated Toolkit recognise the unevenness of local economic development (including infrastructure and other assets) across the municipalities in South Africa. The Toolkit identifies government investment in transport and other types of infrastructure as a key enabling factor of local economic development, and sets out guidelines on structures to manage LED, key content areas of LED plans, etc.

Section 26(e) of the Local Government: Municipal Systems Act, No. 32 of 2000 (MSA) requires all municipalities to compile a Spatial Development Framework (SDF) as a core component of Integrated Development Plans (IDP). The SDF reflect detailed land-use plans and convergence of economic development, transport planning, disaster management planning etc. The SDF is a framework that seeks to guide, overall spatial distribution of current and

[58] Integrated Urban Development Framework, 2016

desirable land uses within a municipality in order to give effect to the vision, goals and objectives of the municipal IDP. The aims of a Spatial Development Framework are to promote sustainable functional and integrated human settlements, maximise resource efficiency, and enhance regional identity and unique character of a place[59].

In addition, there are various Acts addressing the collection, storage and dissemination of spatial data (including airport infrastructure), including the Statistics Act and the Spatial Data Infrastructure Act.

Airports in close proximity to an area prioritised for development may have a role to play in development of the area, which may also present corresponding opportunities for airport development.

<u>International relations and national security objectives</u>

South Africa has an active international agenda targeting a range of issues such as development and peacekeeping on the African continent, strengthening of South-South relations and reform of multilateral economic systems. The country is a key member of the India, Brazil, South Africa (IBSA) and Brazil, Russia, India, China, South Africa (BRICS) fora that seek to deepen trade and political ties among these key nations. On the broader international front, the country has strategic relations with all key countries.

South Africa has over 100 Embassies and High Commissions abroad, while there are around 150 Embassies or High Commissions with representation in South Africa[60].

The documents that reflect South Africa's national security commitments include:

- Non-proliferation of Weapons of Mass Destruction Act, 1993
- National Strategic Intelligence Act, 2002
- National Key Points Act, 1998
- Critical Infrastructure Protection Act, 2019
- Protection of Constitutional Democracy against Terrorism and Related Activities Act, 2004
- National Strategic Intelligence Act, 2002
- Disaster Management Act, 2002

These commitments have implications for certain airports. In particular:

- The National Key Points Act (1998)/National Key Points and Strategic Installations Bill/ **Critical Infrastructure Protection Act, 2019** may place security obligations on an airport in terms of security of information, physical premises, information and communication technology systems, personnel, and contingency planning.
- The National Strategic Intelligence Act of 1994 may require cooperation with the SSA, SANDF and SAPS to support them to gather, correlate, evaluate and analyse intelligence to identify potential threats to the security of South Africa or its people.
- Licensed airports need their own disaster management plans, which need to be coordinated with the planning of their local and district municipalities, as well as provincial and national disaster management in the case of larger scale airports. In addition, airport facilities are considered within disaster management planning as infrastructure that can assist in rapid response to disasters.

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[59] Spatial Development Guidelines 2011: Dept. of Rural Dev and Land Reform website

[60] Source: Department of International Relations and Cooperation (DIRCO)

Environmental objectives

South Africa's national environmental legislation includes the following:

- The White Paper on Environmental Management Policy for South Africa (July 1997)
- National Environment Management Act (Act No. 107 of 1998)
- National Environment Management: Protected Areas Act (Act No. 57 of 2003)
- National Environment management: Biodiversity Act: monitor development with DFEE
- White Paper on Integrated Pollution and Waste Management for South Africa - 2000
- The National Environmental Management: Waste Act (Act No. 59 of 2008)
- National Environment Management: Air Quality (Act No. 39 of 2004)
- National Noise Control Regulations (1992) issued in terms of the Environment Conservation Act

South Africa is also required to meet its relevant international obligations as a signatory to the various environmental agreements. Agreements of particular relevance to airports include:

- United Nations Framework Convention on Climate Change, 1992, and Kyoto Protocol, 1997.
- Vienna Convention for the Protection of the Ozone Layer and Montreal Protocol on Substances that Deplete the Ozone Layer (Nairobi).
- Convention on the International Trade in Endangered Species of Flora and Fauna (CITES).
- ICAO CAEP: Committee on aviation, environmental protection and technical committee of ICAO Council: will monitor

In terms of this legislation and these agreements, the following environmental issues of particular relevance to airports emerge:

- Airport planning needs to strive for social, economic and environmental sustainability.
- Airport planners and airports need to:
  - Develop full "cradle to grave" costing and apply the "duty of care" principle, i.e. planning for prevention, control and rehabilitation of significant pollution and environmental degradation;
  - Apply the principles of Integrated Environmental Management, with mitigation where possible and enhancement of potential benefits; and
  - Follow the required Environmental Impact Assessment (EIA) procedures, i.e. determine whether a Basic Assessment or full Scoping and EIA is required depending on the mix of facilities and activities proposed[61].
  - Airports will need to comply with gazetted air quality standards, as well as with their local municipality's noise impact assessment requirements and tests. Airports may need to budget for noise contouring research and on-going noise monitoring equipment.
- Airports have an obligation to provide for litter disposal; more generally waste production should be minimised at the source.
- As much waste as possible should be separated for recycling on site.

[61] A review of the Environmental Impact Assessment (EIA) process and development of an Environmental Impact Management Strategy is being conducted by DEA during 2008 and 2009 to try to rationale the use of EIAs, and potentially where appropriate replace it with other tools such as risk assessment (RA); cost benefit analysis (CBA); and sustainability assessments (SA).

- Use of renewable and solar energies should be promoted.
- In the longer term, airports may need to reduce their contribution to greenhouse gases, and potentially enforce the "polluter pays" principle.

Cooperative governance

The foundation for a system of cooperative governance in South Africa across the three spheres of government is set out in the Constitution of the Republic of South Africa, stating that they should cooperate in mutual trust and good faith, including sharing information, consulting on areas of common interest, coordinating action and legislation and avoiding legal proceedings against each other. Section 156 sets out the powers and functions of local government, Schedule 4 sets out functional areas of concurrent national and provincial legislative competence, and Schedule 5 sets out areas of exclusive provincial jurisdiction. The Constitutional Transformation Project of February 2005 responded to the interim Constitution of 1994 and concluded that:

- Civil aviation will remain primarily a national function.
- The national government's interest in the planning and location of airports relates to safety aspects, while provincial governments' interests relate to the impact of airports on other provincial functions.
- The international and national airports referred to in Schedule 6 of the Interim Constitution of 2004 are the airports owned by ACSA.
- All airports not belonging to ACSA, local government or private owners, would become provincial assets.

It must be noted that the Constitutional Transformation Project responded to the *interim* Constitution of 1994 with a specific focus on assigning responsibility for the *administration* of assets that have existed in the former "TBVC" (Transkei, Bophuthatswana, Venda and Ciskei) states pre-April 1994. ACSA currently owns six of the current ten international airports.

What is important though, is that Schedule 4 of the Constitution of the Republic of South Africa of 2006 deals with "Functional Areas of Concurrent National and Provincial Legislative Competence". In terms of this Schedule, National Government has exclusive legislative competence regarding international and national airports. This has specific implications for the development of new (green-field) national and international airports as well as applications for international status of existing domestic airports. The need to expand the definition of "national" airports to include all airports serving scheduled air transport services to be considered. This will align the current airports designated in terms of the Civil Aviation Act, 2009, for security purposes, with this concept.

The Intergovernmental Relations Framework Act of 2005 is an effort to clarify roles and improve the operation of cooperative governance in practice, including through establishing intergovernmental forums and providing guidelines on managing joint programmes, effective implementation and dispute resolution.

The Division of Revenue Act stipulates the division of revenue raised nationally between the national, provincial and local spheres of government and specifies several conditional allocations (under Schedules 4-7) that are relevant to airport investments in that they affect potential government funding of road and other public transport infrastructure linking airports to the wider transport network:

- Infrastructure grant to provinces for the construction, maintenance, upgrading and rehabilitation of new and existing infrastructure in roads.

- Gautrain Rapid Rail Link Grant with its east-west line link to OR Tambo International Airport.
- Public Transport Infrastructure and Systems Grant.

National Treasury issued budgeting guidelines for infrastructure and capital projects in 2012. Requests will be appraised by a Capital Budgets Committee (CBC) based on the submission of a project concept note according to following criteria:

- Is funding consistent with the guidelines and departmental strategic plan?
- Does request quantify likely financial, economic, social and environmental impacts?
- Does request define risks and their mitigation?
- Are the proposed funding arrangements appropriate?

The Treasury regulation on Public-Private Partnerships (PPPs) sets out basic definitions and guidance on how a PPP transaction is to be carried out (in terms of application, procurement, contracting, management, amendments and exemptions) and the key criteria for award of PPP agreement (i.e. value for money, affordability and substantial technical, operational and financial risk transfer to the private sector).

The current policy process on the system of provincial and local government raises significant questions about the future relationship between the spheres of government, including roles, funding relationships, the contribution of public-private partnerships, “top-down” vs. “bottom-up” planning and even whether provincial governments should be retained. The outcome of this process could have significant implications for respective roles of spheres of government within airport planning in the long term.

7.2 Transport-specific policy, legislation and regulation

This section deals with both overall transport documents (which may relate to some extent to airport development planning), as well as those that relate specifically to aviation and airports.

<u>Overall/cross-mode transport policy, legislation and regulation documents</u>

Overall transport sector documents that have implications for airport development include:

- White Paper on National Transport Policy, 1996
- White Paper on National Transport Policy, 2021
- Comprehensive Maritime Transport Policy, 2017
- National Rail Policy, 2022
- Moving South Africa – Towards a Transport Strategy for 2020
- National Freight Logistics Strategy - 2005
- National Land Transport Act (Act No. 5 of 2009)
- Public Transport Strategy and Action Plan - 2007
- National Land Transport Strategic Framework 2006-2011
- Rural Transport Strategy for South Africa - 2007
- National Department of Transport Environmental Implementation Plan (2008, as amended)
- National Transport Master Planning (NATMAP) 2050, (2016)

These documents give priority to developing efficient, cost-effective, integrated and modern systems with good intermodal links that are accessible and meet the needs of user groups. In terms of these documents, the following issues of relevance to airports emerge:

- Transport networks must be supported by the development of integrated transport information systems.
- Corridors of movement have been prioritised as the most effective way to reach the majority of users. Government should continue having an active role in infrastructure development (transport subsidies and grants should continue where these contribute to policy goals), but with greater involvement of the private sector as investors and operators. However, investment in infrastructure should take lifetime cost, economic and social returns, returns to the transport system and returns to customers into account.
- Integrated planning across transport modes should be promoted (National Land Transport Act 2009).
- Key challenges include investment, inclusion of externalities into costs, matching costs to prices, avoiding distortions arising from cross-subsidisation, maintaining a link between revenue and costs and including signalling through price.
- Domestic tourism is seen as a key growth area – there are challenges to align transport strategy with tourism strategies and target segments and ensure that transport does not create bottlenecks.
- Lack of skills is a key constraint to sector development, including logistics skills and technical and administrative skills within government.

<u>Aviation-related policy, legislation and regulation</u>

A wide range of aviation policy, strategy and legislation inform the NADP, including the following:

- White Paper on National Civil Aviation Policy of 2017 (preceded by the White Paper on National Policy on Airports and Airspace Management of 1997)
- Airlift strategy and Implementation Plan of 2006, and Air Transport Strategy of 2015
- Civil Aviation Act (Act No. 13 of 2009)
- International Standards and Recommended Practices: Annex 14, Convention on International Civil Aviation and associated South African Civil Aviation Authority Standards
- Airports Company South Africa Act (Act No. 44 of 1993)
- Air Services Licensing Act (Act No. 115 of 1990)
- International Air Services Act (Act No. 60 of 1993)
- Air Traffic and Navigation Services Company Act (Act No. 45 of 1993)
- South African Civil Aviation Authority Levies Act (Act No. 41 of 1998), Civil Aviation Aircraft Passenger Safety Charge
- National Aviation Security Plan, 2022
- Bilateral Air Services Agreements

Multilateral: Africa

- Yamoussoukro Declaration for the liberalisation of intra-African air transport services (and associated decision on implementation, referred to as the “Yamoussoukro Decision”)
- SAATM
- AFCFTA
- AU Agenda 2063

Other relevant ICAO documents which provide guidance, but which are not mandatory, include:

- Airport Planning Manual
- Aeronautical Information Services Manual
- Aerodrome Design Manual
- Airport Services Manual
- Airport Economics Manual
- Air Traffic Service Manual
- Mombasa ATFM roadmap

The most relevant aspects of these guiding documents are highlighted below.

The draft Comprehensive Civil Aviation Policy provides the strategic policy framework for the NADP. The White Paper asserts that airport operation and development should be sustainability and viability, especially regarding environmental, economic and financial considerations. In addition, it requires that e*xisting publicly owned airports, excluding military airports, are encouraged to make every effort to become viable and sustainable, including through optimising non-aeronautical revenue and airport precinct development. Failing that, other justifications relating to social or economic benefits could be supported, should there be sufficient willingness for local or provincial government to cover associated costs. Where neither financial viability nor socio-economic justification can be achieved, alternative uses for such assets should be investigated, with due regard to the high cost of developing a new airport to cater for future demand.*

The White Paper further notes that current funding of aviation infrastructure is inadequate. In future, airport development should be funded by adopting an appropriate funding model for different airport scenarios. The principle is that national government should not provide any direct *operational* funding for any airport it owns, but the consideration of financial assistance for safety/security-related airside capital projects on provincial and municipal airports is recommended. The provinces and the municipalities should remain responsible for prioritising their funding requirements in accordance with their established needs, including aviation infrastructure needs for the facilities these authorities plan, own and operate. Partnerships at new and existing airports, between the public and private sectors as well as local and international investors should be encouraged in all spheres of government. Strategies to promote private-sector involvement in the funding of airport development should be encouraged.

Airport developments need to take into account the minimum requirements set in Annex 14 of the Convention on International Civil Aviation (Chicago Convention) and Standards and Recommended Practices (SARPS), as adopted within South African domestic law. ICAO Annex 14 contains both Standards and Recommended Practices; however, in South Africa's case both the Standards and Recommended Practices have been adopted for all licensed airports in most cases.

The Civil Aviation Act, 2009, amongst others, governs the location and regulation of airports and related services; including rights of land adjacent to airports and adopts the Convention on International Civil Aviation into South African law. It prescribes the establishment of the National Aviation Security Committee and its composition. The related National Aviation Security Program~~me~~ (NASP) contains provisions for procedures to promote aviation security in South Africa and applies to, amongst others, aircraft and designated civilian airports. Designated airports are required to meet additional security provisions. These airports[62] are *de facto* treated as the strategic network and main feeder network and have to develop Aviation Security Programmes[63].

The ACSA Act sets out the functions of ACSA, including maintenance, management, control and operation of all the aerodromes transferred in terms of Section 6 of this Act. ACSA is required to submit a business plan to the Minister at least three months prior to the commencement of any financial year. Planning is therefore aligned with the financial year and the three-year planning cycles. The Act also requires ACSA to conduct its business in such a manner that the national interest is not jeopardized, and consider implications for the national transport system. Sign-off of airport planning is primarily based on financial statements, and secondarily on service levels.

The Air Service Licensing Act, 1990, establishes the Air Services Licensing Council (ASLC) whose function it is to license and control all domestic air services. The ASLC also monitors domestic air services to ensure continued safety and reliability of air service operators. Air services are also regulated through the International Air Services Act, 1993. This Act established the International Air Services Council who is responsible for the licensing of international air services operated by South Africa air service operators, issuance of foreign operator's permits to foreign visiting aircraft, and the negotiation of bilateral air services agreements (BASAs). These in turn impact on the nature and volume of traffic to South Africa's airport network and, in the case of designation of entry points within BASAs, impact on the flow of scheduled international traffic to particular airports within the network. The Airlift Strategy and Airlift Implementation Plan support the opening up of all international access points within the country.

The Civil Aviation Authority (established and mandated by the Civil Aviation Act, 2009, and associated regulations) has a responsibility for regulating and overseeing safety and security at licensed airports. The Civil Aviation Act also sets out a "user-pays" principle for their services, including inspection services to airports.

Airspace management is provided by the Air Traffic and Navigation Services Company (ATNS), as mandated by the Air Traffic and Navigation Services Company Act. However, the SACAA, as the safety regulator, conducts oversight of airspace design and management. The design and management of airspace can have significant implications for the capacity of airports and the airport network as a whole. Aerodrome control and aeronautical information services may be provided at airports subject to approval from SACAA.

The Yamoussoukro Declaration for the liberalisation of intra-African air transport services and the subsequent Decision on the Implementation of the Yamoussoukro Declaration binds South Africa to the full implementation of a liberalised intra-Africa air services framework.

7.3 Institutional arrangements

The table below categorises the current roles of various government institutions in relation to airports. These mandates have informed roles and responsibilities identified in Part E of the NADP.

[62] Currently there are 20 designated airports
[63] Section 111 of the Civil Aviation Act, 2009

Table 12: Roles of government institutions in relation to airports

Entity	Roles											
	Planning		Regulation and oversight							Direct		
	Strategic planning	Technical planning	Licensing	Safety	Security	Environment	Economic	Quality	Financial	Airport development	Airport operations	Border management[64]
The Presidency	✓	✓										
Department of Transport	✓	✓		✓	✓	✓[65]	✓	✓	✓			✓
Air Traffic and Navigation Services (ATNS)	✓	✓		✓		✓[66]				✓	✓	
South African Civil Aviation Authority (SACAA)	✓	✓	✓	✓	✓	✓[67]				✓		
Airports Company ~~of~~ South Africa (ACSA)	✓	✓		✓	✓	✓[68]	✓	✓	✓	✓	✓	
Department of Trade and Industry and Competition	✓	✓					✓					
Department of Forestry and Fisheries Environmental Affairs	✓	✓				✓						
Department of Public Works and Infrastructure	✓	✓								✓		
Department of Land Affairs and Rural Development	✓	✓										
South African Police Services	✓	✓			✓							✓
State Security Agency	✓	✓			✓							✓
~~Department of Agriculture, Forestry and Fisheries~~	✓	✓			✓							✓
Department of Health	✓	✓			✓							✓

[64] In future border management functions will be performed by the planned Border Management Authority
[65] Aviation- related in conjunction with DEA
[66] Aviation- related in conjunction with DEA
[67] Aviation- related in conjunction with DEA
[68] Aviation- related in conjunction with DEA

Entity	**Roles**											
	Planning		**Regulation and oversight**							**Direct**		
	Strategic planning	**Technical planning**	**Licensing**	**Safety**	**Security**	**Environment**	**Economic**	**Quality**	**Financial**	**Airport development**	**Airport operations**	**Border management**[64]
Department of Defence				✓	✓					✓		✓
Department of International Relations and Cooperation	✓				✓							✓
Department of Home Affairs	✓	✓			✓							✓
Border Management Authority					✓							✓
Department of Co-operative Governance and Traditional Affairs	✓	✓										
Department of Finance, including: - National Treasury - South African Revenue Services, - Development Bank of Southern Africa	✓	✓			✓				✓			✓
Provincial Departments of Transport, Roads, Public Works	✓	✓							✓	✓	✓	
Provincial Departments of Agriculture (Conservation and Environment)	✓	✓				✓				✓		
Provincial Treasuries									✓			
Provincial Departments of Economic Development and Tourism	✓									✓		
Local Government/	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	

In addition, the following inter-governmental coordination structures are relevant to issues of coordination of airport planning and development:

- Inter-Agency Clearing Forum (IACF)
- National Planning Commission
- Ministerial and DG Clusters, of particular relevance are:
  - Economic Sector, Employment, Investment, Employment and Infrastructure Development Cluster
  - Justice, Crime Prevention and Security Cluster

- MinMECs (forums between line function national ministers and their provincial counterparts) and their associated technical committees
- COTO
- SSA
- National Aviation Security Committee
- NATJOINTS
- National Air Transport Facilitation Committee
- National Airspace Committee
- National Committee for Environmental Coordination (chaired by the Department of Water and Environmental Affairs)
- National and provincial Disaster Management Centres (chaired by COGTA)
- National Transport Forum (NTF)[69]

8 Long term international trends influencing airport planning

A summary of some of the key global trends impacting on both airport network planning and airport planning are provided below[70]. For further detail see Appendix 3.

8.1 Airports are needing to accommodate new aircraft types for both passenger and freight

- Passenger aircraft types are expected to be dominated by single aisles, higher seat counts and often wider wingspans;
- Large wide-body aircraft (>80 tonnes) will comprise the majority of new freight aircraft deliveries (Boeing);
- Airports are upgrading their facilities to accommodate ICAO Code E and F spatial requirements;
- Aircraft parking, turning areas and passenger handling facilities are needing to accommodate multiple new aircraft types with different widths, wingspans, heights, lengths and seat numbers;
- Some airports have already designed flexible gates that can accommodate one large aircraft or two smaller aircraft; and

[69] The NTF was established during 2014
[70] Sources include: The Future of Airports, Oliver Wyman, March 2012: http://www.oliverwyman.com/content/dam/oliver-wyman/global/en/files/archive/2005/20120222_Airport_trends_MAR21.pdf. ; Navigating the Future: Airbus Global Market Forecast 2012-2031, Airbus, Presented by Andrew Gordon: http://www.airbus.com/company/market/forecast/.; Airport design trends, Aviation Business, 10 January 2012: http://www.aviationbusiness.com.au/news/airport-design-trends .; Planning Session 3: Industry Trends Affecting Airport Planning, ACI-NA, Presented by Matthew Griffin: http://www.aci-na.org/sites/default/files/p3_griffin_post.pdf .; Current Market Outlook 2014-2033, Boeing. Available at www.boeing.com

- Cargo terminal peak capacities may need to take into account these larger aircraft sizes.

8.2 New security technologies are impacting on the required layout of passenger and cargo terminals

- For example, on the passenger side full-body scanners, biometric passenger screening, and psycho-physiological screening require additional space;
- These technologies may also increase the rate of passenger throughput

8.3 Airports are increasingly mainstreaming environmental considerations into their planning and design. Airports are also seeking carbon-neutral status, and planning and designing facilities accordingly

- Pressures on airlines to reduce environmental impacts and fuel usage are in turn placing pressure on airports to increase efficiency of the operating environment, including backup power for aircraft, and planning of layouts to reduce the length of taxi to aircraft parking;
- Terminal design is increasingly including natural light, efficient lighting and passive heating/cooling;
- Investments in Renewable energy/ solar plants
- Communication systems are increasingly incorporating reporting and complaints procedures around environmental issues.

8.4 ACI Accredited Health and Hygiene Protocols

- The ACI Airport Health Accreditation (AHA) programme provides airports with an assessment of how aligned their health measures are with the ACI Aviation Business Restart and Recovery guidelines and ICAO Council Aviation Restart Task Force recommendations along with industry best practices.
- The programme is open to all ACI member airports of all sizes.
- Enables airports to demonstrate to passengers, staff, regulators, and governments that they are prioritizing health and safety in a measurable, established manner.
- Enables airports to validate their own measures throughout their facilities and processes.
- Reassures the travelling public using the airport’s facilities.
- Promotes the recognition of professional excellence in maintaining safe hygienic facilities.
- Promotes best practices and aligns efforts across the industry, and ensures harmonization between ICAO global guidance and industry implementation.
- Accreditation is voluntary with a request to join the programme initiated by the airport.

8.5 For international airports, there is expected to be less separation of domestic and international passengers

As with the previous trend of consolidation of international and domestic check-in desks, this will affect overall passenger terminal layout, including flow between check-in, retail, security, customs, immigration and port health.

8.6 Airport planning, design and systems are increasingly integrating with other modes of transport

- Check-in and baggage handling is becoming increasingly streamlined, customized and multi-modal;
- Airports are therefore having to design their check-in and baggage handling and associated IT systems to be inter-operable with rail and bus systems;
- Systems may also be required to allow for integration of private concierge access from ground transportation/parking to aircraft;
- In smaller airports, a plaza is often being developed that enables diagonal movement from terminal to ground transport; and
- This trend may impact on both airport and wider precinct planning and design, including the integration with public transport.

8.7 Airports are increasingly being planned and designed based on user experience

- User experience design would require increased involvement of users in the early stages of the planning and design process, potentially including co-design;
- In the case of single-user facilities, there would be close collaboration around planning and design. In the case of multi-use facilities particular methodologies around shared-use planning and design are being applied to take into account combined requirements and peaks and minimising conflicting uses that may create overall inefficiencies in the system;
- Increasingly sophisticated flow simulations are allowing more efficient and pleasant layouts and flows to be developed;
- At hub airports, there is a focus on creating a wide experience for transfer passengers; in addition to retail and food service, this is expected to increasingly include entertainment and relaxation;
- There is increased segmentation of consumer and service levels from extremely high end to very inexpensive; and
- These trends may also have implications for passenger terminal footprint and layout.

8.8 Aerotropolises and airport cities are increasing due to greater importance on revenue from non-aviation sources and convenience for users

- Globally, 40%[71] of total airport income came from non-aeronautical sources. In Africa, the proportion was a little lower at 31.3%[72]. The majority of non-aeronautical revenue is from retail sources, car parking, and property and real estate income/rent. Airports will have more of a focus on integrated property development, public transport development, retail, tourism, and hospitality, meeting and training centres; and
- Airport owners and developers are increasingly working in partnership with other landowners in the vicinity and with local urban planning officials.

8.9 Low Cost Carriers are increasingly offering long-haul flights and using secondary destination airports

Secondary airports in destination markets may need to align the type of facilities offered to Low Cost Carrier requirements e.g. infrastructure and system that allow for high speed turnaround.

8.10 With the rise of private sector involvement in financing airports, financing is increasingly being integrated into every step of the planning and design process

- A more iterative planning and design process may be required to respond to commercial viability assessments; and

- It is likely that increased emphasis will need to be placed on optimisation of design to maximise returns, including non-aeronautical revenue and airport precinct development.

8.11 As smaller airports are becoming targets for illegal activities, new strategies to combat them are being implemented

- As security tightens at major airports with international port of entry designation, criminals are increasingly using light aircraft and targeting secondary and other smaller airports as well as helipads and airstrips for various types of illegal activities, such as transport of drugs, guns, tobacco, protected animal and plant species, as well as human trafficking and undocumented migration.

- Efforts to combat these activities include:

    - Communication to encourage reporting by residents in the vicinity of any suspicious activity;
    - Remote and unmanned aircraft system monitoring and surveillance programmes;

[71] ACI; Calleja R: "Non-aeronautical Revenues critical for Growth (June 27, 2017)
[72] Source: Calleja R: "Non-aeronautical Revenues critical for Growth (June 27, 2017)

- International cooperation to share information and improve risk profiling;
- Following monitoring, action to disrupt illicit activity patterns, e.g. arresting pilots involved in illicit activity, introduction of temporary security or border control presence at airports where incidents have taken place; and
- Allocation of budgets to law enforcement and border management agencies to investigate incidents at small airports.

8.12 Activity other than scheduled air transport is being consolidated at particular airports, rather than spread out amongst multiple airports and airfields:

- In many countries, non-commercial, general air service and flying training activity is experiencing pressure at busy commercial airports;
- There is also often pressure on smaller airports and airfields with less commercial activity due to budget constraints and competition with other land uses;
- Therefore, in some countries, role players such as flying clubs and flying schools are collaborating to consolidate their activity at selected airports to increase their viability, and in some cases jointly fund infrastructure upgrades or maintenance;
- However, this requires a critical mass of activity and resources to fund and manage these airports; and
- The need for closer cooperation between military and civil airports and airport operations must be investigated to minimise cost of ownership to the State while still achieving the Defence Act imperatives.

PART C: GAP ASSESSMENT

This section assesses the gaps between the desired state of South Africa's airport network and policy principles, international trends and current capacity of the airport network; and the impact of COVID-19 pandemic on the global economy. Part E provides a 5-year plan of how to address these gaps.

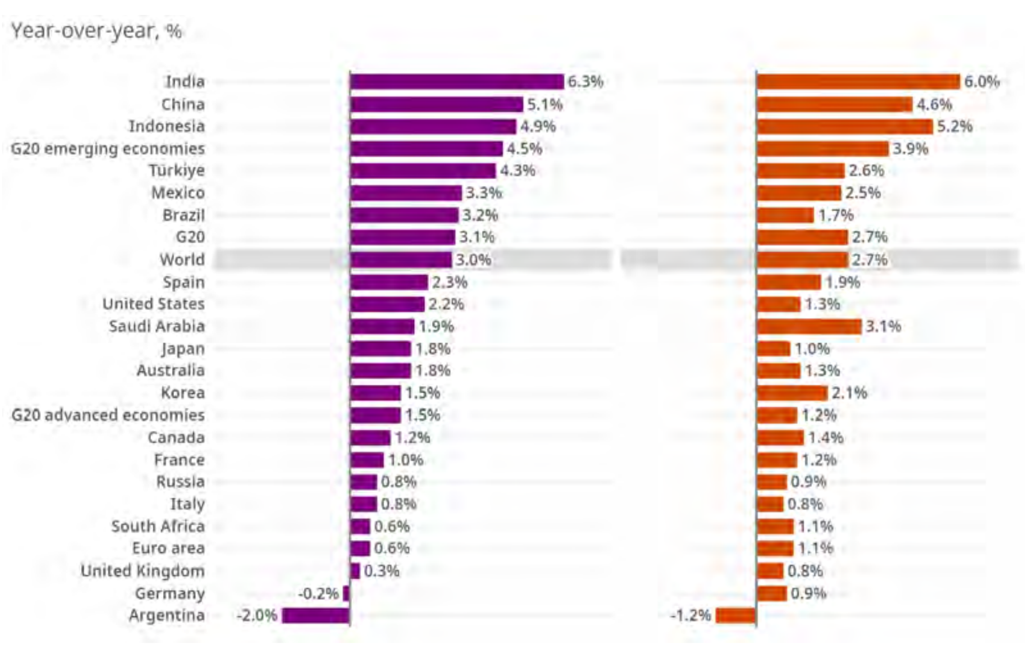
9 ASSESSMENT OF GAPS IN TERMS OF POLICY AND INTERNATIONAL TRENDS

9.1 Situational Assessment:

9.1.1 The Global context

The aviation industry is influenced by diverse factors such as political stability, economic conditions, technological advancement, impact on society and environmental concerns. As 2023 progressed, travel restrictions waned and China's economy showed signs of recovery following the end of zero-COVID measures, along with the removal of most testing requirements for international travellers. The developments in China are expected to increase air traffic demand globally and ease supply chain disruptions. The global GDP growth rate for 2023 which is estimated at 3.0%, and a forecasted rate of 2.7% for 2024, suggests a continued expansion, albeit at a more moderate pace.

Global GDP Projected Growth Rates for 2023 and 2024



In 2017, airlines worldwide carried around 4.1 billion passengers. Airlines transported 56 million tonnes of freight on 37 million commercial flights. Each day, aircraft transport over 10 million passengers and around USD 18 billion worth of goods. This indicates the significant economic impact of aviation on the world economy, which is also demonstrated by the fact that aviation represents 3.5 per cent of the gross domestic product (GDP) worldwide (2.7 trillion US dollars) and has created 65 million jobs globally[73]. In 2019, the aviation industry continued to show growth as depicted in the table below:

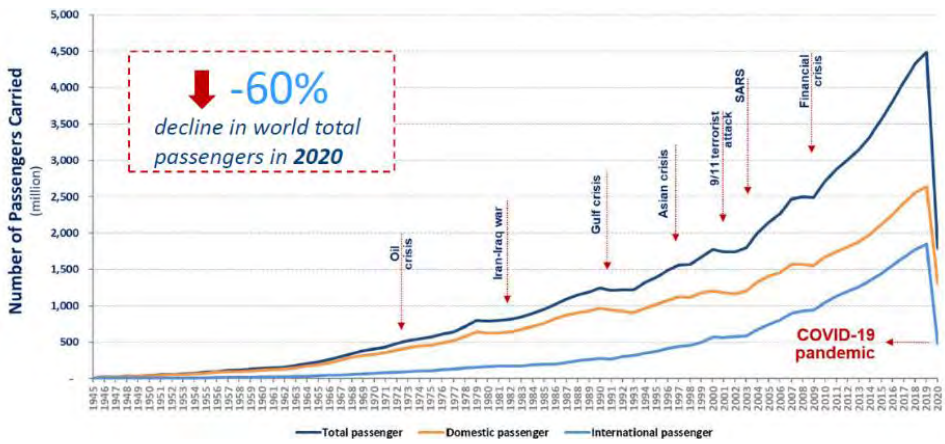
PER YEAR	4.3 BILLION PASSENGERS	48,500 ROUTES WORLDWIDE	38 MILLION SCHEDULED COMMERCIAL FLIGHTS
PER DAY	100,000 FLIGHTS	12 MILLION PASSENGERS TRANSPORTED	240,000 HOURS FLOWN
ECONOMIC BENEFITS	65.5 MILLION JOBS SUPPORTED	3.6 PER CENT OF GDP SUPPORTED	USD 2.7 TRILLION ECONOMIC IMPACT

Source: Aviation Benefits Report, 2019

The COVID-19 pandemic had spread worldwide without acknowledging borders. It has impacted all industries; all sectors and all aspects of human lives with devastating economic and financial losses and significant uncertainties. From the aviation perspective, global airline traffic declined by 66% in 2020, and by 58% in 2021, compared to 2019, producing an economic loss of USD 244 billion in 2020 and USD 146 billion in 2021 across the value chain. These are hyperbolic losses considering that in the best year for the value chain, 2015, economic profit was limited to USD 12 billion for all sectors combined. Amid lockdowns and travel restrictions, all aviation sectors suffered significant losses in 2020 and 2021, except for air cargo carriers and freight forwarders where supply-demand imbalances led to increases in yields, and value creation. Sectors with greater shares of fixed costs, such as airports, suffered more than those with a more variable cost base, e.g. ground handlers, while airlines lost the most[74].

[73] https://www.icao.int/Meetings/FutureOfAviation/Pages/default.aspx
[74] https://www.iata.org/en/iata-repository/publications/economic-reports/understanding-the-pandemics-impact-on-the-aviation-value-chain

World passenger traffic collapses with unprecedented decline in history
World passenger traffic evolution 1945 – 2020



Source: OCAO. Effects of Novel Coronavirus (COVID-19) on Civil Aviation: Economic Impact Analysis Montréal, Canada 24 February 2021 Economic Development – Air Transport Bureau. https://www.icao.int/sustainability/Pages/Economic-Impacts-of-COVID-19.aspx

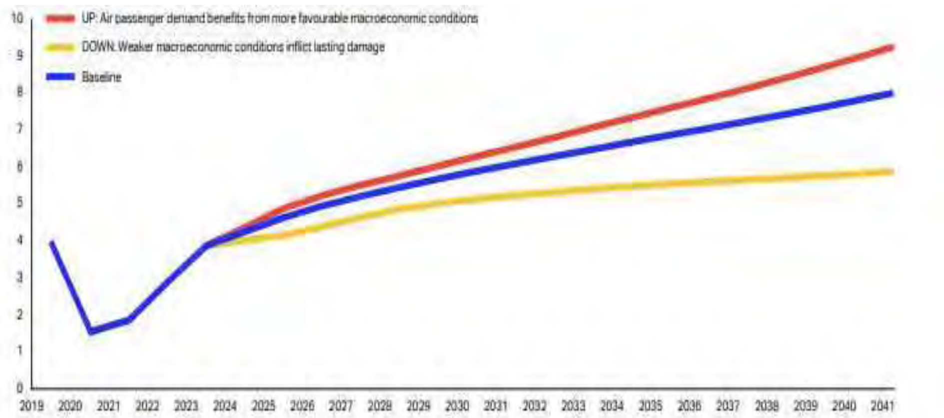
Furthermore, the COVID-19 pandemic brought an abrupt and substantial decline in connectivity in 2020, with the number of unique city pairs falling by more than 28% and eliminating almost 6,000 routes. The recovery since that time has been more subdued, as travel restrictions were removed gradually and unequally around the world. Despite the observed recovery in the number of city pair routes, it is important to note that the frequency of service on those routes is slower to be restored to pre-pandemic levels, and the return of capacity will lag the recovery in the absolute number of city-pair connections.

Global demand for air travel remained strong in 2023, with the industry steadily approaching 2019 levels of passenger traffic. This strong performance was reflected across all regions, with North American carriers leading the recovery, benefiting from an early reopening and robust domestic demand. The reopening of Chinese markets also played a pivotal role in accelerating global passenger traffic recovery in 2023, particularly reviving travel in the Asia Pacific region.

Air passenger growth will continue to increase, but at a slower pace compared to that experienced during the past 3 years. Between 2023 and 2040, the number of air passengers is forecast to increase by 4.2% annually. This would be a radical slowdown from the exceptional 36% annual growth rate seen over the past three years, as markets emerged from the depths of the COVID-19 crisis. Having restored traffic to pre-pandemic levels, this deceleration will nevertheless allow the number of industry-wide air passenger journeys to more than double from the 2019 level, to reach 7.8 billion by 2040[75].

[75] https://www.iata.org/en/iata-repository/publications/economic-reports/global-outlook-for-air-transport---december-2023---report/

Global air passenger journeys, billion



Sources: IATA Sustainability and Economics, Tourism Economics (September 2023 release)

9.1.2 The African Perspective

The COVID-19 pandemic has caused the largest drop in global passenger traffic ever observed from 2020 to 2022. Air travel has definitely seen an uptick in 2022, moving the industry on the path to recovery. Throughout 2022, there has been a slow but steady recovery in air traffic for African airports. Passenger traffic in 2022 has continued to rise compared to 2021 **(+56%)** but it is still short of the 2019 air traffic level **(-22%)**.

In terms of total passengers and aircraft movements (ATMs), the third quarter of 2022 has witnessed the highest figures at 51,696,274 passengers and 712,518 ATMs respectively. However, in terms of traffic recovery compared to 2019, the fourth quarter of 2022 recorded the highest rate of recovery at **85%** for passengers and **82%** for ATMs.

Cargo, on the other hand, is following a different trend. The cargo volume reached for the first time the level closest to that of 2019 in Q4 of 2022 with a recovery of **96%**. However, it has experienced a rollercoaster evolution throughout 2022 compared to 2019. In summary, the cargo transported in Africa in 2022 reached **87%** of the cargo volume handled in 2019. The table and charts below depict the air traffic figures and evolution in Africa[76].

AIR TRAFFIC AFRICA for YEAR 2019 vs 2021 vs 2022									
PERIOD	PASSENGERS			AIRCRAFT MOVEMENTS			CARGO (Tons)		
	PASSENGERS 2022	*VAR 22/21*	*VAR 22/19*	*ACFT MVTS 2022*	*VAR 22/21*	*VAR 22/19*	*CARGO 2022*	VAR 22/21	VAR 22/19
Q1	35 501 890	73.5%	-32.0%	580 585	29.6%	-25.2%	494 568	-9.4%	-18.3%
Q2	41 955 767	82.0%	-23.3%	641 222	34.7%	-20.3%	541 289	-5.1%	-12.2%
Q3	51 696 274	55.5%	-19.7%	712 518	22.4%	-20.5%	477 992	-7.1%	-19.8%
Q4	49 508 395	30,1%	-14.6%	680 138	10.2%	-18.0%	658 925	26.8%	-4.4%
YEAR	**178 662 326**	**55.6%**	**-22.1%**	**2 614 463**	**23.1%**	**-20.9%**	**2 172 774**	**1.0%**	**-13.3%**

[76] https://www.aci-africa.aero/files/Africa-Air-Traffic-Performance-2022-EN-Final-270423.pdf

The evolution of passenger traffic in 2022 has shown a clear improvement compared to 2021 and a tendency to approach the level of 2019. In the top ten airports ranking in Africa for total passenger traffic, Cairo International Airport in Egypt has been the only airport which has fully recovered and even exceeded its 2019 passenger traffic. It has been in first place for the past two years, taking over from OR Tambo International Airport of South Africa, which was first in 2019 and was then in second place in 2021 and 2022. The rest of the positions are distributed among airports in the North, East and South regions. In tenth position, Nnamdi Azikiwe International Airport of Nigeria has witnessed a strong recovery and performance, being the second airport in the top ten list having exceeded its 2019 passenger traffic. All the top ten airports in terms of total passengers represented 50% of overall passenger traffic in Africa in 2022. The table below summarises the total passenger traffic performance for the top ten airports in Africa.

TOP 10 AFRICAN AIRPORTS IN TERMS OF PASSENGER TRAFFIC 2022

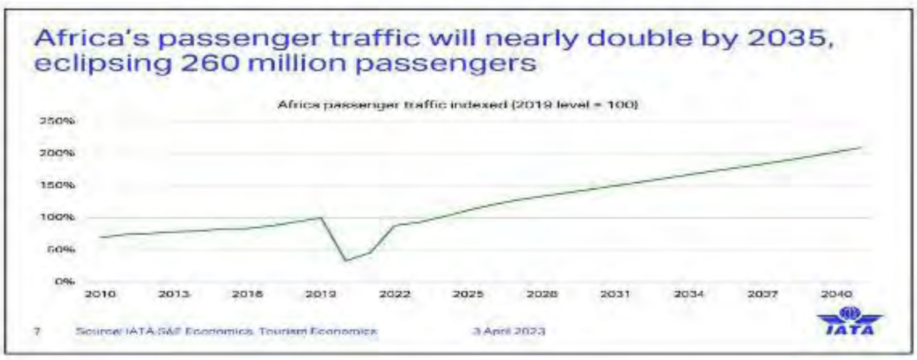
2022 RANK	2021 RANK	2019 RANK	AIRPORTS	COUNTRY	PAX 2022	% change vs 2021	% change vs 2019
1	1	2	Cairo International Airport	Egypt	20 009 336	76.3%	5.4%
2	2	1	OR Tambo International Airport	South Africa	14 789 508	80.3%	-31.4%
3	6	4	Cape Town International Airport	South Africa	7 875 425	65.5%	-28.3%
4	9	5	Mohammed V Airport	Morocco	7 559 854	82.6%	-27.7%
5	5	8	Hurghada International Airport	Egypt	7 164 088	46.0%	-4.5%
6	7	3	Addis Ababa Bole International Airport	Ethiopia	6 656 516	45.2%	-44.5%
7	10	6	Jomo Kenyatta International Airport	Kenya	6 556 569	65.0%	-21.0%
8	3	9	Murtala Muhammed Airport	Nigeria	6 526 034	14.6%	-10.2%
9	13	7	Alger Houari Boumédiene Airport	Algeria	6 317 793	190.7%	-19.4%
10	4	14	Nnamdi Azikiwe International Airport	Nigeria	5 985 596	13.4%	10.7%

The number of aircraft movements (ATMs – Arriving and Departing) in 2022 has grown compared to 2021 **(+23%)** but still not to the level of 2019 **(-21%)** pre-COVID-19 period. The top ten airports for aircraft movements represented **39%** of the total aircraft movements in 2022 compared to **37%** and **34%** respectively in 2021 and 2019. The top ten African airports in terms of aircraft movements in 2022 are tabulated below with OR Tambo International Airport in South Africa taking the first spot followed by Cairo International Airport in Egypt and Addis Ababa Bole International Airport in Ethiopia.

TOP 10 AFRICAN AIRPORTS IN TERMS OF AIRCRAFT MOVEMENTS 2022

2022 RANK	2021 RANK	2019 RANK	AIRPORTS	Country	ATM 2022	% change vs 2021	% change vs 2019
1	1	1	OR Tambo International Airport	SouthAfrica	174 624	36,43%	-20,20%
2	2	2	Cairo International Airport	Egypt	163 579	46,04%	0,84%
3	8	3	Addis Ababa Bole International Airport	Ethiopia	108 244	68,22%	-12,70%
4	6	4	Jomo Kenyatta International Airport	Kenya	93 983	29,94%	-19,19%
5	3	6	Murtala Muhammed Airport	Nigeria	93 979	7,91%	-2,05%
6	5	-	Wilson Airport	Kenya	90 689	21,09%	-
7	7	5	Cape Town International Airport	South Africa	88 183	31,00%	-9,07%
8	4	9	Nnamdi Azikiwe International Airport	Nigeria	88 042	9,46%	24,43%
9	9	7	Mohammed V Airport	Morocco	68 362	42,53%	-28,15%
10	16	8	Alger Houari Boumédiene Airport	Algeria	57 790	69,18%	-32,97%

Africa is home to over 18% of the world’s population and despite this, Africa's presence in the aviation industry accounts for just 2.1% of air global passengers. Currently, the industry is estimated to support $63 billion in economic activity and 7.7 million jobs, with projections suggesting that the scale of aviation’s jobs and GDP footprint in Africa could triple in the next two decades. By 2035, it is expected that the number of passengers traveling to, from, and within Africa could reach over 260 million[77].



9.1.3 The South African scenario

A Situational Assessment of the South African airport network was conducted in terms of the current economic development and future planning around airports within its surroundings. The following is a high-level assessment outlining current economic scenarios and focusses on the guidance provided within the NADP that supports future planning which aims to enable all airports to achieve linkages and sustainability within a coherent network.

In assessing current economic development; it must be acknowledged that airport infrastructure contributes to the socio-economic development of the country by facilitating domestic- and international tourism and trade. The current airport network consists of more than 1500 airports, of which 106 licenced airports are economically active. These include 10 airports which are designated as international airports. Activities at these airports include movement of people, goods and aircraft (including both scheduled- and non-scheduled traffic). The purpose of these activities is commercial air services, non-commercial flights, flight training, public-good (medical rescue and emergency services), diplomatic, agricultural, as well as sport-and recreation. Additionally, non-aeronautical opportunities and spend at international airports result in increased revenue, cross-subsidization and are designed to meet the needs of their users. The network also consists of at least 50 airports which primarily serve the purpose of business access, including mines. There are an estimated 60 airports that provide access to game lodges and resorts.

South Africa’s civil aviation industry holds an immense strategic importance and value for the South African economy particularly in international trade, investment and tourism, contributing

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[77] https://www.iata.org/contentassets/898a4919cc0b463a9cbba1a79d61e742/focus-africa-presentation_final.pdf

nearly 500,000 jobs and R154 billion to the country's Gross Domestic Product (GDP). ACSA has recorded a total of 39 877 142 million passengers that were facilitated through its airport network, during the 2016/17 financial year[78]. In the following year ACSA passenger statistics increased to 42 075 499 million passengers. ACSA currently has an annual departing- and arrival throughput passenger capacity of 54.5 million across its entire airport network. The direct-, indirect- and induced impact of ACSA airports individually and jointly benefit the Gross Domestic Product (GDP), employment and tax revenue, at both the national-, provincial- and local levels It also has an impact on related economic sectors through backward and forward linkages that exist within the aviation sector

Indirect- and induced economic growth also contributes to the GDP due to initiatives such as the development of aerotropolises in major cities which utilise non-aeronautical sources of revenue such as retail, training centres, conferencing and hotels. Projects such as the Dube Tradeport Aerotropolis, Ekurhuleni Aerotropolis and the Cape Town Aerotropolis, have already been initiated. These aerotropolises have already benefitted job creation and import- and export opportunities. It also provides convenience and a one-stop-shop to users. Some of the larger international airports have integrated multi-modal access with the transport network allowing ease of access and increased competition. In particular, public transport access to some international airports has improved i.e. Gautrain and the BRT Projects linked to airports.

In 2020 the world was hit by the COVID-19 pandemic which devastated the global economy and disrupted global supply chain. The aviation industry was one of the hardest hit, which saw a complete cessation of air travel in 2020. Global Lockdowns were implemented to combat the spread of the pandemic through air travel. In South Africa, the restricted air travel devasted the local airlines which resulted in the liquidation of the Comair Group which operated Kulula and British Airways through a franchise agreement; and the cessation of Mango airlines operations, a subsidiary of South African Airways. Cessation of operations of these airlines led to a contraction of domestic supply of airline seats by over 40%. This necessitated a structural reform of the domestic air travel market, which continues to evolve.

Airport Operators such as ACSA was not spared either in that the group facilitated 4.5 million passengers in the 2020/21 Financial Year, from over 41 million passengers processed in the 2019/20 Financial Year through the ACSA network. While there was a slow recovery during the 2020/21 Financial Year, it was only when global lockdown restrictions were relaxed that the passenger numbers began to pick up pace. By 31 March 2022, passenger throughput had reached 50% of the pre-COVID-19 levels. Although the recovery trajectory has been inconsistent, the notable increase in traffic through the ACSA network during the 2022/23 Financial Year gives cause for optimism. While capacity constraints and related air fare increases resulted in flat recovery in the domestic segment, the situation is now normalising as incumbent airlines such as Fly Safair, Airlink, Lift, Cemair and South African Airways continue to increase supply to offset the deficit left by the closure of Airlines including Comair, Kulula and Mango.

During the 2020/21 Financial Year, ACSA had created 20 312 job opportunities and added R5,5bn in the country's economy, which was lower than R10,2bn in the 2019/20 Financial

[78] http://www.airports.co.za/

Year. In the 2021/2022 and 2022/23 Financial Years, Airports Company South Africa contributed R6.1bn to the South African economy and created 16 870 jobs; and a further R8,4bn to the GDP and created 16 225 job opportunities, respectively.

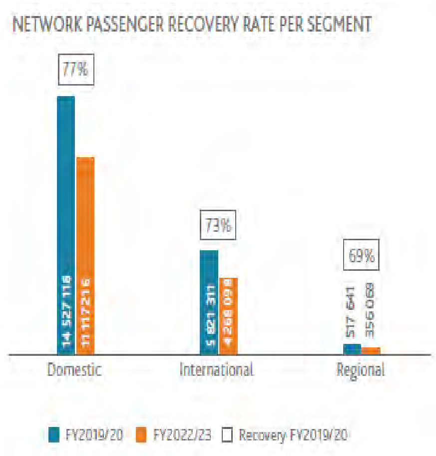
There has been a steady increase in both domestic and international flights with regional capacity being augmented by the South African Airways expansion and other airlines from the African continent. Cape Town International, in particular, benefited from the increase in international travel with airlines such as Air Belgium, Condor, United Airlines, Qatar, Emirates and South African Airways contributing greatly to the recovery of the international market segment. By 31 March 2023, the network as a whole had reached 76% of its pre-pandemic throughput. ACSA's three flagship airports, OR Tambo International, Cape Town International and King Shaka International, collectively account for 85% of all air passenger traffic in South Africa. Of these, O.R. Tambo accounts for 49% of the network's departing passengers but Cape Town International saw the most significant recovery in departing passengers during the course of the year, with passenger throughput increasing by 80% over the prior period. Air traffic movement and passenger throughput is expected to reach pre-pandemic levels during the 2023/24 financial year, a year earlier than projected at the start of the 2022/23 financial year[79].

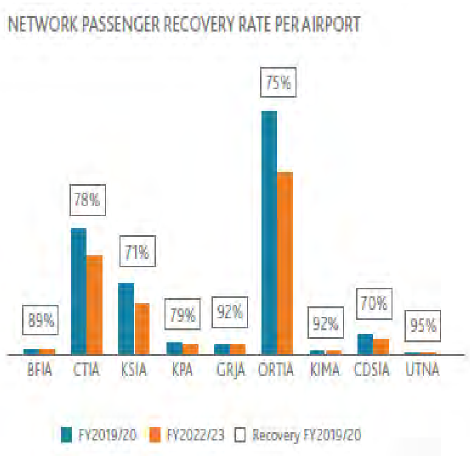
	Annual departing passenger throughput capacity	Total annual departing passengers			Aircraft landings		
		FY2022/23	FY2021/22	FY2020/21	FY2022/23	FY2021/22	FY2020/21
O.R. Tambo International Airport	14 000 000	7 828 651	4 819 924	2 054 468	90 774	70 025	35 235
Cape Town International Airport	7 000 000	4 216 937	2 850 795	1 193 423	45 145	37 767	19 494
King Shaka International Airport	3 750 000	2 166 478	1 613 224	754 405	18 672	14 929	7 330
Chief Dawid Stuurman (Gqeberha) International Airport	1 000 000	597 570	455 748	212 074	20 001	22 052	15 016
Bram Fischer International Airport	300 000	160 120	327 227	161 589	6 868	6 236	5 293
Upington International Airport	50 000	24 671	306 732	134 160	2 825	2 127	1 348
King Phalo (East London) Airport	600 000	364 601	103 197	36 831	8 831	9 284	4 634
George Airport	450 000	384 060	47 222	18 041	14 349	10 213	9 143
Kimberley Airport	100 000	70 127	14 272	5 427	4 322	4 183	2 470
Total	27 250 000	15 813 215	10 538 341	4 570 418	211 787	176 817	99 963

Capacity constraints in the domestic market has resulted in a flat recovery trajectory in that segment. However, this is slowly being mitigated by the recovery of the route network since the closure of the Comair Group in June 2022. In the regional segment, SAA's resumption of some regional routes, such as the route between Johannesburg and Windhoek, has been bolstering recovery. Eswatini Air, which has recently launched flights to OR Tambo International Airport is further supporting regional recovery. The international market segment, on the other hand, has been on a consistent growth trajectory since the IATA Northern Winter 2022 season. New routes and route expansions have been the largest contributors, with Cape Town International Airport being the largest beneficiary. Airlines such as Air Belgium, Condor, United Airlines, Qatar, Emirates and SAA have all contributed immensely to the recovery of

[79] ACSA Integrated Report 2023

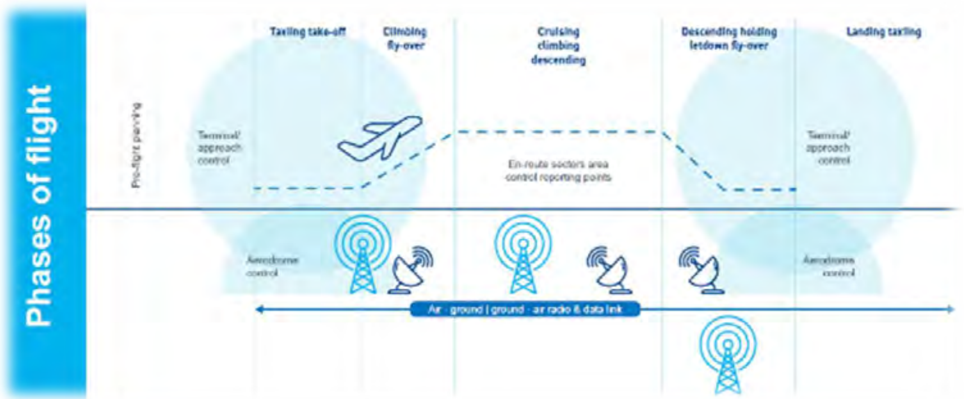
the international segment. This has led to a steady upward recovery trajectory, with international recovery reaching 73%.



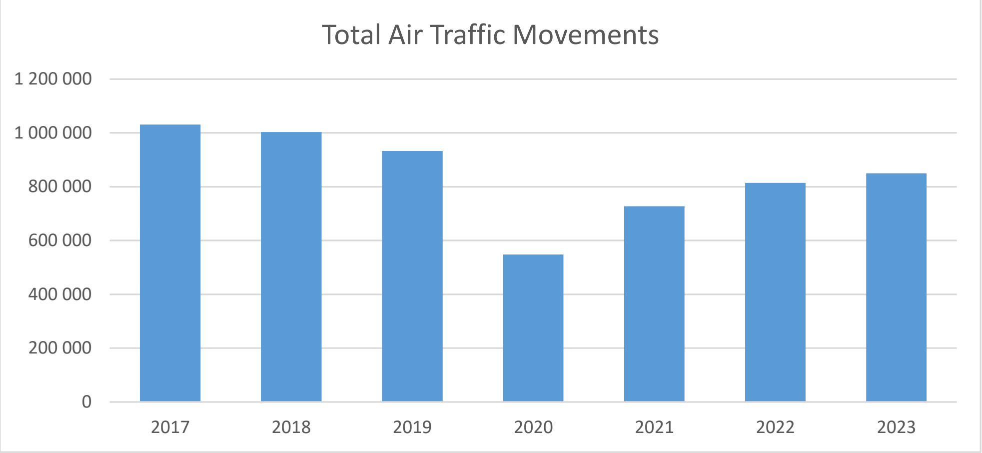


Air Traffic Movements

Air Traffic Movements (ATMs) refers to aircraft take-off or landing at an airport, over flights within the South African airspace and training operations. The phases of flights are depicted in figure below:

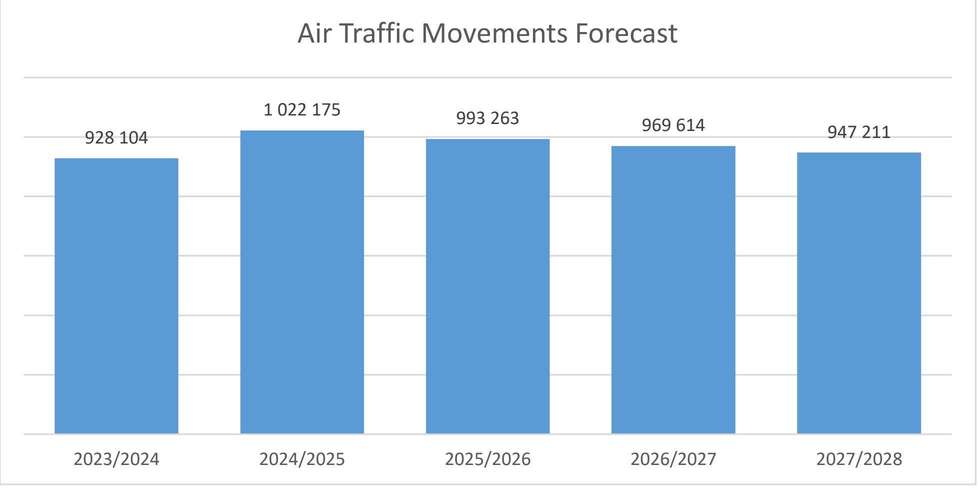


ATNS provides air navigation services to 21 airports in South Africa and controls the South African airspace and adjacent airspaces. Total air traffic movements incorporate arrivals, departures, overflights, and training circuits within the 21 ATNS manned airports (nine (9) ACSA airports and eleven (11) non-ACSA airports). The total ATMs were over a million for the years 2017 and 2018, from 2019 the ATMs were less than a million with 2020 being the lowest with a total of 548,408 movements recorded. A recovery of movements can be seen with 2023 recording a total of 849,797 movements. The trend can be seen from the graph below:



The forecast for the five years shows that the movements will improve, however, they will not reach 2018 movements. COVID-19 was not the only contributing factor to the decline of air traffic movements. Over the years, there had been a downward trend due to other factors which have a significant influence in air traffic movements. These factors include;

- South African economic decline over the years;
- Global economy decline in many regions over time;
- Impact of COVID-19 pandemic - liquidation of domestic airlines;
- Shift in airline operating models/direct flights;
- Decreased business travel and virtual working; and
- Decline in tourism[80].



[80] Source: Air Traffic and Navigation Services (ATNS) SOC

The majority of the 100+ municipally- and provincially owned airports are not currently financially sustainable on either an overall or operational basis. Some provinces, such as KZN, have actively worked to increase the viability of their provincial airports. In this regard, the implementation of the KZN Regional Airports' Project, seeks to create a network of regional airports that attract private investment and business ventures to promote growth and generate new sustainable jobs. A lot of work done has centred around Mkhuze-, Margate-, Pietermaritzburg-, Ladysmith-, Richards Bay and Newcastle Airports; and there is a growing need to facilitate route development to increase connectivity and scheduled air services. Further, the Province was tasked to develop a Marketing Strategy for all the regional airports. Margate Airport was brought back to life with around R11m upgrade; which was undertaken in partnership with the Province and the private sector. The airport has undergone extensive refurbishment, upgrading the airport to a Category 4. The newly revamped airport was handed over to the Mayor of Ugu District Municipality during 2022. The airport facilitate tourism and provides a convenient alternative to King Shaka International Airport; and has a daily scheduled flight operations between Margate and Johannesburg operated by CemAir. The airline also wants to re-introduce the Margate-Cape Town route. The revamped airport will benefit local communities and surrounding areas through job creation- and business opportunities; and to position the region to attract investors. The renovation of Margate Airport creates great prospects for businesses and the logistics sector.

The Province also hosted the Mkhuze Airport Awareness and Mobilisation Workshop, and the site visit of the newly built terminal building. The purpose of the Workshop was to harness collaboration between private and public tourism establishments and other interested stakeholders to showcase developments that have been made; and how the airport can serve the wider region of Northern KZN. Mkhuze Airport unveiled the newly built state-of-the-art Terminal Building worth over R90m; which was handed over to the Mayor of uMkhanyakude District Municipality. The master plan for Mkhuze Airport is expected to attract critical infrastructure and investment in mixed-use developments on land adjacent to the airport, while also supporting the proposed Agri-hub in Mkuze for cargo development. The airport can accommodate Boeing 737 aircraft. Airbus A320 and A321 can also land at the airport.

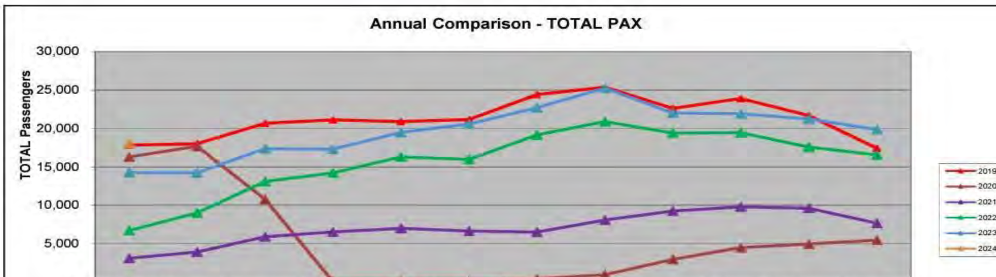
The Limpopo Provincial Government manage and operate Polokwane International Airport, through the Gateway Airport Authority Limited (GAAL) management entity. The airport is licensed as Category 7 airport, with the capacity to handle B737-800 and A320 aircraft. The aerodrome has one scheduled commercial route between Polokwane and Johannesburg, operated by Airlink; and there are plans to attract other airline operators and to establish additional routes eg Cape Town and Durban; and to activate the SADC business. The province has established a forum which comprises of critical stakeholders including tourism, agriculture, economic development etc to harness collaboration to maximise Air Access. There are opportunities in the consolidation of the cargo sector, which will require significant investment in the cargo infrastructure. In 2022/23 Financial Year, the airport facilitated 38 898 total passengers and 4117 air traffic movements as depicted in the table below:

Type of movement	2021/22	2022/23	2023/24 Apr - Dec
Aircraft movement	200	4 117	2 778

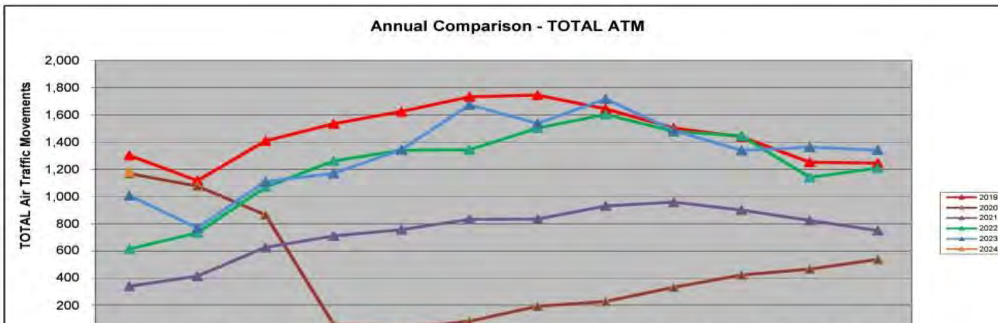
Passenger movement	2495	38 898	22 852
Cargo	0	0	Not yet consolidated

Kruger Mpumalanga International Airport is a Category 7 licensed airport in the Mpumalanga Province. The runway capacity of the airport can accommodate Boeing 747 and Airbus series aircraft. The airport serves an average of 270 000 passengers annually and it is strategically located to unlock a wide variety of new business and tourism-related opportunities in the province. The is currently able to accommodate a passenger capacity of 600 000 per annum with the significant expansion potential. Below is the table depicting airport statistics over the five-year period since 2019.

Statistics



	January	February	March	April	May	June	July	August	September	October	November	December
2019	17,820	18,020	20,686	21,129	20,907	21,164	24,422	25,386	22,620	23,919	21,659	17,444
2020	16,297	17,669	10,762	75	76	83	406	982	2,949	4,503	4,965	5,480
2021	3,092	3,926	5,903	6,538	7,018	6,638	6,508	8,095	9,245	9,804	9,623	7,670
2022	6,720	9,025	13,094	14,202	16,299	15,991	19,154	20,903	19,383	19,444	17,577	16,559
2023	14,258	14,234	17,367	17,316	19,495	20,587	22,690	25,249	22,022	21,924	21,238	19,855
2024	18,044											



	January	February	March	April	May	June	July	August	September	October	November	December
2019	1,301	1,116	1,408	1,534	1,624	1,733	1,745	1,644	1,502	1,439	1,251	1,246
2020	1,168	1,075	864	59	26	83	193	229	332	423	466	538
2021	340	414	626	710	756	831	834	930	958	900	824	749
2022	614	733	1,069	1,260	1,340	1,342	1,502	1,603	1,478	1,446	1,140	1,208
2023	1,006	768	1,108	1,169	1,344	1,673	1,536	1,716	1,485	1,339	1,361	1,341
2024	1,182											

The Kruger Mpumalanga International Airport (KMIA) development zone offers attractive investment opportunities across various sectors including aviation, agriculture, agro-processing, light industrial, logistics, real estate, tourism and hospitality. It offers zoned industrial land, with support infrastructure and services available on a phased basis within an international port of entry close to the borders of Mozambique and eSwatini. The zone located at the confluence of regionally important road and rail networks, enables companies to exploit the superior logistical speed and reach offered by its airport. As an established tourism hub, the zone is also ideally positioned to service regional demand for air freighting and to become a world-class agro-processing hub, producing labour-intensive, value added products for export. There is an opportunity to create a solar power plant.

In terms of the existing and planned airport infrastructure, the ultimate airport capacity at the current busiest international airports is estimated as follows:

- ORTIA - 76 to 80 mppa (million passengers per annum)
- CTIA – 40 to 42 mppa
- KSIA - 40 mppa
- Lanseria - 21 mppa
- KMIA – 600 000 mppa

There is scope for utilisation of military airports for civilian purposes such as Air Force Base Hoedspruit/Eastgate Airport. Eastgate Airport is the only Designated Airport facilitating scheduled flights in South Africa that has a Co-share Agreement in place with the South African National Defense Force (through the South African Air Force). SAAF provides Manoeuvring Area including runways and taxiway, Fire and Rescue services, Air Traffic Services, bulk services and security services at access gate. Eastgate Airport were granted approval for the management of a terminal building for facilitation of passengers travelling within South Africa, and an apron on 'airside' for parking of aircraft for passengers to embark and disembark. The airport is responsible for the facilitation and screening of passengers and provide services to the travelling passengers eg restaurant, car rental and ablutions facilities. Airport Security and compliance to the SACAA standards and regulations on security measures are implemented and audited annually by SACAA. Eastgate Airport is a tourist destination for various lodges and hotels in the area. About 97% of passengers frequenting the airport are international tourists/foreigners. Airport passenger statistics and air traffic movements facilitated by the airport are shown in the table below.

Aeronautical Statistics

PASSENGERS

	2021			2022			2023		
	Arriving Pax	Departing Pax	Total per annum	Arriving Pax	Departing Pax	Total per annum	Arriving Pax	Departing Pax	Total per annum
TOTALS:	33 874	33 529	67 403	81 981	79 194	161 175	103 589	101 450	205 039

FLIGHTS

	2021			2022			2023		
	Scheduled Flights	Charter Flights	Total per annum on Flights	Scheduled Flights	Charter Flights	Total per annum on Flights	Scheduled Flights	Charter Flights	Total per annum on Flights
TOTALS:	1 348	235	1 583	1 795	423	2 218	1 802	616	2 418

Some smaller airports are focusing on precinct development to improve viability through increased non-aeronautical revenues. Airports providing facilities used for indirect hire-and-reward that are not currently licensed e.g. game lodges offering package deal and training centres, are of concern in respect of liability-related issues and should be addressed. Therefore, in order to begin to address this gap, unlicensed aerodromes are required to register in terms of the Part 139: Sub-Part 6 of the Civil Aviation Regulations which were promulgated in 2018.

Further, airports have been shown to contribute to socio-economic development by:

- Improving accessibility for people to geographical areas, whether for personal-, essential services-, business- or tourism reasons;
- Allowing for “time critical” in- and outbound freight;
- Making a location more attractive for investment by certain sectors, in particular knowledge intensive industries, such as biotechnology, pharmaceuticals, universities, and financial services;
- In the case of large airports, also having significant direct impacts on the airport precinct in terms of employment and spend, as well as multiplier effects from employment and spend;
- Stimulating infrastructure- and property development in the vicinity of the airport to enhance non-aeronautical revenue;
- Contributing to the image of a country;
- Ensuring availability of facilities and provision for training, recreational- and sport aviation to create pilots and related profession for the future of aviation;
- Flight training is concentrated at airports that serve as bases for flight training schools; and
- The balance of the network is mainly used for non-commercial- and private access purposes; and includes over 290 voluntarily registered airports. These are smaller unpaved airfields typically used for agricultural- and recreational purposes. In many cases, such airports play a supporting role in the growth of both aviation and the community in which these smaller aerodromes are located.

The assessment has also highlighted various weaknesses and threats in the current environment, on which the NADP seeks to provide guidance on opportunities and methodologies to improve the current situation into the future desired state. The following areas have been identified:

- National Government has exclusive legislative competence regarding international- and national airports which service domestic scheduled traffic and are subject to the National Aviation Security Programme (NASP). Schedule 4 of the Constitution of the Republic of South Africa of 2006 (Constitution) deals with “Functional Areas of Concurrent National- and Provincial Legislative Competence” referring to Public Service Airports, Other Licenced Airports and registered airports.
- The planning of the South African airport network is adversely affected by the lack of reliable, consistent and up-to-date information on areas such as location, infrastructure, operations, passenger- and freight volumes, traffic movements and forecasts; which is critical to having an “evolvable network plan’’.
- There are few information sharing platforms for airport designers and planners. Additionally, consultative forums do not exist at all licensed airports which could

potentially address some of the challenges identified. Consequently, coordination of all stakeholders at these airports taking into consideration user needs with respect to airport design and -planning and also integration of the airport with its surrounding areas does not take place.

- Lack of legislative mechanism to reserve land in priority areas for long-term airport planning requirements.
- Lack of intensive marketing of various airports on their facilities and services that are being offered.
- Involvement of multiple role-players, overlapping jurisdictions and a lack of clear regulatory/ procedural instruments are making it challenging to execute joint-network planning. Not all airports have a working relationship with their respective Municipalities or Provinces. Many provincial transport- and planning officials are not aware that airports form part of their mandate. As a result, airports are not always included in the formulation of spatial development frameworks in terms of the Spatial Planning and Land Use Management Act, the Integrated Development Plans (IDPs) and Local Economic Development Plans. This scenario does not lead to the required coordination. Resultantly, local municipalities and Chambers of Commerce are not able to integrate and synchronise consideration of economic priorities and sectoral activity, as well as the employment of wider regulations such as the land-use planning and the integrated transport planning.

- There are more than 100 Municipal and Provincially owned airports which are not able to comply with their licensing requirements due to limited managerial capacity, lack of awareness, high cost of compliance and funding constraints. Revenue may be recorded at airports owned by provincial- and local government, but may not be ring-fenced due to the nature of budgeting processes. This poses a threat to the maintenance of adequate aviation safety and security standards, as required by the Civil Aviation Regulations, 2011.

- In addition, there is no agreed system to determine whether the airport's socio-economic contribution will justify further investment. Private funding of airports with lower volumes of activity has, however, been constrained by the low returns, long lead times on return, lack of credit worthiness of many municipalities and lack of borrowing rights of most other public entities. Development Finance Institutions (DFIs) including the Development Bank of Southern Africa (DBSA) have been approached in some cases for infrastructure upgrades and funding. This includes ACSA, provincial-, municipal- and privately-owned airports. Another concern is that many smaller and non-commercial aviation focused airports will not be able to fully cover costs on a user-pay basis.

In order to provide for the optimal- and sustainable airport, the planning and design of airports must take the following, amongst others, into consideration:

- The volume and nature of forecast demand;
- Optimisation of economic impact, including contribution to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods;

- Integration with the transport network at the airports and in the vicinity including public transport, private vehicle access, freight transport and fuel pipelines. This includes retail, food services, offices, hospitality/ hotels, conferences and events;
- Optimisation both aeronautical and non-aeronautical revenues, including integration of the wider precinct;
- Compliance with relevant regulations and licensing, registration or designation requirements. Further, an opportunity is being provided to review the aerodrome licensing and registration system to lessen the burden of compliance, thereby improving safety.
- Minimisation of ongoing facilities management- and maintenance costs through life-cycle costing, during airport design and upgrading as well as consideration of efficiencies and technology trends;
- Minimisation of environmental impact of the carbon emissions and noise; and
- Encouraging Provinces and Municipalities to remain responsible for prioritising their funding requirements in accordance with their established needs, including aviation infrastructure needs for the facilities these authorities plan, own and operate. As mentioned, funds are not ring-fenced.

The NADP seeks to clarify the implementation of Schedule 4 of the Constitution and to encourage the establishment of the consultative fora which will facilitate mechanisms to realise the benefits of direct-, indirect- and induced economic impact leading to benefits at national-, provincial- and local levels. Various mechanisms and legislation at each level of government is highlighted to support action leading to a coherent network of sustainable and/or justifiably socio-economic driven airports. Mechanisms recommended for the integration of airport network planning into transport and spatial planning coordination structures include the establishment of the Airport Development Coordinating Committee (ADCC). An intergovernmental mechanism will also be created to reserve land in priority areas, for long-term airport requirements. Ultimately, balancing all considerations with respect to airport design planning is complex and requires significant planning capacity. There is a need for the development of shared technical capacity, knowledge systems and guidelines, including at provincial level, to support individual small airport planning, as well as finding ways to tap into private sector expertise.

9.2 Policy gap assessment

The assessment in the table below provides a more in-depth assessment of the gaps between the desired airport network and individual airport planning in terms of the draft Comprehensive Civil Aviation Policy principles.

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
Aviation Safety and Security Oversight	
PS 4: Aviation Security at Airports ***The DoT is responsible for the development of national civil aviation***	• Twenty (20) airports are currently designated in terms of the Civil Aviation Act of 2009 as part of the secure network and are audited by SACAA for compliance

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
security policies. This includes the compilation, revision and development of the National Aviation Security Programme (NASP) which, amongst others, addresses airport security, in compliance with Annex 17 of the Chicago Convention. ***SACAA will remain responsible to oversee the implementation and compliance with the NASP.*** ***Where the cost of security oversight is recovered from the users, this should be done fairly and equitably, subject to consultation with affected parties and guided by ICAO's Policies on Charges for Airports and Air Navigation Services (Doc. 9082).***	
PS 13: Insourcing of security screening services at designated airports. ***Government should investigate the possibility of direct employment for aviation security screeners working at designated airports, either through insourcing by the airport operator or the creation of a wholly owned government screening organization responsible for screening operations.***	• Currently, airport security function is performed mainly through outsourced services, except in various airports where it is done by the airport operator • Professionalisation of Aviation Security Screening Operations (HBS) through insourcing by the Airport Authority or creation of wholly government owned screening organisation like Canadian Transport Security Administration
PS 14: Protection of critical Aeronautical and weather infrastructure located outside airports. ***Measures should be taken to ensure that aviation infrastructure located outside of airports is protected through partnerships between the affected industry and the country's law enforcement as well as communities. Steps should also be taken to ensure that the protection of this critical infrastructure is enabled through legislation.***	• Coordination of all Aviation Security and Critical Infrastructure security responsibilities through National Aviation Security Committee (NASC) and NASP;
Institutional Arrangements	

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
PS. 6: The DoT's capacity for its civil aviation responsibilities ***The government is committed to ensuring that the DoT is suitably equipped to fulfil its functional responsibilities for civil aviation effectively, efficiently, and meaningfully.***	• Additional information, technology and human systems capacity will be required in the DOT to effectively oversee and support the implementation of the NADP
Civil Aviation Infrastructure – Airports	
PS 16: National Airports Development Plan ***The DoT will develop a National Airports Development Plan which will guide all present and future airport development in consultation with all relevant stakeholders.*** ***Planning and integration of airports into the broader transport network should be coordinated through the National Airports Development Plan.***	• Currently overall national network planning is not fully integrated and does not fully take into account multi-modal transport linkages, and is not always evidence-based • DOT does not have the exclusive mandate on national airport network planning, and there are currently limited mechanisms/instruments available to give effect to this • Multiple role players, overlapping jurisdictions and a lack of clear regulatory/procedural instruments have made it challenging to execute joint network planning in the past • Airport users have noted that pre-planning of airports is not always taking into account technical requirements of users e.g. aircraft parking spacing to accommodate quick turnarounds of low cost carriers, slopes of freight access roads, tourist operator access on the landside • The NADP will facilitate and promote the development of Aerotropolis and Smart Airport Cities; and will also need to establish a legal mechanism for designation of special development zones for Aerotropolis and Airport Cities, similar to SEZ through collaboration with the dtic for the expansion of SEZ areas for the Aerotropoli and airport cities across the country • The NADP will also deal with matters pertaining to the designation of International Airports as Ports of Entry in line with Global, Continental and Regional Status; considering that the Minister of Home Affairs has the ultimate mandate to designate any

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
	place in the republic as a port of entry as stipulated in the BMA Act, 2020 • The NADP will adopt and outline the Airport Council International (ACI) Health Accreditation Programme as a national standard for all South African Airports including ACSA owned airports, Provincial, Municipal and Privately-owned Airports
PS 17: Environmental Sustainability of Airport Development *Airport development, expansion and operation should be in line with the Government's policy on environmental management.* *The environmental sustainability of airports should be assessed as a prerequisite, whether at strategic planning level or for individual projects, using the appropriate tools.*	• At the moment overall network planning does not take into account minimising environmental impacts (environmental consideration is at the level of individual airports. For example, there is limited consideration of shifting airport locations or activity to less sensitive areas) • New airport developments would comply with environmental approval processes, including considering alternative locations • However, many existing airports, in particular smaller and municipally-owned airports may not comply due to limited management capacity, lack of awareness, high compliance costs and funding constraints • The environmental sustainability of airports will be aligned with policy objectives set out by the Airports Council International Towards Net Zero Carbon Emissions by 2050: the ACI global long-term carbon goal for Airports • South Africa will consider multiple solutions for decarbonization and to a gradual transition to net zero carbon in the long term • The environmental sustainability of airports will be aligned with policy objectives set out by the Airports Council International Towards Net Zero Carbon Emissions by 2050: the ACI global long-term carbon goal for Airports • South Africa will consider multiple solutions for decarbonization and to a gradual transition to net zero carbon in the long term • Airports Council International's (ACI) Airport Carbon Accreditation recognizes and accredits the efforts of airports to manage and reduce their carbon emissions • There are four levels of certification: mapping, reduction, optimisation, and neutrality

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	**ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE**
	• Airport Carbon Accreditation is based on existing international standards in the reporting and accounting of Green House Gas (GHG) emissions • Attain an independent ACI certification
PS 18: Financial Sustainability and Viability *Existing publicly owned airports, excluding military airports, are encouraged to make every effort to become viable and sustainable, including through optimising non-aeronautical revenue and airport precinct development. Failing that, other justifications relating to social or economic benefits could be supported, should there be sufficient willingness for local or provincial government to cover associated costs.* *Where neither financial viability nor socio-economic justification can be achieved, alternative uses for such assets should be investigated, with due regard to the high cost of developing a new airport to cater for future demand.*	• The majority of the 100+ municipally- and provincially owned airports are not currently financially sustainable on either an overall or operational basis. In some cases, attempts are being made at an individual or provincial level to increase their viability • Green-field airport development plans currently have inconsistent approaches to assessing financial viability • There is as yet no agreed system in place to determine whether airports' socio-economic contribution merits continued investment • There is currently no specific guidance or support for alternative uses or decommissioning of publicly owned airports; however in terms of the Government Infrastructure Asset Management Act there are wider asset guidelines on life-cycle asset management and due diligence processes exist to decide on concessioning or sale of assets; indications are that these guidelines are not currently being following for municipally-owned airports and that airports are rather being deprioritised in terms of budget allocation, maintenance and management • Partnerships should be fostered between critical role players, infrastructure investors, Provincial and Local Government, Development Finance Institutions, Private sector economic growth sectors to promote aviation sector leading role in economic recovery and development
PS 19: "User pays" principle *The "user-pays" principle in respect of services rendered at cost-related levels should be introduced at all airports, where feasible. When implementing this principle, the rate of return must be pre-determined based on acceptable business principles applicable to this sector to ensure that it*	• The user-pays principle already applies at various airports within South Africa • Small volume activity airports and non-commercial aviation-focused airports are unlikely to be able to support themselves purely on aeronautical charges; some airport owners and operators are therefore exploring increasing non-aeronautical revenue and wider revenue from precinct development. However, it is likely that many

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
does not yield a disincentive for efficient service provision.	smaller and non-commercial aviation focused airports will not be able to fully cover costs on a user-pays basis • In the case of airports owned by provincial and local government, revenue may be recorded but may not be ring-fenced due to the nature of budgeting processes • In the case of airports providing services such as medical rescue, emergency services and fire-fighting functions, the appropriate "user" that should pay is not currently clarified e.g. line ministry/department, local tax payer, private service provider
PS 20: Funding sources, public and private participation strategies ***Local and international private sector participation in the provision and operation of airport infrastructure should be encouraged in all spheres of government.*** ***Airports should also be permitted to operate under a range of types of management and control, allowing airports maximum flexibility in their business model, but without undermining the core aeronautical activities of such airports.*** ***Aerotropolis and Airport Smart City Development should be promoted and facilitated through land reservation for future development, infrastructure development with major links to airports and integrated public transport investments to promote access to airports***	• There are currently different levels of private involvement in different types of airports, for example: o Fully private airports are already in operation, including some large airports and many small airfields which are typically already self-financed by private owners o ACSA airports already have some private sector involvement e.g. ground handling and debt financing for some capital upgrades o Some municipal and provincial airports have concessioned out the operation of the airport or entered into lease agreements (for parts of airports) with private or non-profit operators such as aeroclubs and flying schools. • Widespread use of municipal or provincial PPPs has been constrained by the high cost, administrative burden and political sensitivity • Typically, runway infrastructure is difficult to finance privately given the very long return periods (e.g. if over 25 years payback period), with the exception of some specialist infrastructure funds • Private funding of airports with lower volumes of activity has been constrained by the low returns, long lead times on return, lack of credit worthiness of many municipalities and lack of borrowing rights of most other public entities • Non-aeronautical aspects are typically more attractive to the private sector given quicker returns and therefore care needs to be taken

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE
	to not lose focus on aeronautical aspects by the airport operator
PS 21: Government funding of airports ***National Government should not provide any direct operational funding for any airport. The National Government as a responsible owner/shareholder of certain airports should, however, continue with its responsibility to develop and manage the National Airports Development Plan. It should ensure that funds are appropriated to meet national strategic objectives as to give effect to the NADP. The decision to expand airports or develop new airports must be informed by capacity constraints, market demand or compliance when required where the "user-pays" principle shall apply."*** ***The provinces and the municipalities should remain responsible for prioritising their funding requirements according to their established needs, including aviation infrastructure needs for the facilities these authorities plan, own and operate. The provinces and municipalities should be allowed to use their public sector infrastructure grant funding to finance airport development or redevelopment but not for operational expenses.***	• Development Finance Institutions (DFIs) including the Development Bank of Southern Africa (DBSA) have been approached in some cases for infrastructure upgrades and funding. This includes ACSA, provincially and municipally-owned airports, and privately-owned airports • At present, budget restriction measures have prevented the development of an airside capital assistance programme; • Other infrastructure funds, as well as provinces and municipalities, have been focused on infrastructure areas that are considered more "basic needs" and have therefore provided limited funding to airports • The European Union IIPSA fund administered by DBSA has received some airport-related applications
PS 22: International donor funding and partnerships ***The use of international donor funds should be in line with national policies and priorities. In addition, partnerships at new and existing airports between the public and private sectors as well as local and international investors should be encouraged in all spheres of government.***	•

DRAFT COMPREHENSIVE CIVIL AVIATION POLICY STATEMENT EXTRACTS	**ASSESSMENT OF GAP BETWEEN AIRPORT-RELATED POLICY AND CURRENT STATE**
PS 23: Aerodrome certification, licensing , approved and registration *The current airport licensing, certification, approved, and registered system should be aligned with the National Airports Development Plan and the National Airspace Master Plan. All airports should be required to obtain appropriate aerodrome licences, certification, approved or to be registered.*	• Registration of aerodromes: SACAA has been using a voluntary registration system; as at June 2023. In 2018, the registration regulations were promulgated.
PS 24: Designation of Airports as International Ports of Entry *The framework for the designation of international airports (ports of entry) in respect of existing domestic and planned new international (green-field) airports should form an integral part of the National Airports Development Plan and provide for the criteria and requirements for the development and designation of such airports.* *The Department of Transport, in consultation with all relevant Organs of State should investigate the feasibility of providing for "regional ports of entry" in order to facilitate small aircraft movements between South Africa and Southern African Development Community States, factoring in all relevant national security implications and imperatives. As is the case with international airports, the feasibility of regional-international airports must show financial viability with sufficient demand for passenger and freight air services.*	• The existing international airport designation (port of entry) guidelines do not have legally binding status, and do not sufficiently deal with considerations for green-field developments • A key issue that needs to be addressed is the sequencing of approvals for green-field airports that seek international status, in particular to address liabilities and investor risk thresholds • "Regional-international" airports will require full border control functionality as a port of entry, factoring in all relevant national security implications and imperatives. These airports will facilitate small aircraft movements to and from SADC to address increased congestion, especially in Gauteng. Operating in a congested airspace by a significant number of small aircraft could cause serious airport and airspace capacity constraints, as well as safety risks. Border Management Authority (BMA) has been established which could increase efficiencies, enhance security and should reduce costs of border control functions
PS 25: Facilitation ***The DoT should enhance the role and functions of the current National Air Transport Facilitation Committee.*** ***The airport licensees/airport operators of airports serving international air services may be required by the National Air Transport Facilitation Committee to establish Airport Facilitation***	• Ineffective or lack of proper facilitation at airports is one of the main causes of consumer complaints in respect of a number of activities or services ranging from passenger and baggage handling, customs and immigration services, security screening, retail business, ground transport, and ability to meet the general needs of persons with disabilities as well as

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Committees to coordinate civil aviation facilitation matters at the airport level. These committees, chaired by the airport licensees/airport operators, will be composed of local representatives of the major stakeholders in civil air transport facilitation at such airports.	accommodating well-wishers, 'meeters' and 'greeters' •
Civil Aviation Infrastructure - Integration of the Airport into its Surroundings	
PS 26: Airport emergency management plans ***All licensed airports, unless exempted by regulation, must prepare, implement and maintain an emergency management plan. Where appropriate, the plan should also incorporate and integrate the emergency management plans (or similar planning) of all air carriers providing air transport services to such airports. These plans also need to be integrated with the local, provincial and national disaster plans.***	• Integration is constrained by poor communication between airport operators and municipalities, as well as the prioritisation of basic service delivery
PS 27: Use of military airports for purposes of civil aviation ***Where there is a demand, the co-use of military airports for civil aviation purposes could be negotiated where practical, provided that military utilisation of the facilities would at all times have priority. However, it is not intended that the military should enter the business of providing airport facilities for civil aviation, or that the civil use of any military facility should interfere with the constitutional responsibilities of the SANDF.*** ***The SANDF should accept financial responsibility for the exclusive military utilisation of facilities at civilian airports.***	•
PS 28: Communication and consultation	• Consultative forums do not current exist at all licenced airports; they could potentially address some of challenges identified

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The DoT to provide a framework for the establishment of consultative fora that include a consolidated and structured plan for stakeholder engagements at licensed airports to facilitate consultations between all stakeholders. This involves spheres of government, private business, airport licensees, airport operators, aircraft operators, other service providers, communities and the travelling public on future Aerotropoli, Airport Cities and Airport development matters (including Airport Master Plans).	around coordinating integration of the airport with surrounding areas, and consideration of user needs in airport design and planning
PS 29: Integrated metropolitan and local planning ***Provincial and Municipal government must jointly incorporate future Aerotropoli, Airport Cities and Airport development (Master Plans) as part of a holistic planning approach to the total transport system and the environment in which the airports are located.*** ***There is a further need to ensure that airports are included in the formulation of spatial development frameworks in terms of the Spatial Planning and Land Use Management Act, the IDPs and Local Economic Development Plans. In addition, future Aerotropoli, Airport Cities and Airport developments (Master Pans) must be included in all transport plans including multi-modal transport planning (rail, road and air) and public transport, e-hailing etc. prepared in terms of the National Land Transport Act.***	• In the past these planning processes focused only on land transport, and therefore planning and information processes and forums may not be equipped to integrate airports • Many provincial transport and planning officials are not aware that airports are part of their mandate (despite inclusion of concurrent jurisdictions in Schedule 4 of the Constitution of South Africa)
PS 30: Transformation of airports and access to Townships and Rural Economies ***The provision of access through public transport and inclusion in Airports Masterplans of facilities for economic***	•

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activities linked to surrounding Township and Rural economies. ***The promotion of non-transit activities, businesses and access to tax free outlets, duty free services, trading platforms, promotion of local arts and crafts, festivities and events for the benefit of surrounding communities.***	
PS 31: Reservation of land for Airport Development ***Land must be reserved for identified or selected Aerotropoli, Airport Cities and Airport development and a mechanism for reserving land for future Aerotropoli, Airport Cities and Airport development must be formulated in consultation with the relevant stakeholders (involved in formulating Aerotropoli, Airport Cities and Airport development plans), as it is key in safeguarding future Aerotropoli, Airport Cities and Airport expansion***	•
PS 32: Funding mechanism ***A funding mechanism to be investigated for both private, government and municipal-owned airports for future Airport, Aerotropoli and Airport City developments.***	•
PS 33: Provincial transport planning ***Provincial governments should include airports in their provincial transport plans and also include the policies and strategies relevant to airport development for all airports in the relevant Provincial Transport Framework and the provincial development plans. Airport development should be included in the spatial development frameworks. Where new airport developments are scoped as national and international***	• Provincial, Metropolitan and Municipal Transport Plans should make specific provision for Public Transport facilities at airports and routes from CBDs, Townships and rural Hubs. Airports Operators should allocate land specifically for multi-modal public transport interchanges in Airport Masterplans to promote access to airports and facilitate non-transit business activities.

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airports, Provinces need to seek the national government's approval for the demarcation of the particular area for the development of such aerodrome, as guided by the NADP.	
PS 34: Land use on airports and land use around airports ***The airport licensee/operator should develop the airport development plan, airport master plan and precinct plan of the airport for any new developments in consultation with the responsible local government, as well as the SANDF, if applicable.*** ***The Master Plan should enable long-term planning, such as fifty years. The airport licensee/operator should be responsible for informing the responsible municipality of the obstacle-free zone which is determined according to the regulations under the Aviation Act.*** ***The authorities responsible for land-use planning and control in the vicinity of an airport should ensure that the future zoning of areas close to the airports would be compatible with the airport development. This should be addressed through appropriate Land Development Objectives, the Integrated Development Plans and inclusion of master plans into spatial development frameworks.***	• There is a growing number of commercial developments at and around airports, including offices, shops, tourism facilities, hotels, restaurants, fuel stations and warehouses. • Land-use developments around airports often encroach upon the airport, making it difficult to extend the airport or to use it to its full potential in future. • There is a need to control land-use development at airports and in the areas adjacent to and affected by airports and to ensure appropriate and compatible developments, as the land-use needs of airports differ greatly from those of residential or industrial areas. • In addition, land use can be optimised to increase the economic contribution of airports, including through development of airport cities and aerotropolis urban sub-regions with an integrated economy, mixed use developments and integrated transport.
PS 35: Local emergency services and bulk municipal services *The licensees/operators of airports should plan and monitor their emergency services, as well as the required bulk municipal services, in consultation with the relevant municipal and provincial governments which are responsible for emergency medical, fire-fighting and disaster management services. The municipalities*	• The planning of emergency services at an airport is not always properly co-ordinated with the emergency services of the municipalities in the vicinity of the airport. • Integration is constrained by poor communication between airport operators and municipalities, as well as the prioritisation of basic service delivery

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concerned should ensure that these services are integrated into their own disaster management plans.	
PS 36: Safety and security compliance by provincial and municipal airports ***Provincial and municipal airports must be managed efficiently and effectively to ensure safe and secure operations, geared towards injecting commercial activities in and around the airports.*** ***Where management expertise and capability are inadequate, management contracts or partnerships should be entered into with entities such, as ACSA, who possess the requisite expertise and experience in airport management.***	• South African Civil Aviation Authority (SACAA) audits indicate high levels of non-compliance at provincial and municipal airports • The elevated non-compliance levels are as a result of the fact that Municipalities and Provinces do not have the competence required to manage airports; as well as competing priorities and constrained budgets to cater for aviation infrastructure which they own and are responsible for managing and operating.
PS 71: Airport Gateways ***An assessment is therefore required within the national interest to determine the optimal policy for aligning and allocating international status to airports.*** ***Review of some international airports with low traffic volume be considered as the traffic volumes do not justify the cost of rendering border control functions by the relevant Departments; and explore the option of reclassifying their current international status to regional airport to promote the regional travel and reduction of travel costs in the region.*** ***The development of a tiered system of Airports – Global Airport Status designation to ORTIA in order to maintain Hub Status 40,000 to serve Europe, Africa, Middle East and Eastern Europe, International Status to KSIA to serve Asia and CTIA to serve Americas. The remaining airports should be restricted to Neighbouring Countries if***	•

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financially viable and encouraged to promote general aviation and air Cargo.	
PS 75: Passengers with universal access needs ***All airport licensees, airlines and other service providers rendering direct services to the traveling public, should provide facilities and services to passengers with universal access needs. Passengers with universal access needs are persons with disabilities, elderly people, children and persons accompanying children. Such facilities and services should enable passengers with universal access needs to experience ease of access to all airline services; from booking a ticket to taking the trip and being able to provide feedback.*** ***This includes the use of airline facilities and services whether infrastructure, information or communication in accordance with the Constitution, with due regard to aviation safety standards and facility constraints, acknowledging the need for universal design and access, as well as reasonable accommodation.*** ***Relevant information must be available so that passengers with universal access needs and others involved in providing travel services have access to information, such as information about access policies and matters concerning the specific needs of a passenger, e.g. seat dimensions, air circulation/air changes and accessible toilets.***	•
Aircraft Operations and the Environment	

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PS 78: Establishment of Airport Environmental Committees ***The airport licensee of an airport that is required to calculate and predict aircraft noise contours and conduct regular monitoring of aircraft noise and/or air quality monitoring should establish a standing Airport Environmental Committee as part of an airport consultation forum to provide a communication link between various interested and affected parties to discuss the environmental impact of aircraft operations.***	• In practice, relocation or repurposing of areas within the noise contours is contentious/sensitive and can therefore be difficult to implement, but consultative fora have been identified as a potential mechanism to address these issues • Responsibilities of the airport developer/operator versus airlines and the municipality may also not be clear and widely understood by the public, e.g. around communication, any compensation for relocation • Baseline data on actual land use in the affected area prior to airport development may be difficult to keep current due to sudden changes such as informal settlements • Airport Master Planning is a key tool to improve coordinated land use planning
PS 79: Environmental Management Programme ***An Environmental Management Programme should be used to monitor and control environmental impacts and emissions at licenced airports. This programme should include the current airport operations, air carriers, flight frequencies, proposed developments at the airport, local structure plan, airport controls to minimise the impact of aircraft emissions on the surrounding environment, local planning controls, measures aimed at minimising disaster risk as well as climate change considerations.***	•
PS 80: Aircraft noise management ***Decisions regarding the implementation of measures for the control of aircraft noise should be taken according to ICAO balanced approach to noise management.***	•

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PS 82: Existing undesirable land-uses within various noise contours ***Once the noise contours for the airport have been established and the proposed land-uses have been accepted for the different noise zones as determined, the relevant municipality should survey all land-uses within these noise contours and compare them with acceptable land-uses to determine any existing non-compatible or undesirable land uses.*** ***Where buildings and other infrastructure are used for a purpose that is incompatible with certain noise zones, these buildings and infrastructure should be used for a more compatible purpose which is permissible in that particular noise zone. However, the practical implications of such a change in the use of buildings and infrastructure must be considered by the local authority.***	•
PS 84: Departure and arrival procedures, preferential runways, and related noise abatement measures ***The airport licensee of an airport that is required to calculate and predict aircraft noise contours and/or conduct monitoring of aircraft noise should ensure that appropriate noise abatement procedures and measures are developed and published after approval by SACAA. Aircraft-, airport- and air traffic service unit operators must implement such noise abatement procedures and measures as applicable.***	•
PS 85: Operating restrictions ***The airport licensee of an airport that is required to calculate and predict aircraft noise contours and to conduct monitoring of aircraft noise may, if necessary, propose, for consideration by the land use authority, any or a combination of operating restrictions for eliminating or reducing aircraft noise to***	•

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meet the restrictions set by the land use authority.	
PS 86: Airports for which noise contours should be calculated ***SACAA must, in terms of formulated criteria as prescribed, determine which airports are required to calculate aircraft noise contours.*** ***The airport licensee should be responsible for calculating and predicting aircraft noise according to the prediction model set in the National Code of Practice and ICAO and bear the financial responsibility.*** ***The airport noise contours should be established in a manner that would not subject land-use development rights to frequent change.*** ***SACAA should have overall responsibility for enforcing and regulating the calculation of aircraft noise contours at airports as determined.***	•
PS 87: Noise and track conformance monitoring systems ***SACAA must in terms of formulated criteria, as prescribed, determine which airports are required to conduct regular monitoring of aircraft noise.*** ***SACAA will be responsible for the regulation of the standards and requirements for aircraft noise monitoring systems in line with international practice as well as enforcing the monitoring of aircraft noise.*** ***The airport licensee will be responsible for funding the procurement, installation, operation and maintenance***	•

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of the permanent noise monitoring equipment.	
PS: 88 Handling complaints, claims and exceptions *The airport licensee must address all noise-related enquiries and complaints, and where established, in consultation with the Airport Environmental Committee established at such airport and should endeavour to share information on noise issues monitoring and mitigation with the public.*	•
PS 89: Measures to reduce fuel consumption *Airport authorities, air traffic service providers and aircraft operators should adopt operational measures to minimise fuel use and reduce emissions. Fuel efficiency gains, as defined by ICAO, should be reported to the DoT on an annual basis.*	•
PS 91: Voluntary measures *Airport operators, air traffic service units and aircraft operators should report on voluntary measures implemented to limit or reduce aviation emissions, to the DoT, on an annual basis.* *Aircraft operators that are registered in South Africa should report on fuel consumption to the DoT and the Department of Energy whilst carbon dioxide emissions should be reported to the DEA, on an annual basis.*	•
PS 93: Local air quality monitoring *An appropriate monitoring system should be introduced for the capturing of relevant data concerning engine*	•

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emissions. Airports meeting the criteria for air-quality monitoring, as determined by the DoT in consultation with the DEA, should be subject to the monitoring of ambient air quality.	

9.3 International trend gap assessment

The table below assesses the gap between the desired airport network and individual airport planning in terms of **international trends**.

Table 13: International trends gap assessment

Trend themes	Assessment of gaps
1. Airports are needing to accommodate new aircraft types for both passenger and freight	• Larger volume airports have invested in recent years in upgraded air bridges, aircraft parking etc., and some airports can now accommodate wide-body aircraft and ICAO Code E • Only the O. R. Tambo International Airport currently receives Code F, where all Code F and most Code E stands are dual contact • King Shaka International Airport already has 2 Code F stands with dual passenger boarding bridges. • The spatial provision for similar dual bridges and Code F stands are on the master plan for Cape Town International Airport and will be developed as and when required by demand
2. New security technologies are impacting on the required layout of passenger and cargo terminals	• This trend is starting to be evident in South African airports with some plans to introduce new technologies, e.g. the integration of full body scanners at ACSA airports and the Department of Home Affairs plans to integrate biometrics into security planning at international airports

Trend themes	Assessment of gaps
3. Airports are increasingly mainstreaming environmental considerations into their design	• This trend is not yet strongly evident in most South African airports • One example of incorporation of environmental considerations into airport design is the increase in use of natural light in recent passenger terminal upgrades at Cape Town International, King Shaka International Airports, and Lanseria International Airport pier development •
4. There is expected to be less separation of domestic and international passengers using "call to gate" methodology	• South African international airports are starting to follow this trend. All ACSA airports are designed to the principle of single centralised holding areas from where all flights are called
5. Airport design and systems are increasingly integrated with other modes of transport	• Public transport access by train and rapid bus transit is a relatively recent development in South Africa, and only at larger/higher traffic airports, and so integration across modes is still under development (some layout changes were made in the recent wave of ACSA airport upgrades to improve integration) • South Africa's Public Transport Strategy through Integrated Rapid Public Transport Networks (IRPTN) includes in its objectives linking major origins and destinations, including airports, as well as integrated ticketing systems and institutional integration between services • However, inter-operability of facilities and systems is not yet in place e.g. luggage check-in at Gautrain /rapid bus stations for airports • Smaller airports at the moment have less advanced public transport systems and tend to rely heavily on private vehicles; constrained budgets for public transport upgrades have slowed this integration
6. Airports are increasingly being designed based on user experience	• Airport users have raised concerns that airport design and upgrade processes have not been highly consultative from early stages, and have often not resulted in optimisation of facilities to address their needs.
7. The number of aerotropolises and airport cities are increasing due to increased importance on revenue from non-aviation sources and convenience for users	• Numerous feasibility and planning processes are underway for aerotropolises in South Africa, e.g. Dube Tradeport Aerotropolis Region, Ekurhuleni Aerotropolis, Cape Town Aerotropolis

Trend themes	Assessment of gaps
8. Low Cost Carriers are increasingly offering long-haul flights and using secondary destination airports	• This trend is not yet strongly featured in South Africa, although there have been some developments around use of Lanseria International Airport for domestic low cost carriers, this has not extended to long-haul to date
9. With the rise of private sector involvement in financing airports, financing is increasingly being integrated into every step of the planning and design process	• The strategic master plans of ACSA airports are subject to financial evaluation to determine the preferred option that provides the most cost effective operation • ACSA's 10 year plan is subject to intensive scrutiny by both industry and the Economic Regulator prior to funding release • Smaller private airports typically will have phased developments to take into account financing requirements
10. As smaller airports are becoming targets for illegal activities, new strategies to combat them are being implemented	• Registration of airports is one initiative to improve information availability around smaller airports that may be targeted for illicit activity. The regulations to deal with the registration of unlicensed airports have been promulgated. • Discussions are also underway within the security and border control agencies as to how to address this issue; however, available resources to monitor activity are likely to be a constraint
11. Non-scheduled, general air service and non-commercial aviation activities are being consolidated at particular airports, rather than spread out amongst multiple airports and airfields.	• South African non-scheduled, general air services and non-commercial aviation activities are experiencing similar pressures at the main commercial airports • There has been some consolidation of activity at smaller privately-owned airports (e.g. Grand Central, Port Alfred), and in some cases at municipally-owned airports (e.g. Virginia) • However, financial viability of smaller airports remains a concern
12. ACI Accredited Health and Hygiene Protocols	• The ACI Airport Health Accreditation (AHA) programme provides airports with an assessment of how aligned their health measures are with the ACI Aviation Business Restart and Recovery guidelines and ICAO Council Aviation Restart Task Force recommendations along with industry best practices. • The programme is open to all ACI member airports of all sizes. • Enables airports to demonstrate to passengers, staff, regulators, and governments that they are

Trend themes	Assessment of gaps
	prioritizing health and safety in a measurable, established manner. • Enables airports to validate their own measures throughout their facilities and processes. • Reassures the travelling public using the airport's facilities. • Promotes the recognition of professional excellence in maintaining safe hygienic facilities. • Promotes best practices and aligns efforts across the industry, and ensures harmonization between ICAO global guidance and industry implementation. • Accreditation is voluntary with a request to join the programme initiated by the airport.
13. Consideration of the Disability Sector	• ICAO Doc 9984 - Manual on Access to Air Transport by Persons with Disabilities • Annex 9 • ICAO ACI World's Accessibility Enhancement Accreditation (AEA) program provides a continuous path of improvement for airports in the area of accessibility for passengers with disabilities. • It is designed to help airports measure, evaluate, and improve their accessibility management and culture, and it is the only international assessment/accreditation program dedicated to airport accessibility to passengers with disabilities • Problems using airline bookings and airline services: passengers are refused travel, subjected to insensitive booking requests, damaged wheelchairs, and the failure to accommodate assistive devices. Rude or unhelpful staff, overtly discriminatory search demands, no safety information available when deaf. • Silent airports: the introduction of silent airports was a special focus in 2021. The international 'Silent airport' movement was founded on research that did not include people who were blind, who were subsequently unaware of gate changes. This is not acceptable in Aviation in South Africa because of the equality clause in the Constitution and the Constitutional Court Case won by BlindSA on access to information. • Travelling alone: passengers have been refused flights because they are a person with a disability flying alone, have been refused passage because their combined wheelchair and themselves is not covered in policy or because the airline does not believe it has a duty to reasonably accommodate the passenger.

Trend themes	Assessment of gaps
	• Weight of wheelchairs: airlines have refused to take passengers in wheelchairs where the wheelchair weighs more than 32kg, and a combined wheelchair/passenger weight of 65kg, which is unrealistic. Due to the changes allowed through the CAA between 2013 - 2017, there is no reasonable mechanism to stop this.

10 ASSESSMENT OF GAPS IN THE AIRPORT NETWORK

South Africa's airport network as a whole has significant capacity, and many of its airports are currently under-utilised. The section below addressed the identified gaps.

10.1 Controlled airspace

Only three airports are slot coordinated, and airspace congestion is primarily experienced in the vicinity of the OR Tambo International Airport Terminal Area. Airspace congestion within and close to the ORTIA TMA is therefore a particular constraint to traffic growth for the Gauteng area. Resolving this will require the optimisation of airspace utilisation and ultimately, additional airport capacity outside of the ORTIA TMA.

10.2 Airport infrastructure capacity

The ultimate capacity of most airports in South Africa is unknown. In terms of the existing and planned airport infrastructure, the ultimate airport capacity at the current busiest international airports is estimated as follows:

- ORTIA - 76 to 80 mppa (million passengers per annum)
- CTIA – 40 to 42 mppa
- KSIA - 40 mppa
- Lanseria - 21 mppa
- KMIA – 600 000 mppa

Taking into account available demand forecasts, planned investments at major airports, and a similar aircraft mix, capacity constraints in terms of both passengers and ATMs can be expected within the 2050 planning period to serve Gauteng, Western Cape, and KZN. Within this period, specific dates where additional capacity will be required may shift based on actual activity levels (see the following section for discussion of the Planning Activity Levels approach).

In addition, cargo handling capacity is constrained at ORTIA (where over 80% of cargo volumes are currently concentrated), and plans for a mid-field cargo terminal aim to address this through infrastructure investment to accommodate 750 000 tonnes of Cargo per annum. Midfield Cargo Development Project to be expedited to ensure that ORTIA regains its status as the premier Cargo Hub in Africa; and acts as catalyst for other non-aeronautical developments in and around the airport.
Cargo capacity at other international airports may help to address this gap depending on international air connectivity at these airports. The scale and nature of cargo are unlikely to support freighter-focused airports and cargo hubs in the short-to medium term.

10.3 Airport sustainability and commercial development

Many of South Africa's smaller airports, in particular provincially and municipally-owned and non-commercial aviation focused airports, are not currently financially self-sustaining. Traffic volumes within the airport network are not likely to be sufficient to enable financial viability of all of these airports based on aeronautical revenue alone. Requirements for noise and emission monitoring at airports will also have cost implications. In addition, competing land uses that are more financially attractive are placing pressure on existing facilities.

The current budget constraints and focus on basic service delivery across all spheres of government will constrain public sector funding of airport projects in the short to medium term. Decisions by provinces and municipalities to invest and operate airports that are not financially viable will require the executive authorities to prioritise within their budgets to fund operations and should consider the opportunity costs of such funding. Given that the private benefits exceed social benefits, the case for user charges is strong. Fiscal funding will only be considered where social benefits are greater than private benefits and costs.

Further development of non-aeronautical revenue, including the appropriate development of land on and around the airport is therefore likely to be necessary to increase the number of airports within the airport network that can be sustained. Without such development, the long-term capacity of the airport network to serve in particular non-commercial aviation needs will be reduced. These developments can also support the economic contribution and spatial integration of airports into their surrounding areas.

The spatial context and nature of economic activity and demand in the areas surrounding airports will constrain what type of development will be viable, ranging from small airport precincts though to airport cities and aerotropolises. It is therefore still likely that some airports may need to be mothballed or alternative uses found (taking into account that lost capacity will be difficult to replace), and that aviation activity will need to consolidate into a smaller number of airports.

PART D: GUIDING PRINCIPLES

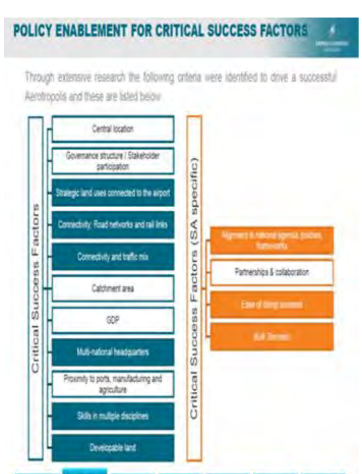
The section below sets out **guiding principles** to support decision-making and planning for both the **overall airport network** and **individual airports in their surroundings**. In particular, these guiding principles aim to support airport operators and provincial and local government in their airport-related planning.

These guiding principles will be reviewed as part of the NADP review cycle, and refined, if required, to take into account any changes in the airport network context.

11 Aerotropolis and Airport City Principles

The Aerotropolis is a platform for a host of physical, social, governmental, and economic planning efforts intended to improve the lives of our residents and communicate a message of stability, sustainability, economic energy, and desirability to the world. At its core, the Aerotropolis is more than a development plan. It sets out a roadmap to better the lives of communities as a hub of investment and industrialisation. It will contribute towards the development of the SMME sector as a key driver of growth. It will also strengthen the capacity of the state to direct economic development and enhance the competitiveness of strategic economic sectors.

On a macro level the key objective of an aerotropolis strategy is *to achieve economic integration, improve economic development and stimulate growth through investment and the provision of quality of jobs; and* to bolster the economic development of a country. Its successful implementation rests on ensuring that several major building blocks are in place. These major building blocks comprise of key activities which include establishing strategic partnerships and placing a great focus on critical success factors that should be in place in order to create an enabling environment for the execution of an Aerotropolis. Critical success factors must be executed in a manner that embraces SMART development principles to ensure sustainability.



Aerotropoli and Airport Cities must primarily:

- Increase the competitiveness of cities, airports and regions to attract business. The benefits and competitive advantage that will be gained by locating in a specific area must be in place or at least be clearly demonstrated and articulated.
- Maximise revenues in that for many airports, non-aeronautical revenues are critical for long term sustainability.
- Promote speedy connectivity and accessibility. The value proposition of the airport city and the aerotropolis is that connectivity increases competitiveness. Goods and services must be provided efficiently and swiftly. This does not only refer to air and surface access but also support systems eg IT systems, governance, ease of doing business etc.
- Support integration of the airport system into an airport network that contribute to the growing wealth of the country and to ensure that potential investments are utilised effectively and efficiently.
- Support integrated planning and development through integration of airport development frameworks and Plans into Integrated Transport Plans and Spatial Development Frameworks of all spheres of government.
- Incorporate Smart development principles to ensure sustainability.

Aerotropolis Major Building Blocks

Building block 1: Establish strategic partnerships and stakeholder platforms

This is concerned with the pursuit of strategic public and private partnerships to streamline efforts and secure resources required for the successful implementation of the Aerotropolis. This includes attaining commitment and strategic public investment to lay the foundation for the development of the Aerotropolis (e.g. bulk services provision), establishing solutions for phased payment/relaxation of development costs, and engaging with and informing policy makers to ensure that the Aerotropolis finds expression in applicable policies and frameworks and thus enabled. In addition to establishing strategic partnerships, it is important to establish structures that will serve as a platform to create awareness and formalise cooperation and collaboration among various stakeholders.

Building block 2: Focus on critical success factors

Critical Success Factors (CSF) are useful in ensuring that effort is placed on the right things to achieve success- and in the case of the aerotropolis, the following critical success factors have been identified:

- Central Location: Central geographic location in relation to the area an airport serves.
- Stakeholder Participation: Strategic partnerships with all relevant stakeholders is a requisite for airport related development. Cooperation between the Airport, the municipality, the region, community, airlines, and transport authorities (all relevant stakeholders) is important for the success of an Aerotropolis.
- Strategic Land Uses: High value strategic land uses including international business districts, international exhibition centres, airport related mixed- use, residential areas,

and transit-oriented development in the vicinity (around) of the airport connected (including public transport) to the airport.

- Connectivity- Road Networks and Rail Links: Surface access is one of the most important factors. Access should not only be measured in terms of distance but also in time. At large airports where roads are congested, the provision of public transport for both passengers and staff is critical.
- Air Connectivity & Traffic Mix: Air connectivity and traffic mix in terms of passengers and cargo. The number of direct destinations that an airport is connected to is directly related the success of an Airport. Airports that are either passenger or cargo biased will struggle to succeed as the aerotropolis concept leans heavily on both cargo and passenger connectivity.
- Catchment Area: Catchment area in terms of the population that an airport serves within a geographical area.
- GDP: Airports located in areas with constantly low or negative (recession) GDP may struggle to attract investment due to low economic activity and the need to channel resources in other focus areas such as the provision of basic services etc.
- Multinational Headquarters: The number of multinational headquarters situated on or near the airport. Companies of distinct size and from different sectors have diverse needs when it comes to their choice of location.
- Proximity to Ports, Manufacturing and Agriculture: Points to the existence of other supporting and complementary industries, business and agriculture/agro- processing that is part of the larger value chain. Enable imports and exports and reduce travel times to the airport and other supporting and complementary businesses.
- Skills in Multiple Disciplines: The availability of skilled labour at the right level. In general, there is an oversupply of certain skills but a shortage of skills in fields such as ITC, Engineering, Health Professionals, Business Management etc. in South Africa.
- Available and Developable Land: Developable or re-developable land available on and off airport.
- Alignment to national and regional policies and development frameworks: Policies, frameworks and plans at all levels of government should support the development of aerotropoli and airport cities by ensuring that the mechanisms required to enable them (ie ability to reserve land, integration with spatial and transport plans), are formulated and are in place.
- Partnerships and collaboration: Establishing partnerships with key and strategic stakeholders, and the relevant structures that will facilitate engagements, is important to ensure collaboration.
- Ease of doing business: Ease of doing business is concerned with ensuring that the measures that make doing business seamless, are in place. In the case of an aerotropolis, this includes ensuring availability of land that is ‘development ready’ (i.e. zoning, bulk services).
- Bulk Services: Determining bulk services is an outcome of land use and transportation planning. Broad land uses and transportation corridors are first defined and thereafter services demand is determined, as different land uses such as roads, have different services requirements. The required bulk services provision must be in place, prior to executing a development.

Building block 3: Attract investment opportunities

Attracting investment opportunities is concerned with developing partnership models, incentivising investors and achieving “investment ready” status. This would include putting in place incentives that would attract investors in place such as expanding/ establishing Special Economic Zones that have a Special Airport Designation offering an array of incentives over and above those associated with traditional SEZs.

The adoption of the aerotropolis concept has placed airports at the centre of corridors linked to other related land uses and clusters outside the airport city resulting in a multitude of industrial, residential, and commercial clusters directly and indirectly linked to the airport. These sectors are targeted and based on existing economic activity, national strategic objectives, international best practices, and industry growth drivers related to trade. The connectivity of the airport with regional and global markets, drives a strong and growing economy and aviation sector as well as many other sectors and industries by creating sustainable business opportunities for large-, medium-, and small enterprises alike.

The South African Aerotropoli incorporates the principles of smart and sustainable cities which is concerned with planning, developing and managing cities (urban areas) in a sustainable way, using the latest technology according to environmentally friendly principles while maintaining and using resources in a sustainable manner. The growth of the South African Aerotropoli network provides the opportunity for Government to adopt smart principles into all developments. This support and encourage the private sector to adopt the same principles creating an environment where all role-players collaborate on smart principles and creating economies of scale to drive affordability and wide-spread adoption. The South African Aerotropoli underpinned by the adoption of smart principles, provides a multitude of benefits.

In the SMART MOBILITY sector:

- Leading world-class airports are at the centre of each aerotropolis/airport city due to flexible and agile planning done in collaboration with all relevant stakeholders.
- Aircraft operators from all over the world ensure connectivity to every continent across the globe in support of multiple sectors including tourism, import and exports etc.
- A healthy network of aircraft carrying passengers and cargo around the South African network of airports supports an integrated economy and the growth of uniquely positioned sectors of industry. These airports and their surrounding industries are suited to the regions in which they are situated and complement each other to ensure economies of scale for the benefit of a broader and integrated economy.
- In addition to ride-hailing and car-sharing platforms, there could be safe and well managed taxi-drones transporting people and goods effortlessly in and out of the multi-modal transport centres based at the airport.
- Aerotropolis communities enjoy the benefits of extensive public transport networks, moving around the aerotropolis on efficient and affordable public transport, to and from their homes.
- The public enjoys seamless and ticketless movement from one public transport mode to another due to multiple service providers collaborating and creating a single smart platform for payment which is transparent and easy to use for both the passenger and

the service provider. The platform also shares schedules, updates, and information links for seamless integration.

In the SMART ENVIRONMENT sector:

- Every opportunity to maximise common use renewable energy sources and responsible water consumption is taken and applied across the aerotropoli. Green buildings are the norm and attract significant incentives from government.
- Aircraft operators are provided with alternative fuels which together with the electric ramp handling vehicles, has reduced the carbon footprint of the airport to zero. Airport users are provided ample capacity to charge their electric cars.
- Infrastructure takes full advantage of natural light and green building technology to ensure users enjoy optimum levels of comfort in all the buildings.

In the SMART GOVERNMENT sector:

- Collaborative structures for planning include all stakeholders invested in the aerotropolis and a plethora of public private partnerships.
- There are integrated data platforms, which provide consistent, coherent, and readily aggregated and reliable information to city planners, architects, designers, airport building/ facilities managers, transport authorities, engineers, etc.
- Aerotropoli carrying on strong and sustainable businesses based on structured development plans have been adopted and supported by all spheres of government.
- In the airports, all passenger processing takes place digitally using integrated state of the art identification technology which allows the passengers to move through multiple service providers at the airport seamlessly with no queues and no touchpoints.
- Airport infrastructure ensures there are spaces for the passenger to relax and enjoy themselves at healthy food courts, virtual reality pods, quiet reading spaces with limitless Wi-Fi.

In the SMART LIVING sector, there are opportunities for:

- Urban economic developments that are positively influenced by the application of ICT technology on all aspects of urban economy, which in turn changes the land-use system.
- An abundance of job opportunities are being created by inflows of local and foreign investment; and taken up by skilled workers. South African Aerotropoli have resulted in growing employment for the communities around them with unemployment now at an all-time low.
- A market-responsive mix of compatible land uses within proximity to one another, designed to optimise density and land values.
- Landside development beyond aviation-related uses and including complementary businesses and industries; intermodal transport hubs; hospitality and MICE facilities; leisure and entertainment use; and social infrastructure such as schools and hospitals.
- A healthy and attractive environment for more investment. As more investments flow, so opportunities continue to arise for SMME's, employment and skills development in multiple sectors.

- Spatial arrangements of buildings and public space promotes compact and walkable urban structures.

In the SMART PEOPLE sector, there are opportunities for:

- The most sought-after Aviation Training Academy globally providing a wide range of qualifications related to the sector.
- World class universities and TVET colleges sporting the largest research and development faculties placing South Africa at the forefront of innovation globally.

Ekurhuleni Aerotropolis[81]

[81] https://www.globalafricanetwork.com/wp-content/uploads/2017/11/Ekurhuleni-Aerotropolis-June-2017.pdf

Updated National Airports Development Plan (NADP) *March 2024*

12 ACI Accredited Health and Hygiene Protocols

The ACI Airport Health Accreditation (AHA) programme provides airports with an assessment of how aligned their health measures are with the ACI Aviation Business Restart and Recovery guidelines and ICAO Council Aviation Restart Task Force recommendations along with industry best practices. The programme is open to all ACI member airports of all sizes and it:

- Enables airports to demonstrate to passengers, staff, regulators, and governments that they are prioritizing health and safety in a measurable and established manner.
- Enables airports to validate their own measures throughout their facilities and processes.
- Reassures the travelling public using the airport's facilities.
- Promotes the recognition of professional excellence in maintaining safe hygienic facilities.
- Promotes best practices and aligns efforts across the industry, and ensures harmonization between ICAO global guidance and industry implementation.

Accreditation is voluntary with a request to join the programme initiated by the airport.

13 Environmental carbon emissions of airport development

Airports Council International's (ACI) Airport Carbon Accreditation recognizes and accredits the efforts of airports to manage and reduce their carbon emissions. There are four levels of certification: mapping, reduction, optimisation, and neutrality. Airport Carbon Accreditation is based on existing international standards in the reporting and accounting of Green House Gas (GHG) emissions.

The environmental sustainability of airports will be aligned with policy objectives set out by the Airports Council International Towards Net Zero Carbon Emissions by 2050: the ACI global long-term carbon goal for Airports. South Africa will consider multiple solutions for decarbonization and to a gradual transition to net zero carbon in the long term. The environmental sustainability of airports will be aligned with policy objectives set out by the Airports Council International Towards Net Zero Carbon Emissions by 2050: the ACI global long-term carbon goal for Airports. South

Africa will consider multiple solutions for decarbonization and to a gradual transition to net zero carbon in the long term. Attain an independent ACI certification.

14 Establishment of Airport Consultative Committees

Local Airport Facilitation Committee

The airport licensees/airport operators of airports serving international air services may be required by the National Air Transport Facilitation Committee to establish Airport Facilitation Committees to coordinate civil aviation facilitation matters at the airport level; and to support the airports in their efforts to coordinate the implementation of the Airport Facilitation Programme in order to meet the objectives of the National Air Transport Facilitation Programme. Airport Facilitation Committees chaired by the airport licensees/airport operators, will be composed of local representatives of the major stakeholders in civil air transport facilitation at such airports.

Local Airport Security Committee (LASC)

Establishment of airport security committee will assist and support the designated airports authority in their role of coordinating the implementation of security controls and procedures as specified in the Airport Security Programme, in line with the National Aviation Security Programme.

Environmental Management Committee

The airport licensee of an airport that is required to calculate and predict aircraft noise contours and conduct regular monitoring of aircraft noise and/or air quality monitoring should establish a standing Airport Environmental Committee as part of an airport consultation forum to provide a communication link between various interested and affected parties to discuss the environmental impact of aircraft operations.

15 Airport network planning

In order to give effect to the draft Comprehensive Civil Aviation Policy principle of macro-planning for airport network and integration into the wider transport network, **a more evidence-based and coordinated approach to airport network planning** is needed. Given the allocation of roles in relation to airports across the three spheres of government and the private sector, by definition any systems airport network planning in South Africa needs to be collaborative.

15.1 Principles to address capacity constraints in the airport network

Airports reaching their capacity thresholds may relate to a complex range of issues, including ATMs, aircraft mix and runway occupancy time, passenger volumes, passenger and baggage handling systems, environmental restrictions, and capacity of landside transport systems. The importance of these factors may vary between airports. In addition, some capacity constraints are at the airport network level rather than at the level of an individual airport, in particular airspace constraints within a geographical zone.

Existing infrastructure capacity should be optimised to deal with activity levels, including using the following techniques:

- **Prioritise alternative approaches to addressing capacity pressures rather than major infrastructure expansions or green-field investments, e.g.**

  – Review aircraft mix at airports through one or more of the following:
    - differential charging,
    - provision of secondary airports,
    - restrictions on airport access during peak hours, and
    - selection of specific airports for a particular type of air traffic
  – Improve airspace management techniques e.g. redesigned Air Traffic Zones (ATZ), Control Zones (CTR) or Terminal Areas (TMA); designing, validating and implementing Performance Based Navigation (PBN) procedures where beneficial and rendering effective Air Traffic Flow Management (ATFM) services.
  – Infrastructure refinements to speed up throughput e.g. high speed taxi-ways (noting that these are more likely to provide short- to medium-term relief rather than permanent relief, depending on traffic growth rates).
  – Implementation of CDM and A-CDM to increase efficiencies at congested airports
  – Implementation and enforcement of slot coordination framework to manage slots and encourage efficient use of limited airport- and airspace infrastructure at coordinated airports

- **Proactive identification of capacity gaps** and identification of partners to deliver on these requirements (potentially through a committee with representation from the three spheres of government, ACSA, private operators and key user groups).

- **Promote use of Planning Activity Levels** (PAL) approach working with multi-disciplinary teams to deal with volume uncertainties at network and individual airport level (i.e. customised to each airport's volume forecasts and capacity – investment decisions to upgrade capacity are triggered once certain volumes of traffic are reached, taking into account construction lead times).

  – This would enable airports to cope more effectively with uncertain growth forecasts in a resource-efficient manner. However, for publicly-owned airports it might create funding challenges as the timings of capital investments would not be fixed within medium-term budget periods, but would need to be flexible dependent on actual volumes.

- **Airspace management** is critical to the airports network's capacity, and therefore should:
  - Be given serious consideration at the outset of any new airport development or expansion planning.
  - Be optimised in terms of design, technologies and use of systems e.g. Air Traffic Flow Management and Performance Based Navigation (BPN).
  - Define minimum aircraft performance criteria and discourage commercial and non-commercial aircraft that do not meet the criteria to enter congested Terminal Areas (TMA) during peak periods through disincentives.

15.2 Airport categories for the purposes of airport network planning

In Part B of the NADP, multiple attributes were used to describe the airport network, namely: infrastructure and facilities, activities and purpose, licence/registration status, international airport status, ownership, proximity to the strategic transport network, and airspace congestion. Combining all of these attributes into a single categorisation system is cumbersome and impractical.

The following categories provide one way of thinking about the country's airport network that takes into account the role of the airports in the network:

A. **Certified International airport** – a designated port of entry that serves intercontinental/long-haul traffic, as well as regional-international and domestic traffic. Such airports are also designated in terms of the Civil Aviation Act, 2009, for aviation security purposes and are subject to the National Aviation Security Programme.

   - **"Regional-international" airport** – a proposed fully-fledged designated point of entry that serves SADC as well as domestic traffic. The feasibility of this category of airport is still subject to further investigation with due regard to all relevant national security implications and imperatives. Whilst this could initially be limited to air services to and from Member States of the Southern African Development Community (SADC) and could be expanded to the rest of Africa in due course (i.e., facilitating access to intra-African air services in line with the Yamoussoukro Decision). This would ease the burden on the currently congested international airports which are used by operators of small aircraft operating from small airports only for purposes of border control, causing serious capacity constraints.

B. **Licenced airport** – An airport open to public that serves scheduled domestic traffic and is designated in terms of the Civil Aviation Act, 2009, and is subject to the National Aviation Security Programme (NASP).

C. **Approved Aerodromes**

Aerodromes that submit a Risk assessment and Standard operating Procedures to be approved by SACAA

Type A – charter operations

Type B – Part 61 training for Pilots excluding gliders and balloons

Type C – Proximity (under CTR) to certified or licensed aerodromes may conflict or cause hazard to existing aerodromes

D. **Registered airports** – airports that are serving non-commercial purposes, such as private flights and sport aviation.
E. **Military airports** – airports that are serving purely military purposes, but may be used for civil purposes if prior permission is obtained from the SANDF and the SACAA.

In the South African context, **cargo** requirements are being served by international and national airports (and in future by "regional-international" airports if created and classified as a commercial port), rather than single purpose cargo airports. A separate "cargo airport" category is therefore not required at this stage. Whilst at present non-commercial General Aviation is an activity that is taking place at multi-purpose airports, including international and national airports as well as smaller commercial and registered airports, airspace congestion levels at certain international and national airports make it increasing necessary **to plan for provision of non-commercial aviation facilities within the airport network**.

15.3 Framework, criteria and processes for airport licensing, registration and approvals

Ideally, airport network planning would identify the optimal locations for airports to meet particular needs within the airport network based on all relevant considerations.

These considerations would include:

- Existing airports within the catchment area that already have suitable core infrastructure (in particular runway capacity);
- Interconnectivity with the existing and planned transport network for other modes, so as to improve the efficiency of intermodal transport integration, and leverage existing/ planned transport investments;
- Airspace – manage airports that fall within congested airspace;
- Environmental sensitivities – excluding areas that are environmentally sensitive or already experience significant environmental stresses;
- Land use – exclusion of airports where there are surrounding land uses that are not compatible and cannot easily be moved; and
- Socio-economic integration – preference for airport locations that will amongst others optimise the socio-economic contribution in terms of passenger movements, freight, destination marketing, public services and job creation potential in the wider precinct.

However, selection of optimal locations would require a proactive process based on high quality data and effective multi-stakeholder coordination. Such a system would provide greater direction and vision in addressing capacity gaps, and could increase efficiency of the network, but would introduce some new risks due to central identification of airport opportunities. This is often not possible within a deregulated airport planning system[82].

[82] For a discussion of these complexities, see Guillaume Burghouwt (2012) Airline Network Development in Europe and its Implications for Airport Planning

In addition, w**here airports (in particular those in larger cities where land is a constraint and urbanisation and urban expansion rates are high) are expected to exceed their ultimate capacity in the next 40 to 60 years, provision should ideally be made to safeguard suitable land for the required additional airport,** and the zoning around the area also needs to be aligned and contained in the spatial development frameworks to avoid encroachment of incompatible land-use**. In line with the National Infrastructure Plan's planning horizon, any major infrastructure projects required within the next 20 years to address the capacity gap should be identified and reviewed every 5 years.**

At the moment, the processing of applications for international airports is a reactive and ad hoc process. The reactive approach has the advantage that the mechanisms already exist to some degree, and it requires minimal risk and resources from central government.

As an interim arrangement pending the full implementation of the National Airports Development Plan, for the next five years a reactive process to applications for international, "regional-international" (if created), and national airports will be used, but within application window periods to enable comparison between applications taking into consideration airspace, transport master-plans, economic viability and sustainability and security imperatives. Data gathering systems will be put in place to support evaluation of applications. A proactive system of identifying the need for additional international airports will be developed during the second phase revision and implementation of the NADP, based on the maturity of the data gathering system and demands due to economic growth.

DOT will work together with other national departments and agencies and in consultation with aviation stakeholders to processes:

- Application for international airport status (including a sub-set for the proposed "regional-international airports"), factoring in all relevant national security implications and imperatives;
- Pre-approval process for green-field airports.

Overviews of the above processes are provided in the sections below:

15.3.1 Process overview for designation of an airport as an international airport / port of entry

An application for international status of an airport should be accompanied by a comprehensive feasibility study with specific emphasis on economic and financial viability and sustainability. In particular, an applicant should be able to demonstrate:

- The presence of significant unmet market demand for international air services and its ability to meet such demand;

- Through projections of volumes, to justify the public resources to be committed for rendering services at the port of entry (customs, immigration and other government officials, services and infrastructure);

- That the market demand could not be met by the development and/or improvement of land transport to an existing international airport;

- How the airport will be integrated into the current transport network, including the National Airspace Master Plan[83];

- Proof of zoning and demarcation of the area for the development of a *new* international aerodrome[84]. (Approval (in some form) will have to be obtained from the National Executive (Cabinet) in terms of Schedule 4, Part A of the Constitution of the Republic of South Africa 1996);

- That Governmental support has been obtained from the applicable Local and Provincial Governments for the planned new international airport or application for international status of an existing airport, as applicable;

- Its ability to comply with all relevant regulatory requirements, including:

  – **Civil Aviation Safety:** Civil Aviation Act, 2009 (Act No. 13 of 2009) and Civil Aviation Regulations, 2011;

  – **National Security:** Defence Act of 2002 (Act No. 42 of 2002), and related security regulations. In addition, all applications will be subject to a comprehensive threat and risk assessment;

  – **Civil Aviation Security**: Civil Aviation Act, 2009 (Act No. 13 of 2009), National Aviation Security Plan (NASP), and relevant security regulations;

  – **Border Law Enforcement and Border Management/BMA**: Requirements of the Border Control Departments including but not limited to Customs, Immigration, Health, Agriculture and Border Police (which in future will be dealt with through the BMA once established); and
  – **Environment:** Requirements of the Department of Environmental Affairs, including a Basic Assessment Report or an Environmental Impact Assessment (EIA) as may be applicable to a new or expansion of an existing airport.

The following diagram provides the summary of the criteria to be considered for designation as an international airport (port of entry status):

[83] Airport development should not be considered in isolation, but be integrated into all national, provincial and municipal economic and spatial development initiatives, and also support broader policy initiatives. There should be synergy between airport development and the national and provincial economic and development strategies. Long-term planning for the location of airports should run in parallel to provincial and regional economic development plans. (National Civil Aviation Policy, 2017)
[84] Regulation 139.02.21 of the Civil Aviation Regulations, 2011

Figure **6**: Summary of criteria for designation of an airport as an international port of entry

The Airport Coordinating Committee (ACC) will continue to consider applications for international airport status and submit recommendations to the Cabinet for consideration.

Consideration will be given to opening a window period for applications for international status (and potentially for removal of under-utilised allocation) every two years, so that the relative merits of application can be assessed taking into consideration airspace, transport master-plans, economic viability and sustainability, security imperatives and other data-gathering systems; rather than on an ad-hoc or first-come, first-served basis.

All applications for international airport status from the same region or in close proximity of such region should be Considered as competing applications and processed in compliance with the Promotion of Administrative Justice Act, 2000.

The designation of an international airport as a port of entry may be withdrawn at any given time:

- where the demand for international services declines to such an extent that it is no longer viable for the State to invest resources in it;
- where the Airport Authority fails to comply with the set infrastructure standards for border management department(s);
- in the event of management deficiencies on the part of the Airport Authority to prevent undetected international flights from landing or taking off without being cleared by the relevant department(s); or
- should there be any other management shortcomings that might compromise the security and integrity of the international border at the airport in question.

The Department of Home Affairs will lead the process in terms of the Immigration Act and in consultation with other stakeholder departments.

Existing international airports must obtain approval from government agencies involved in border control prior to expanding their footprint by introducing additional international passenger terminals or other facilities that impact on the ability of the State to provide border control services whilst ensuring that the security aspects of their mandate are complied with.

"Regional-international" airports, if created, will be considered as a sub-set of international airports and must meet all safety and security requirements applicable to a non-commercial or commercial port of entry, as applicable. These airports could initially be limited to air services to and from Member States of the Southern African Development Community (SADC). This could reduce the burden on the currently congested international airports which are used by operators of small aircraft operating from small airports only for purposes of border control, causing serious capacity constraints (including airspace capacity, physical infrastructure) and safety risks. Provision for additional "regional-international" airports could also increase efficiently for business travellers that need to make brief and frequent trips within the region.

Options and possibilities for funding of the cost of border control functions will be considered in consultation with the national departments responsible for border control/BMA, in order to address the stated concern about border control capacity constraints should additional airport-based ports of entry be required.

15.3.2 Feasibility of Airport Gateways

Initially, South Africa had only 3 international airports which were OR Tambo in Johannesburg, King Shaka in Durban and Cape Town. Cabinet later approved for each province within the Republic to have at least one international airport except for Gauteng where Lanseria Airport was also granted an international status because of navigable airspace limitation and traffic congestion at OR Tambo International Airport. South Africa currently has 10 airports that are designated international ports of entry, of which Johannesburg's OR Tambo Airport remains the largest in terms of passengers and aviation activities. Subsequently, this has led to a proliferation of nonstop air services operated by foreign airlines from their respective cities and hubs into Cape Town and Durban. This phenomenon has led to the bypass of OR Tambo Airport as a hub that plays a key role in the distribution of domestic travellers across the country with most of the capacity deployed into the coastal cities. Over time South Africa has witnessed the growth of other gateways into Aerotropolis to support provincial economic development strategies.

Having multiple airport gateways into South Africa where local carriers use OR Tambo as their base airport is a misalignment which means that local carriers are getting denied revenue opportunity to distribute high yield international travellers across cities in South Africa. On the other hand, ACSA is accruing higher value in the short to medium term from foreign operators utilising larger long-haul aircraft directly into other airports. However, the benefits are not sustainable in the long term. Historic trends over the past ten years have shown that foreign airlines tend to cease operating direct flights if the flights are no longer economically viable. This often follows the displacement of feeder and de-feeder activities that are executed by the domestic airlines. There is a need to strike a balance between the reduction of the ports of entry and the economic developmental agenda concerning special economic zones as these are used as mechanisms to create opportunities at secondary cities and decongest the bigger metropolitans.

While the current capacity at the airport is still depressed due to the impact of COVID-19 and the global impact of the various sets of regulations and differing lockdowns which have been imposed periodically, the following capacity challenges were experienced:

- The availability of parking on the apron.
- The aircraft mix/aircraft performance which impact both safety and efficiency levels - If the type of aircraft is different, such as a large aircraft (eg Boeing 747- 400 or Airbus A380) taking off ahead of a small aircraft (eg De Havilland Dash 8), it becomes a safety risk due to the impact of wake vortex on the smaller aircraft. It can cause that the small aircraft can be flipped in the wake vortex[85], causing loss of life. The separation between these aircraft will have to be increased from the norm of two minutes, resulting in fewer aircraft being able to take-off. This difference in aircraft size and performance also impacts the number of arriving and departing aircraft that can be safely accommodated. This will impact on the available capacity for international travel, safety, as well as efficiency of operations.
- Smaller aircraft such as a Cessna 207, which plans to fly passengers and cargo internationally into SADC or Africa might fly out of an airport such as Wonderboom; but

[85] Wake Vortex Turbulence is defined as turbulence which is generated by the passage of an aircraft in flight. It will be generated from the point when the nose landing gear of an aircraft leaves the ground on take-off and will cease to be generated when the nose landing gear touches the ground during landing

then must clear customs at an international entry point such as ORTIA and Lanseria International airport; which will exacerbate the impact of the above-mentioned scenario.

The above-mentioned challenges might not be problematic during the short- to mid-term. However, the situation will change when air traffic movements increase and reach pre-2019 figures.

Should the number of international airports be restricted to three; it will become difficult to accord international status to other airports which may have the capacity to relieve congestion.

The aspect focused on in this review of the NCAP is to support economic recovery which includes a trajectory change of growing the airfreight market. This does not preclude that the tourism market should be negatively impacted, as FDI and tourism contribute significantly to South Africa's GDP. However, the growth of the airfreight market seeks to complement this growth opportunity and activation of multilateral instruments such as the flagship projects of the Agenda 2063, SAATM and AfCFTA supporting growth which will require access to international entry points to garner success.

An assessment is therefore required within the national interest to:

- Determine the optimal policy for aligning and allocating international status to airports.
- Review of some international airports with low traffic volume be considered as the traffic volumes do not justify the cost of rendering border control functions by the relevant Departments – explore the option of reclassifying their current international status to regional airport to promote the regional travel and reduction of travel costs in the region.
- The development of a tiered system of Airports – Global Airport Status designation to ORTIA in order to maintain Hub Status to serve Europe, Africa, Middle East and Eastern Europe, International Status to KSIA to serve Asia and CTIA to serve Americas. The Remaining airports should be restricted to Neighbouring Countries if financially viable and encouraged to promote general aviation and air Cargo.

15.3.3 Green-field airport pre-approval process overview

Given the significant existing airport network capacity in South Africa, **preference is given to the upgrading of existing airports over development of green-field airports**. Major green-field airport development in close proximity to and within the same (or mainly the same) geographic catchment area as an established airport should, therefore, only be considered in exceptional circumstances and where capacity pressures are significant.

All green-field airports that intent to serve traffic for reward (and therefore will need to be licensed) must obtain airspace approval from NASCOM prior to initiating environmental assessment (whether EIA or Basic Assessment). In particular**, proposals for airports**[86] within a specified distance, to be prescribed in terms of the Civil Aviation Regulations[87], of the geographical footprint of any Terminal Area (TMA), or Control Zone (CTR), of an existing licensed airport, must be licenced after all airspace and interdependency aspects, including

[86] This will include all airports i.e., airports to be licenced or registered (currently "un-licenced")
[87] Regulation 139.01.1(3)

master planning, have been considered. This process will also be applicable to applications impacting on CTRs and TMAs of military airports.

All green-field developments should ideally be planned for areas outside of the CTR of existing airports and preferably outside the TMA. It is noted that airports can co-exist within close proximity; however, the impact on existing established procedures regarding controlled airspace must be considered and could impact on the operations of such airports.

Following airspace approval, green-field commercial airport developments will be required to lodge applications **for zoning and demarcation of the area** identified for the airport development submitted to the relevant sphere of government.

Completing planning approval and building of a major new green-field or significantly expanded existing airport is likely to take 7 to 10 years under current systems and technologies. As these timeframes are not flexible, but volume forecasts change regularly**, a conservative approach to deciding the trigger point to start airport approvals should be taken, based on "high case" scenario forecast volumes or ATMs**. Greenfield developments will also need to plan for compatible zoning around the area and monitor developments in the area during planning and construction to avoid encroachment of incompatible land uses.

Where public money will be directly or indirectly involved in supporting the airport development, National Treasury infrastructure budgeting guidelines will apply:

- National Treasury's budgeting guidelines for infrastructure and capital projects need to be followed
- Proponents of new airports will need to demonstrate why existing airport infrastructure does not have sufficient capacity to address demand as effectively;
- Proponents will also need to provide a feasibility assessment and high-level assessment of the relative environmental cost of green-field development vs. expansion of existing facilities;
- Any indirect risks or costs to the public sector will need to be estimated, e.g. landside transport access infrastructure, public transport, waste removal; and
- Both provincial and local government should demonstrate support of the proposal.

15.3.4 Airport Certification licencing process overview

According to SACAA Paret 139 Regulations and Technical Standards

(i) International aerodromes will be certified under Part 139.02
(ii) Domestic aerodromes open to public will be licensed under Part 139.02

15.3.5 Airport registration process overview

Aerodromes which are for private use with no commercial operations will be registered under Part 139.Subpart 6.

15.3.6 **Approved aerodromes**
Aerodromes where commercial operations take place, e.g. charter, part 61 Pilot training or aerodromes in close proximity to certified or licensed aerodromes.

15.4 Overview of other airport-related selection processes with implications for the airport network

15.4.1 National airport designation process overview

Schedule 4 of the Constitution of the Republic of South Africa of 2006 (Constitution) deals with "*Functional Areas of Concurrent National and Provincial Legislative Competence*". In terms of this Schedule, National Government has exclusive legislative competence regarding international and national airports. The term "national airport" is, however, not defined in the Constitution, or any other legislation.

All international airports as well as domestic airports serving scheduled air transport services must be designated in terms of the Civil Aviation Act, 2009 for security purposes and must operate in accordance with their approved National Aviation (airport) Security Programme[88]. For purposes of the NADP, "*national airports"* will therefore be defined as "*all domestic airports serving scheduled air transport services*".

When an airport is approached by an airline to accommodate scheduled flights, and where the airport does not at that point provide facilities and services for scheduled flights, the airport must apply to SACAA's aviation security division for designation. The airport will then have to comply with additional security requirements as prescribed. Identification of national airports is therefore a demand-driven process, based on interest from scheduled operators eg Hoedspruit AFB/Eastgate, Skukuza etc.

15.4.2 Public service airport process overview

Provincially and local municipalities may want to identify which of the airports in their jurisdictions cannot become commercially viable but are serving a particular public service and can be justified on a socio-economic basis. Provincial and local governments may consider prioritising their available airport budget allocations to these types of airports rather than those that are less critical to public services.

15.5 Knowledge management to enable evidence-based airport network planning

Planning for South Africa's airport network is being adversely affected by the lack of reliable, consistent and up-to-date information on areas such as location, infrastructure, operations, passenger and freight volumes, traffic movements and forecasts. Tracking this information is critical in order to have an **"evolvable network plan"**. The DOT also has an international obligation to provide statistics to ICAO.

[88] Civil Aviation Act, 2009: Section 4(5) read with Section 111.

In the South African context, the largest data gaps relate to:

- Aircraft, passenger and freight movements
- General aviation traffic
- Unlicensed and unregistered airport attributes and facilities
- Regularly updated runway capacity and wider infrastructure capacity at airports, including maximum throughput of passengers related to terminal and baggage handling capacity
- Public transport available at airports
- Information required for airport development and decommissioning
- Forecasts of future usage
- Service level information
- Extent of profitability of airports to guide expansion and decommissioning/alternative use decisions
- Measurement of energy usage and emissions of airport infrastructure

Challenges in improving airport network knowledge systems include:

- The large number of role players involved across public and privately-owned airports;
- No single institution having a legislative mandate to gather all relevant information;
- Gathering, compiling and updating information could require significant resources, both from smaller operators and any central record-keepers, which may outweigh the benefit of information; and
- Confidentiality of information: challenges for ownership and distribution of information to different departments, at different levels of aggregation, for various uses, and of various airport categories, e.g. confidential nature of landing fee structure at private airports.

International and local experience provides the following models for airport knowledge management to address the issues identified:

- Establishment of information sharing forums;
- Real-time electronic sharing of information from airlines and operators: using existing industry systems and additional ICT systems to centrally gather non-commercially sensitive information;
- Information sharing as part of aerodrome licensing/registration and renewals obligations; and
- Survey-based approach to data gathering.

The Department of Transport is developing a Knowledge Management System on airports which will interface with both DOT's internal GIS (NATMAP) and the South African Civil Aviation Authority's systems. It will also establish a system to collect airport network information, which over time can shift to an integrated system with electronic data exchange with key aviation stakeholders. The amendments to the licensing and registration procedures will also increase data availability.

16 Individual airport planning, design and management within its surroundings

The good practices below have been set out to provide guidance to airport owners, managers and operators in South Africa, in particular smaller airports and provincially and locally-owned airports. They are not prescriptive (except where referring to compliance with existing legislation or regulations), and each airport will need to consider the applicability and suitability of these guidelines based on their capacity and context.

16.1 Guiding principles for integrated airport planning and design

In order to provide for optimal and sustainable airports, planning and design of airports needs to take into account and balance a range of factors, including:

- Volume and nature of forecast demand, including phasing based on Planning Activity Levels;
- Optimising the economic impact, including contributing to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods;
- Requirements of key partners and user groups, including both direct and indirect users, potentially including use of co-design methods;
- Compliance with relevant regulation and licensing/registration or designation requirements, including both airport-specific and wider regulations;
- Technology trends impacting on facility design, including layout, flow, and systems integration;
- Minimising of environmental impacts, including carbon footprint, noise, emissions and water use;
- Integration with the transport network at the airport and in the vicinity, including public transport, private vehicle access, freight transport, and fuel pipelines;
- Selecting the appropriate management, operation and funding model;
- Optimising of both aeronautical and non-aeronautical revenues, including integration of the wider precinct;
- Minimising ongoing facilities management and maintenance costs; and
- Integrating requirements from financiers.

Balancing these considerations into airport design planning is complex and requires significant planning capacity. Larger airports and airports in ACSA network have more resources available to do effective planning and design. **DOT nevertheless recommends an increased focus on user-experience design and user co-design methodologies**. In the case of the smaller airports, they typically do not have dedicated capacity available to effectively manage all of these considerations and it is unlikely to be viable to develop dedicated capacity in most cases. **DOT recommends development of shared technical capacity, knowledge systems and guidelines, including at provincial level, to support individual small airport planning, as well as finding ways to tap into private sector expertise, in particular for provincially and locally owned airports.**

The **following sections** provide additional guidance and information sources on good practice and compliance requirements for **each of the above factors**.

16.2 Volume and nature of forecast demand, including phasing based on planning activity levels

Key considerations when forecasting demand and aligning airport design to this demand include:

- Determining the catchment area for the airport for different uses/purposes, based on willingness to travel/drive time;
- Understanding existing in- and outbound volumes and types of passengers, freight and air traffic movements in the vicinity (including piloted aircraft and RPAS movements);
- Understanding "underlying demand" in the catchment area in terms of people, income and economic activity, based on available data;
- Understanding airline and other aviation operator strategies on both airport and aircraft selection;
- Developing realistic assumptions about growth rates in the market;
- Estimating potential market share of the airport within the catchment area for the different purposes (scheduled passengers, cargo, non-scheduled activity);
- Developing realistic assumptions about ratios of "meet and greet" numbers to traveller numbers;
- Developing tested assumptions on the ratio of passengers to baggage handling requirements based on current and future trends;
- Based on all of the above, determining "peak design hour" requirements across the airport facilities (balancing accommodating volumes vs. overall efficiency and cost), and forecasting these forward based on growth assumptions and trends;
- Translating this demand into requirements for all facilities e.g.
  - Runways, aircraft parking and turning spaces, fuelling,
  - Passenger terminal (security screening space, check-in, ground transport and boarding gates),
  - Cargo terminal (cargo handling and storage space, cold store (ethylene and non-ethylene releasing) vs. other),
  - Bulk services, including water, power, waste management, ICT,
  - Off-site requirements such as navigational equipment,
  - Integrating flexibility to accommodate changing technology trends that may change space ratios; and

- The Planning Activity Levels approach is a key tool to use demand forecasts to enable more efficient phased development as trigger points are reached that will require expanded capacity. In particular for lower activity airports with a small number of operators, it can also be important to understand different operators' planned fleet changes and the possible implications for airport development/upgrade requirements. Where capital budgets are constrained, it may be more appropriate to seek agreement with operators whose fleets and scheduling options will require lower capital outlay.

Sources of information:
- ICAO Aerodrome Design Manual, available at http://www.icao.int/
- ACRP Airport Passenger Terminal Planning and Design Spreadsheet Model: Available at http://www.trb.org/main/blurbs/163171.aspx
- IATA Airport Development Reference Manual (ADRM) – available from https://www.iata.org/publications/Pages/airport-development.aspx

16.3 Optimising the economic impact, including contributing to enhanced competitiveness of key sectors in the vicinity through improved movement of people and goods

Good practice for enhancing the socio-economic impact of airports includes the following:

- Coordination with local municipalities and chambers of commerce to take into account economic priorities and sectoral activity in the region e.g. through participation in Local Economic Development forums in the region;
- Incorporating socio-economic contribution into selection of tenants / concessionaires, e.g. designing tenant policies to encourage participation of local businesses;
- Optimising local hiring and skills upgrading of both the direct airport employees and tenants (including selection of tenants based on their socio-economic contribution, local learnership and internship programmes;
- Optimising local sourcing by both the airport and tenants;
- Airport sponsorship of local socio-economic initiatives;
- Active contribution to destination and investment marketing for the region, including through designing/upgrading the airport to contribute to the "sense of place"; and
- Ongoing measurement and reporting of socio-economic impact of the airport e.g. direct and indirect employment, goods handled, efficiency for businesses in area, tourist revenue supported.

Sources of information:
- ACRP sustainability practices survey, available at http://www.trb.org/ACRP/ACRPProjects.aspx
- http://airportsforthefuture.org/
- http://www.futureairport.com/

16.4 Requirements of key partners, service providers and user groups, including both direct and indirect users

Good practice for integration of partner, service provider and user needs into airport design and operation includes:

- Taking into account existing guidelines or specifications from partners and service providers, e.g. Air Traffic Management Service Providers and, in the case of international airports, specifications from state service providers such as Home Affairs, SARS, Agriculture, and Health.

- Following co-design, human-centred and "experience design" methodologies for development and upgrading of airports, including:

    - Ethnographic research with both internal and external stakeholders and users to understand current user experiences and needs e.g. participant observation, interviews, workshops, input on key objectives for each user (e.g. speed, reliability, low energy use, low anxiety);
    - Design of experience blueprints and user archetypes;
    - Mapping of potential conflicting uses by different users or user types, in particular during peak periods, and redesign to try to minimise these conflicts or mitigate their impacts on users;
    - Design of physical infrastructure, layouts, systems and "soft" infrastructure to realise this experience in reality; and
    - Prototyping, testing, and iteration.

- International airports should be legally designated as Ports of Entry. In future this designation authority will exclusively rest with the Minister of Home Affairs, as envisaged by the BMA Bill, 2016. As such the operational requirements for effective and efficient border law enforcement should be provided for by all international airport landlords and/or owners. In this regard the BMA Bill, 2016 being processed in Parliament provides for that "any organ of state that owns immovable property that hosts a port of entry must provide and maintain reasonable accommodation for the Authority, as determined by the Minister, to effectively and efficiently perform its functions: Provided that the Authority is liable for any associated service fees and costs". Also the Minister must determine what is meant by reasonable accommodation.

- In instances where border control departments need to deploy additional personnel at the airport, engagements should be made with the airport to negotiate for additional accommodation.

- Establishment and regular meetings of consultative forums at airports. In terms of ICAO, international airports are required to establish the Local Airport Facilitation Committees to deal with facilitation issues at the individual airports. This committee should be led by the airport and the proceedings of the meetings should be documented and submitted to the National Air Transport Facilitation Committee (NATFC). Facilitation issues which cannot be resolved at the airport level; as well as issues of national importance should be elevated to NATFC. Airports are further encouraged to implement the Airport-Collaborative Decision-Making (A-CDM) in order to improve the efficiencies in airport operations through collaboration, communication and information sharing among the airport stakeholders. Continuous communication and collaboration is vital in improving situational awareness and to ensure effective response by all role players.

- Reflection of this design into the Airport Master Plan.

These principles would need to be played out differently depending on the size and resources of the airport e.g. hiring an "experience designer" or researcher vs. more informal user experience research by the airport developer or operator.

Some examples of co-design at airports:

- http://www.travelandleisure.com/articles/is-changi-airport-the-best-in-the-world
- https://openideo.com/challenge/voting/inspiration/airports-as-stressful-as-moving-houses-and-voting
- http://www.customs.gov.au/webdata/resources/files/WayfindingGuide.pdf
- https://ec.europa.eu/jrc/sites/default/files/fta2014-t2practice_181.pdf

16.5 Compliance with relevant regulation and licensing / registration or designation requirements, including both airport-specific and wider regulations

Airports need to comply with both:

- **Airport-specific regulations:** These include safety (Civil Aviation Regulations, ICAO SARPs, Aerodrome Design Manual), security, facilitation, facilities for passengers with special needs, international port of entry requirements.
- **Wider regulations** such as: Environment, spatial planning, land use planning, integrated transport planning, facilities for emergency services and disaster management (as well as asset management requirements in the case of publicly owned airports).

Compliance to these various requirements is inter-related. For example, in order to continue complying with civil aviation requirements spatial and land use planning processes needs to take into account preserving both on-site and off-site navigational aids and avoiding interference.

Good practice indicates that airport managers/operators remain informed of the changing requirements of the above, and that compliance is included in performance. This could take the form of a compliance officer (at an individual level for larger airports or shared by groups of smaller airports). Information sharing forums or portals can also assist airports to be aware of their compliance obligations and the more efficient and effective ways of retaining compliance.

Sources of information on compliance requirements:

- Airport-specific regulation: SACAA: http://www.caa.co.za/Pages/Airports/About-Aerodromes-and-Facilities-.aspx
- Wider regulation:
  - Environment: www.environment.gov.za
  - Spatial planning and land use management: www.ruraldevelopment.gov.za/
  - Integrated transport planning: www.transport.gov.za
  - Emergency services and disaster management: www.ndmc.gov.za/
  - Infrastructure asset management: www.treasury.gov.za

- Overall guidelines for municipalities: http://www.salga.org.za/ and http://www.municipalbarometer.co.za/

16.6 Technology trends impacting on facility planning and design, including layout, flow, and systems integration

Airports are increasingly trying to "futureproof" the planning, design and upgrading of their airports in order to take into account the lack of certainty of how technology may play out. Good practice includes planning and designing for flexibility, including things such as:

- Planning and designing overall airport and terminal footprints to provide flexibility. For example, in the case of terminals, regular rectangular shapes are considered easier to reconfigure.
- Design of internal elements for flexibility, including careful consideration of placement of rigid vertical elements such as elevators, escalators, mechanism shafts and distribution systems, with the remainder of terminals as modular and movable partitions and elements.
- Flexible air bridges.
- Modular / flexible runways.

Sources of information:

- http://www.airport-technology.com/
- http://www.airportsofthefuture.qut.edu.au/
- http://www.futuretravelexperience.com/

16.7 Minimising of environmental impacts

Environmental impact areas to take in account include:

- Water (reducing water use, capturing rainwater and managing storm water, improving water quality);
- Air quality improvement (including particle filtration systems, dust control);
- Carbon footprint reduction (including material selection for airport construction and maintenance, reduction of operational carbon use, carbon offset programmes);
- Energy (including reduction of energy use and generation of renewable energy e.g. solar roofing);
- Noise minimisation and noise impact reduction, including restrictions on Category 2 aircraft, land use planning, airport soundproofing, noise walls construction, housing schemes for noise insulation;
- Light emission reduction;
- Heat signature reduction (including reducing paved areas, creation of heat sinks etc.);
- Solid waste management and recycling;
- Wetland /habitat protection;

- Biodiversity and endangered species protection, including planting to support biodiversity (whilst noting the need to minimise bird strikes);
- Hazardous materials / spill management;
- Ground transport optimisation; and
- Heritage and culture support.

Good practice to minimise environmental impacts includes the following:

- Integration of environmental impact minimisation into airport design, systems and operation (for airport operator, tenants and users) – designing for efficient operations in many cases also minimised economic impact e.g. reducing taxi distances or waiting periods for aircraft will also reduce energy consumption and emissions;
- Establishment of forums with tenants, airport users and wide stakeholders to jointly minimise environmental impacts;
- Consideration of both direct and indirect impacts e.g. ground transport to and from the airport;
- Measurement of impact on all environmental aspects, and participation in research to identify innovative approaches to environmental improvements; and
- Clear communication with stakeholders and the public on environmental impact and mitigation processes, and available complaint mechanisms.

Sources of information:
• Airports Cooperative Research Programme: http://www.trb.org/ACRP/ACRP.aspx • Airports Going Green: www.airportsgoinggreen.org/ • Green building Council of South Africa: https://www.gbcsa.org.za/

16.8 Integration with the transport network at the airport and in the vicinity, including public transport, private vehicle access, freight transport, and fuel pipelines

Good practice for multi-modal integration includes the following:

- Design of the airport as a multi-modal transport facility, including flow between rail, bus, personal vehicle, bicycle and pedestrian access as appropriate;
- Supporting measures to reduce traffic congestion and incentivising use of shared/public transport e.g. attractive public transport pricing, car-pooling//commuter rebate programmes for staff and tenants, High-occupancy vehicle (HOV) priority lanes, remote check-in (including luggage) and ride facilities, airport pick-up waiting areas to reduce terminal circling;
- Provision for fuel pipelines; and
- Consultation forums with transport planning and operation stakeholders and users.

Sources of information:

- Department of Transport, including National Transport Master Plan (NATMAP) for further detail on multi-modal transport planning and integration
- Airports Cooperative Research Programme: http://www.trb.org/ACRP/ACRP.aspx

16.9 Selecting the appropriate management, operation and funding model

In particular for publicly-owned airports, selection of the best management model can be key to professional management, maintaining safety compliance, attracting activity, generating revenue and optimising costs.

At present, municipal airports are mostly dealt with in-house by a non-specialist official with other responsibilities. However, other models include outsourcing of all or part of the airport to aeroclubs or airport operators.

In the case of municipally-owned airports, Council has the responsibility to decide on the appropriate management approach. In terms of S78 of the Municipal Systems Act, a clear process is set out to decide how to deliver a service, and to determine whether contracting the service out is net beneficial. This process involves a detailed feasibility and business case.

Management model options include:
- Contracting in airport expertise to manage the airport (this option may be constrained by available budget);
- Collaborating with other airports to contract/bring on expertise;
- Establishing a municipal entity to manage a municipal owned airport through Section 84 of the Municipal Finance and Management Act;
- Secondment of private sector expertise;
- Allocation of some maintenance responsibilities to significant tenants;
- MOUs for operation and maintenance with primary airport users e.g. airlines or charter operations; and
- Transfer through a tender/ concession process to people interested in running it e.g. flying clubs, flying schools.

16.10 Optimising of both aeronautical and non-aeronautical revenues, including integration of the wider precinct

The Airports Council International (ACI) 2013 report on Airport Economics[89], based on international research across 680 airports, provides a good sense of typical ratios within aeronautical and non-aeronautical revenues, as shown in the graphs below.

[89] http://www.aci.aero/Publications/ACI-Airport-Statistics/2013-ACI-Airport-Economics-Report

Updated National Airports Development Plan (NADP) *March 2024*

Figure 14: Aeronautical revenues

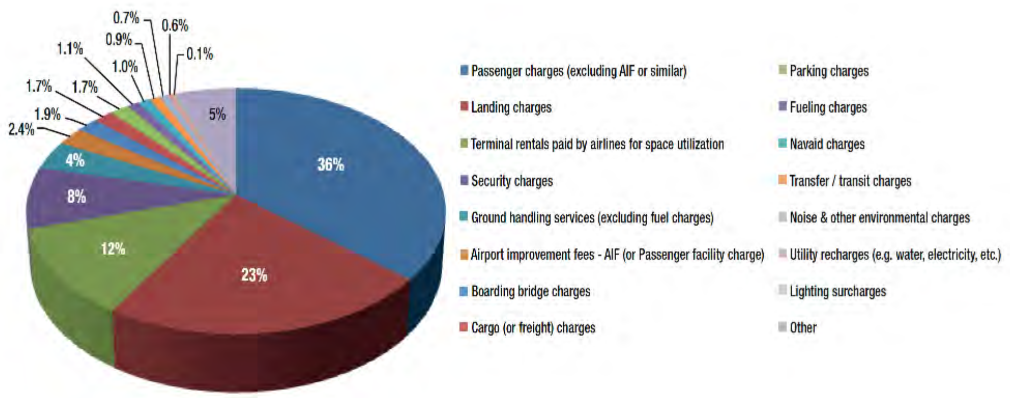
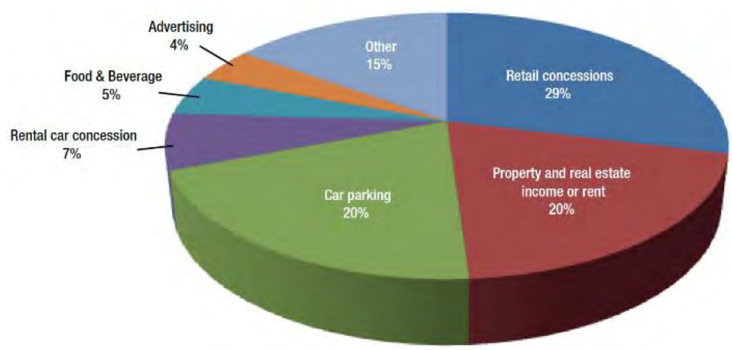


Figure 7: Non-aeronautical revenues



This report also provides a breakdown by region for non-aeronautical revenues, highlighting some differences in the proportions in Africa (a strong emphasis on retail concessions), which might indicate areas that could change in future.

Table 1: Break-down of non-aeronautical revenues by region

Region	% Retail concessions	% Food and beverage	% Car parking	% Rental car concession	% Property and real estate income or rent	% Advertising	% Other
Africa	42.9%	2.2%	14.6%	4.5%	20.9%	7.4%	7.5%
Asia-Pacific	44.5%	3.9%	10.6%	1.8%	23.1%	4.9%	11.2%
Europe	34.2%	3.9%	14.4%	3.3%	22.5%	2.6%	19.0%
Latin America-Caribbean	28.9%	6.7%	7.9%	3.1%	19.2%	4.9%	29.4%
North America	61.2%	3.8%	6.4%	0.8%	9.8%	1.5%	16.5%
Middle East	7.7%	6.7%	39.1%	16.8%	15.1%	5.8%	8.8%
World	**28.9%**	**4.8%**	**20.2%**	**6.8%**	**20.1%**	**4.1%**	**15.1%**

Good practice in terms of optimising airport revenues includes:

- Diversification of revenue streams, including through: [90]
  - Planning within a wider airport precinct, including ancillary land uses such as agriculture, hospitality, offices, temporary use and special events, development of airport cities and aerotropolises, renewable energy generation;
  - Taking note of trends around airport development that are widening the purpose of airports beyond travel, retail and basic food service to include recreation, entertainment, lifestyle, relaxation, meetings (e.g. event and meeting spaces), ICT-intensive services such as training, media and film, museums, unique restaurants, spas, pet care, exercise areas, self-storage and precious metal/ high security storage);
- Effective marketing to direct and indirect users, including in partnership with tenants and service delivery partners;
- Balancing "user pays" and market-related charges where possible in order to be competitive;
- Tracking of revenue by concessionaires and tenants; and
- Measurement of key revenue and cost metrics e.g. Total Revenue per Passenger / Work Load Unit; Aeronautical Revenue per Passenger / Work Load Unit; Non-Aeronautical Revenue per Passenger; Total Cost per Passenger / Work Load Unit.

The approach needs to be customised to the size of the airport and the surrounding economic context e.g. large vs. secondary airport or city, urban vs. rural location.

Sources of information:

- ICAO Economics Manual: http://www.icao.int/ http://www.icao.int/sustainability/documents/doc9562_en.pdf
- http://www.icao.int/Meetings/atconf6/Documents/WorkingPapers/ATConf.6.WP.088.2.en.pdf
- Airports Cooperative Research Programme: http://www.trb.org/ACRP/ACRP.aspx , e.g. http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_019.pdf
- ACI Economics Report: http://www.aci.aero/Publications/Full-Publications-Listing

[90] See http://onlinepubs.trb.org/onlinepubs/acrp/acrp_syn_019.pdf

16.11 Minimising ongoing facilities management and maintenance costs

Good practice in this area includes:

- Life cycle costing during airport design and upgrading;
- Including input by expert airport facility managers into the initial design to ensure it takes into account efficiency of ongoing operations and maintenance; and
- Consideration of technology trends in design and materials selection to minimise ongoing costs e.g. self-repairing materials.

Sources of information:
• South African Facilities Management Association: www.safma.co.za/
• Airport Facilities Council: airp.ifma.org

16.12 Integrating requirements from financiers

Good practice for integration of requirements from potential financiers includes:

- Development of accurate, realistic and justifiable traffic forecasts (passenger, freight, ATMs) and forecasts for related property activity as these are the primary drivers of revenue;
- Preparation of detailed financial analysis (often requiring the involvement of specialists), including full cash flow forecasts, NPV and IRR;
- The inclusion of a full assessment of broader socio-economic benefits and costs to determine overall economic impact, in particular for funding by Development Finance Institutions (DFIs);
- Assessment of risk profiles and measures to mitigate risk; and
- Phasing of investments to take into account repayment requirements and returns.

Sources of information:
• National Treasury budgeting guidelines for infrastructure and capital projects: www.treasury.gov.za
• ICAO Economics Manual (financing section) : http://www.icao.int/sustainability/documents/doc9562_en.pdf

PART E: FIVE-YEAR IMPLEMENTATION PLAN

17 Implementation plan in relation to airport network planning

The following initiatives are proposed for the next 5 years to give effect to the airport network planning guiding principles of the NADP:

1. Integration of airport network planning into transport and spatial planning coordination structures;
2. Consultations towards the formalisation of selection processes for international, "regional-international"(if created), and national airports, as well as the pre-approval process for green-field airports;
3. Mechanism to reserve land for key long-term airport requirements;
4. Development of a preferred option to provide for non-scheduled, general air service, and non-commercial aviation within the national airport network; and
5. Development of a knowledge management system and DOT capacity to inform airport network planning.

Details of each of the above initiatives are as follows:

17.1	**Integration of airport network planning into transport and spatial planning coordination structures**
Overview of initiative:	Provide for mechanisms to integrate airport network planning into transport and spatial planning coordination structures, including the development of an Airport Development Coordinating Committee, and mechanisms to elevate major airport developments affecting two or more Provinces to the National Transport Forum and: • Planning of green-field airports that are intended to be national or international airports; and expansion of current international and national airports impacting on more than one Province to be coordinated through the National Transport Forum (NTF). • Airport Development Coordinating Committee to include representation from the three spheres of government, representative airport associations, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations
Outcomes:	• National Transport Forum considering significant airport developments affecting two or more Provinces, as applicable • National Airport Development Coordinating Committee established • Provincial transport and planning coordination structures to include airports
Lead entity and other participants:	**Lead**: DOT **Other participants:** Provincial and Local transport and planning departments (multi-modal transport integration)

	National, provincial and local departments/units responsible for economic development and tourism (input on demand and economic contribution) Representative airport associations, ACSA, ATNS, SACAA, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations

17.2 Consultations towards the formalisation of selection processes for international, “regional-international” (if created) and national airports, as well as the pre-approval process for green-field airports	
Overview of initiative:	Development of legislation or formalised procedures addressing applications for international airports and “regional-international” airports (if created) for Cabinet’s consideration. Formalising the concept of “national airports” and pre-approval of applications for the development of major green-field airports in coordination with relevant stakeholders: • International and “regional-international” airports through the Airport Coordinating Committee (members of this Committee to represent all border management Departments, and all relevant national security implications and imperatives to be considered) • National airports through the Civil Aviation Act, 2009 and the National Aviation Security Programme (NASP) • Green-field airports through a replacement of the “license of intent” process that can take into account safety, security, socio-economic contribution, local and municipal approval in terms of spatial, land use and economic contribution.
Outcomes:	• Finalised legislation or procedures in effect
Lead entity and other participants:	**Lead:** DOT **Other participants:** SACAA, Airport Coordinating Committee, Inter-Agency Clearing Forum (IACF)/Border Management Authority (BMA) (when created), Representative airport associations, representative airline associations, representative cargo associations, tourism associations and relevant airfreight sector (import and export) associations

17.3 Mechanism to reserve land for key long-term airport requirements	
Overview of initiative:	• Creation of an intergovernmental mechanism to reserve land for long-term airport requirements in major cities to respond to air traffic growth
Outcomes:	• Mechanism agreed and sufficient land reserved in priority areas
Lead entity and other participants:	**Lead:** DOT and COGTA **Other participants:** ACSA, ATNS, SACAA, representative airport associations, National Planning Commission, Deeds Office, relevant municipalities

17.4	**Development of a preferred option to provide for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation within the national airport network**
Overview of initiative:	• Assessment of workable solutions to providing sufficient airport facilities for non-scheduled air services, general air services, flying training, adventure aviation and non-commercial aviation, in particular in areas experiencing congested airspace, e.g.: – Encouraging non-commercial activity outside of peak periods at existing airports – Development of second runways at existing busy airports – Upgrading/development of other airports outside of the congested airspace • Determination of possible funding mechanisms for development or upgrading of airports for this purpose (given that direct "user pays" is not likely to be viable in the case of non-commercial aviation) • Agreement with stakeholders on preferred option
Outcomes:	• Preferred option and associated funding mechanism(s) agreed
Lead entity and other participants:	**Lead**: DOT and National Treasury **Other participants:** Aviation industry associations, ACSA, provincial and municipal airport operators, Provincial Treasuries, Funding Institutions (e.g. DBSA)

17.5	**Development of a knowledge management system and DOT capacity to inform airport network planning:**
Overview of initiative:	Building systems (including Excel and GIS and data gathering/interface systems) that address gaps in available information on the airport network, including: • Airport attributes (aeronautical and non-aeronautical infrastructure facilities, ownership, contact details, license status etc.) • Volumes of passenger, freight, ATMs and non-aeronautical activity, and associated demand forecasting model • Ultimate airport capacity (runway, passenger handling, baggage handling, security, cargo handling, airspace) • Planning activity level thresholds and triggers/"red flag" notifications; and underlying demand (disaggregate population, economic and income) • Multi-modal transport linkages • Noise, emission and energy consumption levels (for relevant airports as determined by NCAP/other directives) • Applications to DFIs for airport infrastructure funding • Ongoing data gathering and research on latest airport network planning trends and good practice, technology trends, useful publications, toolkits and guides, etc. • Socio-economic impact of airports and associated model to estimate socio-economic impact Ensuring DOT has sufficient technical human resources to support airport network planning, including data sourcing and research, data management, stakeholder consultation.

Outcomes:	• System in place and fully populated with accurate and current data • DOT human capacity in place • System used to inform all network planning decisions of national importance
Lead entity and other participants:	**Lead:** DOT **Support entities:** SACAA (including data from licenced and registered airports), ACSA, provincial and municipal airports operators, Stats SA (disaggregated population and economic data), Provincial Transport and Planning, Environment departments, SALGA

18 Proposed initiatives for the next five years in relation to individual airport planning within its surroundings

The following initiatives are proposed to give effect to the guiding principles of the NADP:

1. Development of airport planning technical capacity at a national, provincial and local government level that can support individual airport planning e.g. infrastructure planning, aviation trends, translation of demand forecasts and airline strategy into airport planning requirements, practical experience with airport facilities operation and maintenance, airport master planning, design (focus on upgrading), technical services, airspace procedure design, financial modelling, socio-economic cost-benefit analysis, regulatory compliance requirement, land use and spatial planning;

2. Development of a detailed guide to support airport development and master planning within their surroundings (including both compliance and good practice aspects), providing checklists and integrated planning tools, minimum requirements for an Airport Master Plan, drawing on local expertise and similar international guides and toolkits customising them to the South African context;

3. Exploration of potential mechanisms to involve the private sector in airport planning and design, including concessions models, long-term leases with associated responsibilities for upgrading infrastructure, secondments, technical input from specialist infrastructure private financiers;

4. Joint identification with relevant entities of the most viable approach to securing funding to support airside safety and security compliance for airports. As indicated previously, there are more than 100 Municipal and Provincially owned airports which are not able to comply with their licensing requirements due to high cost of compliance and funding constraints. Revenue may be recorded at airports owned by provincial- and local government, but may not be ring-fenced due to the nature of budgeting processes. This poses a threat to the maintenance of adequate aviation safety and security standards, as required by the Civil Aviation Regulations, 2011. Therefore, the viable approach would have to be determined.

5. Collaboration to create networking and information sharing platforms for airport owners, designers and planners, including both private and public airports.

APPENDIX 1: GLOSSARY

Glossary of terms

Table 2: Aerodrome reference code

Code element 1		Code element 2		
Code number	**Aeroplane field length**	**Code letter**	**Wing span**	**Outer main gear wheel span**[91]
1	Less than 800 m	A	Up to but not including 15 m up to but not including 24 m	Up to but not including 4.5 m
2	800 m up to but not including 1 200 m	B	15 m up to but not including 24 m	4.5 m up to but not including 6 m
3	1 200 m up to but not including 1 800 m	C	24 m up to but not including 36 m	6 m up to but not including 9 m
4	1 800 m and over	D	36 m up to but not including 52 m	9 m up to but not including 14 m
		E	52 m up to but not including 65 m	9 m up to but not including 14 m
		F	65 m up to but not including 80 m	14 m up to but not including 16

"Aerodrome" means an "airport" for the purposes of the NADP.

"Airport"[92] means any demarcated area on land or water or any building which is used or intended to be used, either wholly or in part, for the arrival or departure of an aircraft, and includes any building, installation or equipment within such area which is used or intended to be used in connection with the arrival, departure or movement of an aircraft.

"Airside" means the 'movement' area of the airport that is used for take-off and landing of aircraft and the surface movement of aircraft.

"Apron" means the area of an airport intended to accommodate aircraft for the purposes of loading or unloading of passengers, mail of cargo, fuelling, parking or maintenance. (Also known as the "ramp".)

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[91] Outer main gear wheel span is the distance between the outside edges of the main gear wheel.

[92] Note that the term "*airport*" is used in the National Airports Development Plan (NADP) rather than the term "aerodrome" which is used in a generic sense and also applied in legislation and ICAO documentation. The two terms are considered synonymous for the purposes of the NADP. (The term "aerodrome", as defined in Section 1 of the Civil Aviation Act, 2009, has been adopted and used to define "airport" in this context.)

"Belly freight" means the freight capacity in the cargo holds of a passenger aircraft. Belly freight is limited by the need to accommodate passenger baggage and mail (both of which have priority over freight).

"Cargo" means merchandise carried on a ship, aircraft, train or road vehicle.

"Carrier" means the operator who contracts to provide the transport service which may be by sea, rail, road or air.

"Commercial flight" means any aircraft activity for hire or reward or as a point of departure or arrival for any paying passenger or goods. Such payment does not necessarily have to be direct but could be included in tour- or accommodation packages, be called a "club fee", or any similar arrangement.

"Concession" means a commercial agreement between a government and the private builder, owner or operator of an element of public infrastructure or a business located on public property. Government can fine tune concession terms to establish the protections and incentives necessary to attract investors and to guarantee performance by the concession holder.

"Hub and spoke" principle refers to the principle of grouping and distributing commodity flows and cargoes at a central transhipment point (or hub). A hub and spoke network is a centralised, integrated logistics system designed to keep costs down. Hub and spoke distribution centres receive products from many different origins, consolidate the products, and send them directly to destinations. It is a model used strongly by the airfreight express carriers (or integrators).

"Landside" means that part of the airport which every member of the public can visit, whether a passenger, a person dropping off a passenger or a person meeting an arriving passenger. Similarly, the landside area of the cargo terminal is the area where freight forwarders deliver and receive their outbound or inbound cargo shipments.

"Logistics" means the process of planning, implementing, and controlling the efficient, effective flow and storage of goods, services, and related information from point of origin to point of consumption in accordance with customer requirements.

"National" within the context of this Plan refers to applicability countrywide. The National Airports Development Plan is thus applicable to all airports countrywide, and not limited to a specific sphere of government.

"National airport" means a domestic airport *designated* in terms of the Civil Aviation Act, 2009.

"Regional-domestic airport" means a licensed domestic airport outside of a metropolitan area that serves other cities and major towns.

- **"Regional-international airport"** means a designated port of entry that serves SADC as well as domestic air traffic (note that the creation of this category of airport is still subject to a feasibility study, factoring in all relevant national security implications and imperatives).

"**WGS-84":** This is an Earth-centered, Earth-fixed terrestrial reference system and geodetic datum. WGS 84 is based on a consistent set of constants and model parameters that describe the Earth's size, shape, and gravity and geomagnetic fields.

APPENDIX 2: IDENTIFIED AIRPORT CAPACITY CONSTRAINTS AND EXISTING DEVELOPMENT PLANS

The table below provides a summary of airport capacity constraints and current/planned developments identified through the National Transport Master Plan (NATMAP) and NADP research and consultations. Note that this is as at July 2015 and is not an exhaustive list.

Note: See Appendix 1 for explanation of ICAO Aerodrome Reference Codes (to clarify use of terms such as “4E aircraft”).

Table 3: Airport capacity constraints and current/planned developments

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
Eastern Cape	Bhisho Airport	Capacity capabilities/constraints: • Recent upgrade has addressed many previously identified constraints Current developments: • New offices and accommodation for flight school • Refurbishment of refuelling facilities • New hangar • Refurbishment of runway lights • Refurbishment of control tower Planned developments: • Potential to develop a cross runway and additional accommodation and offices
	East London Airport	Capacity capabilities/constraints: • Load limitations on Code 4E aircraft due to strength and length constraint • Apron services are only provided for up to Code 4C aircraft. • Runway length inadequate to accommodate direct intercontinental flights • Aircraft parking constraints (5 for parking bays are available for commercial aircraft, 4 for non-commercial) • Freight infrastructure considered inadequate: e.g. ambient and cold storage facilities, truck stop facilities
	Mthatha Airport	Current developments: • New runway recently constructed • Terminal building in process of being re-built
	Port Elizabeth International Airport	Capacity capabilities/constraints: • Load limitations on 4E aircraft due to strength and length constraint • Capacity of runway system of 40 movements/hr, and cannot handle Boeing 747-400 and the Airbus A340 or direct intercontinental flights. • Potential constraints in aircraft parking spaces on apron (aircraft size and number Planned developments: • Terminal upgrade
Free State	Bram Fischer International Airport	Capacity capabilities/constraints: • Runway: up to Code 4E aircraft with load limitations • Taxiway system the runways can accommodate up to 60 movements per hour.

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
		• Aircraft parking constraints; only 6 parking bays available. • Scope for expansion into surrounding land if demand requires it in the longer-term
Gauteng	O.R Tambo International Airport	Capacity capabilities/constraints: • Runways can accommodate up to Code F aircraft. Parking bay capacity constraints • Airspace needs to be redesigned to achieve this number. This will be done as part of the Performance Based Navigation (PBN) implementation Project. This will also include the review of uncontrolled airspace below the Johannesburg Terminal Area (TMA). Planned developments: • Midfield terminals (including cargo terminals) • Additional fuel storage tanks • Rapid exit taxiways • Remote apron stands • Parking at super south
	Lanseria International Airport	Capacity capabilities/constraints: • New RWY07/25 operational with instrument approach capability on both runways • Completed state of RWY is CAT 4E • Apron extension operational • Terminal building extension completed with the Pier development with further phases operational • • Some aircraft parking limitations: 15 C & D-type and 34 B-type aircraft. • Lack of public transport. • Requirement for rail link. • Requirement for a transport link (eg. Gautrain) with OR Tambo International Airport. Planned developments: • Doubling of terminal building • Multi storey parkade • New fire station • New control tower • Additional hangars and aircraft maintenance facilities •
	Grand Central Airport	Capacity capabilities/constraints: • Unavailability of land required for expansion poses major constraint: current runway limited to handling Code B aircraft • Lack of airspace to implement instrument procedures. Airspace constrained by Waterkloof and O.R Tambo International.
	Rand Airport	Capacity capabilities/constraints: • Limited land available, which restricts the length by which the runway may be extended to 800m. (currently can handle Code A aircraft) • Air traffic movement capacity constrained due to sharing airspace with O.R Tambo International
	Wonderboom Airport	Capacity capabilities/constraints:

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
		• Main runway currently limited to handling up to Code C aircraft. There is a secondary runway to accommodate smaller aircraft. Airport has a network of taxiways linking the runways, aprons and restricted maintenance areas. Three aprons are available, each accommodating different sizes of aircraft. • The terminal can handle 450 inbound and 450 outbound passengers/hour. • No constraints identified to planned expansions Current and planned developments: • Application lodged for international status • Reintroduction of scheduled flights • Main runway extensions planned with associated taxiways (including widening and further strengthening of runway and rapid exit taxiways) • Construction of a more advanced traffic control tower planned • Expansion of tenant base (AMOs, aviation services and hangars) • Future expansion of terminal building and construction of a multi storey parkade planned • Additional JET A1 fuel farm planned • Further expansion of aprons planned • DVOR completed • Potential to address freight movements
KwaZulu-Natal	King Shaka International Airport	Capacity capabilities/constraints: • Runway can accommodate up to Code 4F aircraft with associated parallel taxiways. • Ultimate passenger handling limit of 45 million passengers. p.a. – based on KSIA Master Plan Planned developments: • Additional 450 bays to car hire parking • Additional 1000 bays to multi-storey parking • Bravo taxiway extension
	Pietermaritzburg Airport	Capacity capabilities/constraints: • Ultimate runway capacity limitation of 20 million passengers p.a. (which is expected to be sufficient for passenger demand beyond 2050). • Capacity currently constrained by terminal building handling capacity of 200 passengers per hour or 1 million passengers. p.a. Planned developments: • Runway repair and upgrade • Apron extension and upgrade • Navigation equipment • Terminal building addition and alterations

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
	Margate Airport	Capacity capabilities/constraints: • Runway length considered a constraint • Ultimate runway capacity limitation of 20 million passengers p.a. (considered sufficient for demand for next 50 years or much more) • Capacity currently constrained by terminal building handling capacity of 200 passengers per hour or 1 million passengers. p.a. • No current scheduled flights. Planned developments: • Upgrade of runway • Runway lighting • Alteration and renovation of apron and terminal building
	Mkuze Airport	Planned developments: • Proposed airport terminal, extend to scheduled flights
	Newcastle	Current capacity and constraints • Runway 1400 X 20 Planned developments: • Expansion of runway to 1650 x 30 • Proposals for export-oriented industrial and logistics precinct development and techno hub
	Richards Bay Airport	Capacity capabilities/constraints: • Passenger terminal building constraints capacity (maximum 90 departing passengers/hour) • Vehicle parking also considered However, available space is considered sufficient to address constraints
	Ulundi Airport	Planned developments: • Runway repair and upgrade • Navigation equipment • Terminal building additions and alterations • Apron upgrade New fire engines
Limpopo	Polokwane International Airport	Capacity capabilities/constraints: • Runway capacity up to Code C aircraft • New terminal building will address previous passengers handling constraints • Limited public vehicle parking (100 bays, planned to expand to 640) is less than runway and passenger terminal capacity (may pose constraint in future if public transport is insufficient) Planned developments: • Resealing of apron • Cargo handling facilities (pre-feasibility study stage)
	Eastgate Airport (co-use of military aerodrome - unlicensed)	Capacity capabilities/constraints: • Runway capacity up to Code C aircraft, approximately 11 m passengers. p.a. • Limited passenger terminal capacity (around 550,000 passengers. p.a.) and apron capacity. • SAAF limits the operational hours of the airport
	Kruger Park Gateway Airport	Capacity capabilities/constraints: • Runway capacity up to Code B aircraft • Apron parking limited to 2 aircraft

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
		• Terminal building capacity limited to 100 passengers/hour
Mpumalanga	Kruger Mpumalanga International Airport	Capacity capabilities/constraints: • Runway capacity can handle up to Code 4E aircraft • Limited aircraft parking (total of 13 parking bays), especially when charter aircraft have to be accommodated for a number of days. • No taxiway, therefore the current airspace capacity at the airport is limited to 8 movements per hour. • However, land provides scope for some expansions (e.g. parallel taxiway)
Northern Cape Province	Upington International Airport	Capacity capabilities/constraints: • Aircraft parking is the major limitation to capacity - only 5 apron parking bays (with 3 runways, one of which is the longest runway in South Africa, runway capacity is not a constraint) • Taxiway system between runways is also a constraint to full operation of runway capacity • Airport fire and rescue capacity is adequate for current operations, this may need to be upgraded to the suitable category should there be a need to handle wide bodied aircraft. • The airport is currently not in a position to remove disabled aircraft. Planned developments: • Feasibility assessment to develop cargo handling facilities
	Kimberley Airport	Capacity capabilities/constraints: • Runway capacity strength limits aircraft handling capacity to Code 4E with load limitations
North West Province	Pilanesberg International Airport	Capacity capabilities/constraints: • The airport does not have a taxiway system, and as a result the airport runway can handle up to 20 movements per hour • There is only 1 apron parking bay available for commercial aircraft and 21 remote grass parking spaces. • Passenger handling, although estimated at 250 passengers/ hour for most facilities, is limited by manual baggage handling and lack of trolleys. • Very little commercial justification for this airport.
	Mafikeng Airport	Capacity capabilities/constraints: • Does not have a taxiway system therefore the airport runway can only handle up to 20 movements per hour, although significant runway capacity (up to Code E aircraft with significant scope for further expansion) • Limited aircraft parking – 12 commercial aircraft, 10 non-commercial and/or small non-scheduled aircraft (the main constraint) • Passenger check-in capacity is less than most other passengers handling facilities • Runway resurfacing • ILS and automated weather station Current developments:

Province	Airport	Capacity capabilities/constraints identified Current and planned developments
		• runway resurfacing • ILS and automated weather station Planned developments: • Potential SEZ
Western Cape	Cape Town International Airport	Capacity capabilities/constraints: • Ultimate passenger handling limit of 45 million passengers. p.a. – based on CTIA Master Plan (could be reached by 2045 based on current traffic forecast) • Ultimate movements capacity is 80 movements per hour with the addition of second parallel and independent runway (currently 30 ATMs per hour declared capacity) • Currently, apron and parking can be limiting on peak hours and slot management and demand shifting strategies may be needed. • Land access a constraint to ultimate demand – would require public transport (BRT and rail), still likely to be an N2 capacity constraint. Planned developments: • Terminal expansion • Runway relocation /re-alignment • Apron development
	George Airport	Capacity capabilities/constraints: • Runway capacity up to Code E aircraft • ATM capacity declaration of 30 movements per hour, potential extendable to 40/hour. • Aircraft parking – currently only 6 aircraft parking bays on the apron

APPENDIX 3: INTERNATIONAL EXPERIENCES AND TRENDS IMPACTING ON AIRPORT PLANNING AND DEVELOPMENT

The section below captures research that has informed the NADP in terms of both the international trends summarised in Part B and the international experiences that have informed the guiding principles captured in Part D. It is organised around key themes.

1. Airport network planning experiences

A high-level scan of overall approaches to national airport development planning was completed as part of the NADP research. The benchmarked countries all have, at the very least, a national airspace management, airport licensing and regulation system in place. However, they have different approaches to airport development planning, including different levels of centralisation and tools for airport planning, as summarised below:

Table 4: Airport network planning experiences by region

Latin America and the Caribbean

Country	Key Institutions	Summary of approach to airport development planning
Brazil	• **Agência Nacional da Aviação Civil (ANAC)** *National Civil Aviation Agency*	• Brazil is **in the process of formulating its first National Airports Development Plan** (Plano Aeroviário Nacional – PAN). The future National Airport Development Plan will establish the main "macro-needs" and "macro-guidelines" for the country's airports.
	• **Government of Brazil**	• **Logistics Investment Program** was launched in December 2012 that included a **Regional Aviation Plan**. The plan restructures the regional aviation network and includes 270 regional airports.
	• **INFRAERO** Airport operator which manages 63 airports, 80 air navigation support units, and 32 cargo terminals • **INFRAERO Serviços** Newly created strategic partner of INFRAERO	• **Presently each of the 27 states in Brazil has a State Airports Development Plan (Plano Aeroviário Estadual)**, and each airport is required to have a Master Plan (Plano Director). • Development plans as part of the 2014 World Cup and 2016 Olympics to modernise 14 airports
Colombia	• **AEROCIVIL** *Civil aeronautics authority of Colombia*	• **Colombia's policy approach is to have 2 separate airport development strategies** – one for its main international airport in the capital city of Bogotá (El Dorado International Airport), and another for the rest of the airports in the country. – Updates to El Dorado and additional plans to support development of second airport in Bogotá, El Dorado II Airport as part of 5 year National Development Plan • Each airport is also required to have a Master Development Plan.

Asia Pacific

Country	Key Institutions	Summary of approach to airport development planning
Australia	• Department of Transport and Regional Services	• **Australia does not have a national airports development plan**. All of the main airports are leased to private owners and operators are required to have an airport master plan. • **Issues paper – Towards a National Aviation Statement** was written in 2008 in order to initiate a discussion about a long-term aviation policy. The response was the **National Aviation Policy White Paper**, which addressed airport planning and development.
China	• The General Administration of Civil Aviation of China	• **China's 12th Five Year Plan for the Development of China's Civil Aviation Industry 2011 - 2015** is the main policy document outlining planned airport developments and support for remote airports. Provincial governments continue to play a significant role as owners and operators of airports in China. The 12th Plan commits more than $4.25 trillion to development. • **A review of competition policy** in the wider civil aviation sector is currently underway.
India	• Airports Authority of India • Ministry of Civil Aviation	• Combined, India's **National Policy Framework on Airport Infrastructure** & **2003 Civil Aviation Policy** cover the classification of airports, guidelines for modernisation and upgrading of airport infrastructure, support for lifeline air services, the economic regulation of airports, and the approach to green-field airport developments. • Ministry of Civil Aviation working on notifying a National Civil Aviation Policy
Singapore	• Ministry of Transport	• **Singapore does not have a national airport development plan**, but has **a wider aviation policy** focusing on the development of Singapore as an aviation hub in the region.

Africa and Middle East

Country	Key Institutions	Summary of approach to airport development planning
Kenya	• Kenya Ministry of Transport • Kenya Airports Authority	• National Airports Systems Plan (NASP) completed and focused on capacity needs for 13 airports.
Morocco	• Ministry of Equipment & Transport • Moroccan Airports Authority	• The Moroccan Airports Authority (ONDA) oversees development and operations of 15 airports. • The Strategic Plan 2008-2012 seeks to expand existing and build new airports – 3rd Airport Project developed out of this plan and concern updates to Casablanca, Fez, Agadir, Marrakech, and Rabat airports
Senegal	• National Airports Authority of Senegal	• The government is in the process of privatising all publicly owned airports (both major and secondary) to improve competitiveness.

Country	Key Institutions	Summary of approach to airport development planning
		• New approach to infrastructure development includes PPPs for airport construction e.g. BOOT model for Leopold Sedar Senghor International Airport.

North America

Country	Key Institutions	Summary of approach to airport development planning
Canada	• Transport Canada	• The main airports policy and regulatory framework is the **National Airports Policy (NAP)** published in 1994. The plan **reinforces Canada's decentralised approach to airport development planning** with each airport responsible for its own development planning. This includes the 26 airports in the National Airport System (NAS) – these are airports recognised as being strategically important at national level. • The **Airports Capital Assistance Program (ACAP)** provides financial support to all airports for infrastructure projects related to security and safety (beneficiaries must meet qualifying criteria).
Mexico	• DGAC *General Directorate of Civil Aeronautics*	• Mexico's National Program for Infrastructure Development 2014-2018 includes airport development planning and provides $279m for 20 airport infrastructure projects. **However, this is not a national airport development plan as it covers wider infrastructure planning in the country**.
United States	• Federal Aviation Authority *Federal Aviation Administration (agency of the US Department of Transport)*	• The US **has a comprehensive airports development plan** known as the **National Plan of Integrated Airports Systems (NPIAS)** which is updated every two years. • The NPIAS: – Identifies almost 3,400 significant airports (public and private), and their roles, which are eligible for AIP grants – Provides information on conditions and performance of the Airport System in six fields: capacity, safety, environment, pavement condition, surface accessibility, and financial performance – Specifies 5-year cost estimates for airport development (currently in the 2015-2019 version) • The FAA also administers the **Airports Improvement Program (AIP)** which provides grants to public agencies and, in some cases, to private owners and entities, for the planning and development of public-use airports that are included in the NPIAS.

Europe

Country	Key Institutions	Summary of approach to airport development planning
France	• **Civil Aviation Technical Centre** *Le Service Technique de l'Aviation Civile (STAC)*	• **Airport development planning is the responsibility of the Civil Aviation Technical Centre (STAC)**. This covers all areas, including airport pavement development, capacity, the environment, equipment, and buildings.

Country	Key Institutions	Summary of approach to airport development planning
Germany	• **Federal Ministry of Transport, Building and Housing: Directorate General of Civil Aviation & Air Navigation Services** • **Civil Aviation Authority**	• **Germany has a decentralised approach to national airport development planning**, with each federal state responsible for its own airport network.
Spain	• **Aeropuertos Españoles y Navegación Aérea (AENA)**	• **There is no National Airports Development Plan in Spain, but every airport is required to have a master plan**. AENA, Spain's Airports and Air Navigation Company, operates 47 airports and 2 helipads and conducts this master planning process centrally
Scotland	• **Department of Transport**	• **Scotland has a largely decentralised approach to airport development planning** with independent airport owners and operators responsible for their own development planning. • **The country does not have a National Airports Development Plan** but its *White Paper on Scotland's Transport Future* is a policy document mapping the overall vision for Scotland's transport infrastructure across all transport modes. • Scotland also has a National Transport Strategy (NTS), which sets out a vision for 2025
United Kingdom	• **Civil Aviation Authority (CAA)** • **Airports Commission**	• The UK's *Future Air Transport White Paper* includes a policy and regulatory framework for airport planning and development, but is not a national airports development plan. • Airport development planning is the responsibility of each airport owner and operator. • The Airports Commission studies the need for increased capacity and provides recommendations to the government through the Department for Transport.

The limited number of comprehensive national development plans may be attributable to the process which is underway in many countries of passing airport ownership and management from national governments to sub-national governments (cities, states or provinces) or the private sector. As part of this process, national regulations often delegate the preparation of airports master plans to the private airport owners, local airport authorities or the federal states or provinces.

Green-field airport guidelines: India

India has a policy for green-field airports, which outlines development and financing of green-field airports. Some of the guidelines include:

- PPPs are the preferred funding model for infrastructure provision and green-field development
- Green-field airports may have 100% private funding
- Green-field airports may be constructed in response to demand and evidence that existing airports cannot manage the demand – a pre-feasibility report is required
- Green-field airports will not be permitted within 150 aerial km of an existing airport
- Cap on FDI for existing airports is 49%
- Green-field developments may be assisted by government at both capital and operational levels in a number of ways if they are considered to have a sufficient socio-economic contribution, including leasing agreements that include deferred payments or token fees, provision of navigation and safety equipment at cost, and levying of certain fees

2. Aircraft types

Passenger aircraft types are expected to be dominated by single aisle, higher seats counts and often wider wingspan. The aircraft fleet of 2033 will be dominated by single aisle passenger aircraft, or 29,500 of the 42,180 aircraft[93]. Africa's fleet of 2033 will look similar; 1,000 of its total 1,420 aircraft are expected to be single aisle passenger aircraft[94]. Many airlines are now using airplanes with enhanced seat technology that takes up less space, allowing more seats to fit in the same space. Single-aisle planes have also increased their seat count about 20% over the last 20 years, and that trend is expected to continue[95].

In terms of freight airplanes, large wide-body aircraft (>80 tonnes) will comprise the majority of new freight aircraft deliveries by 2033[96].

To accommodate larger aircraft designed by Airbus and Boeing, airports are upgrading their facilities to accommodate ICAO Code E spatial requirements[97]. Also, due to the various types of aircraft used in any one airport, aircraft parking, turning areas and passenger handling facilities need to accommodate multiple new aircraft types with different widths, wingspans, heights, lengths, and seat numbers. Strategies that are being adopted include multiple aerobridges at each gate and larger airfields to accommodate larger aircraft, such as the A380 and Boeing 787. Some airports, such as Delhi International Airport, have already designed flexible gates that can accommodate one large aircraft or two smaller aircraft[98]. Cargo terminal peak capacities will need to take into account these larger aircraft sizes.

3. Security technologies

Increases in security measures at airports combined with new, bulky technology requires changes in the layout of passenger and cargo terminals and increased space requirements. For example, on the passenger side, full-body scanners, LAGs, biometric passenger

[93] Source: *Current Market Outlook 2014*, Boeing, p. 2
[94] Source: *Current Market Outlook 2014*, Boeing, p. 2
[95] Source: *Current Market Outlook 2014*, Boeing, p. 9
[96] Source: *Current Market Outlook 2014*, Boeing, p. 31
[97] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.
[98] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.

screening, detection equipment, and psycho-physiological screening, and priority lanes require additional space within the terminal[99].

For international airports, the consolidation of international and domestic check-in desks will ultimately affect terminal layout, including flow between check-in, retail, security, customs, immigration and port health. The "call to gate" methodology holds all passengers in one centralised area, thereby decreasing the amount of required restrooms, seating areas, duplicate retail/food shops. Concourses and piers within the "call to gate" methodology serve only for passengers to access gates when they are ready to board the plane[100].

4. Environmental considerations

Environmental considerations are increasingly being mainstreamed into airport planning and design. Terminal design increasingly includes natural light, efficient lighting, and passive heating/cooling. Airports are also seeking carbon-neutral status, and designing facilities accordingly. For example, in the United States, airports seek LEED-certification (U.S. Green Building Council for Leadership in Energy & Environmental Design) and in doing so, they are using recycled/recyclable materials, adding more windows to help with lighting and heating, utilising white/light coloured materials for roofing to help with heating/cooling, and monitoring carbon monoxide to ensure high air quality and ventilation[101].

The Hyderabad International Airport in India has taken extensive measures to make the airport environmentally friendly, and was even the first Asian airport to achieve a "silver rating" by LEED for its passenger terminal[102]. Some of the highlights include:
- Developed a green belt around the airport where over 1000 hectares of land have been left undisturbed[103]
- Installed LED lights, implemented an automated energy system for the building, and optimised air conditioning units based on weather leading to annual electricity savings of 3.397 million kWh[104]
- Conducts regular greenhouse gas emission inventories and has reduced its scope 1 and 2 emissions
- Treats wastewater and reuses it
- Harvests rainwater
- Recycling of food waste, containers, oil, batteries, etc.
- Promotion of environmental awareness

In Bangkok, Thailand, the design of the Suvarnabhumi Airport took into account environmental considerations, such as how to maximise natural light, decrease energy usage, and increase savings. The design uses clear or low e-coated glass with a translucent triple layer membrane, which helps to manage between inside and outside temperatures, especially heat, and also minimises noise from the aircraft inside the airport. The glass also allows for natural sunlight into the airport, decreasing the need for artificial light during the daytime[105].

[99] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.
[100] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.
[101] Source: Futterman, Evan. Trends and Developments in Airport Design. 2 July 2005. Accessed 16 March 2015 at http://www.facilitiesnet.com/facilitiesmanagement/article/Airports-Flying-High-Facilities-Management-Facilities-Management-Feature--3088#.
[102] Source: "Sustainability Initiatives – A case study of RGI airport, Hyderabad." 12/03/2014.
[103] Source : Rajiv Gandhi International Airport – Environmental policy. Accessed on 20 March 2015 at http//www.hyderabad.aero:environment.aspx
[104] Source: "Sustainability Initiatives – A case study of RGI airport, Hyderabad." 12/03/2014.
[105] Source: Welch, AJ. Suvarnabhumi Airport Bangkok, Thailand. E-architect. Accessed on 21 March 2015 at http://www.e-architect.co.uk:thailand:suvarnabhumi-airport.com

5. Multi-modal system integration

Check-in and baggage handling is becoming increasingly streamlined, customised, and multi-modal. Airports therefore have to design their check-in and baggage handling and associated IT systems to be inter-operable with rail and bus systems. In the future, it is expected that bags will be dropped off using automated machines, rather than at a counter with a conveyer belt, and there will also be a drive through bag drop service within the airport parking lot. Systems may also be required to allow for integration of private concierge access from ground transportation/parking to aircraft. In smaller airports, a plaza is often being developed that enables diagonal movement from terminal to ground transport; some airports like Tauranga, Cairns, King Shaka, and Adelaide have already integrated this concept[106]. Taxis, private cars, and buses can then use "horseshoe cul de sacs" that come off of the main road and also help avoid dangerous situations between pedestrians and vehicles[107]. Other developments may include parking lot systems that guide cars, taxi passenger waiting lounges with pre-payment options, and car servicing within the parking lots[108]. This trend may impact on both airport and wider precinct design, including the integration with public transport.

6. User experience design

User experience design requires increased involvement of users in the early stages of the planning and design process, potentially including co-design. In the case of single-user facilities, there would be close collaboration around design; in the case of multi-use facilities particular methodologies around shared-use design are being applied to take into account combined peaks and minimising conflicting uses that may create overall inefficiencies in the system. At hub airports there is a focus on creating a wide experience for transfer passengers; in addition to retail and food service, this is expected to include entertainment and relaxation. Increasingly sophisticated passenger flow simulations are allowing more efficient and pleasant layouts and flows to be developed. Additionally, there is more segmentation of consumer and service levels from extremely high end (e.g., six-star service, priority boarding and security, valet, haute couture design shops) to very inexpensive, mirroring the varying customer levels on airlines (e.g., platinum, gold, silver, bronze). Retail, entertainment, and commercial facilities will grow and as security, boarding, and baggage systems become more efficient, passengers will have more time to spend accessing these services. Therefore, airports might become a place to "showcase" products that can be purchased there and delivered directly to their homes. These trends may also have implications for passenger terminal footprint and layout.[109]

7. Non-aeronautical revenue

Airports continue to try to grow revenue and diversify revenue sources away from aeronautical sources.

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[106] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.
[107] Source: Fordham, Greg. A vision for airport development. 12 November 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/a-vision-for-airport-development.
[108] Source: Fordham, Greg. A vision for airport development. 12 November 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/a-vision-for-airport-development.
[109] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.

Non-aeronautical revenue is of increasing importance to airports. In 2012, 43.7%[110] of total airport income internationally came from non-aeronautical sources. In Africa, the proportion was a little lower at 32.1%.[111]

Table 5: Global airport income and costs (2012-million USD)

Region	Total Income	Aeronautical Income	*Non-Aeronautical Income	Total Cost (Operating + Capital Cost)
Africa	2,800	1,900	900	1,800
Asia-Pacific	31,600	15,800	15,800	24,100
Europe	44,300	26,100	18,200	39,700
Latin America-Caribbean	6,500	4,200	2,300	4,500
North America	25,300	14,300	11,000	22,400
Middle East	6,500	3,500	3,000	6,200
World	**117,000**	**65,800**	**51,200**	**98,700**

*Non-Aeronautical Income includes Non-Operating Income of USD 5.1 billion worldwide

Non-aeronautical income mostly comes from retail sources (28.9%), car parking (20.2%) and property and real estate income/rent (20.1%); surprisingly, food and beverage only account for 4.8% of total non-aeronautical income[112]. In Africa, the proportions are similar with retail concessions accounting for 42.9% of non-aeronautical revenue followed by property and real estate income/rent (20.9%) and car parking (14.6%)[113].

Table 21: Distribution of non-aeronautical income by source (2012)

Region	% Retail concessions	% Food and beverage	% Car parking	% Rental car concession	% Property and real estate income or rent	% Advertising	% Other
Africa	42.9%	2.2%	14.6%	4.5%	20.9%	7.4%	7.5%
Asia-Pacific	44.5%	3.9%	10.6%	1.8%	23.1%	4.9%	11.2%
Europe	34.2%	3.9%	14.4%	3.3%	22.5%	2.6%	19.0%
Latin America-Caribbean	28.9%	6.7%	7.9%	3.1%	19.2%	4.9%	29.4%
North America	61.2%	3.8%	6.4%	0.8%	9.8%	1.5%	16.5%
Middle East	7.7%	6.7%	39.1%	16.8%	15.1%	5.8%	8.8%
World	**28.9%**	**4.8%**	**20.2%**	**6.8%**	**20.1%**	**4.1%**	**15.1%**

As it is expected that governments will continue to regulate most of the aeronautical revenue generated by airports, airport operators and owners are incentivised to continue exploring innovative ways of enhancing non-aeronautical revenue. In fact, non-aeronautical revenues can account for up to 70% of an airport's revenues[114]. In particular focusing on commercial revenues from retailing, advertisements, ground transport and property development (including golf courses, hotels, convention centres, malls, office space and entertainment centres) to generate profits. Food, beverage, and retail are ways for airports to differentiate themselves and also help with public perception. Many top airports are adding non-aeronautical revenues to their strategic plans and even their airport and terminal design plans;

[110] Based on a survey of 680 airports that represent ~70% passenger traffic
[111] Source: 2013 ACI Economics Report – Preview edition. Airports Council International (2012/2013).
[112] Source: 2013 ACI Economics Report – Preview edition. Airports Council International (2012/2013).
[113] Source: 2013 ACI Economics Report – Preview edition. Airports Council International (2012/2013).
[114] Source: Herrmann, Niko and Bob Hazel. The future of airports: Part 1 – five trends that should be on every airport's radar. Oliver Wyman (March 2012).

they are also employing retail revenue development and management systems, branding, and marketing[115].

Over the next 20 years, airports are expected to implement some of the following initiatives to grow non-aeronautical revenue[116]:

- Integrating shopping centres (including service stations, convenience stores and dry cleaners), industrial parks and golf courses into airports and airport precincts
- Automated retail units (kiosks) with merchandise, food, and beverages that can fit into small spaces, maximising every available opportunity for retail space[117]
- Promotion of retail through airport apps
- Selling excess power back to utilities through co-generation plants
- Operating slot machines
- Selling terminal naming rights and sponsorships to companies
- Offering express spa services
- Providing pet services
- Innovative advertising initiatives (e.g. advertising on air traffic control towers and unpaved airport land)

[115] Source: Herrmann, Niko and Bob Hazel. The future of airports: Part 1 – five trends that should be on every airport's radar. Oliver Wyman (March 2012).
[116] Source: HNTB (2007) Aviation Insight: Non-aeronautical revenue (Winter, 2007)
[117] Source: Schaal, Dennis. Airports are making more money than ever on non-aeronautical revenue. 16 November 2013. Accessed on 17 March 2015 at http://skift.com/2013/11/16/airports-are-making-more-money-than-ever-on-non-aeronautical-revenue/.

Aerotropolises and airport cities

With airports focusing more on non-aeronautical revenue sources, airport owners and developers are increasingly working in partnership with other landowners in the vicinity and with local urban planning officials. These trends will lead to the development of aerotropolises and airport cities.

The concept of an Airport City first appeared in the 1970s in the United States of America, referring to the development of industrial and business parks in the vicinity of airports. Nowadays, it has been used to describe the growth of aeronautical and non-aeronautical land developments occurring at modern airports worldwide.

Airport Cities have evolved with different spatial forms predicated on available land and ground transport infrastructure, yet virtually all emerged in response to four basic drivers:

i. Airports need to create new non-aeronautical revenue sources, both to compete and to better serve their traditional aviation functions.
ii. The commercial sector's pursuit of affordable, accessible land.
iii. Increased gateway passengers and cargo traffic generated by airports.
iv. Airports serving as a catalyst and magnet for landside business development.

The most common airside and landside airport city commercial activities include:

- Duty free shops
- Restaurant and specialty retail
- Cultural and entertainment attractions
- Hotels and accommodation
- Banks and currency exchanges
- Business office complexes
- Convention and exhibition centres
- Leisure-recreation and fitness
- Logistics and distribution
- Perishables and cold storage
- Catering and other food services
- Free trade zones and customs free zones
- Golf course
- Factory outlet stores
- Personal and family services such as health and child day care

The Airport City operating model is quite distinct from the more traditional civil engineering and aeronautical systems airport operating model guided by public sector principles. The commercial development role requires different strategies and operational skills sets driven by private sector principles fusing innovative management, finance, marketing and real estate. In the Airport City model, airports must do business the way businesses do business. This requires a major paradigm shift in airport master planning. These plans must be at least as focused on commercial layout and efficiencies as on aeronautical layout and efficiencies. Ideally, the commercial components and aeronautical components would be synergised. Consistent with their growing non-aeronautical roles and functions, airports are altering their operational management. Numerous airports (both public and private sector operated) have established commercial and/or real estate divisions to address development beyond airport boundaries. They include among others Aéroports de Paris, UK airport operators, BAA, Dallas Fort Worth International Airport, Frankfurt Airport, Amsterdam, Schiphol, Singapore Changi and Spain's Ferrivial Group.

An Aerotropolis or the Airport Economic Region, on the other hand, describes the sum of all airport-related developments that appear around an airport. It is an area that centres its economy on the airport, which in turn serves as the community's economic engine. The airport itself serves as a regional-wide multi-modal transportation and commercial nexus. Strings and clusters of airport-linked business park, information and communications technology complexes, retail outlets, hotels and entertainment centres, industrial parks, logistics park, wholesales merchandise marts and residential developments are forming along airport arteries up to 32 km outwards and economic impact has been measured up to 96 km from major airports.

Reflecting the new economy's demands for connectivity, speed and agility, the aerotropolis is optimised by corridor and cluster development, wide lane and fast lane movements. In other words, form follows function: Airport expressway links complemented by airport express trains bring cars, taxis, buses, trucks and rail together with air infrastructure at the multi-modal commercial core (the airport city). Aviation-linked business clusters and associated residential developments radiate outwards from the airports city, forming the greater aerotropolis.

Although much aerotropolis development has been spontaneous and haphazard, often spawning congestion and environmental problems, in the future it can be markedly improved through strategic infrastructure and urban planning.

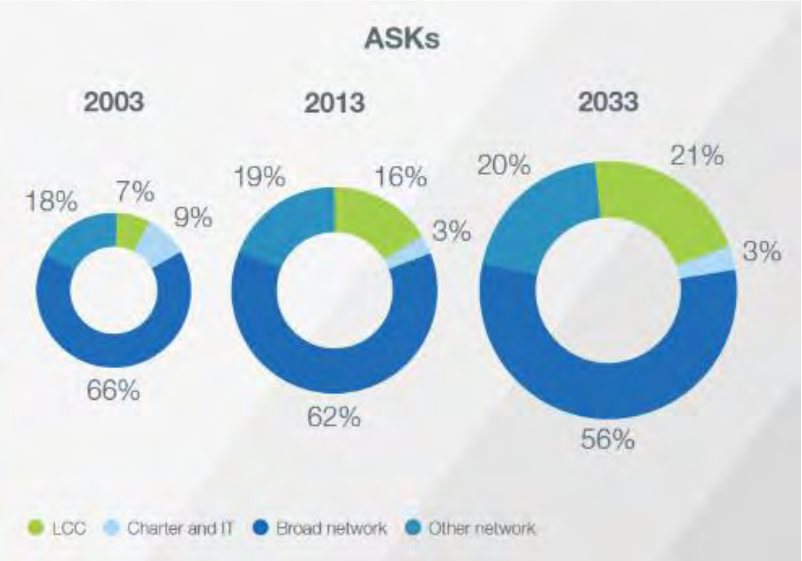
Noise and emission-sensitive commercial and residential developments should be sited outside high-intensity flight paths. Cluster, rather than strip development should be encouraged along airport transportation corridors with sufficient green space between clusters. Place-making and way-finding should be enhanced by thematic architectural features and iconic structures.

There are already several developments around the world, where airports are moving towards becoming airport cities and aerotropolises and other airports have already completed such developments. These airports include: Athens International Airport, Beijing Capital International Airport, Dallas/Fort Worth International Airport, Dayton International Airport, Denver International Airport, Dublin Airport, Frankfurt Airport, Helsinki Airport, Incheon International Airport, Kuala Lumpur International Airport, Memphis International Airport, Pittsburgh International Airport, Taiwan Taoyuan International Airport and Tancredo Neves International Airport.

8. Low Cost Terminals at secondary airports[118]

Currently there are more than 150 low cost carriers (LCCs) in the world, representing 21% of the total global market in terms of seats offered. Over the next 20 years, LCCs are forecast to require a total of 14 272, or 40%, of the world's new single-aisle aircraft.

Figure 8: ASKs by type of carrier



Source: Boeing Current Market Forecast 2014

In 2013, LCCs captured 26% of the world's total market share measured by annual seats. Whilst in the past LCCs used a single type of airplane, and kept to short-haul routes, many LCCs are now also using different types of airplanes and even expanding to medium and long-haul markets. AirAsia X, Scoot (affiliated with Singapore Airlines), Norwegian Air Shuttle, and Wow Air have all begun to offer medium-long haul routes within Asia and some between Europe and Asia and Europe and the United States. Therefore, secondary airports in destination markets may need to align the type of facilities offered to LCC requirements e.g. infrastructure and systems that allow for high-speed turnaround and different passenger processing facilities.

Some international airports are already accounting for these changes and restructuring their LCC terminals. For example, at Kuala Lumpur International Airport they have recently renovated the KLIA2 terminal, which was built in 2006 as a multi-purpose/ hybrid terminal that is efficient and cost-effective for LCCs. The new updates took into account specialised processing facilities developed by AirAsia (AirAsia X is the long-haul LCC of AirAsia) for LCC travellers with multiple tickets that might need to re-check in and collect bags. In the LCC market, many passengers require transfers, so the Malaysia Airports Berhad designed the terminal with the idea that 50% of the passengers would be transfer passengers.

[118] Sources: ICAO Air Transport Policy and Regulation. Available at http://www.icao.int/sustainability/Pages/Low-Cost-Carriers.aspx; The evolving long-haul low-cost network airline model: AirAsia X and the new LCC connectivity. CAPA. 3 September 2014. Accessed on 20 March 2015 at http://centreforaviation.com/analysis/the-evolving-long-haul-low-cost-network-airline-model-airasia-x-and-the-new-lcc-connectivity-182826

9. Airport ownership, operation and funding options

Historical background

With the exception of the United States, most airports around the world were historically owned and managed by federal governments. There was no economic assessment of airport performance, and public ownership was assumed to yield prices close to costs, provide the range of services that users were willing to pay for, and keep costs to a minimum.

However, this ownership and operations policy began to change in the mid-1980s, as governments around the world faced enormous pressures from taxpayers, (or the International Monetary Fund in the case of developing countries) to control (i.e., reduce) government deficits. Considered a mature industry and one which served a more affluent customer base, airports fell to the bottom of their priority list. Since then, governments around the world have made been making profound changes in how their airport facilities are owned and managed.

The United Kingdom was the first country to adopt a new policy: in 1987, it sold its federal airport system. The newly privatized company immediately began to make major investments, changed operating policies to become more efficient and customer service focused, and aggressively pursued development of non-aviation commercial revenues. Its performance has been very strong, with shares rising fourfold in value in a short period, while it was at the same time leading the world in reducing aeronautical charges.

Since the 1990s, governments across the world have been following suit and privatizing their airports, either as systems or as individual airport companies. With the notable exception of the United States, corporatization, commercialization and privatization of airports have become the worldwide trend, bringing considerable change to airport ownership, governance and institutional settings: there has been a transition from positioning airports solely as public utilities towards firms delivering airside services to airlines and terminal retail, and access services to passengers, plus additional ancillary services.

The motives for ownership and institutional restructuring via commercialization and privatization are diverse, but generally include:

- General rethinking of the role government should play in the economy and in airports, and sometimes, need to generate cash for the National Treasury;
- Easier access to private sector financing and investment to meet the constant need for capital renewal and expansion;
- Improved operational efficiency through private sector involvement, or more generally recognition of the relationship between ownership structure, governance and performance.

Recently, there is increasing involvement of the private sector in the management and the financing of airports, both in developed and emerging markets. Long-term concessions are being given to predominately private companies to oversee operations, as governments prefer less risks and shareholding[119]. This has of late particularly been the case in Central, Eastern, and South-eastern Europe. For example, in Croatia where a 65,000 m^2 terminal is being constructed at Zagreb airport, private firms were involved for the first time in the country's history[120].

[119] Source: www.ppiaf.org/node/762
[120] Source: New $450 million airport terminal highlights Croatia's private sector development. Accessed on 18 March 2015 at http://www.ifc.org/wps/wcm/connect/region__ext_content/regions/europe+middle+east+and+north+africa/ifc+in+europe+and+central+asia/news/new+airport+terminal+croatia+private+sector+development

Worldwide, airports industry deal volume reached a peak of 20 deals in the second half of 2013, generating deal value of US$13 billion; while the pipeline remained strong with a host of countries, including Greece, Spain, France, Japan, Brazil, and Ireland, announcing further privatization drives before 2016[121].

Airport ownership and governance models

Current different governance models being used to operate airports are listed below, with their implications for financing discussed below:

Table 22: Airport ownership and governance models

Government or public ownership models	Operation by Federal Government Department	Greece, Sweden
	Operation by Government Agency	Spain
	Operation by Municipal and Quasi-municipal Governments	Most U.S. airports
	Operation by Government Corporation	France (Aeroports de Paris), Australia (Federal Airports Corporation), Germany, the Netherlands
Models with private sector involvement	Private Not-for-profit Corporations	Canada
	Joint Government/Private Corporations	Denmark (Copenhagen), Austria (Vienna)
	Private For-profit Corporation Variations: Own vs. Lease, Pay-as-you-go vs. prepaid lease, BOT, Other PPP models, Separate operation of terminal, etc.	Airports in the UK, Japan, Australia, Brazil, India, etc.

The decision at the national level as to the organizational format under which airports operate will depend on the situation of the country and will be strongly influenced by government policy, as well as by the experiences of other states. Factors to take into account include:

- the legal, institutional and governance frameworks of the government and system of administration in the country;
- the cost and source of funds required to meet infrastructure needs and to secure the continuity of operation taking into account traffic forecasts and risks
- market conditions including degrees of competition among airports and users;
- the requirements of the aviation industry; and
- the role and contribution for civil aviation to the country's economic and social objectives.

[121] Source : Bernard Chow and Colin Smith, PwC, «Airport transactions: Airport privatisation elevates deal activity to higher altitudes »

Airport financing

Airport financing can be:

- Debt financing: represents a significant part of infrastructure financing worldwide, but its availability and cost of funds to an entity depend on its creditworthiness and rating, which are based on its earning potential, financial strength and liquidity; on the regulatory framework, and on potential government guarantees.
- Equity: implies non-government shareholding in the airport and the ability to offer an adequate risk-return combination to private investors.

Alternative governance structures will have different implications for airport financing in capital markets. However, long term sustainable non-government funding of an airport depends on the ability to generate funds internally. Airport revenues are generally bundled as aeronautical (fees and charges to airlines for runway, apron, terminal-gate use, etc.) and non-aviation (from retail and commercial activity including land leases). Airport generated aeronautical fees are generally limited by economic regulation, to prevent abuse of dominant position and anti-competitive practices.

- Government: when an airport is structurally incapable of generating sufficient funds internally (generally because of size, as it is widely accepted that airport unit cost per passenger declines steadily as size increases) but fulfils an important socio-economic role, government support can take a variety of forms.

Involvement of airlines in airport ownership and operations

When airlines invest in airports, not only are they interested in their investment from the financial returns side, but they are also interested in the functionality of the airport/terminal space. Most times when airlines invest in airports they are also heavily involved in the planning of the space so that it suits their needs. Interestingly, airlines may be the only investor for an airport development project. However, there are others that may prefer to act in a consortium with other airlines. Also, airlines may develop their own subsidiaries for the sole purpose of investing in airports; Thai Airways established Thai Airport Management Co. in 2006 when it declared its interest to manage and potentially own foreign and domestic airports. Some airlines may even use airport development as part of their competitive strategy; Porter Airlines bought its own airport in Lake Ontario so that it could have exclusive use of the airport, but it ran into legal problems when it evicted Air Canada Jazz. Additionally, some airlines may offer a loan for an airport development project; RyanAir is reported to have offered a development loan to Frankfurt Hahn Airport[122].

Examples of airlines or major airport tenants owning infrastructure include:

- British Airways LHR Terminal 5
- Lufthansa – FRA Dedicated Terminal
- Air France – CDG Dedicated Terminal
- KLM – AMS Schiphol Development Plan
- airBaltic – Riga Airport dedicated terminal
- Jazeera Airways – Kuwait International Airport dedicated terminal
- Porter Airlines – Purchased an airport at Lake Ontario
- RyanAir – Bremen Airport, Terminal E

Virtually all of the airports in the EU actively involve their carriers (including foreign carriers with established traffic rights), in their airport development planning. An interesting example of an exception to this is the planned US$500m terminal for Istanbul. It was discovered that the Turkish National Carrier had not been involved in any of the initial planning and yet was expected by the Airport Operator to relocate to the new facility. The finance was immediately withdrawn, later reinstated when the Carrier was fully engaged in the process.

[122] Source: Airlines invest in airports. A growing trend. CAPA. 20 September 2010. Accessed on 26 March 2015 at http://centreforaviation.com/analysis/airlines-invest-in-airports-a-growing-trend-35445

Benchmarking of some government airport financing programs

Airports Capital Assistance Programme (ACAP) – Canada

The ACAP is a federal finance programme introduced in 1995 to assist airports that play a key role in the accessibility of remote communities[123]. ACAP is open to ALL Canadian airports (excluding military airports) subject to certain eligibility criteria.

Eligibility criteria for ACAP

ACAP can only be used for capital/infrastructural projects that maintain or improve safety levels, protect airport assets or significantly reduce operating costs (e.g. runways, lighting, firefighting equipment, winter friction testing devices, upgrades to terminal buildings). ACAP applies to:

1. Airports not owned or operated by the federal government that meet statutory certification requirements
2. Airports with year-round regularly scheduled passenger flights (min of 1,000 scheduled flights in each of the past 3 years)
3. Airports designated as remote airports in the National Air Policy (this category of airports is exempt from the requirement to receive regularly scheduled services)

Funding provided by Transport Canada ranges from 0% to 100% of capital expenses, depending on the classification of the project by TC in terms of its priority and volumes of scheduled traffic. ACAP does **not** cover land purchases, feasibility, planning, or zoning studies, or projects already physically initiated or completed.

This multi-stage process to qualify for funding is described below:

Description of type of expenditure	**Prioritisation (in descending order)**
Safety-related airside projects such as rehabilitation of runways, taxiways, aprons, associated visual aids, aircraft firefighting equipment, related site preparation costs including environmental costs	1st
Heavy airside mobile equipment (safety-related) such as runway snow blowers, runway snow-plows, runway sweepers, spreaders, winter friction testing devices, and heavy airside mobile equipment shelters	2nd
Air terminal building/groundside safety-related – such as sprinkler systems, asbestos removal, barrier-free access	3rd

[123] Source: The National Air Policy defines remote airports, as airports where air services are “the only reliable, year-round transportation link to isolated communities.”

Passengers on scheduled commercial flights	% ACAP contribution based on project priority	
	Priorities 1 and 3	Priority 2
Fewer than 50,000	100%	Same as Priority 1, but when equipment is not completely dedicated to airport use, funding will decrease so that it aligns with airport use. Equipment salvage value will be deducted from equipment cost prior to the contribution formula.
50,000 – 74,999	95%	
75,000 – 99,999	90%	
100,000 – 124,999	85%	
125,000 – 149,000	80%	
150,000 – 174,000	75%	
175,000 – 199,999	70%	
200,000 – 224,999	65%	
225,000 – 249,999	60%	
250,000 – 274,999	55%	
275,000 – 299,999	50%	
300,000 – 324,999	45%	
325,000 – 349,999	40%	
350,000 – 374,999	35%	
375,000 – 399,999	30%	
400,000 – 424,999	25%	
425,000 – 449,999	20%	
450,000 – 474,999	15%	
475,000 – 499,999	10%	
500,000 – 524,999	5%	
525,000 +	0%	

Exclusions – ACAP does **not** cover the following expenses:

- Land purchases
- Feasibility, planning, or zoning studies
- Projects already physically initiated or completed

ACAP funding sources

ACAP funding is derived from the Canadian government's Consolidated Revenue Fund, a centralised fiscal reserve (drawn from taxes and other revenues) from which all government services and activities are funded. Transport Canada receives a direct fiscal transfer for ACAP from the Receiver General, the administrator of the Fund. The Receiver General awards the total amount for ACAP to Transport Canada as a lump sum valid over a period of 5 years. From a planning perspective, this approach works well for Transport Canada, as annual fluctuations in expenditure are normal, hence the ability to move the funds around to accommodate demand in each year contributes to the smooth running of the programme. Allocated funds unspent at the end of 5 years are transferred back into the Consolidated Revenue Fund.

Disbursements to airports under ACAP

Currently, approximately 200 Canadian airports are eligible for ACAP. As of 2015, funding is around $38m per year.

There are no regional quotas for ACAP grants – however, the geographical spread of applications for ACAP is taken into account in decision-making.

Key issues/challenges

- *Stakeholder concerns about the minimum passenger service criteria* – it is argued that the minimum level discriminates against smaller airports that rely on chartered flights and that the number of enplaned and deplaned passengers is not an adequate measure for the size of an airport. By setting a minimum level of scheduled services, ACAP is excluding airports that need the capital funds to increase their scheduled passenger service
  - However, there is also recognition that expanding the eligibility criteria to include all registered aerodromes with or without passenger service would increase the number of airports eligible for ACAP from 200 to well over 700, an unsustainable figure

- *Perceptions that the decision-making process is regionally and politically biased* – this may have occurred as a result of the fact that ACAP did not officially release a full list of recipients in the early days of the programme
  - In addition, airport operators and stakeholders indicated that information on the progress of submissions was not shared with applicants and felt they were left guessing as to why certain projects were funded and not others. Stakeholders and operators felt that TC did not clearly inform or provide justifications for funding allocations
  - These issues have since been addressed and there is now greater transparency and accountability in the system.

GENERAL POLICY ON SMALL AIRPORTS IN CANADA

Small airports should be eligible under appropriate new or renewed infrastructure programs. For small airports, these programs should:

- Focus on the aviation aspects of an airport's business, such as runways and navigational aids
- Not be used to support airport operations
- Not duplicate financial support to specific projects from other federal, provincial, territorial or joint airport programs
- Consider competitiveness concerns for other airport(s)
- Exclude federally-owned airports

- Information on public financial support available and provided to airports should be broadly disseminated to help optimize the use of limited public resources
- Future actions should acknowledge that small airports are key infrastructure for many Canadian communities and funding requirements need to be considered in the context of infrastructure priorities
- Airports' associations, with the assistance of jurisdictions, should develop, document and disseminate small airport best practices, including the consideration of workshops as a vehicle for sharing best practices within and between jurisdictions
- Small airports should participate in the review of aerodrome standards and practices, either directly or through their associations, as a means of permitting jurisdictions to assess the financial impact of airport regulations

Notwithstanding the unique situation of each airport, the following general observations are provided as a basis for discussion and continuous refinement. Characteristics of successful small airports tend to include:

- Early engagement of and support from the local business community as users of the air service. Assured demand and customer loyalty are critical to sustained operations.
- Early engagement of and support from local governments – whether through preferential tax treatment, or other creative approaches of support
  - Local jurisdictions are best placed to support a local airport if it represents a community asset and priority
- Engagement of municipal and/or provincial/territorial governments – this is important in regions where catchment areas overlap among airports
  - Some coordination of plans and assistance may be necessary to ensure a sustainable level of operations for the longer term
- Early and active engagement of and support from a carrier(s)
  - Recognition that carriers are not there to "do any favours" – if there are better commercial opportunities they will leave
- Right-sizing of operations with a view to balancing costs and revenues. This may involve downsizing assets, reducing hours of operation to minimise operating costs, or changing the status of the airport from "certified" to "registered" when prolonged absence of scheduled air services has been observed and is expected for the foreseeable future

-
- A commercially-based business plan, which has the buy-in of the business community and local governments
  - Local financial support may be for a pilot initiative that has to prove itself within a limited period of time; sustainable operations are driven by the marketplace.
- Recognising that airport operations may take time to build, and a good business plan seeks to "make the most" of the assets available, which may include:
  - Creative land development of excess lands.
  - Related business services such as pilot training.
  - The airport operator providing limited services off site based on personal marketing and opportunity (even internationally).
- Continuous reassessment of circumstances and nurturing of partnerships
  - Some small airports have benefited from the establishment of partnerships with users who have vested interests in the introduction or maintenance of air services at particular airports. Examples of such partnerships are set out below.

Partnerships to promote viability of small airports

Example 1: Creation of a Travel Bank
More than 250 enterprises banded together, under the leadership of the Fredericton Airport Authority and the Chamber of Commerce, to create a $2.5m Travel Bank, a monetary guarantee of a minimum level of spending on airfares.

Example 2: Assuming Ground Handling Services for Air Carriers
Bathurst airport offered to assume responsibility for ground handling services on behalf of Air Canada Jazz.

- The Bathurst Airport Authority has used a public awareness campaign to showcase the importance of the airport.

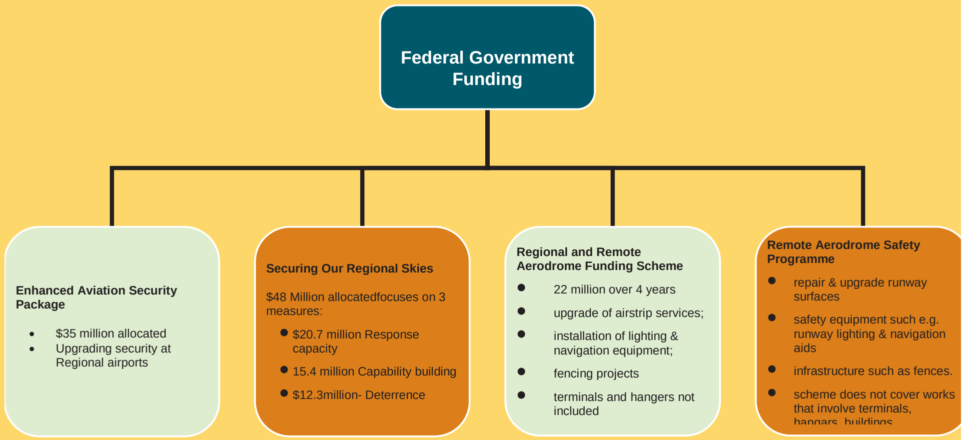
Example 3: Government and Community Support
After losing its international flights from Frankfurt, the Yukon government guaranteed Air Transat the revenue equivalent of 150 passengers per flight (for 20 flights). Yukon agreed to pay the difference in case of a shortfall in passengers, and it invested to help the airport obtain an air start, a container loader and dollies as well as a push back tug. The Yukon tourism industry, municipalities and the German speaking market worked with the Yukon government before the commitment was made.

- There is a need to develop, document and disseminate information on best practices so that small airports can be informed of initiatives adopted at other airports that might provide potential opportunities. This could be done through airports associations, with the help of jurisdictions.
- The Task Force sees the need for all airports, irrespective of size, to generally undertake commercially-based airport planning reflecting best practices.
  - If a small airport does not have adequate resources to undertake the development of a business plan, support could be made available to allow for a plan to be developed.
  - This support can take many forms ranging from the development by airport associations of a "template airport plan" approach to public funding support to develop a plan.
- The Task Force has concluded that, because the root causes of viability concerns vary from one airport to another, there is no "one-size fits-all" solution.
  - Recognizing the changing market dynamics, options for future action must provide flexibility, and must reflect the role of the airport for the community and region, and the role of the airport in the relative context of the country's airport system.

FEDERAL GOVERNMENT: REMOTE AIR SERVICE SCHEME: AUSTRALIA

Remote and rural aerodromes in Australia have access to funding from the Federal government. In Queensland, Western Australia and the Northern Territory, additional funds may be accessed from the State. The various subsidy schemes provided by the Federal government and the individual States may cover air services deemed essential, and airport development to improve compliance with safety regulation.

Examples of federally funded programmes for small airports include:



The Remote Air Service Scheme (RASS) is an initiative to increase air services to remote areas by giving air operators, selected through a competitive tender process, direct subsidies for weekly air transport services that carry passengers and goods (e.g. educational materials, medicines, fresh foods and other urgent supplies).

The Scheme is managed by the Regional Services Division of the Department of Infrastructure, Transport, Regional Development and Local Government.

Currently, 6 operators service 257 remote and isolated stations and communities weekly through the RASS. The capacity to admit communities is limited by the Scheme's budget in any year. To be considered for inclusion on the RASS Scheme, communities must meet certain eligibility criteria including:

- Demonstrate the legitimate need for weekly air service
- The community must be sufficiently remote in terms of surface travel time to a population centre or neighbouring community receiving a weekly transport service.
- Have an aerodrome that meets safety standards

Australia Post, freight, tourist passenger fares) from the agreed maximum subsidy payable under the scheme. Accordingly, there can be an under-spending on RASS compared to the budgeted allocation.

Key successes

- More remote and rural communities have access to essential services

Key challenges

- State involvement and coordination between Federal government and individual States
- Selection criteria is not strictly adhered to

WEST AUSTRALIA: REGIONAL AIRPORTS DEVELOPMENT SCHEME (RADS)

The Regional Airports Development Scheme (RADS) was informally introduced in 1995 and formally incepted in 1997. RADS is administered by the West Australian government’s Department for Planning and Infrastructure (DPI). The department of Treasury allocated $3.8m to the programme for 2015-2017. For the 2015-2017 cycle, $2.5 million will be given to 25 regional airports and the rest of the funding is pending approval for five other projects. In the past, projects have ranged from $2m to assist with construction of a new terminal to $1,239 to help widen the runway and clear take-off and approach areas. 2015-2017 grants ranged from $6,294 to prepare an airport asset management plan to $300,000 to raise the level of the airstrip[124].Types of projects supported include: airport asset management planning, runway development, airside development, grounds development, terminal development, airport master planning, or other aviation infrastructure projects.

Applicants are required to apply before the financial year in which funds are needed. The DPI advertises a six week submission period across the state to applicants who want to improve their infrastructure to improve community access to services or for economic benefit. Applications for airside infrastructure development or the maintenance of aircraft movement areas are accepted. Up to 50% of the total project costs can be covered by RADS.

The demand for RADS is always greater than the funds available, the DPI assesses each project proposal before submitting their recommendations to a consultative committee which includes members of government agencies such as the Department of Treasury and Finance, Department of Industry and Resources, Tourism Western Australia, Western Australian Local government and Regional Development and the Royal Flying Doctor Service.
Applications are assessed according to a number of criteria listed below:

- Level of remoteness / isolation of the area
- If there is a disadvantage accessing other transport, such as rail, sea, or road
- Proximity to major regional airports
- Physical features of the airport and its long-term suitability
- Advice of stakeholders
- Impact on access to medical and educational facilities for the community
- Level of other contributions towards project, such as council contribution

The Committee's recommendations are submitted to the Minister, who awards the grants to the applicants. Once the grant offers have been accepted, a Funding Agreement (contract) is signed, stipulating the terms and conditions of the grant. The contract indicates that the project must be complete within 24 months of the execution of the contract. Once the project is complete, the applicant is required to provide the DPI with an audit that verifies that the work has been completed at an appropriate standard and to erect a RADS sign obtainable from the department.

The DPI has no on-going role in the management of aerodromes. Local Government Authorities are often the beneficiaries of RADS and thus take full responsibility for the airport. In the other cases, the private owner, aboriginal corporation or another government agency remains responsible for the airport.

Key challenges in the implementation of the scheme

- Acquitting projects, especially for smaller communities who may not have good record-keeping skills and auditing procedures:
- The Minister awards grants, and until recently signed all of the funding agreements (contracts) as well, before works commenced, which can cause delays
- Land ownership issues are also difficult to overcome. To ensure that the applicant does not sell the asset for a profit after the completion of the works, there is a clause that stipulates that the owner shall not part with the land before 2 years (for projects with a grant under $200,000), 5 years (between $200,000 and $500,000) or 8 years (over $500,000). However, given the variety of applicants under this scheme (local government, private entities, pastoral lessees, aboriginal corporations), Certificates of Title to demonstrate ownership of the land before signing the contract are now being sought.

Key successes

[124] Source: RADS 2015-17 Funding round: grant allocation – map. Available at http://www.transport.wa.gov.au/aviation/funding-allocation.asp

- There was investment of over $58m in regional airport infrastructure projects between 1997 – 2008. Since 2008, 184 projects were supported by over $33 million from RADS[125].

AIRPORTS IMPROVEMENT PROGRAMME – UNITED STATES OF AMERICA

The Airports Improvement Programme (AIP) provides funding for the capital development of airports that make up the national airports system in the US. Projects that are covered by the AIP are those that focus on the following aspects of airport development:

- The enhancement of safety and security
- The rehabilitation of ageing infrastructure
- Expanding airport capacity
- Reducing the impact of aircraft noise

AIP funding is subject to the following conditions and exclusions:

- Eligibility to receive funds under the AIP is contingent upon the type of sponsor and the type of activity for which funds are sought. Examples of the different types of sponsors that are eligible to receive funds include:
  - Planning agencies – e.g. departments of transport, metropolitan planning organisation
  - Public agencies owning airports – e.g. a state, a municipality, a tax-supported organisation
  - Private airport owners/operators – e.g. an individual, a partnership, corporation, etc., that owns a public-use airport used or intended to be used for public purposes that is a reliever airport or an airport that has at least 2,500 passenger movements each year and receives scheduled passenger aircraft service
- Sufficient funds are available for that portion of the project not covered by the AIP United States
- The project will be completed without undue delay
- The project involves more than $25,000 in AIP funds unless, in the judgment of the responsible Airports office, it would be in the best interest of the Government to award a grant of a lesser amount
- Project is depicted on an FAA-approved current airport layout
- Also, the FAA requires all AIP grant recipients to file detailed annual financial reports which are maintained in a publicly-available database
- The AIP cannot be used for an airport's operational expenses

Introduced in 1982, the AIP is administered by the AIP Branch within the Federal Aviation Authority's (FAA) Office of Airport Planning and Programming. The overarching policy framework of the AIP is the National Plan of Integrated Airport Systems (NPIAS), which lists development considered necessary to provide a safe, secure, efficient, and integrated airport system. Only airports that are identified in the NPIAS are eligible to receive funding under the AIP; these airports (or portions thereof) are also required to be public-use airports that serve civil aviation. An estimated 3,330 existing airports currently qualify for funding.

AIP grants generally cover 75% of eligible costs for large and medium primary hub airports and 90-95% for small primary, reliever, and "general aviation" airports.

Financing of the AIP

The AIP is funded by the Airport and Airways Trust Fund, established by a 1970 piece of legislation. Over 2012-2015, US$3.35bn for AIP grants was provided by the Trust Fund, and an estimated US$42.5bn in AIP-eligible projects between 2013 - 2017.[126]

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[125] Source: Holt, Colin. New airport project to take off in Busselton. 25 March 2015. Accessed on 26 March 2015 at http://www.nationalswa.com/News/MediaReleases/tabid/83/articleType/ArticleView/articleId/4192/New-airport-project-to-take-off-in-Busselton.aspx

[126] Source: Committee on Transportation and Infrastructure U.S. House of Representatives. 12 June 2014. Accessed on 27 March 2015 at http://transportation.house.gov/uploadedfiles/2014-06-18-aviation_ssm.pdf .

The Trust Fund derives its revenue from user fees and fuel taxes such as passenger ticket taxes, taxes on cargo waybills, and taxes on commercial aviation fuel and "general aviation" gasoline. It can make grants to the AIP on an annual fiscal year basis.

Key challenges in administering the AIP

- *Uncertainty about size of future budget for the AIP* – going forward, competing concerns are gaining increasing prominence whilst the budget for aviation programmes does not seem likely to increase proportionately
- *Airports have experienced bureaucratic delays in obtaining discretionary funds*, with long lag periods between the date of application and the date of receipt
- *Ineffective monitoring to ensure status of grants is up-to-date and accurate* – investigative reports have revealed instances of grants being idle beyond the standard time permitted by the FAA (such funds should have been re-allocated upon the expiry date)

Highlands and Islands Airports Ltd (HIAL) – Scotland

Introduction and background

Established in 1986, Highlands and Islands Airports Ltd (HIAL) is a group airport operator owned by the Scottish government and operating as a commercial entity. Public ownership of HIAL is through the Scottish Executive's Transport Directorate.

HIAL is responsible for airport infrastructure and operations, facilitating lifeline air links and developing scheduled air services in conjunction with airlines. HIAL operates 11 airports in Scotland (Benbecula, Campbeltown, Inverness, Islay, Kirkwall, Stornoway, Sumburgh, Tiree, Wick and Dundee), all of which are categorised as social airports covering the Highlands and Islands area[127]. Most of the HIAL airports are ex-RAF (Royal Air Force) airstrips pre-dating the formation of HIAL in 1986. The exception to this is Dundee Airport which opened as a commercial airport in the 1960s, and was transferred from local government to HIAL in 2007 in an effort to improve its performance.

The HIAL airports do not constitute the only airports in the Highlands and Islands (although they are the majority) – local government authorities in the region also operate a small number of airports. The exclusion of these airports from the HIAL network is more for historical reasons rather than a deliberate decision-making process.

Operations

All HIAL airports are currently loss-makers and it is the objective of the Scottish government to turn them into profit-generating commercial businesses. Once this has been achieved for some of the airports, one of the key issues the government will have to address is whether profitable airports should be retained within the HIAL network to subsidise other airports, or if only those airports requiring government support should be included in HIAL. No firm policy decisions have yet been made on this issue. At present, there is no cross-subsidisation amongst the airports.

None of the airports in Scotland is subject to price cap regulation as demand for services is relatively limited, and the airports have been able to invest appropriately without undue reliance on airport charges to provide the necessary financing. The level of airport charges is therefore not a cause for concern in Scotland.

[127] The Highlands and Islands region has a population of about 500,000 living on an area covering about 39,000km^2, and is one of the most sparsely populated areas in the EU. 30% of the total population lives on more than 90 islands; overall, 61% of people in the Highlands and Islands live in rural areas or settlements of fewer than 5,000 people. The population is widely dispersed, with settlements and hamlets of different sizes spread out across the islands.

Funding for HIAL

HIAL receives aviation and non-aviation income from its operations and the shortfall is made up for by subsidies from the Scottish government – subsidies of £21.7m were received in the 2013/14 financial year[128]. In lobbying for government funding, strategic corporate plans for the financial year(s) ahead and performance reports from previous years are used to demonstrate need.

Competitiveness of airports in the HIAL network

Competition between the airports is limited due to the shared and public ownership of the airports, and the loss-making nature of the airports' operations. However, Inverness, the major hub airport in the network, competes with Wick Airport. Externally, Inverness also competes with BAA airports in Aberdeen, Edinburgh, and Glasgow.

Reporting and accountability

Standard and statutory reviews and reports are conducted by HIAL as follows:

- Financial performance reports to the HIAL Board on a monthly basis
- Annual report detailing airport accounts, passenger and freight volumes, infrastructure and other investments (all on an airport by airport basis)
- Monthly reports on safety, security, and environmental management
- HIAL corporate plan with a 10-year horizon
- Policy and Financial Management Review to assess whether HIAL is fulfilling its mandate – these tend to take place every 5 years

Socio-economic impact of HIAL

Some of the indicators used to evaluate the socio-economic impact of HIAL include GDP and employment trends. Other issues that are taken into account include accessibility to national and international locations (e.g. frequency of flights, direct vs. transit). Across the entire Highlands and Islands region, renewable energy such as wind, wave and tidal are key industries. Most firms are SMEs and there are higher business start-ups rates than in mainland Scotland.

Some of HIAL's key successes include:

- *Consistent growth in passenger numbers and ATMs* – government subsidies to make air travel more affordable and accessible have had a significant impact on the uptake of air services in the Highlands and Islands, particularly in the more isolated locations. Some of the key subsidy programmes are:
  - Air Discount Scheme: Allows residents in selected parts of the Highlands and Islands a 40% discount on air fares to commercial centres and local airports in the region
  - Air Route Development Fund: Aims to increase the number of serviced routes to better link Scotland with the rest of the UK and international destinations
  - General operating subsidies and capital grants: Subsidies are based on the agreed demand for local airport infrastructure, and commitment accounting is used for capital projects spanning several financial years

Some of HIAL's key challenges include:

- *Long term financial sustainability* – HIAL, which relies on aviation income and government subsidies, has been forced to explore non-aviation and non-subsidy income options. Examples include property development on non-operational airport land, e.g. residential and commercial housing at Stornoway Airport, business park at Inverness Airport

Key lessons from HIAL:

[128] Source: Williamson, James. HIAL in 4.5m slump in spite of 20m subsidies. The Courier. 26 September 2014. Accessed on 26 March 2015 at http://www.thecourier.co.uk/business/news/hial-in-4-5m-slump-in-spite-of-20m-subsidies-1.596431.

- *The significant market presence of some airports within a network should be managed carefully*

  – Inverness Airport plays a dominant role in the HIAL network, accounting for 47.8% of all passengers[129]. However, the developmental needs of the other airports in the network are considered on an individual basis and responded to proportionately. As far as possible, efforts are made to distribute traffic throughout the network without placing undue emphasis on Inverness Airport.

- *The successful provision of air services to rural areas is strongly linked to wider integrated transport planning* – HIAL is a member of the Highlands and Islands Transport Partnership (HITRANS), a statutory body whose mandate is to develop a comprehensive solution to public transport challenges in the Highlands and Islands across all modes of transport. There is a high degree of cooperation between HIAL and HITRANS, and HIAL airport developments typically include a road and/or rail access solution agreed to by both parties.

- *Consideration should be given to market augmentation measures as an alternative to service support measures* – HIAL emphasises proactively developing its service offerings and market share. It has a close commercial relationship with airlines based on marketing the benefits of its airports as well as the Highlands and Islands region as a whole.

- *Flexibility in defining the social airport network* – the system allows for airports to be added to the HIAL network or closed if necessary, depending on the socio-economic circumstances.

[129] Source: ec.europa.eu/competition/consultations/2013_aviation_guidelines/highlands_islands_airports_en.pdf

10. Strategies to combat illicit activity at airports

As airports are centres of transport, particularly international transport, they are also central to stopping illegal activities such as drug smuggling and human trafficking.

For instance, human trafficking and the illegal migrant trade favour large international transit areas where there are overwhelming amounts of people as well as small airports that have fewer officials with training in document control[130]. Their techniques include going through an airport's domestic terminal, bypassing immigration in the international terminal through use of the emergency exit[131]. Within smaller airports, sometimes groups of people will "rush security gates" to overwhelm airport staff[132]. Other techniques include using LCCs, web-check-ins, and any priority or e-ticketing services that require less document checks[133]. Many airports are aware of this and have developed strategies to aid in stopping illegal activities. San Francisco International Airport has implemented a training program that will enable airport staff members to be able to identify cases of human trafficking[134]. Miami International Airport also provides similar training for airport employees to be able to identify victims[135]. In the UK, anti-slavery teams as part of the Border Force under the Home Office have been placed within airports to identify human trafficking victims, collect intelligence related to human trafficking, and disrupt gangs of organised crime. The first airport to utilise the anti-slavery team was Heathrow, and then teams were supposed to extend through to Gatwick and Manchester airports as well. These new teams will also have support from other government agencies to develop specialised trainings[136].

Drugs are another problem that airports are trying to handle, especially in West Africa, as major cities along the coastline are hubs for drugs from South America before they are shipped into Europe and elsewhere. Cocaine, for example, may cross the Atlantic Ocean in a small Cessna with extra fuel and then be shipped elsewhere from major airports in the region such as Dakar, Accra, or Lagos[137]. For these reasons, the UNODC recently launched a task force to help intercept drugs at the Dakar airport and stop them from being sent elsewhere[138].

New technologies will also help airports to share information about suspicious passengers and intervene on illegal activities. The proposed pre-screening processes at departing airports will allow for suspicious passengers' images to be sent to the arrival airport's border control during

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[130] Source: Migrant smuggling by air. UNODC. http://www.unodc.org/documents/human-trafficking/Migrant-Smuggling/Issue-Papers/Issue_Paper_-_Migrant_Smuggling_by_Air.pdf
[131] Source: Migrant smuggling by air. UNODC. http://www.unodc.org/documents/human-trafficking/Migrant-Smuggling/Issue-Papers/Issue_Paper_-_Migrant_Smuggling_by_Air.pdf
[132] Source: Migrant smuggling by air. UNODC. http://www.unodc.org/documents/human-trafficking/Migrant-Smuggling/Issue-Papers/Issue_Paper_-_Migrant_Smuggling_by_Air.pdf
[133] Source: Migrant smuggling by air. UNODC http://www.unodc.org/documents/human-trafficking/Migrant-Smuggling/Issue-Papers/Issue_Paper_-_Migrant_Smuggling_by_Air.pdf
[134] Source: San Francisco Airport human trafficking prevention: SFO launches program. Accessed on 18 March 2015 at http://speier.house.gov/index.php?option=com_content&view=article&id=610:san-francisco-airport-human-trafficking-prevention-sfo-launches-program&catid=2&Itemid=15
[135] Source: MIA Employees learn how to spot human trafficking victims with new training program. Press Release March 2, 2012. Accessed on 18 March 2015 at http://www.miami-airport.com/releases/12-03-02-MIA_EMPLOYEES_LEARN_HOW_TO_SPOT_HUMAN_TRAFFICKING_VICTIMS_WITH_NEW_TRAINING_PROGRAM.asp
[136] Source: *Anti-slavery teams to tackle human trafficking in airports.* The Telegraph. 21 February 2014. Accessed on 18 March 2015 at http://www.telegraph.co.uk/news/uknews/immigration/10654169/Anti-slavery-teams-to-tackle-human-trafficking-in-airports.html.
[137] Source: Perdigao, Nayanka. Drug trafficking: The new threat to peace and security in West Africa. 2 August 2012. Accessed on 18 March 2015 at http://www.consultancyafrica.com/index.php?option=com_content&view=article&id=1071:democratic-transition-in-egypt-and-tunisia-lessons-for-arab-spring-states&catid=60:conflict-terrorism-discussion-papers&Itemid=265 .
[138] Source: Senegal: UN launches task force to help stem drug trafficking through airport. Accessed on 18 March 2015 at http://www.un.org/apps/news/story.asp?NewsID=40216#.VQmGH2SUc3R .

flight. Once the flight lands, the few suspicious passengers can be easily found and taken from the mass of passengers for additional screening[139].

Secondary, regional, and other smaller airports as well as helipads and lone airstrips are increasingly being used for various types of illegal activities, likely because these facilities have less traffic and law enforcement than primary airports, so criminals believe they can arrive and depart undetected. Light aircraft are being used as transport for drugs, guns, and illegal people according to the British National Crime Agency, and these planes are landing in fields or rural airstrips to avoid major airports' security[140]. In the U.S. light aircraft have also been used to transport illegal immigrants from airports at the U.S.-Mexico border to large cities, bypassing many immigration and customs checkpoints[141]. Turkish migrants were flown across the border on a small six-seat plane to small airstrip that had no passport control[142].

In order to combat these activities at smaller airports, various efforts are being made. For instance, efforts around communication are occurring to encourage reporting by residents in the vicinity of any suspicious activity, such as the U.S. TSA's proposed "Airport Community Watch Program" that involves the airport community and local law enforcement[143]. In Kent, they are monitoring 120 small air bases for illegal and suspicious activities and have asked the community to report any suspicious activities[144]. There are also programmes for remote and unmanned aerial system monitoring and surveillance, as well as closed circuit television monitoring and intrusion detection systems[145]. Following monitoring, action can be taken to disrupt illicit activity patterns, e.g. arresting pilots involved in illicit activity, introduction of temporary security or border control presence at airports where incidents have taken place. Some airports are also allocating parts of their budgets for customs and immigration officers to investigate incidents at small airports.

In addition, there is increased international cooperation to share information and improve risk profiling; the United States Department of Homeland Security has been particularly involved in making agreements with other countries, especially in Europe, to increase coordination and information sharing[146].

11. Regional airports

There is no agreed **definition** for the term *regional airport* although it is clear that large and major hub airports are excluded. Several types of airports might fall into the regional category:

- Small airports serving lightly populated areas
- Small, medium–sized or potentially large primary airports serving secondary cities
- Small to medium–sized airports serving a defined international region

[139] Source: *Airport Design trends.* Aviation Business. 10 January 2012. Accessed 16 March 2015. Available at: http://www.aviationbusiness.com.au/news/airport-design-trends.
[140] Source: Illegal immigrants, guns and drugs 'smuggled into Britain on light aircraft.' Accessed on 18 March 2015 at http://searchlight-germany.blogspot.com/2014/05/illegal-immigrants-guns-and-drugs.html
[141] Source: Moore, Jim. California aircraft used to transport illegal aliens. 2 February 2012. Accessed on 18 March 2015 at http://www.aopa.org/News-and-Video/All-News/2012/February/2/Flight-school-victimized-by-renters-smuggling-arrest .
[142] Source: Toolkit to combat smuggling of migrants. Accessed on 18 March 2015 at http://www.unodc.org/documents/human-trafficking/SOM_Toolkit_E-book_english_Combined.pdf
[143] Source: Security guidelines for General Aviation Airports: Information Publication A-001. Transportation Security Administration. May 2004.
[144] Source: *Plea to be alert to suspicious aircraft in Kent*. Kent and Sussex Courier. 23 April 2010. Accessed on 18 March 2015 at http://www.courier.co.uk/Plea-alert-suspicious-aircraft-Kent/story-11994370-detail/story.html.
[145] Source: Security guidelines for General Aviation Airports: Information Publication A-001. Transportation Security Administration. May 2004.
[146] Source: http://www.dhs.gov/blog/2010/02/18/international-information-sharing-advancing-security-and-protecting-privacy

The traditional **role** of a larger regional airport is therefore to provide connectivity of its regional centres with the rest of the world through connection with a main hub airport, but also provide point-to-point connectivity with other regional centres in the country and nearby states as well as sometimes, providing long-haul, point-to-point connection in specific niche markets (e.g. driven by migration and demographics). The regional airports have therefore a very important development and cohesion role for their regions.

Congestion at the main hubs and increasing demand for air transport, both for passengers and freight services has necessitated changes to the overall air systems, with regional airports taking an ever-expanding role. Optimisation of air transportation systems within the framework of the modes of transport plays an important part in the present quest for sustainability.

Apart from connecting the local population with the closest administrative, economic and social centres, these airports are also very important for the local businesses that need highly efficient services, both for transfer of goods and personnel.

Regional airports are therefore likely to function either as **origins or destinations** depending on the local conditions. This means that the air transport services offered will mainly consist of short-haul operations serving either/or both of:

- Pure point-to-point traffic to other point-to-point airports;
- Spoke traffic providing feed to and from hub airports providing one-stop connections to ultimate destinations (as well as non-stop traffic to the hub as a destination).

Regional airports serve a variety of different market segments and therefore will serve different **segments of traffic** based on user demand:

- Regional airports often fulfil an important social role in providing connectivity to remote regions;
- Low-cost traffic operating on point-to-point routes;
- Feed into major hubs, usually by network carrier, their regional subsidiaries, alliance or code-sharing partners;
- Charter traffic, both as the origin or destination;
- General or express freight, either as a small hub for carrier or as a spoke to feed into the carrier’s main hub, especially for express carriers;
- High value business traffic.

Regional airports, offering primarily short-haul, one-stop passenger services will be served by narrow-body short-haul aircraft. However, the **range of aircraft** operated might be quite large including:

- Turbo-props;
- Regional jets;
- Business jets;
- Narrow-body jets;

In addition, wide-body jets might be expected to operate at those airports that support freight, albeit with relatively low frequency.

The **siting** of new airports involves taking into consideration a variety of problems relating to transportation resources optimisation. Regional airports can be a powerful driving force behind the development of an area and conversely can result in major problems if they are incorrectly sited.

Regional airports cannot be categorised solely on the basis of traffic volumes or hierarchal position within the national airport system, instead they must be categorised on the basis of the role that the airports play within the regional network.

At regional airports only the **basic services** are often required, including:
- Air Traffic Control (ATC) services;
- Fire and rescue services;
- Police;
- Passenger handling services, including check-in and security;
- Facilities management e.g. building maintenance, cleaning and trolley management;
- Aircraft ground handling services (likely to be mainly baggage handling and refuelling);
- Border control;
- Car park;
- Other transport services (bus/coach, taxis and train).

As the airport grows, it needs to ensure provision of **wider services** that are not directly related to aeronautical activities, such as internet access, retail services, banking and currency exchange, food and beverage, car rental services and ultimately extending to the provision of the business lounges and facilities. Depending on the airport's business model, revenue from these non-aeronautical services can be important for the viability of the airport and as the volume of passengers grows, this revenue stream can become an important enabler for reducing charges and attracting more passengers to the airport.

Most of the other services are provided either by airport operator, airlines or through subcontracted third parties. In the case of third party or subcontracted services, it is important that an airport has Service Level Agreements (SLA) in place that ensures that quality of these services, relative to the requirement, is not compromised. In case of small regional airports, the airport's operator usually provides most of the other services or subcontracts these services to a minimum number of other providers.

In some cases, the airport's operator might want to dedicate facilities to a special group of airlines, for example to build a low-cost terminal that serves passengers on low-cost point-to-point services.

The establishment of adequate surface access by private car, taxi, regular coach, metro and/or railway services is another important factor in the successful emergence of an airport. If the airport is connected to the other major transport nodes in the region, it can effectively start to function as a regional transport hub.

The **governance structure** of regional airports across the world is very diverse and varies from region to region and from country to country and from airport to airport. From the ownership perspective there are three main categories: Public ownership, private ownership and public private partnership. There are sub-categories of ownership within these as follows:
- Public ownership:
  - centralised ownership, by a government department, specialised agency or government enterprise of some type;
  - regional or local ownership;
  - combined central-local ownership.
- Private ownership by total divestiture through initial public offering (IPO), trade sale or long term lease.
- Public private partnership, through establishment of a special purpose vehicle or partial divestiture.

The general vision of regional airport operators is that in the future, the **region-to-region routes** will be mostly operated by **low-cost carriers**, even if today low-cost and network carriers coexist on the routes. Network carriers will mostly concentrate on hub operations.

Regional airports will support more and more point-to-point flights, which mean the feeder activity will not grow much. This role will increasingly be fulfilled by regional carriers but their activity will be likely focusing on pure business markets and some hub feed for major partners.

Regional airports will provide an important **reliever role** in the future and will benefit from the inability of large major airports to absorb the forecast increase in air transport demand.

The development of regional airports is restricted by a number of limiting factors, including:

- Lack of policy focus on regional airports within regions' general transport policy and regional development policy.
- Lack of inter-modal connectivity, rail in particular, further undermines the efficiency and potential of regional airports in the world.
- Insufficient passenger throughput to be able to cover the investment into creation of the connections between regional airports and public transport systems in order to facilitate the growth of regional airports.

12. Concentration of activity other than scheduled air transport

Besides scheduled passenger airlines, other significant aviation activities can include non-scheduled flights, private flights, flight school lessons, medical evacuations, hot-air balloon flights, helicopter traffic reports, etc. Whilst it used to be that these other activities were spread out amongst various small and regional airports, airstrips, and airfields, in some countries this is becoming less and less of the case. The small, local-owned FBOs (fixed-base operators) are being purchased by large chain FBOs or they are closing/lease running out and being replaced by other small FBOs[147].

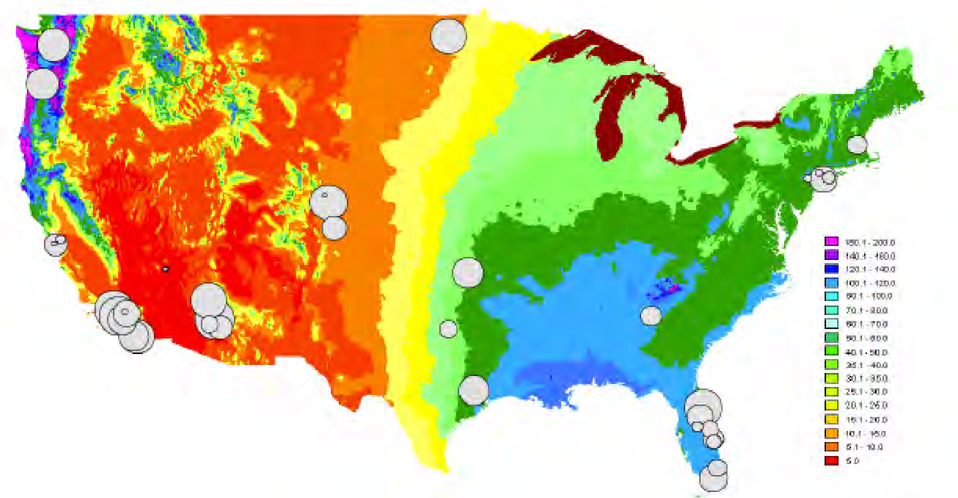
For example, in the United States, there is a clear clustering of "general aviation" activities amongst 50 airports (with "general aviation" in the US defined as all activity other than scheduled air transport services). The 50 airports in the figure below account for 33% of towered "general aviation" operations in the U.S.[148] Additionally the clustering occurs where poor weather is unusual[149]

[147] Source: Goodrich Aviation Development Services. Airport/FBO Consulting. Accessed on 20 March 2015 at http://www.goodrichaviation.com/airport-owned-fbo/

[148] Source: Shetty, Kamala I. and R. John Hansman. Current and historical trends in general aviation in the United States. (August 2012). Accessed at http://dspace.mit.edu/bitstream/handle/1721.1/72392/ICAT%20REPORT%20SHETTY.pdf

[149] Source: Shetty, Kamala I. and R. John Hansman. Current and historical trends in general aviation in the United States. (August 2012). Accessed at http://dspace.mit.edu/bitstream/handle/1721.1/72392/ICAT%20REPORT%20SHETTY.pdf .

Figure 9: "General aviation" airports clusters in the United States vs. weather (rainfall)



Source: Shetty, Kamala I. and R. John Hansman. Current and historical trends in general aviation in the United States. (August 2012). Accessed at http://dspace.mit.edu/bitstream/handle/1721.1/72392/ICAT%20REPORT%20SHETTY.pdf.

However, the scale of these types of activity in the U.S. must be noted, as it is significantly larger than in most other countries. In 2012, there were 209,034 total active GA aircraft and 9,385 "on demand" aircraft (e.g., air taxi, air tours, air medical) that flew 24,403,000 hours and 3,522,000 hours respectively[150]. The table below demonstrates the differences in scale of GA activity by numbers of GA aircraft in select countries:

[150] Source: http://www.gama.aero/files/GAMA%202013%20Databook-Updated-LowRes.pdf

Table 6: Registered "General Aviation" Aircraft by select countries

6.12 **Total Number of Registered General Aviation Aircraft by Select Countries with Active General Aviation Industries (1989–2013)**

Year	Australia	Austria	Brazil	Canada	China	France	Germany	New Zealand	South Africa	Switzerland	United Kingdom	United States
1989	n/a	n/a	n/a	28,121	n/a	n/a	n/a	n/a	n/a	n/a	13,958	219,738
1990	n/a	n/a	n/a	28,155	n/a	n/a	n/a	n/a	n/a	3,653	14,350	212,230
1991	n/a	n/a	n/a	28,003	n/a	n/a	n/a	n/a	n/a	3,785	14,710	196,874
1992	n/a	n/a	n/a	28,066	n/a	n/a	n/a	2,976	n/a	3,914	15,017	185,650
1993	n/a	n/a	n/a	27,912	n/a	n/a	n/a	3,076	n/a	4,005	14,941	177,120
1994	n/a	n/a	n/a	27,848	n/a	n/a	n/a	3,226	n/a	4,039	15,015	172,935
1995	9,548	n/a	n/a	27,937	n/a	n/a	n/a	3,329	n/a	4,107	15,059	188,089
1996	9,665	n/a	10,315	28,002	n/a	n/a	n/a	3,420	n/a	4,096	15,303	191,129
1997	9,849	n/a	10,611	28,054	n/a	n/a	n/a	3,405	n/a	4,058	15,594	192,414
1998	10,006	n/a	10,927	28,017	n/a	n/a	n/a	3,405	n/a	4,039	16,013	204,710
1999	10,168	n/a	14,217	28,047	n/a	n/a	n/a	3,327	7,222	4,021	16,293	219,464
2000	10,125	n/a	14,553	28,242	n/a	n/a	n/a	3,313	7,484	4,048	16,473	217,534
2001	10,402	n/a	14,937	28,493	n/a	n/a	20,859	3,306	7,717	4,067	16,474	211,446
2002	10,455	n/a	15,265	28,744	n/a	n/a	20,714	3,378	7,927	4,030	16,663	211,244
2003	10,671	n/a	15,536	29,112	n/a	n/a	20,610	3,530	8,403	3,972	17,013	209,708
2004	10,904	n/a	15,881	29,614	n/a	n/a	20,611	3,795	8,822	3,893	17,588	219,426
2005	11,180	n/a	16,270	30,244	n/a	29,164	20,707	3,937	9,063	3,841	17,894	224,352
2006	11,117	n/a	15,125	31,018	n/a	29,552	20,865	4,033	10,189	3,822	18,445	221,942
2007	11,541	n/a	15,673	31,886	n/a	30,853	21,017	4,192	n/a	3,813	19,890	231,607
2008	12,045	n/a	16,576	32,933	n/a	31,024	21,327	4,354	10,693	3,765	21,331	228,663
2009	12,229	n/a	19,765	33,533	n/a	31,721	21,570	4,415	10,950	3,685	21,063	223,877
2010	12,564	n/a	17,335	34,175	n/a	32,746	21,703	4,442	11,203	3,705	20,379	223,370
2011	n/a	1,520	18,710	34,947	n/a	32,410	21,603	n/a	11,483	3,709	20,040	n/a
2012	n/a	1,491	19,769	35,540	3,422	n/a	21,546	4,851	11,746	3,657	19,939	209,034
2013	n/a	1,489	20,429	36,078	3,857	n/a	21,462	4,874	11,946	n/a	19,850	n/a

Source: See Tables 6.1 through 6.11.

Source: www.gama.aero/files/GAMA%202013%20Databook-Updated-LowRes.pdf

In India, there is also a trend towards centralising GA activity at an airport. At Delhi International Airport, plans are being made to set up the first General Aviation facility in India to help centralise all of the growing "general aviation" activities[151]. India's seen rapid growth in GA activity and it is expected to grow at 10% per year until 2017. Current estimates are that there are 800 small aircraft and 300 helicopters in the GA fleet, but by 2017 India could add 300 business jets, 300 small aircraft, and 250 helicopters[152].

Financial considerations might also be a reason for the clustering of GA activity. In New Zealand, for example, they have set up an "Aviation Industry Cluster" after realising that the light aircraft industry is too small to achieve growth if everyone works in isolation. Therefore, the Cluster was set up and includes aircraft manufacturers, aircraft maintenance specialists, suppliers, and pilot training organisations. They have already started funding a project so that they could have a GA runway at Hamilton International Airport, to ensure that local aircraft maintenance and pilot training companies could continue to grow.[153]

[151] Source: *DIAL invites bids to develop general aviation facilities*. The Economic Times. 4 May 2008. Accessed on 20 March 2015 at http://articles.economictimes.indiatimes.com/2008-05-04/news/27716713_1_general-aviation-business-aviation-igi-airport
[152] Source: https://www.pwc.in/assets/pdfs/industries/general-aviation-070312.pdf
[153] Source: http://www.kiwiflyer.co.nz/KiwiFlyer-Issue-7-Guest-Comment.pdf