Business Environment Reform Facility

Zambia Aviation Sector Business Environment Assessment

Peter Forbes and Peter Wilson

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BE RF Business Environment Reform Facility

Department for International Development

About Business Environment Reform Facility (BERF)

BERF is funded by the UK Department for International Development (DFID) under the Business Environment for Economic Development (BEED) Programme. BERF is a central facility responding to demand from the DFID's priority Country Offices and stakeholders to initiate, improve and scale up business environment reform programmes. BERF is managed by a consortium led by KPMG LLP. The programme started in January 2016 and will finish in January 2019.

We provide expert advice, analysis of lessons learned, policy research about what works and what doesn't and develop innovative new approaches to involving businesses and consumers in investment climate reform.

BERF has a strong emphasis on strengthening the Business Environment for women and girls, as well as for young adults more generally. It is also aiming to improve the relationship between business and the physical environment including where relevant through linkage to climate change analysis. BERF recognises the need for appropriate political economy analysis in order to underpin business environment reform processes and interventions.

About this Report

Research for this study was conducted by Peter Forbes, Peter Wilson and Taylor Foshee between October and November 2017. It was predominantly based on desk research and, whilst efforts have been made to verify the accuracy of the source information, this cannot be fully guaranteed in all cases.

The views contained in this report are those of the authors and do not necessarily represent the views of any BERF consortium member or DFID.

This is a working paper shared for discussion purposes only. No reliance should be placed upon this report.

Acronyms and Abbreviations

ADS	Automated Dependent Surveillance
AFCAC	African Civil Aviation Commission
AIM	Alternative Investment Market
ANS	Air Navigation Services
AOC	Airline Operator Certificate
ASSP	Aviation Sector Support Programme
ATC	Air Traffic Control
ATCC	Air Traffic Control Centre
AU	African Union
BASA	Bilateral Air Services Agreement
BERF	Business Environment Reform Facility
CoA	Certificate of Airworthiness
CAA	Civil Aviation Authority
CAP	Corrective Action Plan
CEO	Chief Executive Officer
COMESA	Common Market for Eastern and Southern Africa
CPL	Commercial Pilot Licence
CSO	Civil Society Organisation
DCA	Department of Civil Aviation
DFID	Department for International Development
EAC	East African Community
EASA	European Aviation Safety Agency
ECOWAS	Economic Community of West African States
EDF	European Development Fund
EIB	European Investment Bank
EU	European Union
GDP	Gross Domestic Product
GoZ	Government of Zambia
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
ICT	Information and communication technology
IOSA	IATA Operational Safety Audit
MCTI	Ministry of Commerce, Trade and Industry
MDAs	Ministries, Departments and Agencies
MOU	Memorandum of Understanding
MCTI	Ministry of Commerce, Trade and Industry
MTC	(Zambian) Ministry of Transport and Communication
p.a.	Per annum (year)
Pax	Passengers
PEA	Political economy analysis
PF	Patriotic Front
PPL	Private Pilot Licence

PPP	Public Private Partnership
RAF	(UK) Royal Air Force
SAA	South African Airways
SADC	Southern African Development Commission
SAR	Search and Rescue
SARPS	(ICAO) Standards and Recommended Practices
SASO	SADC Aviation Safety Organisation
SME	Small and Medium Sized Enterprise
SSR	Secondary Surveillance Radar
ToRs	Terms of Reference
TVET	Technical Vocational and Education Training
USOAP	Universal Safety Oversight Audit Programme
VHF/HF	Very High Frequency/High Frequency (Radio)
YD	Yamoussoukro Decision
ZACL	Zambian Airports Corporation Limited
ZASTI	Zambian Air Services Training Institute

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Zambian aviation

Whilst the aviation sector remains relatively underdeveloped, air traffic in Zambia has grown substantially in the past 10 years. This is principally the result of an increase in the number of flights by overseas-based carriers facilitated by Zambia's 'open skies' policy in line with the Yamoussoukro Decision (YD).[1] Traffic at the country's four largest airports (which represent over 98% of all traffic in the country) rose from 1.1 million passengers in 2010 to 1.62 million passengers in 2016. This represents annual average growth of 6.9% p.a.

The majority of Zambia's international passenger and cargo traffic is carried by non-Zambian airlines including Kenya Airways, Ethiopian Airways, Rwanda Air, Emirates, South African Airways, Fastjet and SA Airlink. Proflight, a privately owned Zambian-registered airline, provides international services to Lilongwe and Durban, with domestic services between Lusaka and Livingstone, Ndola, Mfuwe, Kasama and Solwezi. Most outbound air cargo (predominately fruit and flowers) is carried as 'bellyhold' on passenger aircraft and is flown to the major cargo hubs at Johannesburg, Nairobi and Dubai.

Proflight is the only operator on most domestic routes. A privately owned Zambian-registered carrier, Mahogany Air, started operating services on the Lusaka-Ndola route in June 2017 and plans to expand to other domestic routes.

Fastjet, a privately owned African low cost carrier, which operates from Dar es Salaam to Lusaka, has stated its intention to expand in the Zambian market but faces potential competition from a new Zambian national airline and has experienced regulatory difficulties.

The Zambian Government has made a commitment to re-establish a national airline to boost the economy and promote tourism. Discussions have been held with aerospace manufacturers and with Ethiopian Airlines about a potential partnership agreement.

Main findings and conclusions

Economic and tourism growth

1) Zambia has experienced strong economic growth over the last 10 years, albeit with a decline from 7.3% in 2012 to 3.4% in 2017 due to falling copper prices. Tourism accounted for about 3.5% of GDP in 2015. Zambia recorded 0.93 million international tourist arrivals in 2015, a decline of 1.6% from 2014. Africans (mainly from Southern African) accounted for 79% of visitors in 2015. Business travel spending exceeds leisure and is forecast to grow more rapidly, which is against the worldwide trend. There has been a long-term decline in the proportion of leisure tourists from Europe.

2) Zambia has many wildlife and natural resource attractions and is considered by the tourism industry as offering better value than other East and Southern African countries.

[1]http://www.worldbank.org/en/topic/transport/publication/open-skies-for-africa.

But its tourism market has been impacted by terrorism across Africa and other factors, such as a state of emergency in 2017, competition from neighbouring countries, a lack of diversification of tourism products and facilities and unattractive tour packages.

Aviation sector growth

3) The Zambian air transport sector has grown strongly over the past decade. The increase in traffic is due partly to the liberalisation of the aviation market, including the granting of 'fifth freedom'[2] rights to non-Zambian registered airlines. Indicative forecasts produced for this report (Tables 7 to 10) indicate that Zambia's air traffic could increase from 1.6m passenger movements in 2017 to 4.0m passenger movements by 2030 under a 'most likely' case, depending on the future structure of the aviation market, the extent of competition, the effects of input costs (e.g. fuel) on air fares, action on business environment constraints and improvements to the tourism product.

4) Domestic market airfares are relatively high in comparison with similar routes and markets in other parts of the world. Mahogany Air may be able to compete with Proflight on domestic routes, although this may prove to be difficult given the limited market size and high overhead costs for a small airline.

5) The Zambian Government is committed to a policy of air carrier expansion, including relaunching a national airline, although there is no clear evidence of a shortage of airline capacity. The proposed national airline will be a joint venture between the Government of Zambia and Ethiopian Airlines. The selection of its aircraft fleet, adequate capitalisation and professional management will be crucial to its success.

6) Zambia's main airports in Lusaka, Livingstone, Ndola and Mwufe are being developed to international standards, these will not be financially self-sustaining without additional commercial development and expansion of traffic.

Policy and regulation of air services

7) The development of the aviation sector is reinforced in Zambia's Seventh National Development Plan for the period 2017-2021, which highlights the need for improvements to the country's international and provincial airports and the creation of a national airline.

8) Zambia's aviation sector is controlled by the Ministry of Transport and Communications (MTC) and centrally through the President's Office. At present, Zambia's airports and air traffic services are managed and operated by Zambian Airports Corporation Limited (ZACL) rather than operating autonomously as two separate bodies – the preferred institutional structure. The majority of ground handling is undertaken by ZACL. Bureaucratic restrictions prevent full competition across ground/cargo handling markets. Increased competition is likely to lower airline costs.

[2] The fifth freedom allows an airline to carry revenue traffic between foreign countries as a part of services connecting the airline's own country. It is the right to carry passengers from one's own country to a second country and from that country to a third country.

9) Following an audit by the International Civil Aviation Organisation (ICAO), Zambia established an independent Civil Aviation Authority (CAA) in 2012 with responsibility for aviation safety and security oversight. The CAA currently has 71 staff including 40 inspectors, although a number of posts, including Inspectorate staff, remain unfilled. The lack of qualified and trained Inspectorate staff is a major concern of ICAO. As a result of improvements to regulation and air safety, Zambian airlines were removed from the EU's list of banned airlines in 2017.

10) ZACL manages upper and lower airspace as well as approach control at the main airports. En-route airspace is controlled by the Air Traffic Control Centre at Lusaka Airport. Zambia's air traffic services have been improved through primary and Secondary Surveillance Radar (SSR) radar although further investment will be needed e.g. in ADS (Automated Dependent Surveillance) to meet ICAO requirements. The majority of Air Navigation Services (ANS) revenue arises from overflights through Zambian upper airspace but charges are out of date and should be reviewed in line with increased air sector investment and operational costs.

11) The legislative framework for the aviation sector exists in a number of Acts, including the Aviation Act, the Air Services Act, the Safety of Civil Aviation Act, the Air Passenger Service Charges and others. As a signatory to the Chicago Convention, Zambia is required to adopt ICAO Standards and Recommended Practices (SARPs) within its own national legislative framework. The updating of national legislation in line with ICAO requirements is an ongoing process.

12) Zambia has a number of Bilateral Air Service Agreements (BASAs) with other African states and with third countries. The MTC is responsible for administration, negotiation and implementation of BASAs. Under an 'open skies' regime, BASAs between countries in the region have become obsolete and are restrictive of competition. A fully liberalised market without restrictions is in the interests of overall air traffic growth in Zambia. Zambia has yet to sign the 'solemn commitment' by African states to apply the Yamoussoukro Decision by the end of 2017 to create fully 'open skies'.

13) The Ministry of Commerce, Trade and Industry (MCTI) has championed reforms to the general business environment. Nevertheless, there are major constraints to investment e.g. insolvency regulations, registering property, trading across borders, dispute resolution and enforcing contracts. Licensing and labour code requirements are excessive and inefficient government bureaucracy creates ongoing problems for businesses. High interest rates and non-performing loans have caused some commercial banks to cease making consumer and business loans.

Country benchmarking

14) The country benchmarking analysis shows that Zambia is not alone in facing challenges to the development of its aviation sector. Apart from Ethiopian Airlines and Comair, most if not all national airlines in Sub-Saharan Africa have suffered continuous financial losses

with substantial calls on the national budget – Malawian Airlines is yet to reach breakeven after four years in partnership with Ethiopian Airlines. Nevertheless, East African states have given financial support to their national airlines, airports and air traffic services in order to promote economic growth and jobs.

Constraints to aviation sector development

15) The development of the aviation sector in Zambia is constrained by a number of factors:

- A relatively small but growing tourist market dependent on African (largely Southern African) visitors, which in turn is constrained by inadequate tourism infrastructure and product choices
- Lack of a fully liberalised air traffic market – Zambia has yet to commit to the YD
- High airfares and operating costs (the consequence of low passenger numbers)
- A shortage of foreign exchange and unstable exchange rates[3]
- A shortage of trained aviation personnel particularly in specialist occupations
- Business environment constraints affecting private sector investment in the aviation sector and in direct/indirect value chain opportunities
- In the longer term, further constraints may apply, including the potential impact of carbon-offset costs across the aviation sector.[4]

Future development of Zambia's aviation sector

16) Expansion of airline capacity through 'open skies' competition and/or a new national airline is likely to stimulate economic growth. If airline capacity is developed on a liberalised and sustainable basis and a national carrier is introduced into the carrier mix with adequate long-term public-private finance, professional management (in partnership with a major international airline) and devolution of government control, the risk of premature failure could be averted. The effect on competition, particularly the threat of 'crowding-out' of the private sector, should be thoroughly assessed.

17) Zambia's airports and air traffic services are likely to remain under government control, although some elements of commercialisation are possible at the larger airports involving, for example, concessions for airport retail, lounges, hotels, etc. Further opportunities exist to promote private sector participation in air cargo, airport ground-handling and aviation training. There could be opportunities for wider industrial and commercial development around some airports e.g. special economic zones.

[3] Zambia's macro-economic and monetary policy are not analysed in this report.

[4] Not discussed in this report. The report notes only that environmental legislation is not implemented effectively.

Recommendations for Zambian aviation sector development

A number of key short-term measures to assist in the future development of the aviation sector are set out in Table 1.

Table 1 Summary of Recommendations

No	Responsible Institution	Recommendation
1.	Government of Zambia	Review the business case for expansion of air traffic capacity, including options for public and private ownership, taking account of likely revenues, costs and impact on future Government budgets. The review should evaluate the appropriate fleet type(s) for the proposed route network and the potential for partnerships with other airlines. The impact of new capacity on competition with existing airlines (threat of 'crowding out'), potentially lower air fares and Zambia's tourism industry should be examined. Zambian airlines must adhere to the highest standards of aviation safety and should complete an International Air Transport Association (IATA) IOSA[5] as mandated by AFCAC (African Civil Aviation Commission)
2.	Government of Zambia	Take appropriate actions to address constraints to investment: ▪ Review and assess the effects of Government taxes on air passengers, airlines and other industry stakeholders and, where action is required, undertake legislative and regulatory reforms ▪ Review and assess the effects of existing BASAs on airline competition and the continuing need for BASAs as an effective means of regulating Zambia's air traffic market ▪ To promote a liberalised market, sign the 'solemn commitment' for implementation of the YD at the earliest possible date ▪ To support private sector investment, sign the Cape Town Convention on aircraft and equipment leasing ▪ Continue with business environment reforms in line with World Bank Doing Business indicators
3.	Government of Zambia	Establish separate organisations to manage Zambia's airports and air traffic services;[6] prepare business plans for both organisations, including how increased private sector involvement in airport operations (e.g. in ground/cargo handling, airport retailing, lounges) can be encouraged, particularly at the new Lusaka Terminal; adopt long-term cost-recovery as the basis for investment in new airport or Air Traffic Control (ATC) infrastructure, taking account of ANS, airport and ATC charges and commercial revenues
4.	Aviation sector stakeholders	Commission a study of development/growth linkages between the aviation sector and tourism, in particular examine the impact of direct (or easily-connected) services to the main source markets; and assess air charter operators serving Zambia's game parks and other attractions
5.	Department of Civil Aviation (DCA), the Technical and Vocational Education and Training (TVET) sector and the aviation private sector	Cooperate to produce an aviation sector training plan for basic training e.g. aircraft mechanics, ground handlers, cabin and ground crew, leaving advanced specialist training e.g. air traffic controllers and commercial pilots, to providers outside Zambia where there is already a well-developed training market; review TVET curricula with the aim of developing aviation skills at basic occupational levels to enable local employment creation for a growing Zambian aviation industry

[5] International Air Transport Association – Operational Safety Audit.
[6] An evaluation of this will be undertaken as part of the proposed EU's Aviation Sector Support Programme.

1. Introduction

DFID Zambia commissioned the Business Environment Reform Facility (BERF) to undertake an assessment of the Zambian aviation sector. The objectives of this assignment are as follows:

1) To identify and assess business environment constraints to growth of the aviation sector in Zambia.
2) To analyse and assess lessons learnt from other regional countries in reforms to aviation sector policy and regulation.
3) To make recommendations for policy and regulatory reforms necessary for aviation sector growth in Zambia.

This report is set out as follows:

Sections 2-5 – detailed findings, including an overview of the air transport sector in Zambia; the regulatory and institutional framework; main airlines and air charter operators; airports and airfields; ground and cargo handling facilities; technical training; and other support services. The report identifies the legal, regulatory or economic constraints which prevent or impede future air traffic growth and aviation sector development and provides a benchmarking analysis of the aviation sector in other regional African states.

Section 6 – main recommendations on how Zambia can develop its aviation sector through appropriate policy and institutional reform, together with economically feasible private sector participation. Whilst this study covers the aviation sector as a whole, it excludes an assessment of aviation security.

The primary direct beneficiaries of this study and any possible future donor assistance are the Government of Zambia Ministries, Departments and Agencies (MDAs) as well as other development partners and research institutions. The indirect beneficiaries are stakeholders in Zambia's aviation and tourism sectors and industries, and individuals benefiting from improved air connectivity to and within the country. This, in turn, will benefit the Zambian economy as a whole and will promote job creation, particularly for youth.

2. The Aviation Sector in Zambia

2.1 The Zambian economy

Zambia's population of 16.59m[7] is concentrated mainly around Lusaka in the south, and the Copperbelt Province to the north-west. Zambia is Africa's second biggest copper producer with copper accounting for more than two-thirds of the country's exports. Over the last 10 years, Zambia's economic growth has largely been underpinned by its mining sector. GDP growth has declined from 7.3% per annum in 2012 to 3.4% per annum in 2017[8] largely due to a fall in the copper price, which has resulted in a high level of unemployment, particularly in the Copperbelt. As a result, the Zambian Government has focussed on investment in new infrastructure projects such as roads, railways and electricity production, and on the development of the agriculture and tourism industries.

During the 2000s, rapid growth and macroeconomic stability were associated with a growing urban consumer class. Despite policies to support farmers, agriculture remained stagnant throughout the 2000s, with continuing high levels of rural poverty. The expansion of informal trade failed to create decent, well-paid jobs. Zambia's youth are frequently unemployed or limited to informal sector work. By contrast, growth in high-value services primarily benefited, and was largely driven by, higher-income groups; and the copper mining boom created few jobs and generated little tax revenue for the government.[9]

Manufacturing, which is concentrated in Lusaka, collapsed during the reform period (2002-2010) contributing to large-scale unemployment. Manufacturing was one of the hardest hit during this period – by 2010, 70% of the sector's GDP was from food processing, up from 50% in 1991; while textiles and clothing collapsed despite the government's efforts to establish export-processing zones. Increased foreign competition was manifest in the form of imports from Asia, against which local firms could not compete.

Zambia faces a number of key economic challenges in the short-term. The decline in the global copper price has resulted in a large fiscal deficit, and there is widespread poverty and youth unemployment. The Government is still dealing with economic reform issues such as the size of the public sector and improving social sector delivery systems. It is, however, committed to a pro-business approach, which it hopes will revitalise the economy in the long-term.

2.2 The Zambian tourism sector

Zambia has a number of major tourist attractions including the Victoria Falls, the North and South Luangwa and Kafue National Parks, and other wildlife reserves. Zambia is considered by the travel trade to offer better value than other East and Southern African countries such as South Africa, Botswana, Kenya and Tanzania. But Zambia is disadvantaged by a lack of diversification of tourism products, underdeveloped tourism facilities and unattractive tour

[7] https://data.worldbank.org/country/zambia.

[8] Trading Economics website – October 2017.

[9] D Resnick and J Thurlow. The Political Economy of Zambia's Recovery. International Food Policy Research Institute 2014.

packages. Although new hotels are being constructed, Zambia has higher construction costs and lower labour productivity than many of its southern African neighbours.

Zambia's tourism sector represents a dynamic component of its economy accounting for about 3.5% of GDP. In 2016 visitor export spending generated US$734.1 million (11.4% of total exports) and travel and tourism directly supported 115,000 jobs (1.9% of total employment). This is expected to rise by 5.2% p.a. to 206,000 jobs (2.3% of total employment) in 2027. In 2016, including jobs indirectly supported by the sector, the contribution of travel and tourism to employment was 5.0% of total employment (306,000 jobs), which is expected to rise to 475,000 jobs in 2027 (5.3% of total). In 2015 tourism contributed 7% of government revenue.[10]

In 2015, Zambia recorded 0.93 million international tourist arrivals, representing a decline of 1.6% from 2014.[11] Africans accounted for 79% of visitors with most tourists coming from Southern Africa. Out of the 53.3m international tourist arrivals in Sub-Saharan Africa in 2015, Zambia received only 1.7%. Amongst its neighbours, South Africa recorded 8.9 million international tourist arrivals, Zimbabwe 2.1 million and Tanzania 1.1 million. Zimbabwe is a key competitor to Zambia, particularly for the Victoria Falls market, although its economy has been weak in recent years.

Leisure travel and tourism spending makes a smaller contribution to GDP than business travel spending in Zambia while the gap is forecast to grow over the next decade (Table 2). This differential is in sharp contrast to travel and tourism spending in Sub-Saharan Africa (leisure spending 1.6% against business spending 1.0%) and worldwide spending (leisure spending 2.3% against business spending 0.7%).[12]

Table 2 Leisure and Business Spending in Zambia

Spending	Leisure	Business
Zambia: Travel and tourism spending (inbound and domestic) share of direct travel and tourism GDP in 2016	41.8%	58.2%
Zambia: Travel and tourism spending annual growth to 2027	3.4%	5.8%
Zambia: Travel and tourism spending 2016 (constant prices and exchange rates)	US$0.5 billion	US$0.7 billion
Zambia: Travel and tourism spending 2027 (constant prices and exchange rates)	US$0.8 billion	US$1.3 billion
Sub-Saharan Africa: Travel and tourism spending 2016 (constant prices and exchange rates)	1.6%	1.0%
Worldwide: Travel and tourism spending 2016 (constant prices and exchange rates)	2.3%	0.7%

Source: Travel & Tourism Economic Impact 2017. Zambia. World Travel and Tourism Council. March 2017.

Tourism data for 2016 and 2017 has not yet been published, although there are indications that the number of leisure tourists has increased slightly, particularly to the Victoria Falls region. Whilst this is encouraging, there has been a long-term decline in the proportion of

[10] Travel & Tourism Economic Impact 2017. Zambia. World Travel and Tourism Council. March 2017.

[11] Ministry of Tourism and Arts – 2015. Tourism Statistical Digest.

[12] Travel & Tourism Economic Impact 2017. Zambia. World Travel and Tourism Council. March 2017.

leisure tourists from Europe. This can be attributed to a range of factors including terrorism attacks in the region (even though these have not been in Zambia); the Ebola virus; the lack of hotel and tourism infrastructure; and the loss of direct flights from Europe, including from the UK and Germany. In July 2017, the government declared a state of emergency which significantly impacted on tourist arrivals.[13]

The relationship between the development of Zambia's aviation and its tourism industry has been highlighted in a benchmarking report[14] prepared by the World Economic Forum. Key relevant findings are summarised in Table 3 for some of Zambia's main regional competitors:

- Zambia (108) is positioned competitively behind South Africa (53), Kenya (80) and Botswana (85) but ahead of Zimbabwe (114);
- The Zambian business environment (4.6) scores well behind the regional leaders South Africa (5.3) and Botswana (5.1) and travel and tourism are a lower priority for Government in Zambia (score 4.9) than in other Southern and East African countries;
- Zambia (119) has the worst air transport infrastructure in the region apart from Malawi which ranks 134;
- Zambia ranks far behind South Africa, Botswana and Kenya in terms of incentives to invest, though well ahead of Zimbabwe.
- High hotel prices and quality of tourism infrastructure also contribute to Zambia's lack of regional competitiveness; and
- The openness of Zambia's BASAs is a positive feature of aviation policy, with a ranking ahead of Kenya, Botswana and Zimbabwe.

Table 3 Zambia's Travel and Tourism Competitive Status in Southern and East Africa

Criterion	Zambia	South Africa	Kenya	Botswana	Zimbabwe
Global competitiveness for travel and tourism (ranking out of 136)	108	53	80	85	114
Business environment (score 1-7)	4.6	5.3	4.4	5.1	3.0
Government travel and tourism prioritisation (score 1-7)	4.9	5.3	5.6	5.6	4.7
Air transport infrastructure quality (ranking)	119	10	48	88	106
Effect of taxation on incentives to invest (ranking)	86	39	69	25	113
Openness of BASAs (score 0–38)	10.4	11.6	7.7	6.5	9.1
Hotel price index (ranking)	64	8	75	23	15
Quality of tourism infrastructure (score 1-7)	4.7	6.0	5.7	5.2	4.5

[13] Tourists continue shunning Zambia for Zimbabwe owing to state of emergency. Lusaka Times. 31st August 2017.
[14] The Travel & Tourism Competitiveness Report 2017. World Economic Forum. http://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf

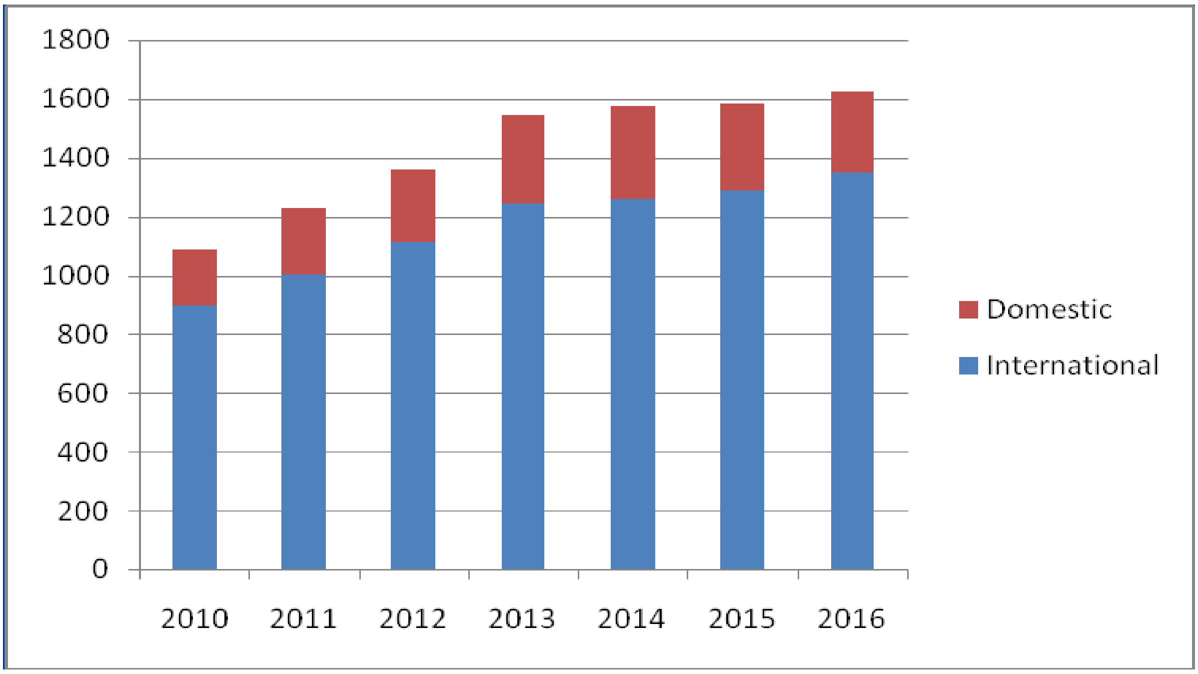
The report's conclusion on tourism opportunities applied to Sub-Saharan Africa could just as equally apply to Zambia: *"Considering the size and rich cultural and natural resources, the 29 million tourists visiting Africa in 2015 is low. From a business perspective, the untapped potential could be an opportunity with returns potentially higher than other already mature destinations."*[15]

For these reasons combined with opportunities for substantial tourism potential in the medium- to long-term, tourism development is a major focus of Government policy. The Zambian Government is working with its partners to support the growth of the tourism industry through private sector development and sustainable wildlife management. To complement this, Zambia's tourism sector would benefit from growth in its international and domestic aviation market – although this is likely to be restricted until a safe and reliable airline network is available, including direct flights from key source markets such as Europe and North America.

2.3 Overview of the aviation sector

Whilst it provides support to the economy and is essential for the tourism industry, Zambia's aviation sector is relatively underdeveloped. For many years Zambian aviation was dominated by the national airline (Zambia Airways) which was declared insolvent in 1994. Since then a number of privately owned Zambian-registered airlines have formed, although only Proflight and more recently Mahogany Air have survived. Traffic has grown strongly in the past decade largely through an increase in the number of flights by overseas-based carriers facilitated by Zambia's 'open skies' policy in line with the YD.

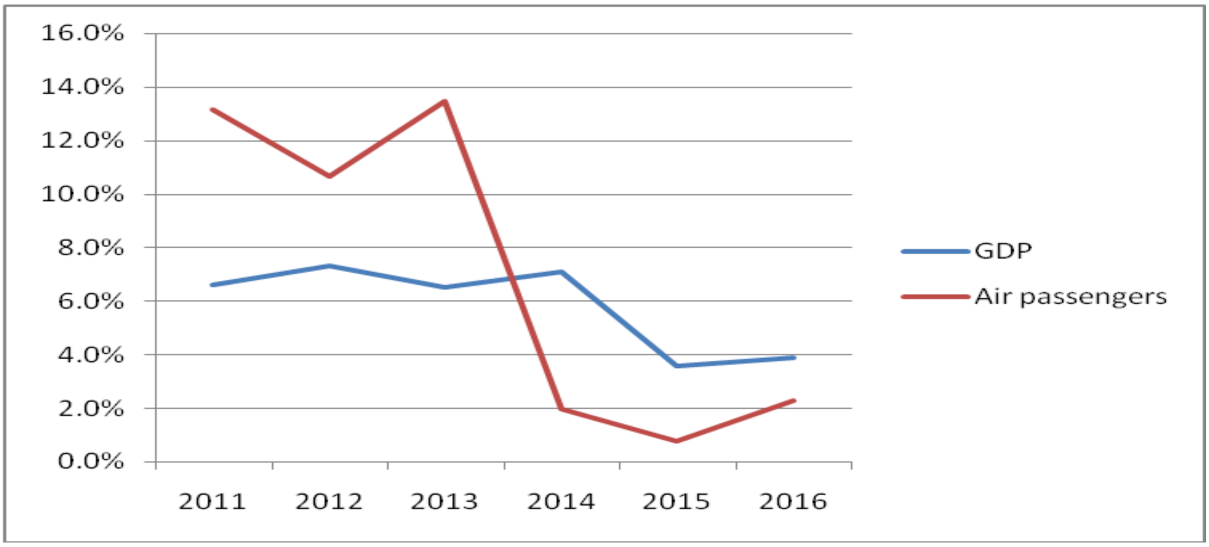
Figure 1 Zambia: International and Domestic Passengers (2010-2016)



[15] The Travel & Tourism Competitiveness Report 2017. World Economic Forum. http://www3.weforum.org/docs/WEF_TTCR_2017_web_0401.pdf

The growth in international and domestic air passengers at Zambia's four main airports is illustrated in Figure 1. The relationship between the growth in air traffic demand and GDP is shown in **Error! Not a valid bookmark self-reference.**.

Figure 2 Zambia: Annual GDP and Air Passenger Growth (2011-2016)



Statistics provided by Zambian Airports Corporation Limited (ZACL) show that traffic at the country's four largest airports[16] rose from 1.1 million passengers per annum in 2010 to 1.62 million passengers per annum in 2016, representing an annual average growth rate of 6.9% per annum – about 20% faster than GDP growth. International traffic grew by 7.1% per annum over this period. Domestic traffic, which comprised 0.27 million passengers in 2016, grew by 6.1% per annum and traffic declined in both 2015 and 2016 due to the country's economic crisis.

The Zambian aviation sector is set to expand significantly over the next 10-15 years in line with overall economic growth and expansion of tourism. The growth rate for domestic carriers will depend on the future penetration of low cost carriers within Zambia and regionally. Further assessment of its growth potential is discussed below.

2.4 Airlines

2.4.1 Overview

The majority of Zambia's international passenger and cargo traffic is carried by non-Zambian airlines. Airlines currently operating at Zambia's four international airports include Kenya Airways, Ethiopian Airways, RwandAir, Emirates, South African Airways and SA Airlink. Proflight, a privately owned Zambian-registered airline, provides international services to Lilongwe and Durban, with domestic services between Lusaka and Livingstone, Ndola, Mfuwe, Kasama and Solwezi.

[16] Lusaka, Livingstone, Ndola and Mfuwe airports account for over 98% of all passenger traffic in Zambia.

For many years, British Airways and KLM operated direct services from Europe (London-Lusaka-London and Amsterdam-Lusaka-Amsterdam). However, these became increasingly unprofitable and British Airways withdrew in 2013 and KLM in 2014. The main reasons for an absence of direct, non-stop flights between Europe and Zambia – from which lessons for future air carrier options can be learnt – centre on:

- A lack of adequate demand for a daily service, which affects efficient resource deployment and asset utilisation and therefore ultimately impacts on yields – Zambia's market is very small and unlikely to grow to an optimum size in the next 20 years;
- The vagaries of Africa as a safe and attractive destination due to terrorism and negative political factors – these factors will diminish but their legacy will affect demand for the foreseeable future; and
- Intense regional competition from direct and indirect European flights and indirect flights by non-European airlines e.g. Emirates, Qatar and Turkish – competition is likely to intensify, not diminish, which will drive out poor performers.

Why no European airlines currently fly to Zambia and what changes in the economics of route options would be required to change the incentive structure for such direct flights would require a further detailed study.

The country has had no flag carrier airline since the closure of Zambia Airways in 1994.[17] Several airlines including Aero Zambia, Zambia Express Airways and Zambian Airways were established between 1995 and 2009, but they all collapsed, largely owing to under-capitalisation, a small market and poor management. The latest addition was Zambezi Airlines which flew regional services within Central and Southern Africa before its licence was suspended by the DCA in 2011 due to safety concerns. The airline closed in 2012.

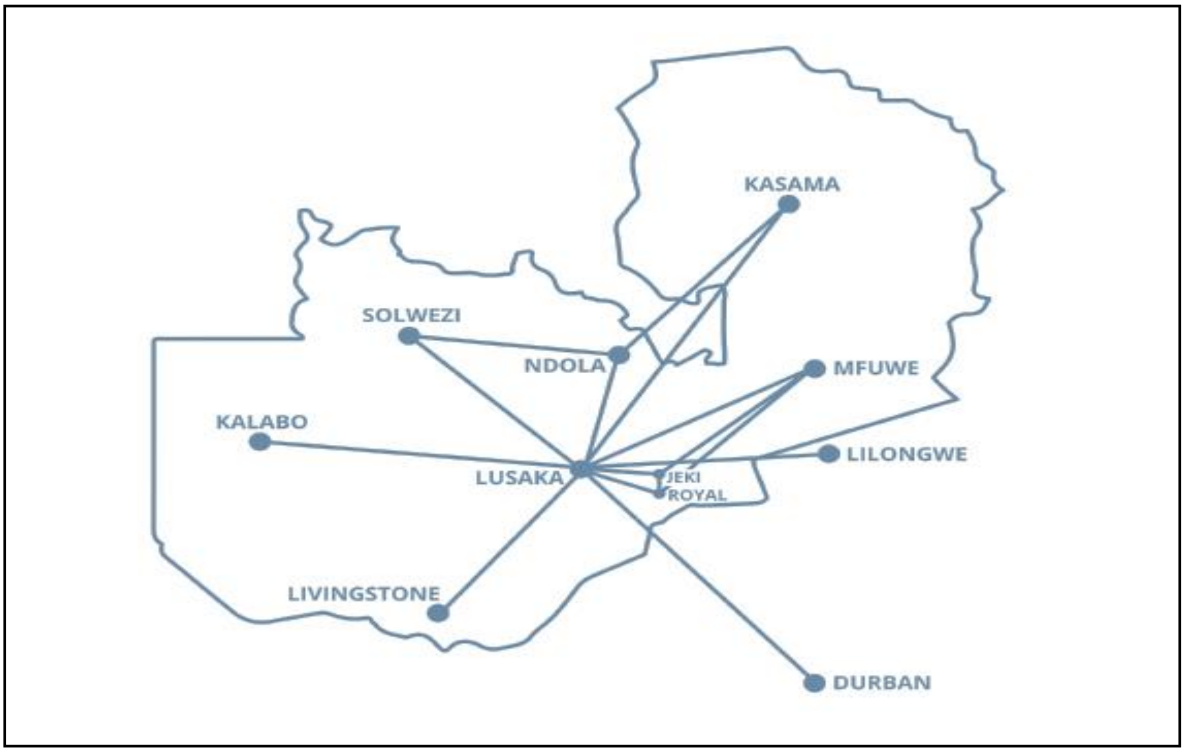
2.4.2 Proflight

Proflight is Zambia's main regional and domestic airline. Formed in 1991 as an air taxi operator, it commenced scheduled services in 2005 and currently carries some 130,000 passengers annually to Durban, Lilongwe and to a range of domestic destinations (Figure 3). Ad-hoc air charter flights are also flown, mainly to key tourist destinations.

The airline operates a mixed fleet of 17 aircraft, although not all are fully serviceable (Table 4). The most modern aircraft is a Bombardier CRJ 100, which is leased from South African-based Cem Air and is operated on the Durban route. There are plans to replace the older BAe Jetstream aircraft with further Bombardier CRJ 100 aircraft in the future.

[17] Zambia Airways demise - Was the decision to ground the airline correct? Lusaka Times. 5th December 2017.

Figure 3 Proflight Route Map (October 2017)



Proflight is a privately owned airline, whose major shareholders include the CEO and other family members. It has a total of some 187 staff, including 28 flight crew, 18 cabin staff and 40 engineering staff. The airline undertakes line maintenance and 'A' checks at its base at Lusaka airport, although heavier maintenance is subcontracted to SA Airlink. Proflight is currently undergoing an IOSA (IATA Operational Safety Audit) with the assistance of IATA.[18] Successful completion of an IOSA is a key target for all regional airlines in Africa as required by the YD and is a requirement for membership of IATA.

Table 4 Proflight Fleet (October 2017)

Scheduled services	No in fleet	Pax capacity
Bombardier CRJ-100	1	50
BAe Jetstream 41	3	29
BAe Jetstream 32	2	18
Cessna 208 Caravan	2	12
Charter operations		
Cessna 208 Caravan	2	12
Britten-Norman Islander	2	9
Cessna 401/402	3	7
Beechcraft Baron	2	5

Having survived and remained financially solvent for some 26 years in a challenging market, Proflight is regarded within the African aviation industry as a well-managed airline.

[18] Proflight website – http://proflight-zambia.com/corporate/about-us.php#safety.

Nevertheless, the airline has been criticised as a monopoly which restricts capacity in the domestic market by the use of smaller aircraft and high fares. The re-emergence of Mahogany Air (see below) could bring about a reduction in fares where they compete with Proflight, although it remains to be seen whether this could be sustainable. Whilst there is undoubtedly scope for market expansion, it seems unlikely that both airlines will survive, particularly if a third entrant also competes in this market.

2.4.3 Mahogany Air

Mahogany Air is a Zambian-registered airline created in 2013 to fly domestic services using two Embraer 120 aircraft. The airline suffered financial difficulties despite attempting to downsize to Beech 1900D aircraft, and it was suspended the following year. In June 2017, backed by a consortium of Zambian and Dubai-based investors, Mahogany Air recommenced operations with a service between Lusaka and Ndola again using an Embraer 120 aircraft. The airline, which plans to start further services between Lusaka and Livingstone, Solwezi and Mfuwe, is funded through a $23m investment over the next three years.

Comparison of fares charged by Mahogany Air on the Lukasa-Ndola route (typically around US$210 for the cheapest return fare) suggest that these are currently highly competitive against those charged by Proflight (around US$465), although this may represent an initial promotional fare.

2.4.4 Fastjet

Fastjet has the stated aim of becoming the first pan-African low-cost airline. The airline currently has two hubs – Dar es Salaam, Tanzania and Harare, Zimbabwe. Although Fastjet operates a service from Dar es Salaam to Lusaka and has ‘fifth freedom’ rights for onward traffic form Lusaka to Harare, further expansion into the Zambian market would require the establishment of a predominantly Zambian-owned airline company operating under a Zambian Airline Operator Certificate (AOC) and Air Transport Licence. The MTC issued a one year Air Transport Permit in March 2014, although this has now expired. Fastjet has also applied for an AOC which has been evaluated by the CAA at a demonstration level.

Fastjet has reported continued financial losses since it was established in 2012. The airline operates an Airbus A319 from its Dar es Salaam base and the smaller Embraer 145 from Harare – although there are plans to move to an all Embraer fleet in the future. The airline is fully privately owned, with Solenta Aviation, a specialist South African aircraft leasing company, holding 28% of its shares, with the balance held by investment trusts and by private shareholders. The company is quoted on London’s Alternative Investment Market (AIM).

Fastjet retains an office in Lusaka, although given recent developments regarding a national airline and traffic rights issues, it is unclear whether their planned expansion into the Zambian market will proceed.

2.4.5 Other scheduled airlines operating in Zambia

It is estimated that about 70% of all air passenger traffic in Zambia is carried by foreign airlines. The key airlines and their routes are given in Appendix 1.

Three of Africa's main airlines, Kenya Airways, South African Airways and Ethiopian Airlines provide the majority of traffic on regional routes from Kenneth Kaunda (Lusaka) International Airport. This includes feeder traffic into their main hubs at Nairobi, Johannesburg and Addis Ababa for onward connections to Europe and North America. Most traffic to the Middle East and Asia (including China) is served by Emirates through Dubai and Qatar through Doha.

Other non-Zambian airlines operating in the country include RwandAir, Air Namibia, Comair (branded as British Airways) and TAAG. Zambia's route network has expanded significantly in recent years as 'fifth freedom' rights have been granted to several non-Zambian airlines. Emirates' daily service from Dubai to Lusaka flies on to Harare; Kenya Airways' service from Nairobi to Livingstone flies on to Harare; and RwandAir's service from Kigali to Lusaka flies on to Cape Town.

2.4.6 Air cargo operators

In 2016, Kenneth Kaunda (Lusaka) International Airport handled 17,000 tonnes of air freight, up 12.4% from the previous year. This is substantially less than that handled at Johannesburg (290,000 tonnes), Nairobi (230,000 tonnes) and Addis Ababa (212,000 tonnes) in 2016. These cargo hubs derive traffic both from feeder flights and from cargo trucked directly to the airport and consequently they attract the dedicated cargo airlines and handle the majority of air cargo in East and Southern Africa.

Whilst Lusaka was served by several dedicated cargo airlines in the past, including Cargolux, Das Air, BA World Cargo and MK Airlines, most cargo is now carried as 'bellyhold' in passenger aircraft with SAA, Kenya Airways, Ethiopian Airways and Emirates and is sent via their main hubs. Some outbound cargo (principally flowers, fruit and vegetables) is trucked directly to Johannesburg for onward connection to Europe. Some minor cargo is carried on Proflight services, although this is very limited due to the small 'bellyhold' capacity of their aircraft. The Zambian Government has held discussions with Cargolux and Martinair about establishing dedicated cargo flights to Europe, although the market size is currently small and too seasonal for regular services.

2.4.7 Air charter operators

Other Zambian AOC holders include Staravia, Stabo Air and a number of small specialist air charter companies, mainly providing tourist flights to wildlife parks and lodges. Established some 30 years ago, Staravia is a family-run business operating ad-hoc air charter flights from Lusaka to key tourist and business destinations in Zambia. The company has a fleet of five aircraft – King Air B200 (x1), King Air E90 (x1), Beech Baron B58 (x2) and a Cessna 210 (x1). The company is heavily dependent on partnerships with Zambian tour operators such as Wilderness Safaris. Royal Air Charters specialise in corporate and tourist charters to the main

Zambian tourist attractions. Stabo Air is an all-cargo Zambian-registered airline flying weekly flights between Lusaka and Europe using an MD11F aircraft.

2.4.8 Proposed new national airline

As a result of the rapid growth in air traffic, the Zambian Government has plans to resurrect its national airline which closed in 1994. Although these plans were temporarily shelved in 2015, the Government has subsequently had discussions with Airbus about pilot training and aircraft acquisition;[19] and in July 2017, the Government announced that it had concluded a deal to acquire five Russian-built Sukhoi Superjet 100 aircraft, one of which would be configured as a Presidential aircraft. More recently, the Minister of Transport announced that the Cabinet had approved the re-establishment of the national airline at an estimated cost of US$30 million with the Zambian Government the majority shareholder in partnership with Ethiopian Airlines.[20,21] This follows similar joint-venture partnerships with other African airlines, including ASKY Airlines (40% Ethiopian Airlines ownership) and Malawian Airlines (49% Ethiopian Airlines ownership). Ethiopian Airlines plans further joint-ventures with airlines in Mozambique, Congo, Chad and Djibouti.

It is likely that turboprop rather than jet aircraft would be the most cost-efficient fleet type for most regional and domestic services, although Zambia seems likely to operate a combination of Dash 8-400 and B737 aircraft.[22] In this context, it should be noted that Fastjet has recently replaced its A319 fleet with smaller Embraer 145 aircraft (see below).

2.5 Airports

2.5.1 Overview

Zambia has four main international airports under the control of ZACL. These are Kenneth Kaunda (Lusaka) International Airport (LUN), Harry Mwanga Nkumbula (Livingstone) International Airport (LVI), Simon Mwansa Kapwepwe (Ndola) International Airport (NLA) and Mfuwe Airport (MFU). There are a further seven domestic airports currently under provincial control and some 43 smaller airfields. The location of Zambia's principal airports and airfields is provided in Figure 4.

[19] https://www.ch-aviation.com/portal/news/43934-zambia-to-choose-airbus-for-national-carrier-project.

[20] Zambia partners with Ethiopian Airlines to revive national carrier. Daily Nation, Zambia. 20th December 2017.

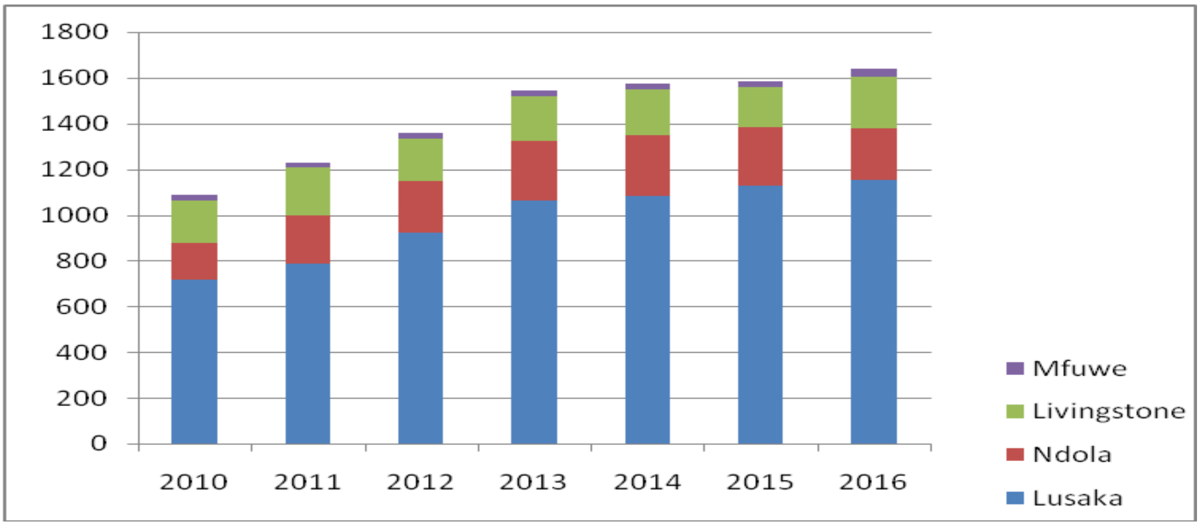
[21] In October 2017, Ethiopian Airlines announced that it was in the final stages of signing a shareholder agreement for a joint-venture airline with the Zambian Government and private investors. The Reporter, Ethiopia. 7th October 2017.

[22] Zambia, Ethiopian Airlines Sign $30m Contract On National Carrier. The Independent, Nigeria. 2nd January 2018. https://independent.ng/zambia-ethiopia-airlines-sign-30m-contract-national-carrier/

Figure 4 Zambia: Principal Airports and Airfields

ZACL, a subsidiary of the MTC, employs 804 staff. Domestic airports and airstrips are under local government control although with funding from MTC. MTC has proposed that these airports should be incorporated into ZACL.

Figure 5 ZACL: Annual Passengers 2010-2016 (000s)



The breakdown of traffic at the four key airports over the period 2010-2016 is shown in Figure 5. The majority of air passengers in Zambia (1.2 million in 2016) travel to or from the main hub, Kenneth Kaunda International Airport in Lusaka. Harry Mwanga Nkumbula International

Airport in Livingstone and Simon Mwansa Kapwepwe International Airport in Ndola each currently handle 227,000 passengers per annum and Mfuwe Airport 32,000 passengers.

2.5.2 Kenneth Kaunda (Lusaka) International Airport

Lusaka's Kenneth Kaunda International Airport is Zambia's main international hub. The airport has a 3,962m runway (10/28) capable of handling aircraft up to B747 size.

In 2016, the airport handled just under 1.2m passengers, although the current capacity is approximately 2.0m per annum. A new international passenger terminal extending this capacity to 4.0m passengers is currently under construction and is due to open in 2019. The new terminal, together with a separate VIP terminal and a new cargo facility is funded by a US$385m loan from the EXIM Bank of China. Once the new international terminal is open, the existing terminal will be used for domestic flights only.

To maximise future revenues at Lusaka (and at other Zambian airports), ZACL should review its airport charging structure to ensure that this conforms to ICAO policy[23] and contributes towards the cost-recovery of airport capital and operating costs. ZACL should also maximise all potential non-aeronautical revenue, including duty-free and tax paid retailing, car rentals, car parking and ancillary activities at the airport site such as hotels and offices. Further economic development might be promoted through a free trade zone or a similar arrangement surrounding the airports.

2.5.3 Harry Mwanga Nkumbula (Livingstone) International Airport

Harry Mwanga Nkumbula International Airport serves Livingstone in the south-west of Zambia and provides a gateway to the Victoria Falls, competing with the Victoria Falls Airport in Zimbabwe. The airport has a 2,256m main runway (10/28) and a 1,350m cross-runway (15/33). A new international passenger terminal opened in 2014 as part of a US$60m upgrade programme funded in part by the European Investment Bank (EIB). In 2016, the airport handled just over 200,000 passengers.

2.5.4 Other airports / airfields

Zambia's third largest airport at Ndola was originally a UK RAF base. It has two parallel concrete runways, one 2,515m and the second 1,215m long. In 2016, the airport handled 0.25m passengers. Expansion at its current site is difficult due to its proximity to the city centre and construction has recently started (June 2017) on building a new greenfield airport on a 2,000 hectare site to the north-west of the city. The new airport will have a 3,500m runway and a capacity of some 2.0m passengers per annum. The US$397m project is being undertaken by a Chinese contractor, AVIC International.

Other airports in Zambia with scheduled services include Mfuwe, Solwezi and Kasama. There are plans for a US$122m upgrade at Mfuwe Airport. Jeki and Royal airports serve Lower

[23] ICAO's Policies on Charges for Airports and Air Navigation Services. Doc 9082 ICAO 2012.

Zambezi National Park. Other smaller airfields and airstrips include Chipata, Kasaba Bay, Mansa, Southdowns and Nyoma.

2.5.5 Ground and cargo handling

The majority of ground handling is managed by ZACL with three other private ground and cargo handling operators at Lusaka airport – Zega, NAC 2000 and Astra Aviation Services. Competition is limited as independent ground handlers pay a ramp access fee to ZACL and cannot undertake certain functions such as passenger handling, load control and flight despatch. NAC2000 provides cargo handling services for several airlines operating at Kenneth Kaunda (Lusaka) International Airport including Emirates, Kenya Airways and South African Airways. None of the major international ground/cargo handling companies active at the main African hubs e.g. Swissport, Menzies Aviation or UAS currently operates at Kenneth Kaunda (Lusaka) International Airport or at other Zambian airports. If ground/cargo handling markets were opened up to private sector operators (possibly through a tender process e.g. at the new terminal at Lusaka airport), the increased competition would be likely to lower airline costs even if an access fee were paid to ZACL by new entrants.

2.6 Air Navigation Services (ANS)

As indicated above, ZACL is currently responsible for the management of upper and lower airspace, as well as approach control at the main airports.

Until 2016, air traffic service provision was essentially procedural (i.e. with fixed time-based aircraft separations) as there was no radar coverage in the region. Following a US$20m purchase of primary and secondary surveillance radar from Thales, about three quarters of Zambian airspace now has radar coverage, resulting in reduced aircraft separations and increased capacity. Some 20 air traffic controllers have been trained in the use of the new equipment by the South African training provider, ATNS.

En-route airspace is treated as a single sector and is controlled from the Air Traffic Control Centre at Lusaka Airport. Approach and aerodrome control operations are established at Lusaka, Livingstone, Ndola and Mfuwe airports. The majority of ANS revenue comes from overflights through Zambian Upper Airspace, although South African Airways divert some traffic due to poor VHF/HF air-ground communications links in the Western Region Sector. ZAMTEL plans to install fibre-optic cables to alleviate this problem.

ANS charges are collected through the IATA system. The schedule of charges has not been updated for over 20 years and urgently needs to be reviewed in view of increased ANS investment and operational costs. ZACL recognises that the airport and the ANS functions may need to be separated in the future. To support ZACL, a €0.8m technical assistance project funded by the EU under the European Development Fund is scheduled for 2018.[24]

[24] Donor support is summarised in Appendix 4.

3. Policy, Legislative and Institutional Framework

3.1 Zambia's political economy

Zambia's eight elections since the return to multi-party politics in 1991 have been characterised by the peaceful transition of power, making Zambia one of the most stable countries in Africa. The 2016 Ibrahim Index of African Governance shows that Zambia ranked 13th out of 54 countries (18th in 2007) and improved in every category over the last ten years.[25] Effective governance and a stable political framework, which promote a conducive business environment, confidence in the market and an attractive destination for foreign direct investment, are conducive to sustainable development.

The power of the President[26] is supported by a high level of centralisation, existing laws and operational guidelines. Informal rules and informal institutions have continued to influence policy making throughout Zambia's political history. As a result of this, personal rule and executive discretion have been reinforced. In this system, formal rules usually give way to personalised relations and informal power structures. The reliance on personal relations has eroded bureaucratic controls and has resulted in increased incidence of corruption and impunity. Political parties organise on regional lines, personalities and patronage, rather than around particular programmes, mandates or issues.[27]

The President has a strong influence on the direction of the country's aviation sector. There would not, however, appear to be any abuse of his or any government minister's power regarding the operations of the aviation sector, which is not necessarily the case in other African states. It has been reported, for example, that (now-ex) President Mugabe's family has a financial stake in the new Zimbabwe Airlines and that aircraft owned by Air Zimbabwe have been used for political rather than commercial purposes.

The Patriotic Front (PF) has ruled since 2006. The Government has been implementing an economic reform programme to speed up growth and restore budget credibility while reducing the fiscal deficit. Job creation, guided by an Industrialisation Strategy, is a priority of the government as Zambia still has a low formal employment base of just 11% of total employment.[28] Key policies in the Government's 'Zambia Plus' programme focus on enhancing domestic resource mobilisation; improving fiscal governance, accountability and transparency; restoring budget credibility and *ensuring greater economic stability, growth and job creation through policy consistency to raise the confidence of the private sector and encourage investment.* The Government's Jobs and Industrialisation Strategy is an attempt to diversify the economy and reduce vulnerability to mining. Foreign direct investment in

[25] Ibrahim Index of African Governance 2016. http://mo.ibrahim.foundation/iiag/.

[26] President Lungu was re-elected in August 2016 with 50.4% of the vote, securing a slender parliamentary majority.

[27] R Flanary, D Wood, C Mathieson and D Cammack. Political Economy Diagnostic Exercise- Zambia. The IDLgroup. August 2011.

[28] P Rasmussen, C Zamba, E Chirwa. African Economic Outlook. Zambia 2017. UNDP/AfDB/OECD. The African Economic Outlook presents the current state of economic and social development in Africa and projects the outlook for the coming two years. The AEO is a product of collaborative work by the African Development Bank, the OECD Development Centre and the United Nations Development Programme.www.africaneconomicoutlook.org.

manufacturing exceeded mining for the first time in the past decade, an early indicator of investment stability in non-mining activities.

The Government's industrialisation strategy prioritises four key sectors – agriculture, tourism, construction and manufacturing – together with reforms to the legal framework, to regulatory compliance and to trade facilitation. Specific skills such as management, information technology and engineering are lacking in key growth sectors, which results in high overhead costs as skilled labour often has to be sourced from abroad.

In common with other African states, Zambia's aviation sector has historically been largely under government control. MTC has overall responsibility for policy development and legislation within the aviation sector, although the CAA provides independent aviation regulatory and safety oversight. In practice, the strategic direction for the sector is largely set by the President's Office, as the CAA has no role in economic regulation. MTC's direct management of Zambia's airport authority, its air traffic services and potentially its national airline is, however, contrary to best practice as each of these should be established as separate autonomous bodies or privatised, where appropriate.

Due to the relatively high fares, domestic air travel is mainly restricted to a small minority of the population with high incomes and to tourists, particularly those from South Africa and non-African countries. In the longer-term, more Zambians will travel by air with the development of a true low-cost aviation market – although passenger growth will be restricted in the immediate future due to the relatively small market size and high operating costs.

3.2 Policy framework

The Zambian Government has always provided strong support to its aviation sector in recognition of its key role in promoting its economy and its tourism sector. As in most African states, its aviation sector has historically been under public sector control, with its national airline, airports and air traffic service provider supported by financial subsidy. The Government continues to seek opportunities to re-establish a national airline.

The development of the aviation sector is reinforced in Zambia's Seventh National Development Plan[29] for the period 2017-2021, which highlights the need for improvements to the country's international and provincial airports and the need to create a national airline for both passenger and cargo traffic. Section 7.9.2 on the development of aviation infrastructure and operations states:[30]

> *'Focus will be on construction and upgrading of airport infrastructure to provide modern equipment and facilities which will enable the country to handle higher volumes of traffic, both passengers and cargo. Provincial and strategic airports will also be upgraded to increase the capacity to handle more traffic.*

[29] Government of Zambia. Ministry of National Development Planning. 7th National Development Plan 2017-2021.
[30] Strategy 2: Development of aviation infrastructure and operations. 7th NDP.

As a way to diversify the economy, establishment of a national airline will be critical to transportation of passengers and cargo. During the Plan period, focus will be on acquiring aircraft to serve domestic, regional and inter-continental routes. Further, arrangements will be made to acquire cargo planes that will assist in exporting agricultural produce to markets in the region and beyond.

Programmes:

a) Provincial and strategic airport upgrading;
b) International airport upgrading and construction;
c) Civil aviation capacity development; and
d) National airline establishment.'

3.3 Legislative framework

Historically the legislative framework for the aviation sector has been established by a number of separate Acts, including the Aviation Act, the Air Services Act, the Safety of Civil Aviation Act, the Air Passenger Service Charges and other related Acts.

As a signatory to the Chicago Convention, Zambia is required to adopt fully ICAO Standards and Recommended Practices (SARPs) within its own national legislative framework. In 2012, a revised Aviation Act was endorsed by the Zambian Parliament and in the same year the Civil Aviation Authority Act established a fully independent CAA with responsibilities in accordance with the Annexes to the Chicago Convention.

In 2016, the 2012 Aviation Act was updated to incorporate further ICAO legislation, including provisions to establish a state aviation safety programme. The updating of national legislation in line with ICAO requirements is an ongoing process for all contracting states. Following its Corrective Action Plan introduced in 2009, Zambia now exceeds the global average in the implementation of ICAO legislation.

3.4 Bilateral Aviation Service Agreements

Bilateral Air Service Agreements (BASAs) are treaties between countries which typically cover the frequency of flights between them, the designated airline(s), the flight origin and destination, tariffs, seat capacities and 'fifth freedom' rights. Zambia has a number of BASAs with other African states and with third countries, although these are mainly restricted to countries with an existing air service (or services) or those with prospects of future air services. MTC is responsible for the administration of the BASAs and, where necessary, their negotiation and implementation.

Under an 'open skies' regime such as that in Europe or in North America, BASAs between countries in the region have become obsolete. In the case of Africa, some 44 states including Zambia agreed to the principles of air service liberalisation under the Yamoussoukro Declaration of 1988. This was endorsed in 2000 as the YD and became fully binding in 2002. Whilst in theory this created an 'open skies' aviation market within Africa, all states retained the BASA system, with many such agreements continuing to have market restrictions. The liberalisation of the air transport market in line with the YD is a key objective of the SADC-EAC-COMESA tripartite group, which includes Zambia. However, in practice, the YD has not been fully implemented, particularly in relation to airline ownership constraints and 'fifth freedom' rights. In January 2015, 11 African states made a 'solemn commitment' at an African Union Conference Transport Ministers summit to enforce the YD by 2017. Since then a further 13 states[31] (but not Zambia) have joined this group. The implementation of the YD has been slow and limited and thus the potential benefits of liberalising intra-African air markets remain largely unrealised.

A fully liberalised market without any restrictions is in the interests of overall air traffic growth in the country and its consequent impacts on the Zambian economy and tourism sector. Examples of the benefits of a more liberal air market are as follows:[32]

- Greater freedom of operation between South Africa and Kenya in the early 2000s was followed by a 69% rise in passenger traffic.
- The operation of a low cost carrier service between South Africa and Zambia (Johannesburg-Lusaka) resulted in a 38% reduction in discount fares and 38% increase in passenger traffic.
- Ethiopia's pursuit of more liberal bilateral agreements (on a reciprocal basis) has contributed to Ethiopian Airlines become one of the largest and most profitable airlines in Africa.
- On intra-African routes with more liberal bilateral arrangements, Ethiopian Airline passengers benefit from 10-21% lower fares and 35-38% higher frequencies (compared to restricted intra-Africa routes).
- The 2006 Morocco-EU open skies agreement contributed to a 160% rise in traffic, and the number of routes operating between points in the EU and points in Morocco increased from 83 in 2005 to 309 in 2013.

Zambia has imposed certain restrictions in granting 'fifth freedom' rights to non-Zambian airlines, reportedly because it wished to protect the interests of its national carrier, even though this did not exist at the time. In the past, Zambia has refused consent for routes such as Tripoli-Lusaka-Johannesburg, Lagos-Lusaka-Johannesburg and Nairobi-Lusaka-Harare.[33] In recent years, however, both Kenya Airways and Emirates have been granted 'fifth freedom' rights for onward travel to Harare from Nairobi and Dubai, suggesting that this protectionism may have been relaxed.

Zambia has BASAs with several non-African countries, including the United States, China and the UK, even though it currently has no direct services to destinations outside Africa apart

[31] Southern African states signing this 'Solemn Declaration' include Kenya, Rwanda, South Africa, Zimbabwe, Botswana and Swaziland.

[32] Transforming Intra-African Air Connectivity: The Economic Benefits of Implementing the Yamoussoukro Decision. InterVISTAS. July 2014.

[33] Open Skies for Africa – Implementing the Yamoussoukro Decision. C Schlumberger. The World Bank, 2010.

from Dubai. British Airways, Lufthansa and Zambia Airways previously had direct flights to Europe. Passengers travelling to Zambia from non-African destinations need to rely on air services through key hubs such as Addis Ababa, Nairobi, Johannesburg and Dubai. It is important therefore that there is a wide range of connections between these hubs and international airports in Zambia and that the BASAs relating to these provide a comprehensive range of destinations. Connectivity can be improved through the use of codesharing and optimal flight scheduling through these hubs in order to minimise total journey time.

Zambia has pursued a more liberal approach in recent years and has opened up certain routes to increased competition through the granting of ‘fifth freedom’ rights. It has not, however, signed the ‘solemn commitment’ by African states to apply the YD by the end of 2017 to create fully open skies across the continent. This suggests that certain restrictions still apply under certain BASAs. These BASAs should be reviewed and reformed as soon as possible so that Zambia can join the 23 other African states which have already signed this commitment.

3.5 Institutional and regulatory framework

3.5.1 Ministry of Transport and Communications

MTC is responsible for the country’s civil aviation policy. The Minister, through Part 2 of the Aviation Act of 1989 (CAP 444) designated the then National Airports Corporation Limited (NACL) now ZACL to be responsible for the management and operation of the country’s four largest airports at Lusaka, Livingstone, Ndola and Mfuwe and for the provision of the country’s ANS through a specialist division within ZACL. Until February 2015, the MTC was also responsible for aviation safety and security oversight through the DCA, although this is now provided by the autonomous CAA.

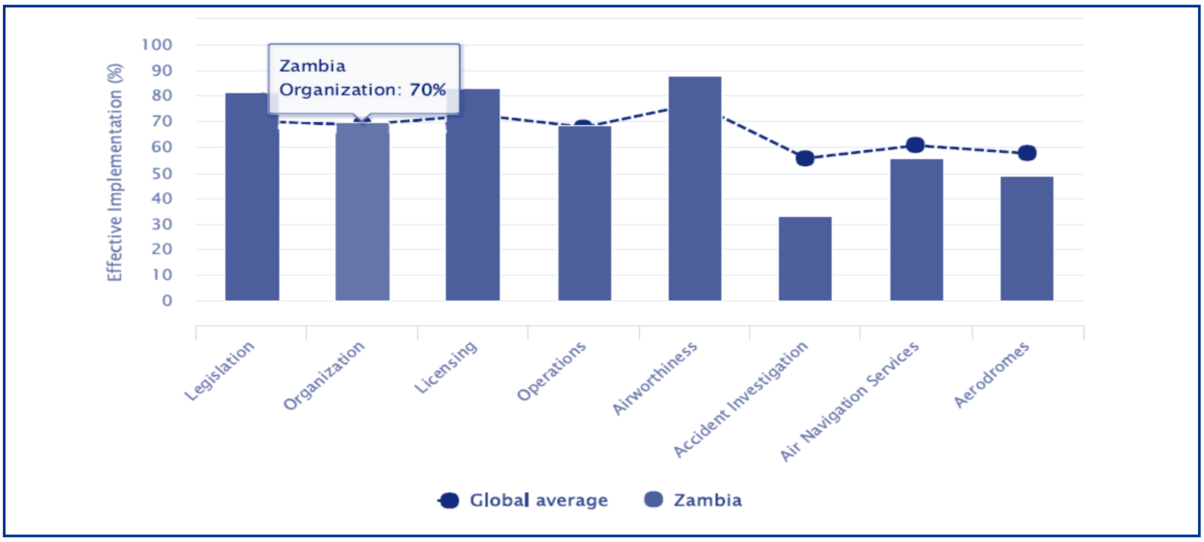
The Ministry is responsible for maintaining all BASAs with other African and third countries, including ‘fifth freedom’ rights. It also issues Air Service and Foreign Carrier Permits, subject to certain financial and insurance requirements.

MTC is also technically responsible for civil aviation Search and Rescue (SAR) operations and for air accident investigation. In practice, SAR would be undertaken by a Disaster Management and Mitigation Unit coordinated by the President’s office. Provision for air accident investigation is currently limited although the Ministry has an MOU with South Africa and other neighbouring states to provide the necessary support and assistance. MTC is also responsible for the management of Zambian Air Services Training Institute (ZASTI), which was formally under the control of the Ministry of Education. In addition, through the Department of Transport, the MTC has established an Aviation Unit responsible for the management of Provincial and District Aerodromes that were formally operated by the DCA.

3.5.2 Civil Aviation Authority

Zambia has recognised for some time that a fully independent CAA would be needed to meet ICAO requirements. This was endorsed by ICAO in its Universal Safety Oversight Audit Programme (USOAP) Comprehensive Systems. Following an ICAO audit carried out in 2009 as part of the organisation’s aviation safety and security audit procedures for Member States, a Corrective Action Plan was put in place to correct the deficiencies identified. With support from an EU-funded technical assistance project,[34] a corrective programme was instigated which resulted in an improved level of effective implementation score of 70% in comparison with the global average of 72.3% (Figure 6). As a result, the ban on Zambian-registered airlines flying in EU airspace, which had been imposed by the European Commission, was lifted in early 2017.

Figure 6 ICAO USOAP Audit – Zambia v Global Average



In February 2015, the CAA formally started work as an autonomous organisation, based at the former Zambia Airways Maintenance base at Kenneth Kaunda International Airport in Lusaka. Whilst most of the former DCA aviation safety and security inspectorate and some administrative staff transferred to the new organisation, a number of new staff needed to be recruited. This contributed to the delay in fully establishing the CAA. The CAA has four divisions:

- Flight Safety Standards (airworthiness, flight operations, personnel licensing)
- Air Navigation Standards (ANS)
- Aerodromes and Security (certification and aviation security oversight)
- Corporate affairs (finance, legal, quality control etc)

The CAA currently has some 71 staff including 40 inspectors, although a number of posts, including some Inspectorate staff remain unfilled. The CAA also issues licences for some 200 active operational personnel (e.g. commercial and private pilot licences, aircraft maintenance engineers, air traffic controllers, flight instructors, etc). The lack of qualified and trained Inspectorate staff was a key concern of ICAO which the new CAA is keen to address through Government assistance complemented by an EU technical assistance project support.

[34] The EU's Aviation Sector Support Programme (ASSP). Donor programmes are listed in Appendix 4.

There are currently 10 airlines and other air operators holding Zambian AOCs and some 33 larger commercial and business type aircraft with Certificates of Airworthiness (CoAs) on the Zambian register. ICAO estimates that the average age of this fleet is 23.9 years, with 51.5% of aircraft older than 20 years. The age of this fleet places substantial responsibility on the CAA to ensure that appropriate aviation safety oversight is carried out.

3.6 Aviation sector training

3.6.1 Assessment of training market

In 2015 Zambia had 83 commercial pilots, 89 licensed aircraft maintenance engineers and 103 licensed cabin attendants.[35] There is a shortage of trained CAA safety inspectors, airport managers and ATC controllers. The long-term development of a pool of trained aviation personnel is a key challenge for Zambia, particularly as, once trained, many leave the country for more lucrative opportunities regionally or abroad.

While there is a shortfall of technically qualified and experienced personnel for the aviation sector in Zambia, the demand for locally trained staff on a consistent basis by aviation organisations – public and private sectors – is uneven and is driven by seasonality and other exogenous factors that affect the viability of local training providers, particularly in the TVET sector. A contributory factor is that well trained operatives tend to leave Zambia for better paid jobs elsewhere in the region.

ICAO reports that the lack of qualified staff poses a major constraint to the development of civil aviation in Africa. Due to inadequate financial resources, most African states do not have sufficient resources to devote to the training of personnel in technical, management and leadership skills.[36]

IATA has identified the lack of effective flight crew training and proficiency as a major source of safety problems. Even where training is adequate, highly trained flight crews in the poorer countries can usually command higher salaries when working for a larger foreign airline. A similar drain of skilled personnel affects regulatory staff. Safety inspectors, trained with donor funding, frequently abandon oversight roles almost immediately to earn much more working for an airline. Poor countries trying to maintain a domestic flag carrier do not pay enough to train and maintain good flight crews. Because funds are usually insufficient to provide competitive salaries for safety inspectors, oversight standards are inadequate.

The key safety oversight issues resulting from under-investment in skills include the following:

- Countries lack expertise, thereby creating a situation for unsafe conditions that could contribute to the high accident rate.
- A lack of expertise, empowerment and appropriate delegation and authority to the operational level within civil aviation administrations.

[35] http://lusakavoice.com/2015/07/10/.

[36] ICAO. Comprehensive Regional Implementation Plan for Aviation Safety in Africa. 2008.

- Administrations lack the necessary qualified technical and administrative staff to carry out safety oversight obligations, as adequate training policies and programmes have not been put in place.
- AOCs have sometimes been issued on request without requiring applicants to demonstrate their capability, and without prior inspections and controls to ensure that the prospective operator is capable of ensuring the conduct of air transport operations with an adequate level of safety.

Appendix 3 sets out details of Zambia's aviation training suppliers. ZASTI is the main source of training but is aimed at basic skills training only. Other provision is small-scale and not consistently available.

While training resources exist in the region, they vary in their management quality and capacity to acquire up-to-date equipment and learning resources. They have tended not to specialise, thus stretching their resources even more thinly, as aviation training demands significant infrastructure investment. Coordination among existing and new institutions would benefit the market.

The Aviation Sector Support Programme, a €3.0m technical assistance and training project was funded under the 10th EDF to improve air safety in Zambia in compliance with international standards. Whilst a Training Needs Assessment was carried out, relatively little training itself was undertaken. The project was completed in October 2015.

Training provision aimed at basic skills would ensure that employers in the public and private sectors have the option to engage locally trained people, particularly Zambian youth, where there is a serious shortage of decent employment opportunities. Given future air traffic growth in Zambia, there is likely to be a requirement for reinvigorated air training services – not only for private and commercial pilots but also for cabin crew, ground staff and air traffic controllers. There is scope for the involvement of private funding – either through the establishment of a new privately-funded training school or through the strengthening of ZASTI with PPP funding.

3.6.2 Regulation of aviation training

The Civil Aviation Authority Act establishes the CAA as the national competent authority for air transport. It regulates training school courses, the suitability and airworthiness of training equipment and the competency of the instructors. It provides for the examination and rating of civilian schools giving instruction in flying, repair, alteration, maintenance and overhaul of aircraft, aircraft engines, propellers and appliances. It regulates other aviation-related courses such as air traffic control, aeronautical information services, rescue and fire-fighting, aeronautical telecommunications, navigational aids and aviation security.

The CAA can establish a training school or acquire any existing school for the purpose of training its employees; and can delegate the training of its employees to any entity having the capacity to offer the training.

3.7 Constraints in the business environment

The Government's business environment reforms aim to provide conducive policy and regulation in order to ensure a business and investment-supportive climate.

The Zambian Development Agency supports foreign investors to establish operations in multi-facility economic zones by providing fiscal incentives. The business regulatory environment works relatively well when compared to the countries in the Southern Africa region. According to the World Bank's Doing Business 2017, Zambia ranks fourth in the region.[37] This finding correlates to the 2016 Global Competitiveness Report that places Zambia fifth in the region behind Mauritius, South Africa, Botswana and Namibia.[38]

The Ministry of Commerce, Trade and Industry (MCTI) has instituted a number of reforms to alleviate or remove constraints to investment:

- A one-stop-shop for business registration under the Private Sector Development Reform Programme;
- Easier company registration with the Patents and Companies Registration Authority, as most registration forms are available online;
- The Zambia National Electronic Single Window will facilitate import and export documentation through a single platform; and
- Registration for tax and completion of tax returns online.

Nevertheless, there are still major constraints to investment: resolving insolvency, registering property, trading across borders, resolving disputes and enforcing contracts are continuing weaknesses and the regulatory environment remains a challenge for entrepreneurs and investors. Licensing and labour code requirements are often excessive, discouraging formalisation and requiring significant knowledge to remain compliant, especially for small businesses. According to the 2016 Global Competitiveness Report the burden of government regulation remains a constraint and inefficient government bureaucracy creates ongoing problems for businesses.

A decline in copper prices and depreciation of the kwacha have exacerbated shortages of foreign exchange, which has had a knock-on effect on receipts by suppliers in the aviation sector. The Government has been tightening monetary policy to bring inflation below 10% (exceeded 22% in February 2016) while limiting excessive exchange rate volatility.[39]

The Global Competitiveness Report also records that the 'soundness of banks' has deteriorated in recent years. Zambia experienced three microfinance bank liquidations in 2016, the result of accelerated lending to small borrowers and a growing portfolio of non-performing loans. Furthermore, liquidity constraints in the market made it increasingly more

[37] www.doingbusiness.org/.

[38] https://www.weforum.org/reports/the-global-competitiveness-report-2017-2018.

[39] The exchange rate averaged 12.2 kwacha to the US dollar in November 2015, up from 6.4 in November 2014, but stabilised at 10 kwacha to the US dollar by April 2016. African Economic Outlook. AfDB, OECD, UNDP. 2017.

difficult for the small lending institutions to access capital. Zambia has only 19 registered commercial banks and a large group of microfinance institutions. High interest rates and non-performing loans have caused some commercial banks to cease making consumer loans. SMEs struggle to access finance and venture capital and other innovative forms of business finance remain undeveloped.[40]

Zambia's environment is guided by the Environmental Management Act of 2011 and several other related pieces of legislation that regulate urban and rural planning, forestry, wildlife, mining, radiation and water. The implementation of this legislation is inadequate given the environmental challenges that Zambia faces and the small budgetary allocation that the environment receives annually.

MCTI should continue with its programme of business environment reforms in line with World Bank Doing Business indicators to create more certainty and reduce the risks of investment facing the Zambian aviation sector; and should address the imperfections in the working of local financial markets, particularly in terms of improved commercial bank lending to SMEs.

[40] African Economic Outlook. AfDB, OECD, UNDP. 2017.

4. Comparisons with Other African States

4.1 Overview

This section provides a benchmarking analysis of the aviation sector in certain selected Sub-Saharan Africa states in comparison with Zambia. These have been selected in terms of their state of development in relation to Zambia and therefore exclude the two largest aviation markets, South Africa and Ethiopia.

Key demographic statistics for each of the benchmarked states described in Appendix 2 are shown in Table 5.

Table 5 Demographic Statistics (2016) – Selected Sub-Saharan States

	Population (m)	GDP (US$ billion)	GDP per capita (US$)	Airport Pax (m)	Propensity to Fly
Tanzania	55.6	47.4	853	4.6	0.08
Kenya	48.5	70.5	1454	10.0	0.21
Uganda	41.5	25.5	615	1.6	0.04
Malawi	18.1	5.4	301	0.5	0.02
Zambia	**16.6**	**19.6**	**1178**	**1.6**	**0.10**
Zimbabwe	15.6	16.3	1043	1.4	0.09
Rwanda	12.0	8.4	698	0.9	0.08
Togo	7.5	4.4	587	0.7	0.09
Namibia	2.5	10.3	4108	1.0	0.40

The ratio between the total number of annual air passengers and the total population in a country is the 'Propensity to Fly' and is an indicator of the level of development of its aviation sector. The Propensity to Fly in Zambia is significantly less than in Kenya and Namibia although it is higher than in many other East African states.

4.2 Benchmarking conclusions: Lessons learnt for aviation sector development

A more detailed description and analysis of the current state of development of the aviation sector in each of these nine states is given in Appendix 2. Only two, Zambia and Uganda, do not have a national airline – although none of the national carriers in the other seven states is profitable and consequently all have required on-going Government subsidies.[41]

The benchmarking analysis shows that economic and tourism growth can be promoted by strengthened competition in the aviation sector, thereby reducing airfares, improving service levels and reducing unit operating costs. This is more feasible where the aviation sector is larger or there is a major airport hub and where tourism policies and development plans are closely aligned with aviation sector policies – this latter point is a key lesson for the Zambian aviation sector (and wider economic) development.

[41] ASKY in Togo has been financially supported by its key shareholders (a consortium of African banks and Ethiopian Airlines).

The benchmarking analysis demonstrates that many states in East and Southern Africa either have or previously had a state-owned airline which has required continued government subsidy:

- IATA revealed that African carriers made a loss of US$900m in 2015 and US$800m in 2016. In 2017, IATA forecasts a further combined loss of US$800m.
- Kenya Airways is the third largest airline in Sub-Saharan Africa. Despite part-ownership by KLM and Air France and support through its membership of the Sky Team Alliance, it has remained unprofitable for several years. It is downsizing under its Optimisation Plan by cutting capacity by around 30% (whilst Ethiopian Airlines is expanding through partnerships with other African airlines).
- SAA has been losing money for many years and has changed CEO and board chairman several times in the past five years.
- In January 2017, the Government of Nigeria took over Arik Air (a private airline) because of mounting debt.
- Malawian Airlines reported[42] that, after four years in partnership with Ethiopian Airlines (Ethiopian has a minority 49% stake), breakeven has yet to be achieved.
- Ethiopian Airlines[43] and Comair[44] have been the only profitable airlines in Sub-Saharan Africa over the past decade.

Given the continuing losses incurred by Sub-Saharan state-owned carriers (even for well-established airlines such as SAA and Kenya Airways) and the as yet unproven viability of joint-ventures with Ethiopian Airlines, a key lesson is that a national carrier operating in a relatively small market under an ‘open skies’ policy cannot be both profitable and cash positive in the medium-term, without some form of partnership with a major carrier – and even then, the risks of failure (and of continued state funding) are very considerable.

Certain African governments have perceived wider political, social and economic benefits arising from state aid for a new or relaunched national carrier, particularly in terms of job creation, reduced airfreight costs and improved tourism traffic. But such state aid to airlines is contrary to the principles of an ‘open sky’ policy and indeed would be illegal within the European Union. Furthermore, there are significant financial risks of pursuing open-ended state aid – the on-going cost to the national budget could run into tens of millions of dollars,

[42] The head of Malawi’s Public Private Partnership Commission (PPPC) told journalists in September 2017 that despite initial promise on its launch four years ago, Malawian Airlines had yet to reach breakeven: *“The business model that was floated during the tender indicated that the airline would be making profits by the second year, but the reality on the ground has been different as the airline has struggled to gain the market share that is needed to make profits.”* https://independent.ng/zambia-ethiopia-airlines-sign-30m-contract-national-carrier/

[43] In the year to June 2016 (latest figures available), Ethiopian Airlines made a net profit of six billion birr (US$273m) on turnover of 55 billion birr (10.9% net profit margin). Net profit grew by 70%. Ethiopian carried 7.6m passengers.

[44] Comair is a South African low cost carrier quoted on the Johannesburg Stock Exchange. To June 2017, Comair had a turnover of R6.1bn, an operating profit of R1.1bn with net profit before tax of R435m (7.1% net profit margin). Comair carried 5.5m passengers.

particularly as the government tries to get to grips with the illusory long-term outcome of growth in passenger numbers, rising revenues and financial self-sustainability.[45]

Air traffic has increased significantly in Rwanda and in Togo as a result of the entry of new national airlines, supported by Ethiopian Airlines. If a similar arrangement between Ethiopian and the proposed Zambian national carrier were to come to fruition, full traffic rights should be granted by both Zambia and Ethiopia for 'fifth freedom' routes operated by either airline. If a partnership with Ethiopian Airlines is not feasible, then arrangements with another major carrier should be investigated – bearing in mind that expansion of carrier capacity would be counter-productive if a new national airline drove away private sector competition.

The benchmarking analysis also indicates that the airport sector in Sub-Saharan Africa is not yet sufficiently commercialised for private sector funding – although many airports are being built or extended through loan funding, particularly from China and Japan, including the construction of a new terminal at Kenneth Kaunda International Airport in Lusaka. There is a strong case, however, for the increased involvement of the private sector in air cargo and ground handling at Lusaka to promote competition and reduce costs, particularly once the new terminal is built.

[45] Relaunching Zambia Airways is the Worst Business Decision. Lusaka Times. 21st December 2017.

5. Future Development of the Aviation Sector

5.1 Key drivers and constraints to growth

The development of a country's aviation sector (in terms of growth in air passengers and cargo) is strongly correlated with its growth in GDP – although it is not always possible to determine the precise causal links between the two. A recent study by IATA[46] shows that globally annual growth in the number of air passengers is approximately 1.4 times that of the annual growth in GDP. This ratio, the income elasticity of demand, is normally somewhat higher (approx 1.8) for short and medium haul routes in developing countries. However, the ratio in Zambia based on traffic levels over the period 2010-2016 is only 1.21. This lower figure is due to market size constraints, high fares and the lack of effective airline competition for much of this period. In a traffic forecasting model, a further multiplier can be applied for any decrease (or increase) in the level of air fares. IATA found that, in the case of markets in Sub-Saharan Africa, as air fares reduce (e.g. as a result of market competition), traffic levels grow by a factor of 0.6 times that of the air fare reduction, a price elasticity of -0.6. The IATA study did not evaluate the impact of exports/imports or of tourism on air traffic growth, although these are correlated to GDP to a greater or lesser extent, depending on country conditions.

Zambian GDP is expected to rise by an average of around 4.5% per annum between 2018-2025.[47] The level of air fares is likely to reduce due to airline competition as the market expands, particularly if there is a reduction in Government taxes on aviation, although this will be dependent on whether the Government continues to subsidise the aviation sector. Indicative air traffic forecasts for Zambia's four main airports over the period 2016-2030 are provided below in Table 8, Table 9 and Table 10.

There are a number of constraints to the future development of Zambia's aviation sector. The key constraint is the overall market size where capacity is largely concentrated on certain routes e.g. Lusaka-Johnnesburg, Lusaka-Harare and Lusaka-Nairobi. The overall market size is relatively small (1.62m passengers in 2016), so even with some future growth, the opportunities for competition on the less dense routes are limited. As indicated in Appendix 1, several routes have low service frequencies and flights are often scheduled at inconvenient times for passengers. There is little scope for development of Lusaka as a hub as nearly all passengers either originate from or have a destination in Zambia. Furthermore, there is currently no demand by a major based airline (or airline alliance) for a hub and spoke network. In general, the proportion of direct 'point-to-point' flights is increasing at the expense of hub traffic on a global basis, although there will still be a requirement for specific African hubs for many intercontinental destinations. These include Nairobi, Addis Ababa and Johnnesburg as well as Dubai and Istanbul.

As in many African countries there is a wide disparity in income levels, with only a relatively small proportion of the population able to afford air travel. Despite this, the Zambian aviation

[46] The demand for air travel is sensitive to changes in air travel prices and incomes. However, the degree of sensitivity (i.e. its demand elasticity) will vary according to different situations. Air Travel Demand. IATA Economics Briefing No 9, 2008.

[47] Trading Economics forecasts.

sector is not under-performing and, as illustrated in the demographic analysis in Table 5, the propensity to fly across the population as a whole is comparable with or higher than that in other African states with a similar GDP and GDP per capita level. It should be noted that whilst potentially air fares could reduce with lower competition, the opportunity for sustainable low cost competition, particularly in the domestic market, is limited in the short-term. There is a danger, for example, that the introduction of a national carrier on domestic routes would drive away existing operators such as Proflight or Mahogany Air. Traffic levels on these routes are likely to be restricted, especially if the Zambian Government continues to levy high taxes on the aviation sector. The precise impact of taxation on the aviation sector, which is common in Sub-Saharan Africa, needs further examination.

Airline profitability in Africa is also constrained by low passenger load factors. IATA data[48] shows that passenger load factors for African airlines on international routes averaged 71.6% in 2016 in comparison to the global average of 80.6%. This is largely due to the use of oversized aircraft types and poor yield management.

A further constraint on the development of the aviation sector is the impact of high airline operating costs, both for airlines based in Zambia and for those flying to Zambia but based elsewhere in Africa. Aviation fuel prices in Africa are amongst the highest in the world, with prices averaging some 5.3% higher than the global average,[49] although no specific data for Zambia is available. Airport charges, both to airlines (e.g. landing fees, parking and ground handling) and to passengers (e.g. Passenger Departure Tax, Airport Infrastructure Charges) are also comparatively high. Typical quoted charges[50] at Lusaka and at other airports in East and Southern Africa are shown in Table 6.

Table 6 Illustrative Airport Charges (2016) – Selected Sub-Saharan African States

	Landing Fees (US$) – B737-800			Passenger Service Charges (US$)		
	Int'l	Regional	Domestic	Int'l	Regional	Domestic
Zambia	355-619	355-619	284-495	40.00	40.00	16.00
Zimbabwe	480	480	480	35.00	35.00	10.00
Kenya	223	223	223	40.00	40.00	5.82
South Africa	189	145	100	12.92	9.78	4.75

To put this into perspective, the combined airport charges (e.g. aircraft landing fees, passenger charges, ground handling, en-route and other miscellenous airport charges) could typically amount to US$48-$55 for inbound international and regional flights into Zambia, which are incorporated into the air ticket price. (This analysis is based on a 175 seat B757-800 with a 65% load factor, although the per passenger costs are broadly similar for other aircraft types).

These airport charges are broadly comparable to those in Europe, where most airports have a higher capital and operating cost base although this is normally offset by an increased

48 http://www.iata.org/pressroom/pr/Pages/2017-02-02-01.aspx
49 http://www.iata.org/publications/economics/fuel-monitor/Pages/price-analysis.as
50 In practice, these are subject to discounts although the charges should be non-discriminatory.

passenger throughput. At London Luton Airport, for example, the typical landing fee for a B737-800 aircraft is US$371 per arrival and the standard Passenger Service Charge is US$15.80 per passenger. A variable rate is also charged for Air Passenger Duty (min US$17.33) and other passenger-related airport charges (min US$1.96).

Other airline operating costs in Africa are also increased by high aircraft leasing costs although these might potentially be reduced if Zambia were to be a signatory to the Cape Town Convention.[51] The reasons why Zambia has not signed the Convention are not known but this option should be explored further by the Government, particularly if leased aircraft are to be acquired for the proposed national airline.

5.2 Potential growth scenarios and air traffic forecasts

For the purposes of this study, we have assumed three possible air traffic growth scenarios, as follows:

- A ‘most likely’ case scenario, based on mid-range GDP forecasts for the Zambian economy. This assumes that a new national carrier would be formed within the next 2-3 years, initially with a regional turbo-prop aircraft fleet (e.g. ATR 72, Bombardier Dash 8), with medium / long-haul aircraft added within the next 5-7 years.
- A ‘high traffic growth’ scenario, based on ‘high’ GDP forecasts with similar assumptions on the formation of a national carrier – but with an increased fleet size and route network.
- A ‘low traffic growth’ scenario, based on low GDP growth – with a single regional carrier (e.g. Proflight or a successor airline).

The ‘most likely’ and ‘high growth’ scenarios assume that the airline would operate under a partnership arrangement with another African carrier e.g. Ethiopian Airlines, Kenya Airways. There is scope for a second (and possibly) a third home-based carrier e.g. Proflight, Fastjet, Mahogany Air – although traffic levels and fleet sizes may be variable over the next 10 years, as there is likely to be fluctuation in the overall level of traffic demand.

Economic growth for 2017 is projected at 4.3% (3.6% in 2016) with higher production in agriculture, mining, manufacturing and trade (Table 7). Improved electricity supply is expected to support increased production and continued strong copper prices and market confidence have supported the Kwacha.[52]

[51] The Cape Town Convention sets out protocols for default of payment and recall of leased aircraft. The primary aim of the Convention and the Protocol was to resolve the problem of obtaining rights to high-value aviation assets, namely airframes, aircraft engines and helicopters which by their nature have no fixed location. This problem arises primarily from the fact that legal systems have different approaches to securities, title retention agreements and lease agreements, which creates uncertainty for lending institutions regarding the efficacy of their rights. This hampers the provision of financing for such aviation assets and increases the borrowing cost. https://www.icao.int/sustainability/Pages/Capetown-Convention.aspx

[52] Fredson Yamba. Secretary to the Treasury. The 2018-2020 Medium Term Expenditure Framework & the 2018 Budget. 10 September, 2017.

Table 7 Zambia's Economy – Key Economic Forecasts (2016-2020)

	2016	2017	2018	2019	2020
Real GDP Growth (%) 2016-2020	3.6%	4.3%	5.0%	5.1%	6.1%
GDP Per Capita (US$ millions)	1,322	1,532	1,681	1,848	2,055
Copper price (US$ per MT)	4,868	5,827	5,957	5,991	6,003

Based on likely GDP growth and other determinant variables, indicative passenger forecasts for Zambia's four main airports have been developed for the three scenarios described above. Using 2016 as a base year, the forecasts have been prepared up to 2030, as longer term forecasts beyond this date are highly uncertain (Table 8, Table 9, Table 10).

Table 8 Zambian Airports – Air Passenger Forecasts: Most Likely Scenario (000s)

	2016	2018	2020	2022	2024	2026	2028	2030
Lusaka (LUN)	1152	1275	1571	1782	2012	2260	2539	2853
Ndola (NLA)	241	267	329	0	0	0	0	0
Ndola (new)	0	0	0	373	421	473	532	598
Livingstone (LVI)	197	218	268	304	344	386	434	487
Mfuwe (MFU)	32	36	44	50	57	64	72	80
Total	1622	1796	2213	2510	2833	3183	3577	4019
% annual growth	2.3%	7.5%	10.0%	6.5%	6.0%	6.0%	6.0%	6.0%

Table 9 Zambian Airports – Air Passenger Forecasts: High Scenario (000s)

	2016	2018	2020	2022	2024	2026	2028	2030
Lusaka (LUN)	1152	1364	1773	2068	2412	2813	3191	3619
Ndola (NLA)	241	286	371	0	0	0	0	0
Ndola (new)	0	0	0	433	505	589	668	758
Livingstone (LVI)	197	233	303	353	412	480	545	618
Mfuwe (MFU)	32	38	50	58	68	79	90	102
Total	1622	1921	2497	2912	3397	3962	4494	5097
% annual growth	2.3%	15.0%	13.0%	8.0%	8.0%	8.0%	6.5%	6.5%

Table 10 Zambian Airports – Air Passenger Forecasts: Low Scenario (000s)

	2016	2018	2020	2022	2024	2026	2028	2030
Lusaka (LUN)	1152	1269	1426	1572	1733	1875	2028	2193
Ndola (NLA)	241	266	299	0	0	0	0	0
Ndola (new)	0	0	0	329	363	393	425	459
Livingstone (LVI)	197	217	244	269	296	320	346	375
Mfuwe (MFU)	32	36	40	44	49	53	57	62
Total	1622	1788	2008	2214	2441	2640	2856	3089
% annual growth	2.3%	7.0%	5.0%	5.0%	5.0%	4.0%	4.0%	4.0%

The most likely scenario sees passenger numbers growing from 1.62m in 2016 to 4m in 2030. The high scenario adds another 1m passengers; whereas the low scenario reduces it by 1m passengers. These forecasts compare with IATA's 2016 forecast[53] of a 5.1% per annum air traffic growth to 2030 across Africa on a continental basis.

5.3 Implications for economic and employment growth

The development of a country's economy is linked through travel and tourism to that of its aviation sector – although the strength of the relationship is dependent on the composition of the economy and its maturity. Tourism will gain more than other sectors from the development of the aviation sector although the economy as a whole will benefit from increased GDP and employment levels.

Zambia, like many other Southern African countries, is heavily dependent on its inbound leisure and business travel and tourism industry, particularly for foreign exchange income. A high proportion of international tourist visitors enter the country by air and use domestic flights and special charter flights to the main game parks and other visitor attractions.

The development of air services is essential to support Zambia's tourism industry in an increasingly competitive market both within Africa and across the world as a whole. Moreover, the expansion of Zambia's nature-based tourism industry offers not only a significant source of future employment and income growth but also an effective mechanism to improve the conservation of the environment and, in particular, Zambia's protected areas.

In addition to tourism, the development of the aviation sector is crucial for international and, to a lesser extent, domestic business travel – business travel makes a larger contribution to Zambian GDP than leisure travel – which in turn is important for the development of exports, imports and inward investment. The impact of aviation development on other sectors is more difficult to assess. It is unlikely, for example, that Zambia's copper production would be significantly stimulated by improvements in air transport. Conversely, many exports, such as fresh fruit and flowers, would be boosted by better links to their main markets in Europe and the Middle East. The precise magnitude of these impacts in Zambia requires further study.

Whilst increased market liberalisation of the aviation sector will encourage air traffic and economic growth in their own right, the outcome of Government financial support is more unpredictable. Government funding for a national airline may not be necessary, particularly in the short-term, provided the airline market is liberalised to enable non-Zambian owned airlines[54] to operate on both international and domestic routes. As a result of recent fleet orders, there is excess capacity within many airlines in Southern Africa, several of which are likely to welcome the opportunity to operate in Zambia, given the appropriate conditions. On the other hand, the re-establishment of a national airline could potentially provide a more focussed route network for Zambia itself and would build up specialist expertise in the aviation sector. Similarly, the economic impact derived from airport development may be positive, at least in the short-term. The new Ndola airport in Zambia's Copperbelt, for example, would

[53] http://www.iata.org/pressroom/pr/Pages/2016-10-18-02.aspx.

[54] This would be prevented under Zambia's airline ownership requirements, although it would be permitted under the 'Open Skies' regimes in Europe and the US. This legislation could be amended, although there may be some loss of tax revenue in comparison to operations by Zambian-registered airlines.

have a short-term economic impact from the additional employment and other indirect and induced economic impacts on the local economy during the construction phase.

Whilst there are no specific studies quantifying the economic or employment benefits from the development of Zambia's aviation sector, there is a clear linkage between the two. In Kenya, for example, a study by IATA[55] suggested that a US$351m investment in Kenyan aviation infrastructure created an increase in national connectivitiy (i.e. direct air services) of 59% and a subsequent 0.42% increase in GDP – though the study does not elaborate on the economic benefits. Zambia has different parameters in terms of the structure of its aviation and tourism sectors, its export and import markets and the income distribution across the country as a whole and the same investment could result in a lower connectivity multiplier, but is likely in any case to have a significant economic impact.

[55] Aviation Economic Benefits. IATA Briefing No 8, 2007.

6. Recommendations to Catalyse Growth in the Zambian Aviation Sector

This study has identified how Zambia's aviation sector might potentially develop over the next decade. This development will be largely under the Zambian Government's control, although there are a number of opportunities for private sector involvement across the sector. International donors and funding agencies could play a role in catalysing development in the following areas:

Expansion of air carrier passenger capacity

An expansion of air passenger capacity and concomitant tourism capacity would be necessary to accommodate the forecast growth of air passenger numbers from 1.6m (2016) to between 3m (pessimistic) and 5m (optimistic) in 2030. The options for air carrier capacity expansion include organic expansion by existing and new carriers under an 'open skies' scenario, and the re-launch of a state-owned airline, either wholly state-owned or a joint venture with a major airline. The analysis above has pointed to the substantial risks of launching a wholly state-owned airline and even a partnership with a major player is not guaranteed to succeed. This suggests that a very cautious and carefully reasoned approach should be built into all options.

Recommendation 1

- The Government of Zambia should review the business case for expansion of air traffic capacity, consulting widely and including the options for public and private ownership of new airline capacity, taking account of the likely revenues, costs and the impact on future Government budgets. The review should evaluate the appropriate fleet type(s) for the proposed route network and the potential for partnerships with other African airlines should be explored both on an operational level and in terms of equity participation. The impact of any proposed new capacity including a national carrier, competition with other airlines, potential lower air fares and Zambia's tourism industry should be examined. In all circumstances, Zambian airlines must adhere to the highest standards of aviation safety and should satisfactorily complete an IATA IOSA[56] as mandated by AFCAC.

Removal or mitigation of constraints in the aviation sector

There are a number of constraints to the future development of Zambia's aviation sector. The following Government-led reforms should help to catalyse future aviation sector growth.

Recommendation 2

- The Government of Zambia should take the following actions to address the impact of constraints to investment in the aviation sector:
  - Review and assess the effects of Government taxes on air passengers, airlines and other industry stakeholders and, where action is required, put in place legislative and regulatory reforms to address constraints and restrictions;

[56] International Air Transport Association – Operational Safety Audit.

- Review and assess the effects of existing BASAs on airline competition within the context of the YD and address the continuing need for BASAs as an effective means of regulating Zambia's air traffic market;
- To promote a liberalised market, Zambia should sign the 'solemn commitment' for implementation of the Yamoussoukro Decision at the earliest possible date;
- To support private sector investment in the Zambian aviation industry, signing the Cape Town Convention on aircraft and equipment leasing should be expedited; and
- Continue with business environment reforms in line with World Bank Doing Business indicators to reduce the risks of investment facing the Zambian aviation sector.

Management of Zambia's airports and air traffic services

The management of Zambia's airports and air traffic services should be undertaken by two separate organisations, which should prevent any cross-subsidy between the two and will improve governance and financial control. Whilst still Government-owned, these organisations should be autonomous and independent from the Ministry of Transport and Communications in terms of day-to-day operations.

ANS charges collected through the IATA system have not been updated for over 20 years and should be reviewed in line with increased ANS investment and operational costs.

Recommendation 3

- The Government of Zambia should establish two separate organisations for the management of Zambia's airports and its air traffic services.[57] Business plans should be prepared for both organisations, setting out how increased private sector involvement in airport operations (e.g. in ground/cargo handling, airport retailing, lounges) can be encouraged, particularly at the new Lusaka Terminal. Investment in new airport or ATC infrastructure should be made on a long-term cost-recovery basis, taking account of the expected ANS (which are overdue for review and revision), airport and ATC charges and other commercial revenues.

Alignment of the development of Zambia's aviation sector with economic and tourism growth

There are important symbiotic linkages between the growth and development of Zambia's aviation industry, its tourism sector and its economy as a whole. Studies in other countries have shown how airport investment and other measures such as increased market liberalisation can increase direct, indirect and induced employment and GDP. Similar principles apply for new airline investment. Whilst improved air connectivity can help to promote Zambia's tourism industry, further measures such as improved and expanded tourism attractions, improved internal transport, increased hotel capacity and substantial marketing expenditure will also be required.

[57] An evaluation of this recommendation will be undertaken as part of the proposed EU's Aviation Sector Support Programme.

Recommendation 4

- Stakeholders in Zambia's aviation sector should commission a study into the linkages between aviation sector growth with growth and development of the tourism industry and the economy as a whole. In particular, the impact of direct (or easily-connected) services to the main source markets should be examined. The provision of suitable small-scale air charter operators serving Zambia's game parks and other attractions should also be assessed.

Aviation sector training

To promote broad aviation sector training, it would be more cost-efficient (given the disproportionately high equipment costs) for basic level skills training to be supplied by Zambian TVET institutions, with specialist training, such as commercial pilot training, inspectors, air traffic controllers and ground handling operatives, provided by well-equipped professional organisations outside Zambia – of which there are a number in the region (see Appendix 3). There is a need to redefine the role of ZASTI and to prepare a business plan for its development, taking account of the training needs of current and future staff working in Zambia's aviation sector. The possibility of developing ZASTI through a PPP initiative could be explored.

Recommendation 5

- The DCA, the TVET sector and the aviation private sector should cooperate to produce an aviation sector training plan for providing specialist basic training e.g. aircraft mechanics, ground handlers, cabin and ground crew, leaving advanced training e.g. air traffic controllers and commercial pilots, to specialist regional providers where there is already well-developed training capacity. The training plan should review TVET organisations and their curricula with the aim of developing aviation skills at all basic occupational levels to enable local employment creation for a growing Zambian aviation industry.

Appendix 1 Zambia – Scheduled Air Services (November 2017)

ZAMBIA - SCHEDULED AIR SERVICES - OCTOBER 2017

Lusaka (LUN)		
Addis Ababa (ADD)	-	Ethiopian (5 pw)
Dar es Salaam (DAR)	-	Fastjet (1 pw)
Dubai (DXB)	-	Emirates (7 pw)
Durban (DUR)	-	Proflight (3 pw)
Harare (HRE)	-	Fastjet (1 pw); RwandaAir (7 pw); Kenya Airways (7 pw); Ethiopian (6 pw); Emirates (7 pw); TAAG (1 pw)
Jeki (JEK)	-	Proflight (14 pw)
Johannesburg (JNB)	-	South African Airways (SAA)(36 pw); Ethiopian (1 pw)
Kasama (KAA)	-	Proflight (4 pw)
Kigali (KGL)	-	RwandaAir (4 pw)
Lillongwe (LLW)	-	Proflight (7 pw); Ethiopian (1 pw)
Livingstone (LVI)	-	Proflight (14 pw)
Lower Zambezi Royal Airport (RYL)	-	Proflight (14 pw)
Luanda (LAD)	-	TAAG (1 pw)
Mfuwe (MFU)	-	Proflight (15 pw)
Nairobi (NBO)	-	Kenya Airwarys (17 pw)
Ndola (NLA)	-	Proflight (22 pw); Mahogany Air (12 pw)
Solwezi (SLI)	-	Proflight (10 pw)
Windhoek (WDH)	-	Air Namibia (4 pw)
Livingstone (LVI)		
Cape Town (CPT)	-	Kenya Airways (3 pw)
Johannesburg (JNB)	-	British Airways/Comair (7 pw); SAA (6 pw)
Lusaka (LUN)	-	Proflight (14 pw)
Nairobi (NBO)	-	Kenya Airways (3 pw)
Nelspruit (MQP)	-	SAA (7 pw)
Ndola (NLA)		
Addis Ababa (ADD)	-	Ethiopian (7 pw)
Johannesburg (JNB)	-	SAA (16 pw)
Kasama (KAA)	-	Proflight (2 pw)
Lubumbashi (FBM)	-	Kenya Airways (3 pw)
Lusaka (LUN)	-	Proflight (22 pw); Mahogany Air (12 pw)
Nairobi (NBO)	-	Kenya Airways (4 pw)
Mfuwe (MFU)		
Jeki (JEK)	-	Proflight (7 pw)
Lower Zambezi Royal Airport (RYL)	-	Proflight (7 pw)
Lusaka (LUN)	-	Proflight (14 pw)

Appendix 2 Benchmarking Analysis with Other Sub-Saharan States

Kenya

Kenya is Africa's fifth largest international aviation market after Ethiopia, South Africa, Egypt and Morocco. In 2016, the country's airports handled some 10.0 million passengers, representing an increase of 11% over 2015. Of these some 7.0m travelled to or from Nairobi (Jomo Kenyatta International Airport). Based on its total population of 48.5m, this gives a 'Propensity to Fly' ratio of 0.21, over twice that of Zambia (0.10).

Kenya Airways is the country's largest airline, with a fleet of 34 aircraft and some 53 destinations. Its low-cost subsidiary, Jambojet has a fleet of 4 aircraft and 7 destinations. In 1996, the airline became the first to privatise in Africa. The Kenyan government currently has a 29.8% stake in the airline and Air France-KLM[58] has 26.73%. A consortium of lending banks and private investors owns the remaining shares. Although it is the largest airline in East Africa, Kenya Airways has been unprofitable over several years, reporting its biggest-ever annual loss of US$256m in 2015/16.[59] Since then, the airline has embarked on an Optimisation Plan in which the government increases its shareholding to 46.53% and the lending banks shareholding increases to 35.69%. There has also been a reduction in capacity and a number of job cuts. Although the airline made an operational profit of US$8.7m in 2016/17, its financing costs were almost nine times that amount.[60]

Kenya Airways has many of the key challenges that face all Sub-Saharan airlines, which include the high price of aviation fuel, a lack of market liberalisation, currency fluctuations and exogenous factors such as the Ebola crisis and terrorist attacks. The Kenyan Government has reiterated that it is committed to keeping its shareholding of Kenya Airways below 50%.

Other privatised Kenyan-registered airlines include AirKenya (14 destinations), Fly540 (12 destinations), FlySAX (15 destinations) and Safarilink (17 destinations). There is one small air cargo carrier, Astral Cargo although most air freight is carried on Kenya Airways, Qatar Cargo, Cargolux or on other international carriers.

Kenya's principal airports are under government control within the Kenyan Airports Authority (KAA). Jomo Kenyatta International Airport (JKIA) has a throughput of some 10.0m passengers per annum and a capacity of some 14m per annum. There were plans to build a new greenfield terminal to increase this capacity to 20m passengers, but these fell through when the contractor, Anhui Construction Company of China, was unable to secure the US$600m funding required.[61] The Government has since announced that all future expansion of the airport would be through a PPP and passed legislation for PPP infrastructure projects in 2012, although hitherto this has not involved the airports sector.

58 Members of the Sky Team Alliance.
59 Financial Times. 21 July 2016.
60 Financial Times. 8 June 2017.
61 https://www.reuters.com/article/kenya-airport/update-1-kenya-scraps-plans-for-new-main-airport-terminal-idUSL5N1712M5.

The Kenyan CAA is regarded as one of the leading aviation safety regulatory authorities in Africa and has been instrumental in organising pan-African activities through COMESA in which Zambia has been involved. The Kenyan CAA has a good record of implementing aviation safety oversight in line with ICAO requirements and has a USOAP audit score comparable with or exceeding the global average on the key evaluation criteria. The Kenyan CAA is also responsible for the management and provision of air traffic services.

There is a wide range of aviation training providers in Kenya offering a variety of courses to students and aviation personnel across the East African region as a whole. Kenya Airways has its own staff training centre ('the Pride Centre') for flight crew, other operational and management staff. The East African School of Aviation is the Training Department of the Kenyan CAA – whilst there are several academic institutions offering aviation-related courses (e.g. the Nairobi Aviation College, the Kenya Aeronautical College) and several privately-owned flight training schools. These training organisations require high cost equipment so the consolidation of such training into a small number of centres covering the East African region is appropriate.

Malawi

Malawi's national carrier Malawian Airlines was formed in 2012 after the collapse of Air Malawi. The airline, which flies a range of regional and domestic services, is majority-owned by the Government of Malawi with Ethiopian Airlines holding a 49% stake. Ethiopian also provide the aircraft (a B737-700 and a DH Dash 8) and operate the airline under a management contract. As in the case of its stake in ASKY in Togo, Ethiopian Airlines has been able to expand its route network in East Africa through its investment in Malawian Airlines.

Fastjet, which operated a route between Dar es Salaam and Lilongwe, had planned to set up a base in Malawi but withdrew as they were unable to secure 8th freedom rights for a domestic route between Lilongwe and Blantyre. A small Malawian-registered airline, Ulendo Airllnk, provides a range of domestic services and a service from Lilongwe to Mfuwe in Zambia. Lakestar Express, a new privately-owned low cost airline is expected to start up in January 2018 using two Beech 1900D aircraft. Lakestar Express will compete on Malawian Airline's routes, although the airline has limited seat capacity.

All Malawian airports are state-owned under the Ministry of Transport and Public Works. Lilongwe (Kamuzu) International Airport, the country's main hub is currently being expanded through funding from the Government and the Bank of Japan. Other airports to be upgraded include Mzuzu and Blantyre. A new airport at Mongochi on Lake Malawi is planned to support the country's tourism sector.

Malawi has experienced some difficulty in meeting ICAO aviation safety oversight requirements. Following an ICAO USOAP audit, a corrective action programme was put in place which included new aviation legislation in line with ICAO requirements and the creation of a CAA responsible for safety oversight, operating independently from the Department of Civil Aviation, which is responsible for the country's airports and air traffic services provision.

The creation of the Civil Aviation Authority was expected to be operational by the end of 2015 although it was still not in place by March 2017.[62] Like Zambia, Malawi has been receiving EU-funded assistance to assist in meeting these ICAO requirements.

Namibia

Despite its relatively small population (2.5m in comparison to Zambia's 15.5m), Namibia has a well-developed aviation sector, largely due to the influence of and historical connections with its neighbour, South Africa. The state-owned national carrier, Air Namibia, which was founded in 1946, provides regional services to South Africa, Botswana, Angola, Zambia and Zimbabwe and an international service from Windhoek to Frankfurt in Germany. It also operates a range of domestic services in Namibia. The airline has a relatively young fleet comprising A319, A330 and Embraer ERJ 135 aircraft.

Like many other national carriers in Africa, Air Namibia has a long history of government assistance, with continued financial losses for the past 20 years. The airline is currently implementing a five year recovery plan, although the government continues to subsidise the airline, with losses currently running at around N$60m (US$43m) per year. A study conducted by Oxford Economics in 2015/16[63] indicated that Air Namibia is responsible for some 4,550 jobs and for a N$704m (US$50m) contribution to Namibian GDP. In practice, however, the overall economic and social benefit of the aviation sector in Namibia is likely to be much higher than this as air travel is often the only realistic mode of transport.

Although the airline is fully state-owned, there has been some discussion about a possible PPP with Air Namibia and a Namibian company, Westair, which owns several aircraft leased to Air Namibia. This may reduce the risk to the Namibian government for additional subsidy.

Namibia's main airports are owned by the state-owned Namibia Airports Company. Windhoek (Hosea Kutako) International Airport handled some 0.75m passengers in 2015/16, a drop of 1.9% from the previous year. All Namibia's main airports are being improved under a reconstruction programme. However, given the small passenger throughput and the high capital cost of the reconstruction programme, the government will need to subsidise the NAC for many years to come.

Namibia has a number of small private air charter companies including Westair, Wilderness Air and Scenic Air. Cargo and ground handling at Windhoek International Airport is competitive, with NAC, Air Namibia, Transworld Cargo and Menzies Aviation all providing services.

Rwanda

Like Zambia, Rwanda is a landlocked country in Africa, although it has a lower population and GDP per capita ratio. The government has, however, been keen to maintain a national airline, initially establishing Rwanda Express and then rebranding it as RwandAir following the

[62] Mutharika touts plans to make Malawi an air-linked country. Nyasa Times, March 26, 2017.
[63] Will Air Namibia breakeven in five years? Namibia Economist, 29 May 2017.

genocide in the country. RwandAir now operates a fleet of 12 aircraft and serves some 21 destinations including Kigali-London and Kigali-Brussels. It is 99% state-owned, although it has a technical alliance and codesharing agreement with Ethiopian Airlines. The Rwandan government has had discussions with Ethiopian about taking an equity share in the airline, although this has not materialised.

Although it is one of the fastest growing airlines in Africa, RwandAir is still loss-making. The Rwandan government believes that support for the airlines and, in particular, the maintenance of its European routes, is important for its tourism industry. It is also noted that the A330 aircraft used on the European services have a substantial cargo 'bellyhold' capacity and that RwandAir has reduced cargo rates on these services to maximise this potential.

Rwanda's airports are managed and operated by Rwanda Airports Management, a subsidiary division of Aviation Travel Logistics, a predominantly government-owned holding company for all aviation-related activities. The main hub is Kigali International Airport, which handled some 710,000 passengers in 2016. Although RwandAir handles most traffic at Kigali, there is a range of other airlines serving the airport including KLM, Brussels Airlines, Ethiopian, Turkish and Qatar Airlines. A new US$700m airport, Bugesera International Airport, some 25 km east of Kigali is currently under construction. This airport, which will have an initial capacity of 1.7m passengers per annum, is being developed by a Portuguese contractor, Mota Engel, through a Build Own Operate Transfer (BOOT) arrangement.

In addition to the BOOT arrangement for the construction of the new airport, Rwanda has been forward thinking in terms of introducing private sector funding and competition into its aviation sector. As examples of this, a Kuwaiti company, NAS, provides ground handing at Kigali International Airport; a Nigerian company, ASL Nigeria, provides airline catering; and Swissport manages an executive lounge at the airport.

Tanzania

In the past 10 years there has been a strong rise in the number of international and domestic flights in Tanzania as a result of development of the country's energy and tourism sectors. Although the state-owned national airline, Air Tanzania, has been unprofitable for many years, the aviation market has grown as a result of investment by Precision Air and Fastjet Tanzania.

Air Tanzania now operates one international route (Dar es Salaam-Comoros) and several domestic services with two turboprop aircraft (Bombardier Q400 and DH Dash-8). The government has ordered a further two Q400 and a B787 Dreamliner aircraft – although the first Q400 planned for delivery in 2017 was seized after a Canadian contractor took the Tanzanian Government to the International Court of Arbitration for non-payment of an outstanding debt.

Precision Air started in 1993 as a privately-owned air charter operator for the Tanzanian tourist market. It subsequently expanded into scheduled service operations across the East African region using a fleet of ATR 42 and ATR72 aircraft. In 2003, Kenya Airways acquired a 49% stake in the airline and in 2011 it was floated as a quoted company on the Dar es Salaam stock exchange. The company has however been unprofitable since 2013 due largely to competition from Air Tanzania and Fastjet Tanzania.

Fastjet's operations in Tanzania commenced in 2012 and they remain the main source of revenue for the Fastjet franchise. Services are operated between Dar es Salaam and Harare, Kilimanjaro, Lusaka, Mbeya and Mwanza. These currently use a single A319 aircraft although there are plans to replace this with two Embraer 190 aircraft in late 2017. As present, Fastjet is making substantial losses, although the airline hopes to reverse this with the restructuring of its fleet.

There have been proposals that the three Tanzanian airlines should cooperate rather than compete on their route networks in order to maintain viable traffic levels. This is likely to result in higher air fares and would not be in the best interests of developing an efficient and financially stable aviation sector in the longer term.

Tanzania's airports are all government-owned. Kilimanjaro International Airport was privatised for a short period as the Kilimanjaro Airports Development Company under a 25 year concession agreement, although this has subsequently been repossessed by the government. Dar es Salaam International Airport was renamed Julius Nyere International Airport in 2005 and currently handles some 2.5 million passengers per annum. A new terminal (Terminal III) is being constructed but is being delayed due to a shortage of government funding. The main passenger terminal at Kilimanjaro International Airport is currently being expanded.

The Tanzanian CAA provides aviation safety oversight and air traffic services within the country. It should be noted that, in their most recent ICAO USOAP audit in 2016, the CAA received a total score of 40.71 (out of 100), substantially less than the global average of 63.22 and Zambia's score of 62.17. This indicates that substantial reforms are needed to meet ICAO standards.

Togo

The aviation sector in Togo expanded significantly following the introduction of a new start-up, ASKY Airlines in 2010. Togo has never had its own national airline apart from Togo Airlines, which was operational for a two year period from 1998-2000. ASKY Airlines, which operates regional flights across West Africa, is privately-owned by a consortium including ECOWAS[64] and UEMOA[65] and Ethiopian Airlines, which have a 40% shareholding. ASKY, which has a mixed fleet of eight B737 and DH Dash 8 aircraft leased from Ethiopian, now flies to some 23 destinations. Codesharing with Ethiopian enables both airlines to develop expanded route networks and benefit from the traffic rights applicable in each country.

ASKY has undoubtedly benefited from the partnership with Ethiopian Airlines, particularly in terms of codesharing, aircraft leasing and maintenance arrangements and airline

[64] Economic Community of West African States.
[65] West African Economic and Monetary Union.

management expertise. It is currently planning new routes from Lomé to Paris, Johannesburg and Beirut and is seeking further private funding for expansion.

Lomé International Airport, Togo's main hub, currently handles around 600,000 passengers per annum, although a new passenger terminal opened in 2016 with a capacity of some 2.5m passengers per annum. New air cargo facilities to handle up to 35,000 tonnes per annum have also been built.

The Civil Aviation Authority in Togo (Agence Nationale de l'Aviation Civile du Togo) is well regarded and has obtained one of the high scores of all African states in terms of the implementation of ICAO requirements. Most aviation support activities are government-owned although Egyptair plans to start an aviation training centre in Lomé.

Uganda

Uganda Airlines, the state-owned national airline was formed in 1977 but finally collapsed in 2001. The airline had operated a range of regional and international routes including services from Entebbe to London, Brussels and Frankfurt. From 2007-2014, a privately-owned airline, Air Uganda, provided regional services using three Bombardier CRJ200 aircraft. The airline lost its AOC following an ICAO USOAP audit of Uganda's CAA in 2014. A small Ugandan-registered airline, Eagle Air, currently provides scheduled and charter services using turboprop and piston-engined aircraft, although most regional and international routes are served by non-Ugandan airlines.

The Ugandan Government has announced that it intends to relaunch Uganda Airlines.[66] It is intended that this will provide domestic, regional and intercontinental flights, although the precise nature of the airline, including whether it will be fully state-owned or partly privatised or whether it will involve a partnership arrangement with another African airline, is yet to be finalised.

Uganda's airports are all state-owned and operated under the CAA. Entebbe International Airport, the main hub, handled some 1.5m passengers and 60,000 tonnes of air freight in 2016. Most traffic is regional, with Kenya Airways and Ethiopian Airlines the main operators. Entebbe Airport is currently undergoing a US$200m upgrade with a new cargo centre, fuel farm and runway strengthening. The CAA is also responsible for 12 small airfields and airstrips used for tourist charters and a small number of scheduled domestic services.

Ground and cargo handling at Entebbe Airport is privatised. There are currently two key providers – Entebbe Handing Services and DAS Handling. There is a government-owned flight training school – the East African Civil Aviation Academy – which provides pilot training for students across the East African region, although this now faces competition from the privately-owned Uganda Aviation School.

[66] Uganda Airlines will succeed – Museveni. New Vision, June 4, 2017.

Like Zambia, Uganda has historically had difficulty in meeting ICAO requirements for aviation safety oversight – although the earlier problems which emerged after ICAO's USOAP audit in 2014 would appear to be now resolved.

Zimbabwe

Zimbabwe's air transport industry has declined significantly over the past 20 years in line with the decline of its economy. The traffic carried by the government-owned national carrier, Air Zimbabwe, has fallen from some 1.0m passengers in 1996 to around 230,000 passengers per annum today. The airline operates a number of domestic routes and services between Harare-Johannesburg and Harare-Dar es Salaam. It has a fleet of seven aircraft, of which is it believed only three (a B767 and two B737s) are serviceable. Due to safety concerns, Air Zimbabwe is currently on the EU's list of airlines banned from entering EU airspace.

Air Zimbabwe has received several financial bale-outs from the Zimbabwean Government. The airline has been criticised within the country as its aircraft are often chartered for political purposes rather than used for scheduled air services. It has recently been announced that a new national carrier, Zimbabwe Airlines, owned by the Mugabe family has been formed. It is unclear as to whether this airline will replace or will supplement Air Zimbabwe. The African low-cost airline, Fastjet, has a Zimbabwean subsidiary, Fastjet Zimbabwe, which operates a single Embraer 145 on competitive services to Air Zimbabwe. There are no scheduled domestic airlines, although a recent start-up, Rainbow Airlines was grounded after three flights due to a lack of US funding. A number of routes are operated by non-Zimbabwe airlines, including Kenya Airways and Emirates, which have 'fifth freedom' rights.

The country's airports are under the control of the CAA which provides aviation safety oversight and airport management. The main airport at Harare was renamed Robert Mugabe International Airport in November 2017. The government has recently announced that the passenger departure tax will double to provide funding for an upgrade of the airport. Victoria Falls Airport has already been upgraded through a US$150m loan from the Exim Bank of China, resulting in an expansion of services from the airport.

Appendix 3 Zambia Aviation Training

Zambian aviation training resources

ZASTI

Local aviation training is provided through the country's main training facility, ZASTI based at Lusaka airport, although the Copperbelt University in Kitwe also offers courses in aeronautical engineering. ZASTI operates as a separate division within the MTC. Although course fees are charged, it is mainly Government funded.

ZASTI mainly offers initial training in aircraft maintenance and ground services (ANS, meteorology, fire and rescue and aviation security) for students wishing to enter the aviation industry. There is also a small flying school for PPL (Private Pilot Licence) training.

ZASTI can provide technical training for some 500 students per year. Most of this training is at a basic level and there is insufficient equipment at ZASTI to meet ICAO standards. Many of ZASTI's instructors have not received any training themselves for many years and lack knowledge of the latest industry requirements. There were plans under the EU-funded Aviation Sector Support Programme (ASSP) to develop ZASTI's training capability through linkages with ICAO's Trainair Programme although this did not proceed.

Whilst ZASTI has quite extensive classroom and residential facilities, its equipment (e.g. flight simulators, aviation security training equipment, etc) is largely out-dated. Some limited PPL training is provided using a Cessna 152 aircraft. An Aztec Piper aircraft, which was formerly used for commercial pilot training is still owned by ZASTI but is unserviceable. Whilst ZASTI's budget allows for up to 15 students at any one time, on average between five and seven students achieve their PPL each year.[67]

Some upgrading of ZASTI's facilities is expected as a result of ASSP II (planned to commence in 2018). In some areas such as PPL, CPL and air traffic controller training, there are clear advantages in undertaking such specialist training at centres in South Africa, Kenya and the Middle East which are better equipped.

Aeroprecision College Zambia

Aeroprecision offers PPL and CPL training[68] and is investigating training cabin crew in 2018. Students start in the classroom learning the basics and simpler theory for 2-3 weeks. They then fly for a minimum of five hours to gain a basic understanding of flight before returning to the classroom to learn the more advanced modules. Students combine classroom with two hour flying lessons progressively until they complete the 40 hours required for a PPL. They then move onto the CPL which has its own exams and further flight training. Training is not structured as a course – students work with an instructor to get through ground school and

[67] P Forbes, N Zveguintzoff and J Ramphul. Evaluation and Formulation of the Aviation Sector Support Programme Phase IIin Zambia.Final Evaluation Report. April 2016.

[68] Aeroprecision reported that there is a serious shortage of pilots in Zambia and more pilots need to come through the training process. There is currently no training of Zambian pilots. Pilots are recruited from the region and from Europe. Telephone interview November 2017.

flying. Students are paired if possible to learn theory but because of different stages in the course a lot of one-on-one training is with a single instructor.Training costs (US$11,500 for PPL followed by US$30,000 for CPL) are not inclusive and are pay-as-you-go.

The company owns 1x Cessna 172 and has access to another if the need arises. There is no simulator. Therefore PPL and CPL will be single engine only.The chief instructor works for a charter company, which provides job opportunities from time-to-time. This is predominantly air taxi work (2-18 passengers).

Other regional aviation training

Training options for Zambian would-be pilots and other specialist cabin and ground staff roles are available in the region, though at a considerable cost. For example, a Commercial Pilot's Licence ranges from a minimum of £18,000 to £36,000 (excluding type training and other mandatory expenditure e.g. accommodation and subsistence, licences, insurance, health checks, etc). Some examples are set out in Table 11 – a trainee pilot from Lusaka attending a training school in Kenya would need to find approximately £30,000 over 9-12 months to cover training, living costs and a range of ancillary expenses associated with regulatory compliance. This compares with a cost of £120,000 for major UK flying schools.

Table 11 Regional Comparisons of Pilot Training Organisations

Training Company	Location	Flight & Cabin Crew Training	Other Aviation Training/Services	Aircraft
Signa Aviation Services www.signaaviation.com	Windhoek, Namibia	PPL, CPL, ATPL, Type Ratings, Jet Ratings, Cabin Crew	Engineer Training, CRM, Dangerous Goods & First Aid Courses	4x Sling 4s 3x single engine Cessnas 3x twin engine Cessnas 1x turbo prop 2x business jets 2x simulators (1 fixed and 1 part motion)
Guthrie Aviation www.guthrieaviation.com	Harare, Zimbabwe	PPL, CPL, theory classes and practical training	Pilot hire, aircraft management and pilot assistance	2x single engine Cessnas 2x twin engine Cessnas
IAS Aviation Academy www.flyias.net	Gaborone, Botswana	PPL, CPL, instructor and instrument ratings		5x single engine (various) 1x twin engine Beechcraft Baron
43 Air School www.43airschool.com	Port Alfred, Lanseria, South Africa	PPL, CPL, ATPL (£36k), Jet Pilot Programme, Vietnam Airlines cadet programme	Airline prep programme, multi crew courses, CRM, recurrence training	60x training aircraft
Cape Town Flight Training Centre www.cape-town-flying.co.za	Cape Town, South Africa	PPL, CPL (£20k), ATPL (ground school), ratings available	Feeding to many international and intra-continental airlines and private charters	4x single engine 1x twin engine

Training Company	Location	Flight & Cabin Crew Training	Other Aviation Training/Services	Aircraft
Flight Training Centre www.flighttrainingcentre.co.ke	Nairobi, Kenya	PPL, CPL (£18k), Flight Instructor, Instrument Rating, Multi Engine Rating, Multi Engine IFR/IR		2x single engine Cessna C152s 3x single engine Cessna C172s 2x PA34 Piper Seneca twin engine trainers Multi engine sim

UK pilot training

L3 Airline Academy (https://www.l3airlineacademy.com/)

- ATPL, airline sponsored programmes, theoretical knowledge training, instructor training
- Simulator training and recurrence training for airlines using simulators onsite (mostly Airbus A320); e-learning modules available online
- Airline sponsored programmes include British Airways, easyJet, Royal Brunei, Qatar Airways, Wizz Air, IndiGo, Hong Kong airlines; mainly self-funded schemes
- Cost of ATPL around £120,000 including full board for 18-22 months to include jet type rating
- Degree linked programme with BUCS New University; cadets receive a degree and pilot training combined (BSc) and can apply for student funding
- Centres based in the UK, USA, New Zealand
- Fleet is 40+ strong comprising 80% single engine DA20, DA40 and Cessna 172 and 20% DA42 (multi engine)
- Formally CTC Aviation, bought out by L3 Communications which specialises in simulation construction and defence infrastructure

Oxford Aviation Academy (http://www.caeoaa.com/)

- ATPL, airline sponsored programmes, theoretical knowledge training, instructor training and modular (self-improver route); e-learning modules available online
- Simulator training and recurrence training for airlines using simulators onsite (mainly under the wider CAE brand)
- Airlines include easyJet, Volotea, CityJet, Jet Airways
- Cost of ATPL typically around £120,000 to include jet type rating not including accommodation and meals
- Fleet is over 100 strong including Pipers, Diamond, Cessna, some business jets and a few aerobatic aircraft
- Bases include Brussels, Madrid, Melbourne, Oxford, Perth, Phoenix

Appendix 4 Donor Interventions

The development of Zambia's aviation sector is being supported by direct funding and technical assistance from several international donors. Examples include:

- The European Union funded a €3.0m technical assistance and training project (Aviation Sector Support Programme) under the 10th EDF (European Development Fund) which focussed on improving aviation safety oversight.
- A similar follow-up project (Aviation Sector Support Programme II) is planned, funded under the 11th EDF. This will include further assistance from EASA (European Aviation Safety Agency) to support the CAA in the implementation of ICAO aviation safety requirements and a €0.8m study on the separation and future potential development of the airport and ANS functions within ZACL.
- Projects to assist in the implementation of the Yamoussoukro Decision have been financed by NEPAD, COMESA, EAC and SADC.
- Zambia has been active in a COMESA project for Airspace Integration in the East African region.
- ICAO and IATA have provided technical support to improve aviation safety in Zambia. Zambia is a member of SASO (SADC Aviation Safety Organisation) sponsored by SADC and ICAO, which emerged from ICAO's COSCAP[69] programme.
- IATA are providing technical assistance to Proflight to complete their Operational Safety Audit (IOSA). Successful completion of this audit, which is mandatory for IATA membership, is now a requirement for all African carriers under AFCAC policy.

It is likely that continued donor assistance will be required in the short- to medium-term to ensure that Zambia benefits from best international practice in the development of its aviation sector.

[69] COSCAP - Cooperative Development of Operational Safety and Continuous Airworthiness Programme.

Contact us

Kru Desai

Government and Infrastructure

T +44 (0)20 73115705

E kru.desai@kpmg.co.uk

John Burton

International Development Assistance Services

T +44 (0)7920082438

E john.burton2@kpmg.co.uk

Peter Wilson

BERF Team Leader

T +44 (0)7850329362

E peter.wilson@kpmg.co.uk

www.kpmg.com