Project Report

Professionals for Aviation Study – 2022

Consultant Report

PART 1

“Review and Finalization of the Existing Analysis and Assessment”

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EXECUTIVE SUMMARY

I. The objective of the SWOT and PEST Analysis is to understand what external and internal forces may affect the development of sustainable aviation professionals to carry out effective regulatory and oversight responsibilities in each area of the ICAO Strategic Objectives. Understanding current external and internal influences allows for the formulation of strategies based on facts rather than assumption.

II. A Political, Economic, Social, and Technological (PEST) analysis seeks to provide strategists with a framework through which to increase their awareness of the external environment. The PEST analysis relies more on expert knowledge and existing literature of the various AFI regions rather than information received by way of questionnaires. The approach in this report is to summarize the PEST outlook along ICAO recognised regional lines; WACAF, ESAF, EUR/NAT and MID allowing for any proposed strategies to be monitored or driven by the ICAO Regional Offices.

III. The West and Central African region of AFI consist of 24 States (5 English, 3 Portuguese speaking and 16 are Francophone): Benin, Ghana, Burkina Faso, Guinea Bissau, Cameroon, Guinea, Cape Verde, Liberia, Central African Republic, Mali, Chad, Mauritania, Congo, Niger, Cote d'Ivoire, Nigeria, Democratic Republic of the Congo, Sao tome & Principe, Equatorial Guinea, Senegal, Gabon, Sierra Leone, Gambia, and Togo. The region has had quite a considerable number of political upheavals, coup d'états and terrorist's insurgency. The economic strength of the WACAF is the weakest in the AFI Region albeit countries like Nigeria have a strong economy and others have modest economies like Ghana, Senegal, Cameroon and Côte d'Ivoire. ICT penetration and access to electricity is still low to moderate within the WACAF region.

IV. The East and Southern African region of AFI consist of 24 States (18 English, 2 Portuguese speaking and 4 are Francophone): Angola, Botswana, Burundi, Comoros, Djibouti, Eritrea, Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, Somalia, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia and Zimbabwe. The region has mixed climatic, ecological, pollical and social conditions. Agriculture is the main stay of several states. There is great production of industrial crops and food among some member states. The ESAF region is a mixed bag of stable and unstable States, and several are making great strides in ICT.

V. Three AFI states in the EUR/NAT region, Algeria, Tunisia and Morocco and 3 states, Egypt, Libya and Sudan in the MID region are referred to in this report as AFI-EUR and AFI-MID respectively. Political instability and internal conflicts in several of these countries have increased poverty levels despite the availability of natural resources such as oil and minerals.

VI. Before 2020 most African states were making significant growth in GDP and serious efforts at reducing unemployment. However, the COVID-19 pandemic and its attendant crisis has dramatically increased poverty and threatening

human capital. Beyond disrupting the economy, the COVID-19 pandemic risks rolling back the recent gains in health and human capital development if effective prevention and control measures do not continue to be implemented rapidly and at a scale. Because a large share of Africa's population is close to the poverty line, even a mild economic shock can push numerous households into poverty. The impact of the crisis has been especially acute among households that rely on self-employment and informal microenterprises in urban areas.

VII. 2020 and beyond has been marked by economic downturn or stagnation, a sharp reduction in exports caused by the pandemic's disruption to global value chains and the collapse of receipts from tourism, slow growth, increased poverty, and rising public debt levels. GDP growth contracted below-potential revenue mobilization, and unfavourable budget structures, with limited allocations to key sectors, such as health and education.

VIII. Whilst the effect of the pandemic cannot be underestimated, some scholars, however, believe that the severity of the impact of the COVID pandemic on the economies of Africa underscores the weak and fragile economic fundamentals underpinned by longstanding corruption, ineptitude and poor economic management prior to the crisis.

IX. The development of technology in the ESAF region has been very varied but overall, much better than in WACAF. Admittedly, considerable efforts have been made by several countries particularly in Kenya, Rwanda and South Africa in developing Information, Communication and Technology (ICT) areas such as Telecommunications and Broadcasting; Mobile/Cellular Service; Mobile Money transaction, Fibre Optic Coverage; International Internet bandwidth; 3G/4G Coverage; Internet Domains; Broadcast Services and Subscriptions (Frequency Modulation); Newspaper Circulation and online Newspaper Readership.

X. Kenya is at the forefront of technological innovations and is often referred to as the 'Silicon Savannah' of Africa; Rwanda as "a centre of excellence at a regional level in the area of technologies, particularly with ICT"; and South Africa as a regional hub and a supply base for neighbouring countries. South Africa's ICT products and services industry is penetrating the fast-growing African market.

XI. Availability of energy has been a major challenge. On the average access to reliable electricity has been low in most African countries but with some highflyers such as Egypt – 100%, South Africa and Ghana – 85% penetration. Liberia has one of the lowest electricity access rates in the world, with only about 8 percent of households connected to the national grid. Less than 7 percent of the population in Monrovia has regular access to electricity and less than 2 percent of the population has access in rural areas.

XII. Most African States have launched National Policy on Science, Technology, and Innovation with the main objective policy being, to integrate Science, Technology, Scientific Research and Innovation in the context of the issues facing their countries. To that end technological needs assessment (TNA) processes are at various stages of development to decide priority sectors and implementation for both mitigation and adaptation.

XIII. The SWOT analysis aims at defining internal and external relevant factors that have a direct bearing on the strategic planning process of each of the AFI States.

Internal factors usually can be classified as Strengths (S) or Weaknesses (W), and those **external** can be classified as Opportunities (O) or Threats (T).

XIV. **Strengths**: State/Regional strengths can be defined as the resources and capabilities within the ambit of the aviation agency that can be used; **Weaknesses**: The absence of certain strengths within the ambit of the aviation agency may be viewed as a weakness; **Opportunities**: The external (national or global) environmental analysis may reveal certain new opportunities for the State/Region (Aviation Agency); **Threats**: Changes in the external (national or global) environmental factors which could be detrimental to the State/Region (Aviation Agency) can be considered as threats.

XV. The SWOT analysis in the report seeks to identify those internal and external factors that affect and will need to be strengthened or mitigated to promote State Safety Oversight Systems. To achieve this, the State Safety Oversight System is analysed by the following variables: Safety Oversight Index, State Safety Briefing (including SMS), Global Aviation Training, and Staff Needs. It must however be noted that State Safety Oversight Index has been deleted from GASP 2023-2025 targets and so this final report does not include SSI. Effective Implementation (EI) which is part of the State Safety Briefing is to be the main consideration.

XVI. A summary of the SWOT Analysis (including PEST) by region is detailed in paragraphs 32 to 35. the PEST Summary is included as Opportunities and Threats.

ABBREVIATIONS

- SWOT - Strength, Weakness, Opportunities and Threat
- PEST - Political, Economic, Social, and Technological
- WACAF - Western and Central Africa Office – ICAO
- ESAF - Eastern and Southern Africa Office - ICAO
- EUR/NAT - European and North Atlantic Office - ICAO
- MID - Middle East Regional Office - ICAO
- STEM - Science, Technology, Engineering, and Mathematics
- AFI Region - Africa-Indian Ocean Flight Information Region
- RSOO – Regional Safety Oversight Organisation
- TNA – Technology Novation
- STI - Science, Technology and Innovation
- SSI – State Safety Index
- SARP - Standards and Recommended Practices

BACKGROUND

1. It has been observed variously that the challenge of inadequate Aviation professionals is prevalent globally and more so in the AFI Region. ICAO Aviation Safety and Security Audits have identified the lack of enough qualified aviation personnel as one of the common deficiency and root cause for low scores in the average Effective Implementation (EI) of critical elements (CEs) of a State Oversight System, hence low levels of compliance with ICAO SARPs in many African States. This adversely impedes States' fulfilment of their international obligations under the Chicago Convention and effective participation in the global aviation market.

2. The enhancement of aviation human resource capacity in Africa remains a key component of the deliverables of the AFI Region initiatives including: the Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan), the Comprehensive Implementation Plan for Aviation Security and Facilitation in Africa (AFI SECFAL Plan) and the African Human Resource Development Fund (HRDF).

3. The aim of the current project is to provide support or a basis for the development of sustainable aviation professional personnel to carry out effective regulatory and oversight responsibilities in each area of the ICAO Strategic Objectives. The five ICAO established comprehensive Strategic Objectives are as follows:
    a. **Safety:** Enhance global civil aviation safety. This Strategic Objective is focused primarily on the State's regulatory oversight capabilities. The Global Aviation Safety Plan (GASP) outlines the key activities for the triennium.
    b. **Air Navigation Capacity and Efficiency**: Increase the capacity and improve the efficiency of the global civil aviation system focusing primarily on upgrading the air navigation and aerodrome infrastructure and developing new procedures to optimize aviation system performance. The

Global Air Navigation Capacity and Efficiency Plan (Global Plan) outlines the key activities for the triennium.

c. **Security & Facilitation:** Enhance global civil aviation security and facilitation. This Strategic Objective reflects the need for ICAO's leadership in aviation security, facilitation, and related border security matters.
d. **Economic Development of Air Transport:** Foster the development of a sound and economically viable civil aviation system. This Strategic Objective reflects the need for ICAO's leadership in harmonizing the air transport framework focused on economic policies and supporting activities.
e. **Environmental Protection:** Minimize the adverse environmental effects of civil aviation activities. This Strategic Objective fosters ICAO's leadership in all aviation-related environmental activities and is consistent with the ICAO and UN system environmental protection policies and practices. This objective was not included in this study.

4. The specific objectives of this current project as approved by the ICAO Secretary General that relates to the areas outlined in the Strategic Objectives are as follows, to:
    a. Establish baseline data/information on aviation professionals in the region and build a sustainable platform for available data on expertise in real time.
    b. Assess the existing gaps of expertise in specific areas and present future anticipated demand to effectively carry out the oversight responsibilities of States in the AFI region.
    c. Develop a tool to support a data bank/platform providing information on the available aviation professional and accessible to relevant stakeholders such as AFCAC, AFRAA, IATA, AATO, ICAO TCB, AFI Plan, AFI SECFAL Plan, RSOOs/RAIOs, etc.
    d. Address the gender balance and parity inadequacies in the AFI Region; and
    e. Prioritize and provide the required training and competencies.

5. It is envisaged that the study would encompass actions aimed at achieving the project objectives including the development of a database on aviation professionals for each strategic objective that will facilitate access to real time information in all concerned areas.

The Initial ICAO Contract

6. In April 2021, ICAO put up an advert for the recruitment of an "Professional for Aviation Study Consultant" with the following outlined functions:
    a. Function 1 (incl. Expected results):
        • A comprehensive analysis and assessment including SWOT and PEST on AFI States aviation professionals' capacity building strategies in all areas of ICAO Strategic Objectives starting with safety and air navigation in the AFI Region as Phase I.
        • Develop a database on aviation professionals in major areas.
    b. Function 2 (incl. Expected results):
        • Analyze the existing professional gap and anticipated demand in various professional categories.
    c. Function 3 (incl. Expected results):
        • Propose an implementation strategy and plan including the required resource to address the existing gap and future demand at least in the coming ten (10) years (2022-2032);
        • Review the present capacity of aviation approved training centres to meet the forecast capacity building demand; and
        • Propose mechanisms/options for the sustainable funding of the proposed implementation of the plan.

7. A recruited consultant carried out some considerable work, but the study was incomplete. Several documents were submitted to the ICAO WACAF office which form a starting point for this revised contract. The inherited documents include:
    a. Staffing needs assessment_consolidated_v21 – Excel file
    b. PEST ANALYSIS DRAFT_ICAO – Word file

c. SWOT ANALYISIS Methodology_ICAO – Word file
d. DATA BASE V 0.1 – Excel file

8. The **Data Base V 0.1** was designed to capture the following information of individual personnel engaged with ATOs
    a. Personal Details
    b. Academic Qualifications
    c. Name of ATO and
    d. Courses Delivered or Attended in any of the ICAO Strategic Objective areas

9. The **PEST ANALYSIS DRAFT_ICAO** was designed to capture information and analyse each member State in the AFI Region in the following areas
    a. Basic Data
    b. Political Factors
    c. Economic Factors
    d. Social Factors
    e. Technological Factors

10. **SWOT Analysis Methodology_ICAO** was designed to capture specific information of each AFI Member State including:
    a. Safety State Briefing
    b. Ratio of Inspectors Compared to other Similar Countries
    c. Safety Oversight Index
    d. Number of ATOs and Training Staff
    e. Main Airports Data

    Base on the above information a SWOT Analysis was initiated but only one State Algeria, had been captured.

11. **Staffing Needs Assessment_Consolidated_v21** was designed to capture information in each of the ICAO Strategic Objectives areas for each AFI Member State. Specific information includes:

a. Current Staffing
b. Average Age
c. Current Staffing (Female)
d. Required Staffing
e. Gap
f. Comments

12. Other relevant documents reviewed to meet the requirements of the deliverables of the current contract include:
    a. AFI Training Database Development FINAL REPORT (2010) prepared for ICAO ACIP by SITA Consulting
    b. African Aviation Training Roadmap prepared by Association of African Aviation Training Organizations (AATO)

The Revised ICAO Contract

13. The deliverables of this current contract are as follows:
    a. A review and finalization of the existing analysis and assessment including SWOT and PEST on AFI States capacity building strategies in the areas of Safety and Air Navigation in the AFI Region.
    b. Update the existing database on aviation professionals in major areas.
    c. Analyze the existing professional gap and anticipated demand in various professional categories of Safety and Air Navigation capacity.
    d. Propose an implementation strategy and plan to address the existing gap and future demand at least in the coming ten (10) years (2022 – 2032)
    e. Review the present capacity of Aviation Approved Training centres to meet the forecast capacity building demand and
    f. Propose mechanisms/options for the sustainable funding of the proposed implementation of the plan

Objective of the SWOT and PEST Analysis

14. The objective of the SWOT and PEST Analysis is to understand what external and internal forces may affect the development of sustainable aviation professionals to carry out effective regulatory and oversight responsibilities in each area of the ICAO Strategic Objectives. Understanding current external and internal influences allows for the formulation of strategies based on facts rather than assumption.

15. The approach employed in the SWOT and PEST analysis of this document is influenced by the publications of Sammut-Bonnici and Galea, 2015 on these two forms of analysis.

16. SWOT and PEST Analysis are complementary business analysis tools to evaluate internal and external factors that may have effect on business objectives. In this regard, the SWOT and PEST analysis, enable strategic decisions to be made, considering the strength and weaknesses inherent in a business as well as the opportunities and threats in its external environment. The external environment is analysed through the lenses of political, economic, social, and technological changes over which the business may have little to no control of. Even though a business may lack control over these external factors, any change in the factors may lead to unprecedented and untold effect on the strategic objective(s) of the business.

17. For this project, the SWOT analysis aims at defining internal and external relevant factors that have a direct bearing on the strategic planning process of each of the AFI States. **Internal** factors usually can be classified as strengths (S) or weaknesses (W), and those **external** can be classified as opportunities (O) or threats (T).

    a. **Strengths**: State/Regional strengths can be defined as the resources and capabilities within the ambit of the aviation agency that can be used.
    b. **Weaknesses**: The absence of certain strengths within the ambit of the aviation agency may be viewed as a weakness.
    c. **Opportunities**: The external (national or global) environmental analysis may reveal certain new opportunities for the State/Region (Aviation Agency).

d. **Threats**: Changes in the external (national or global) environmental factors which could be detrimental to the State/Region (Aviation Agency) can be considered as threats.

18. The following strategy is employed to conduct the PEST Analysis:
    a. Identification of the PEST factors
    b. Analysis of their effect on the business
    c. Categorization of the factors into opportunities or threats
    d. Prioritization of the factors
    e. Proposal of pre-emptive and corrective strategic actions

19. Data was collected on PEST factors for 54 African States. This data has been enhanced and analysed in the section “Review and Finalization of the Existing Analysis and Assessment” and summarized as Opportunities and Threats in the SWOT analysis to show how these factors may affect the objective of developing sustainable professional personnel to carry out effective regulatory and oversight responsibilities in each area of the ICAO Strategic Objectives.

Limitations

20. This contract has been limited by the following factors:
    a. Data collected by the previous consultant was limited.
    b. The time allotted was rather too short to update the data to be collected from respondents (States). A recommendation is made to make this a continuous real time process via a web-based database software.
    c. It was also accepted between ICAO WACAF and the consultant that there is probably ‘questionnaire fatigue’ and therefore expecting a completion of the data in the short time available through responses from states was not feasible.

REVIEW AND FINALIZATION OF THE EXISTING ANALYSIS AND ASSESSMENT

21. THE PEST METHODOLOGY

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a. A PEST analysis seeks to provide strategists with a framework through which to increase their awareness of the external environment. However, experts advise users of the framework that if not used judiciously, a PEST analysis may become an endless evaluation of Political, Economic, Social, and Technological factors, which may result in an inconclusive analysis. The fundamental principle of the framework is that only those factors that have a direct bearing on the attractiveness of the industry and which are likely to change in the foreseeable future should be included.

b. The analysis relies more on expert knowledge and existing literature of the various AFI regions rather than information received by way of questionnaires. This approach was to save time but also because of the realisation that questionnaires on PEST could be sensitive, and responses would not be forth coming.

c. The PEST Analysis Draft, prepared by the previous consultant, provides Basic Data and discusses Political, Economic, Social and Technological Factors as they appear in each member State in the AFI Region. The approach in this report is to summarize the PEST outlook along ICAO recognised regional lines; WACAF, ESAF, EUR/NAT and MID. This approach, is believed, will be more favourable allowing any proposed strategies to be monitored or driven by the ICAO Regional Offices.

d. There are just 3 AFI states in the EUR/NAT region, Algeria, Tunisia and Morocco and 3 states, Egypt, Libya and Sudan in the MID region which are referred to in this report as AFI-EUR and AFI-MID respectively.

e. Political Factors - The political stability in the countries of the AFI region is critical for success. Opportunities for growth of aviation and training will be available and more sustainable in countries that are politically stable with Governments implementing activities aimed at the promotion of civil aviation. Continued political stability is conducive to the growth of the aviation industry. However, political instability may lead to reduced travel due to travel advisories. A framework on ATOs

Cross Border collaboration will guide on student transfer where political instability affects training in the host state.

f. Economic Factors - The improvement in general economic performance resulting in growth in economies and increase in disposable incomes will boost the aviation industry through increased demand for air services. This will automatically trigger demand for more human resources hence the need to train more personnel. Scholarship and Fellowship program will address participants' financial challenges during harsh economic times.

g. Social Factors - The social dynamics in Africa are constantly changing. The populace has become more knowledgeable and better informed and thus higher demand for better quality services. Africa has the highest population of youth (15-25 years) at 51% of the total African population. This generation of people require jobs and more importantly how the Aviation industry attract, train, and retain this workforce, needs to be considered. Economic growth in the States has a direct correlation to employment opportunities within the Aviation sector, as Aviation is directly linked to a country's economic growth

h. Technological Factors - The advancement in the level of technology in the aviation industry requires support from skilled, dynamic, and flexible workforce that is able to learn and adopt new technologies for use in the workplace. The aviation training organisations will therefore need to position themselves to offer training on emerging technologies that can be applied on the next generation equipment. The ATOs will need to work with Development Partners towards acquisition and utilisation of current technology in training. Technology can also be harnessed as a methodology to provide training initiatives. This is in the form of online and e-learning programmes, communities of learning, blogs etc. Therefore, a solid technological infrastructure with affordable and accessible data is necessary in Countries adopting this approach to learning

22. THE PEST ANALYSIS

a. WACAF

The West and Central African region of AFI consist of 24 States: Benin, Ghana, Burkina Faso, Guinea Bissau, Cameroon, Guinea, Cape Verde, Liberia, Central African Republic, Mali, Chad, Mauritania, Congo, Niger, Cote d'Ivoire, Nigeria, Democratic Republic of the Congo, Sao tome & Principe, Equatorial Guinea, Senegal, Gabon, Sierra Leone, Gambia, and Togo.

Political Factors

i. The 24 WACAF countries consists of 5 English, 3 Portuguese speaking and 16 are Francophone. The region has had quite a considerable number of political upheavals, coup d'états and terrorist's insurgency. In the last couple of years 3 countries have been politically unstable: Mali, Burkina Faso and Guinea Conakry all in the Francophone zone of the region. These upheavals come on the backdrop of serious civil wars that ravaged countries like Liberia and Sierra Leone within the last three decades. These upheavals obviously have affected all economic activities and the aviation sector has had its own share.
ii. In each decade between 1958 and 2008, according to one researcher, West Africa had the highest number of coups on the continent, accounting for 44.4%. Since 2010, there have been over 40 coups and attempted coups in Africa; some 20 occurred in West Africa and the Sahel (including Chad). Since 2019 there have been 7 coups (five successful and two failed).
iii. Between 1958 and 2008, most coups in Africa occurred in former French colonies, as did six of the 7 since 2019. Similarly, 12 of the 20 coups in the sub-region since 2010 happened there. The latest successful putsch in Burkina Faso came on the heels of two attempted ones, in 2015 and 2016.
iv. In the last two years, three fragile countries in West Africa – Mali, Guinea and Burkina Faso – succumbed to instability and experienced military takeovers. West Africa's latest successful coup, in Burkina Faso on 24 January 2022, has renewed unease about coups "returning" and democracies "dying" in Africa. The recent attempt in Guinea-Bissau add to the number.
v. While the COVID-19 pandemic may have played a role in pushing these countries over the edge, they were on the precipice of instability long before the emergence of the virus due to deep-seated vulnerabilities such as chronic insecurity, political corruption, and mass unemployment.
vi. Indeed, in all three countries, Mali, Guinea and Burkina Faso, military interventions came not as a surprise but on the back of long-ignored systemic failures and growing societal discontent.
vii. In Burkina Faso, repeated attacks by armed groups and a failure to govern (partly evidenced in the apparent ill-equipping of the country's security forces against such groups) created a security vacuum.
viii. In Mali, attempts by the ruling party to manipulate the results of the 2020 parliamentary elections in favour of candidates supported by

the then president led to street demonstrations during which aggrieved masses called on the government to resign.

ix. In Guinea, the September 2021 military coup was the consequence of a months-long political crisis, triggered by President Alpha Conde's bid to remove presidential term-limit restrictions through a constitutional referendum in March 2020 – a move that allowed him to seek a third term in office.

x. None of these coups, or the challenges that led to them, materialised suddenly. International development organisations and think-tanks have been pointing to the extreme security and governance challenges facing these countries for years. Even before the beginning of the COVID-19 pandemic, US-based think-tank "The Fund for Peace" had rated these countries as on "high warning" or on "alert" in its Fragile States Index, suggesting that their vulnerabilities could lead to instability if not outright armed conflict. Similarly, the Economist Intelligence Unit, in its Democracy Index of 2019, had suggested that there was a steady decline in the quality of democratic governance in Burkina Faso, Guinea and Mali.

xi. So far, all attempts by regional bodies like ECOWAS and the AU to turn back this trend have failed, largely because such attempts focused on punishing the militaries rather than understanding and attempting to help fix the underlying causes that led to civilian populations supporting their actions. As a result, the recent wave of military coups in Africa has raised questions about the role regional and continental multilateral organisations can play in averting democratic backsliding.

xii. Terrorism has been a major challenge for Nigeria over the years. The "Conflict over Resources and Terrorism: Two Facets of Insecurity" by **The Organization for Economic Cooperation and Development** (OECD) West African Studies, April 2013, discusses the political, economic and religious factors that gave rise to Boko Haram, the most active terrorist group in Nigeria. It argues that Boko Haram's tactics may be evolving from a locally focused insurgency to transnational terrorist activities, and that the movement poses a growing threat to neighbouring countries, particularly Mali and Niger. The report alleges that Nigerian government's failure to address socio-economic marginalisation, combined with heavy-handed counter-terrorism measures may have hindered efforts to end the Islamist-led insurgency in the north. Nigeria's experience and Boko Haram's dramatic escalation of violence, provides lessons for other countries about the need to understand and tackle this new and evolving threat. Boko Haram embodies a growing regional security challenge that requires a coordinated regional response, including joint security initiatives and shared commitment to development and governance in

vulnerable area. The tactics employed by Boko Haram including abductions and bombings have made it extremely dangerous for aviation activity. The Nigerian Civil Aviation Training (NCAT) centre in Zaire, is at the centre of Boko Haram insurgent activity. This has obviously made the NCAT unattractive to participants especially from foreign countries.

xiii. President Denis Sassou-Nguesso, who led the People's Republic of the Congo from 1979 to 1992, returned to power in 1997. He won the presidential elections in 2002, 2009, and 2016. In November 2017, a ceasefire agreement was signed between the Congolese Government and representatives of the former rebel leader, Frédéric Bintsamou (known as Pastor Ntoumi), who had reignited a rebellion in the department of Pool following the 2016 presidential elections. Peace and security have since gradually returned, while the government and the international community strive to consolidate the still-fragile peace in this southern department of the country. A disarmament, demobilization and reintegration (DDR) program established under the control of the United Nations. In 2018 an Audit was conducted of the program by the Office of Internal Oversight Services (OIOS) which made a number of recommendations that have been accepted are being implemented by MONUSCO.

xiv. The crisis in northern Mali, according to the OECD West African Studies, April 2013, is the outcome of long-term factors converging with recent developments in regional terrorist activity and the knock-on effects of the Libyan civil war in 2011: Long-standing socio-economic grievances, Touareg desire for autonomy from Bamako, and the outflow of weapons and fighters from Libya culminating in the revolt in the north in January 2012 and the current security crisis there underscores the policy challenges and risks the international community faces in reaching a resolution. It argues that Bamako’s loss of control over the north is due to longstanding socioeconomic grievances among the Touareg, compounded by complex new threats and developments.

xv. The exploitation of the Touareg rebellion by radical Islamist terrorist groups presents a unique and complex challenge not only to Mali but also to the wider region. As military intervention looms so too do the prospect of protracted conflict that will very likely affect the entire region. Planning will need to look beyond short-term responses to the crisis: sustainable security will depend upon sustainable development.

Economy Factors

i. The economic strength of the WACAF region is the weakest in the AFI Region. Nigeria undoubted has a large and strong economy

and has been a kingpin in supporting the RSOO, BAGASOO financially. A few other countries in the region may be said to have modest economies like Ghana, Senegal, Cameroon and Côte d'Ivoire. Others such as Guinea Conakry, Guinea Bissau, Gambia, Sierra Leone, Liberia are below average.

ii. The largest economies in the region – Nigeria, Ghana and Côte d'Ivoire – accounted for one-quarter of Africa's GDP in 2020. West Africa has experienced a surge in economic growth since the early 1990s. Since 2000 its collective GDP has risen from $105bn to more than $659bn in 2020. An IMF report from Wikipedia estimated the GDPs (in bn US$) as Nigeria - 1,116, Ghana - 186.682, Sierra Leone 14.449, Central Africa Republic 4.985, Cape Verde 3.851, Mali 49.987 among others.

iii. Guinea Bissau, Ghana, Togo, Sierra Leone, Gabon and Congo are classified as “debt distressed” as all have debt totalling more than 70% of their respective gross domestic products (GDPs), according to the most recent data from the IMF and the World Bank (Dec 2021).

iv. Prior to the global shock triggered by the pandemic, Côte d’Ivoire had one of the most robust economies in Africa and in the world and had grown at an annual average rate of 8% since 2012. However, the global health situation adversely affected Ivorian households and businesses and slowed the growth rate to 1.8% in 2020. Robust domestic demand and stable exports are expected to drive the country’s economic recovery from 2021.

v. As WACAF Africa’s population booms and its economy continues to expand, the opportunities for businesses to trade across the region are vast. Despite this, economic growth rates in most of the countries are lagging and poverty remains high. Essentially, WACAF’s farmers and firms produce and trade in highly localized markets and do not achieve the sufficient economies of scale required to attract broad-based investments that could accelerate growth and reduce poverty. This is due to several constraints including inefficient transportation and trade barriers along corridors and at borders, a heavy reliance on family and informal sources of financing, and an insufficient supply of reliable and affordable power. These factors result in West African products being uncompetitive in the international marketplace.

vi. USAID/West Africa’s strategy has been to work through regional organizations and private sector associations to address critical constraints to competitiveness and demonstrate West Africa’s productive potential to trigger greater regional investment.

vii. West African countries have long-standing, thriving business connections. Over the years, these existing trade relationships have been formalized and enhanced into important cross border trade along key corridors and serve as the main source of

livelihoods for many traders, notably women, transport operators, and businesses connected to trade such as hotels and restaurants.

viii. Unfortunately, West Africa and the larger WACAF region, also has some of the longest road transportation times for travel between countries and some of the highest travel costs per kilometre of any region in the world. The region's corridors are laden with administrative barriers such as cumbersome border and customs clearance processes, as well as formal and informal checkpoints and roadblocks that keep trucks stationary for extended periods of time.

ix. These are serious impediments to the region's economic growth and development. In addition, implementation of trade facilitation related policies such as the Trade Facilitation Agreement (TFA), the adoption and implementation of the ECOWAS Customs Code, and the enforcement of the existing regional measures (like Common External Tariff and ECOWAS Trade Liberalization Scheme) are not yet fully enforced. Whilst these limitations may tend to promote air travel, the fact that they limit the spending capacity of the populace acts as a disincentive to promoting aviation.

x. In response to these challenges, USAID/West Africa partnered with the Economic Community of West African States (ECOWAS), the West African Economic and Monetary Union (UEMOA), the European Commission (EU), the World Bank (WB), Germany (GTZ) and the Netherlands to develop the Trade Facilitation West Africa (TFWA) program.

xi. Since 2018, TFWA has strived to advance ECOWAS's regional agenda to support the free movement of goods, support countries to implement the World Trade Organization Trade Facilitation Agreement, decrease the time and cost of goods to move along key regional corridors, and increase engagement of the private sector and civil society in trade facilitation reforms, with a particular focus on women and small-scale traders.

xii. The Democratic Republic of Congo (DRC) is endowed with exceptional natural resources, including minerals such as cobalt and copper, hydropower potential, significant arable land, immense biodiversity, and the world's second largest rainforest. However, DRC has the third largest population of poor globally. Poverty in DRC is high, remains widespread and pervasive, and is increasing due to impacts from COVID-19

xiii. It is estimated that Africa and for that matter WACAF will only experience a "demographic dividend" by 2035, when its young and growing labour force will have fewer children and retired people as dependents as a proportion of the population, making it more demographically comparable to the US and Europe. It is becoming a more educated labour force, with nearly half expected to have some secondary-level education by 2020. A consumer class is also

emerging in Africa and is expected to keep booming. These factors support a growth in Aviation activity.

Social Factors

i. The COVID-19 pandemic which may be classified as a social factor has had the most devastating global economic disruption in recent times, particularly due to the pronounced decline in oil prices (prior to the Ukraine-Russian war) and spikes in risk aversion in global capital markets. Over 40 percent of populations in the WACAF region live below the poverty line, while another about 25 percent are vulnerable. With COVID-19, many of these vulnerable people could fall into poverty. The magnitude of the health impact depends on the duration and the domestic spread of the outbreak, while the economic impact hinges on oil prices, fall in the hospitality and tourism industry and a near collapse of the aviation sector.
ii. Oil accounts for over 80 percent of exports, a third of banking sector credit, and half of government of Nigeria's revenues. Oil prices also affect growth in non-oil industries and services, with additional pressures arising from foreign portfolio investors' reassessment of risks and domestic liquidity management.
iii. Within the primary sector, agricultural activity stands out, as it is the base of most of the economies in WACAF including Cameroon, Ghana and Côte d'Ivoire and the countries' leading employer. It focuses on the production of industrial crops and food: timber, cocoa, coffee, cotton, pineapples, bananas and rubber. Cameroon for instance is considered the "breadbasket of the region" and the sector has great growth potential.
iv. A report from West Africa Think Tank, WATHI, a new civil society organization focusing on West Africa, reports the region is confronted with the realities of energy vulnerability, fuel price volatility and system unreliability. Energy poverty and its consequences for local economies and social development are projected to remain the predominant challenge for West Africa through to 2030.
v. Without considerable investment, energy poverty and its profound economic and societal consequences will continue to be a challenge for West Africa in 2030. The region with a total population in excess of 340 million has one of the lowest modern electricity consumption rates in the world. Electricity access rates in the region vary from below 20 % in countries like Liberia, Sierra Leone, Niger, and Burkina Faso to more than 50 % in Senegal and more than 70 % in Ghana.
vi. In Nigeria, the largest country in West Africa, it has been estimated that 96 million people 55 % of the population do not have access to electricity. For the ECOWAS region, only 19 % of the rural population has access, with this predominantly being in larger rural

centres and some localities. Poor electricity access in the region is due to a variety of regulatory, social, economic, technical, and financial constraints such as insufficient generation, high prices of petroleum, lack of financing, and transmission and distribution losses.

vii. A World Economic Forum report in 2015 quoted officials to have said that large parts of Central Africa have big potential to generate hydro-electric power, which could help pull more than 700 million people out of poverty. Insufficient energy supplies have been a major hurdle on the region's path towards economic growth.

viii. According to Cameroon's energy and water minister, Atangana Kouna, low access to energy has hampered efforts to meet the Millennium Development Goals, contributing to acute poverty and high child malnutrition rates. "The Central African region is facing a huge development setback that can be addressed through investments in energy supply and energy infrastructure," the minister told a November meeting in Yaounde that endorsed an implementation plan for a regional energy strategy.

ix. The plan, which runs through to 2030, has since been approved by energy ministers from the Economic Community of Central African States. The Central African Power Pool, which organised the Yaounde gathering, will coordinate the inter-state electricity connection project, based on a $4.6 million study funded by the African Development Bank (AfDB).

x. Authorities say the project will provide a regional response to Central Africa's energy and development challenges, curb greenhouse gas emissions, and give a boost to the emerging economies of Cameroon, Gabon, Chad, Central African Republic, Republic of Congo, Democratic Republic of Congo (DRC) and Equatorial Guinea.

xi. Based on estimates from the International Monetary Fund (IMF), investors withdrew $83 billion from emerging markets since the start of the COVID-19 crisis. Capital outflows are likely to lead to a sharp drop in foreign direct investment (FDI) and to increased financing costs. The impact of internal transmission channels – reduction in consumption and domestic investment – will depend on contagion risk and the public policy choices made to combat the pandemic.

xii. As most countries were beginning to recover from the impact of the COVID-!9 pandemic, the war in Ukraine has made things even worse. Whilst the few oil producing countries like Nigeria, Equatorial Guinea, Cameroon and to some extent Ghana may be experiencing a windfall, high rise of finished petroleum products (petrol and diesel) prices, high cost of living and inflation have all led to lower standards of living globally.

xiii. But the problems of the region are also partly self-inflected. For instance, the decision taken by Nigeria, to unilaterally close its land

borders with its neighbours in August 2019 has dealt a major blow to economic activity in Benin, Togo, Cameroon, and Ghana. Others followed suite because of the spread of the COVID-19 pandemic. Ghana has just recently (March 2022) opened its land boarders but until its neighbours do same, the negative economic effect on several of these countries will persist.

xiv. Rising public debts and deteriorating exchange rate of national currencies have also affected the social life of the people of the region. Ghana's public debt rose to over 80% of GDP and the currency was adjudged to be one of the worse performing in the world depreciating by about 20% in the first quarter of 2022. As at November 2022 the cedis had at a point become the worse performing currency in the world depreciating by over 60% in 9 months in 2022 with the World Bank predicting that public debt could close the year at over 104% of GDP. These challenges have led to austerity measures by the governments including increased taxes, high fuel prices and projected debt restructuring. The consequences have been unrest, strikes and lower disposable income.

xv. Eight WACAF member States belong to the West African Economic and Monetary Union (WAEMU). Their monetary policy is managed by the Central Bank of West African States (BCEAO), which keeps the CFA franc pegged to the euro. The BCEAO's foreign exchange reserves were equivalent to 4.9 months of imports in 2019, against 4.5 months in 2018, owing primarily to community-wide fiscal consolidation and net capital inflows. The real effective exchange rate (REER) depreciated by 5% in 2019, driven by the nominal depreciation of the euro against the US dollar and the persistently lower inflation rate of WAEMU in relation to its trading partners.

xvi. Countries of the central zone of WACAF are members of Central Africa Economic and Monetary Community (CEMAC) which experienced crisis up to early 2022 because of its large dependence on oil exports and lack of sufficient buffers, such as government deposits and international reserves. Equatorial Guinea for instance announced plans for adjustment but has not yet reached an agreement with the International Monetary Fund (IMF).

xvii. Until the outbreak of Ebola in May 2014, Sierra Leone was seeking to attain middle-income status by 2035, but the country still carries its post-conflict attributes of high youth unemployment, corruption and weak governance. The country continues to face the daunting challenge of enhancing transparency in managing its natural resources and creating fiscal space for development. Problems of poor infrastructure and widespread rural and urban impoverishment persist despite remarkable strides and reforms.

xviii. To restore its external and fiscal imbalances, Equatorial Guinea for instance is undertaking several reforms and has entered into an IMF Staff Monitored Program (SMP) in May 2018.

Technological Factors

i. The development of technology in the WACAF region has been very varied but overall, very low. Admittedly, considerable efforts have been made by several countries but limitations of electricity coverage, poor road infrastructure, corruption and mismanagement has made it difficult to develop Information, Communication and Technology (ICT) areas such as Telecommunications and Broadcasting; Mobile/Cellular Service; Mobile Money transaction, Fibre Optic Coverage; International Internet bandwidth; 3G/4G Coverage; Internet Domains; Broadcast Services and Subscriptions (Frequency Modulation); Newspaper Circulation and online Newspaper Readership.

ii. Nigeria's ICT sector has grown from less than 1 percent of GDP in 2001 to almost 10 percent of GDP (OC&C Consulting, 2018). Nigeria has also surpassed South Africa to emerge as a premier investment destination with 55 active tech hubs raising a total of US$ 94.9 million, while South Africa raised US$60.0 million with 59 active start-ups (Usman, Choi, & Dutz, 2019). The country is also Africa's biggest technology market and accounts for 23 percent of internet users in Africa with 122 million people online in December 2018 (Internet World Stats, 2019). It also has the largest number of telecommunications subscribers, with a tele-density figure of almost 90 percent (Nigerian Communications Commission, 2019). The growth of the tech sector offers new possibilities for Nigeria's growing labour force, in terms of employment and entrepreneurship.

iii. In Nigeria, over 100 million people have access to mobile telephones and internet use has risen to almost 50 percent (Internet World Stats, 2019). Mobile telephony and internet connectivity, combined with urbanization and population growth, have created an environment for technology products and services. However, a very unreliable energy sector has lowered all the gains made in the ICT sector.

iv. Ghana has one of West Africa's most developed national innovation systems. There is a Council for Scientific and Industrial Research, established in 1958, with 13 specialized institutes for research on crops, animals, food, water, and industry. Other scientific institutions include the Ghana Atomic Energy Commission, the Centre for Scientific Research into Plant Medicine and the Noguchi Memorial Institute for Medical Research at the University of Ghana. However, Ghana has only a small pool of researchers (39 per million population in 2010) but they are increasingly publishing in international journals.

v. In Ghana Telecommunications and Broadcasting; Mobile/Cellular Service; Mobile Money transaction, Fibre Optic Coverage; International Internet bandwidth; 3G/4G Coverage; Internet Domains; Broadcast Services and Subscriptions (Frequency Modulation); Newspaper Circulation and online Newspaper Readership are well developed. Electricity coverage in Ghana is over 80% of the population and reasonably stable giving great value to the ICT development.

vi. Ghana fostered business incubators for ICTs, industrial parks for textiles and garments and smaller experimental incubators within research institutes like the Food Research Institute. These are all located in the Accra-Tema metropolis where they are too inaccessible for the thousands of entrepreneurs living outside the capital who need these facilities to develop their businesses.

vii. E-commerce sites have been established in the fields of energy, agriculture, banking, transportation, logistics, health, and finance in countries like Nigeria and Ghana. Several large tech companies have emerged over the past few years; these have attracted international attention and funding.

viii. As in the case of the six other Francophone countries situated mainly in the West African region, Niger expressed interest in participating in the Global Observatory of Science, Technology and Innovation Policy Instruments (GO-SPIN) programme and designated a technical group that participated in the GO-SPIN training workshop held in Dakar in March 2013. The project funding of the Spanish funded project on Capacity-Building in science, technology and innovation (STI) Policy in Africa was used entirely for this activity, as well as to support the completion of the GO-SPIN survey, in collaboration with African Observatory of Science, Technology and Innovation (AOSTI).

ix. Mali is a landlocked country in the heart of the Sahel, a region particularly threatened by drought and desertification; approximately 65% of Mali's land area is either desert or semi-desert. Mali's economy is dominated by the primary sector, which contributes 35% to GDP. Agriculture, water, and health are all key sectors that are particularly vulnerable to the adverse impacts of climate change. Accordingly, the target group for technology transfer in the Technology Needs Assessment (TNA) is the vulnerable rural population, who represent 70% of Mali's total population.

x. Liberia is currently in the process of working on its TNA. It has completed its sectors and technology prioritization process and is currently about to complete its second reports (Barrier Analysis and Enabling Frameworks). Nearly half of Liberia's area is covered by forest, and around 40% of the Upper Guinea Forest falls within Liberia's borders.

xi. Other countries in the region have made some modest efforts but not sufficient to support innovative strategies in the use of ICT. The government of Guinea-Bissau announced its intention to liberalize the telecom industry, extend telecommunications to the whole country and introduce a cellular network. The internet access for the network would be provided by the U.S. Agency for International Development (USAID).

xii. Guinea-Bissau has one of the lowest electrification rates in Africa. This rate indicates the number of people with electricity access as a percentage of the total population. Electricity is not accessible to a large part of the population, mostly due to corruption and inefficiency.

xiii. The government of Guinea is promoting access to ICTs and their use in teaching, scientific research, and administration. Guinea currently has one of the lowest rates of internet penetration in Africa, at just 1.5%.

xiv. As a desire to link training with Science, Technology and Innovation (STI) development, Gambia's Programme for Accelerated Growth and Employment, covering the period 2012–2015, drives its own vision of attaining middle-income status. Just 14% of the population has access to internet, for instance, and only three in four Gambians have access to a clean water supply.

xv. Overall, however, STI in Gambia is characterized by inadequate infrastructure and insufficient skills and institutional capacity to realize its science and innovation goals, combined with a lack of funding. The National Science, Technology and Innovation Policy is intended to address these constraints.

xvi. Côte d'Ivoire has six main public universities and a virtual university (Ghana has over 30 public and private universities and Nigeria has over 50 public and private universities). In spite of several visible improvements, Côte d'Ivoire's research and innovation system is still underfinanced and needs to strengthen or operationalize its framework laws (e.g. for public-private partnerships, research contracts etc.) as well as fundamental public and private infrastructure.

xvii. Chad's business and investment climate remains challenging. Private sector development is hindered by poor transport infrastructure, lack of skilled labour, unreliable energy, weak contract enforcement, corruption, and high tax burdens on private enterprises. Chad is currently in the process of working on its technological needs assessment. It has prioritised its key sectors, and work is now underway to determine which technologies to prioritize.

xviii. UNESCO's cooperation with Togo in science, technology, and innovation (STI) policy started in 2009, with the implementation of the first phase of the Spanish funded project on Capacity-Building in STI Policy in Africa. The project is still not completed.

xix. Infrastructure in the Central African Republic, in particular, is in a very poor state. For instance, only 10 percent of the population — mainly in the capital of Bangui — has access to electricity, which is not available to the rural population. This strong potential is also beset by a dire reality: the central African region has the worst infrastructure on the African continent. According to a report by the African Development Bank (AfDB), the "region stands out on the continent as one with the least infrastructure network, particularly transport and energy, which impacts negatively on production capacities and regional trade as well as social conditions and welfare."

xx. Other services like telecommunication and banking are either lacking or non-existent beyond Bangui. Corruption within the government not only fuels instability but also hinders developmental and growth efforts in the country as natural resources like diamond and gold are exploited within the inertia of instability.

xxi. The impact of the relatively poor technological factors became manifest during the COVID-19 pandemic. Several virtual courses were introduced to maintain training in aviation and other sectors. Meetings were held virtual but individuals from several countries in the WACAF region were unable to participate either as instructors or as participants.

b. ESAF

The East and Southern African Region of AFI consist of 24 States: Angola, Botswana, Burundi, Comoros, Djibouti, Eritrea, Eswatini, Ethiopia, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Rwanda, Seychelles, Somalia, South Africa, South Sudan, Uganda, United Republic of Tanzania, Zambia and Zimbabwe. The Region has mixed climatic, ecological, pollical and social conditions. Agriculture is the main stay of several states. There is great production of industrial crops and food among some member states: grains and cereals such as rice, wheat, barley, and soybeans in South Africa; tomatoes, potatoes, carrots, cabbage, butternuts, beans and groundnuts, dates, grapes, watermelons, span speck, citrus and others in Namibia; cotton, sunflower, pyrethrum, barley, tobacco, sisal, coconut, cashew and bixa?? in Kenya; coffee, sugarcane, chat (stimulant plant), tobacco, castor oil seed, cotton, tea, jatropha in Ethiopia etc.

Political Factors

i. The ESAF Region is a mixed bag of stable and unstable States. Countries such as Eswatini, Mauritius, Malawi, Mozambique, Rwanda, and the Seychelles are currently experiencing stable

democratic governance which is promoting rapid economic development.

ii. Eswatini has been a monarchy since its independence proclaimed in 1968 but has been politically stable. King Mswati III, who has reigned since 1986, is the head of state and who appoints the ministers, including the prime minister. It exercises simultaneously the executive and the legislative power. Traditionally the King rules alongside the Queen Mother, who is seen as a spiritual leader.

iii. Malawi has been a predominantly peaceful and stable country since its independence in 1964. The one-party rule ended in 1993 and since then presidential, legislative, and local elections have been held every five years.

iv. Mozambique achieved independence in 1975 but a few years later a civil war was declared between the FRELIMO government and the Mozambique National Resistance (RENAMO) guerrillas. However, since 1994, Mozambique has since remained stable.

v. The Rwandan genocide that took place in 1994. President Kagame has had 3 terms in office consolidating the hegemony in the power of the Rwandan Patriotic Front (RPF). Kagame had an impact on its own development model, focused on improving the education sector and promoting the private sector. Kagame runs a joint government with the presence of young technocrats.

vi. Seychelles acceded to independence from the United Kingdom on June 29, 1976. President Manchan was deposed during a coup on June 5, 1977. However, Seychelles has remained stable and a great tourist destination since.

vii. In January 2009, in Madagascar, protests began against the government of President Marc Ravalomanana, in whose repression many people lost their lives. Finally, in March 2009, a transitional government was formed headed by the mayor of the capital, Antananarivo, Andry Rajoelina. The European Union, like the rest of international organizations, including the AU and SADC, refused to recognize the new government. There were several attempts at international mediation, among which the SADC stands out. Madagascar is however currently stable.

viii. The main challenge in South Africa is to respond to the problems that have not been solved since the fall of apartheid: education, health, energy security, employment, improving security, fighting corruption and agrarian reform, among others. The COVID 19 crisis has only deepened inequalities and put enormous pressure on the health system that is pending global reform that would include the private sector.

ix. Education remains another of the pending challenges for post-apartheid governments. In a recent report by Amnesty International, its Executive Director for SA, Shenilla Mohamed, stated that “youth cannot continue to be punished for the failures of governments”,

which has worsened during the pandemic and it is difficult to achieve the proclaimed interest in which the recovery involves the full participation of young people in the economy in a country where only 10% of households have access to the internet, investment in education is limited and school equipment is deficient.

x. Overall, however, South Africa, one of Africa's largest economies remains relatively politically stable.

xi. Other countries in the ESAF region have not been so stable. Comoros, a former French colony, since its independence in 1975, has suffered considerable political instability, with a score of attempts and coups, social unrest, secessionist demands and arrest of several foreign and Comorian citizens.

xii. Djiboutian politics has been characterized as a dominant single-party system, because only since 2013 opposition parties have been represented in parliament. The subsequent presidential and parliamentary elections were all characterized by boycotts by the opposition and, despite this, the ensuing victory for Guelleh and his party. The constitutional limitation of two terms was amended in 2010, so he could be inaugurated in 2011 for the third time and in 2016 for the fourth time.

xiii. Eritrea obtained its independence after the referendum held in April 1993, and the presidency of the country has been held since then by Isaias Afewerki, supported by the Front for Democracy and People's Justice (FDJP). Although a new constitution was approved in May 1997 (a year before the war with Ethiopia began, which would last until 2000), it has not yet entered into force. Legislative power resides in a transitional assembly made up of 150 deputies (all of them members of the FDPJ), and its functions include the election of the president.

xiv. Ethiopia is one of the most complex countries in Africa, whose stability depends largely on difficult ethnic balances, but also on social discontent, which make tensions and protests a constant in the history of the oldest country on the continent. Since 2015, and after the holding of general elections that shattered any aspiration for pluralism and democratization, social unrest has led to a series of riots and protests led by the majority ethnic group, the Oromo people, who protested the hegemony of the Trigiña ethnic group and the poor socio-economic situation. .

xv. Despite the ambitious reforms of the charismatic Prime Minister, the instability, and inter-ethnic clashes, have led to recurrent violent outbreaks throughout the country (Gambella, Oromía, Amhara, Somali, Hawassa). Proof of this was the attempted coup in June 2019 or, more recently, the violent protests in late June and early July 2020.

xvi. The instability in Ethiopia has affected Aviation Training. In the recent violence several potential participants in ICAO GSI Courses for

instance withdrew their applications as several news media reported violence near Addis Ababa.

xvii. After the December 2007 elections in Kenya, there was a tragic episode of violence that caused more than 1,000 fatalities and half a million displaced people. The situation, which did not normalize until the signing of the National Reconciliation Agreements in February 2008, revealed the persistence of ethnic-based tensions, as the lines of confrontation coincided with the traditional conflicts between the Luo, the Kalenjin and the Kikuyu, and rekindled historical feuds between these communities over the distribution of land in the Rift Valley and around Lake Victoria. The reconciliation agreements resulted in a coalition government with Mwai Kibaki as president and opponent Raila Odinga as prime minister. In 2010 a new Constitution was promulgated.

xviii. The “Building Bridges Initiative” (BBI) is the constitutional reform project promoted by the Kenyatta President and by the opposition leader Raila Odinga,

xix. Despite this recent history Kenya may be considered as a relatively stable country. There have however been repeated terrorist attacks mostly claimed by Al-Shabaab. The latest was as recent as March 11, 2022, on a construction site in Lamu County, Kenya. At least four people were killed.

xx. In Lesotho the results of the May 2012 elections resulted in an unprecedented government coalition formed by Prime Minister Thabane's All Basotho Convention (ABC); the LCD of Deputy Prime Minister Metsing and the Basotho National Party (BNP) of Minister Morena Maseribane, the first experience of its kind on the African continent but this arrangement broke down in 2014. .

xxi. In the short term, Lesotho will face several challenges, such as coping with the country's political instability and responding to SADC's scrutiny of the need for constitutional and security sector reforms. Particularly hard is the SADC statement with the presence of members of the Lesotho Armed Forces in a multitude of polling stations. Newly elected Prime Minister Thabane has stated that he has no plans to disband the army, but that he will work to separate it from political life to ensure peace and stability.

xxii. A transitional constitution July 2011 established that the Republic of South Sudan is a democratic republic and is defined as a "multiethnic, multicultural, multilingual, multireligious and multiracial entity". It also establishes the separation between Church and State and equal rights between men and women.

xxiii. On July 9, 2011, after decades of war, South Sudan achieved its independence. The region has remained relatively calm, but a coup d'état took place on the late afternoon of 11 April 2019, when Sudanese President Omar al-Bashir was overthrown by the Sudanese army after popular protests demanded his departure. On

25 October 2021, the Sudanese military, led by General Abdel Fattah al-Burhan, took control of the government in a military coup. At least five senior government figures were initially detained.

xxiv. The separation of South Sudan, after a referendum agreed with Khartoum in 2011, meant for Sudan the loss of a large part of its population, a third of its territory and most of its public income, which came from the oil that is extracted in that area. Since then, the economic situation in Sudan has remained very complicated, with a chronic shortage of foreign exchange, a very high public deficit and inflation that exceeded 200% in 2020. The recovery necessarily involves the consolidation of public finances and the debt relief. The lifting of US sanctions on the previous regime, the economic reforms undertaken by the transitional government in accordance with the IMF program (SMP) and the recent payment of arrears to the World Bank clear the way towards the cancellation of the external debt under the HIPC initiative.

xxv. After the collapse of the Siad Barre regime in 1991, a period marked by war and anarchy began in Somalia. Fighting between rival factions and clans plunged the country into chaos. In terms of security, the situation is very precarious. Although it has been possible to regain control of the main urban centres, the terrorist group Al- Shabaab, which has about 5,000 troops, still controls large rural territories, its financial capacity is remarkable and maintains a great operational power, inside and outside Somalia.

xxvi. Uganda is a former British colony, it was not until October 9, 1962, that it declared itself independent by electing Milton Obote, leader of the Uganda People's Congress (UPC), as Prime Minister. The subsequent years were marked with coups, dictatorship, and violence. In December 2017, after several months of political tension, street protests and chaotic parliamentary debates, the Ugandan Parliament passed Constitutional Amendment Law No. 2.

xxvii. In 2019, the rise in popularity of the opposition Robert Kyagulanyi known as Bobi Wine, who has managed to present himself as a potential threat to the power of President Museveni, has led the security forces to harass Wine, a trend repeated in the presidential elections of January 2021. Wine's arrest at the beginning of the campaign caused several days of incidents in mid-November 2019 and the repression of protests by the security forces caused more than 80 deaths.

xxviii. Although Museveni revalidated his mandate by obtaining about 58% of the votes in the elections of January 14, 2021, the results have been answered by Wine and viewed with suspicion by the international community due to the climate of harassment of the opposition and the press –with blocking access to the internet and social networks- during the electoral campaign. However, Wine's

results (35% of votes) guarantee that Museveni will reach 40 years in office, postponing the debate on his succession until 2026.

xxix. It may be summarized therefore that Uganda is presently enjoying an uneasy quiet.

xxx. Tanzania may be classified among the stable countries in the ESAF region. The United Republic of Tanzania was formed in 1964 from the union of two independent states, Tanganyika, and Zanzibar. Since its creation, the politics of Tanzania has been structured around the existence of a single party that was successively changing its name. At present his name is Chama Cha Mapinduzi (CCM), party of the revolution in Swahili. All the presidents of the country who have alternated in power after the withdrawal of the independence leader Julius Nyerere in 1985 and the subsequent reintroduction of multipartism have belonged to this party.

xxxi. Zanzibar has its own president, government, and house of representatives. After independence, in December 1963, Zanzibar became a constitutional monarchy headed by Sultan Jamshid bin Abdullah. However, the "Africanist" parties (as opposed to those with greater Arab influence) staged a coup in January 1964, constituting a Revolutionary Council with the aim of applying policies close to those of the Soviet bloc. The fear of an international intervention to re-establish the sultanate, in the context of the cold war, galvanized the union with Tanganyika.

xxxii. President Edgar Lungu of Zambia was re-elected president in the last elections, which took place on 11 August 2016 and which, according to international observers, were peaceful, free and fair, although there were some episodes of violence during the election campaign and limitations on the right to freedom of the press.

xxxiii. The leader of the majority opposition party, the United Party for National Development (PUDN or UPND), Hakainde Hichilema, who was contesting the presidency with Lungu, refused to accept the 2016 results even after the constitutional court had ruled against him. He was arrested and detained, and it took the mediation of Commonwealth Secretary-General Patricia Scotland and Nigerian President Muhammadu Buhari to get him released.

xxxiv. Hakainde Hichilema won the 2021 elections that was marred by sporadic violence. Hichilema, a former CEO at an accounting firm before entering politics, would face a daunting task turning around the economic fortunes of one of the world’s poorest countries.

xxxv. In power since the beginning of independence in 1980 in Zimbabwe, President Robert G. Mugabe began his eighth presidential term after winning an absolute majority in the July 2013 elections. These elections marked the end of the validity of the Global Political Agreement promoted by the Southern African Development Community (SADC), which established a Government of National

Unity (GNU) in response to the campaign of violence and electoral fraud that took place in the 2008 elections.

xxxvi. The intensification of factional fighting within the ZANU-PF party over Mugabe's succession since the 2013 elections, with the expulsion of former vice president Joice Mujuru in December 2014, the entry into politics of Grace Mugabe and, finally, the removal of Vice President Emerson Mnangagwa, led to the November 2017 military intervention against Robert Mugabe.

xxxvii. Following the intervention, and Mugabe's forced resignation as president, there was a swift appointment of a successor by the ZANU-PF party in the person of former vice-president Emmerson Mnangagwa, who was sworn in as president on 24 November 2017.

xxxviii. The new president first had to complete Mugabe's term in office, so elections were called for 30 July 2018 (presidential, parliamentary, and local). In these elections, President Mnangagwa won and was confirmed in office with 50.8% of the vote, against the new opposition leader, Nelson Chamisa of the Movement for Democratic Change-Alliance (MDC-A), in second place with 44.3% of the vote.

xxxix. Today Zimbabwe is relative calm politically.

Economic Factors

i. The economies of most countries in the ESAF region have suffered from the COVID Pandemic and the global economic disruptions caused by it. Admittedly, the effects have been varied with the more southern states like South Africa, Namibia, Botswana, Eswatini, Malawi Mauritius, Mozambique, Namibia, Tanzania and others like Comoros and Seychellois islands having their economy heavily impacted by COVID-19 (coronavirus) pandemic. Most states experienced a serious contraction in GDP in 2020 and are just beginning to recover.

ii. The second wave of the COVID-19 (coronavirus) pandemic was more severe than the first wave. The industries most hit were the hospitality, tourism, and aviation sectors. Trade and supply were also badly affected due restriction in movement and social distancing. The economic impact of COVID-19 includes the increased prices of basic foods, rising unemployment, slowdown in growth, and increase in poverty.

iii. The fiscal deficit of several states is widening due to a slowdown in revenue collection because of the COVID-19 pandemic combined with increasing spending pressures resulting from responses to the pandemic, debt service costs and unbudgeted arrears.

iv. South Africa, Eritrea,Angola, Mozambique, Kenya and Zambia all have debt totalling more than 70% of their respective gross domestic

products (GDPs), according to the most recent data from the IMF and the World Bank

v. A World Bank report shows that Mauritius became a High-Income Country in July 2020. It reached this milestone in one of the worst years in its history due to the global COVID-19 (coronavirus) pandemic, which has wreaked havoc on its economy. It therefore slipped back into Upper-Middle-Income status in 2021 due to the impact of the Covid-19 pandemic.
vi. Mozambique's economy registered its first contraction in 2020 in nearly three decades. It is however expected to gradually recover in 2021, but substantial downside risks remain due to uncertainty surrounding the path of the COVID-19 (coronavirus) pandemic, while growth is expected to rebound over the medium-term, reaching about 4% by 2022.
vii. The COVID-19 (coronavirus) pandemic is set to have an unprecedented impact on Namibia's economy and has exacerbated pre-existing structural challenges. Real gross domestic product (GDP) contracted by 7.4% year-on-year (y-o-y) over Q1-Q3 2020. The mining sector, which is an important earner of foreign exchange, contracted by 12.2% y-o-y affected by domestic factors and falling global demand (especially diamonds). On the back of local and foreign travel restrictions, the hospitality industry recorded a large contraction of 46.5% y-o-y. Overall, GDP is expected to have contracted by 7.3% in 2020.
viii. The economic and social shock from COVID-19 (coronavirus) on the Seychellois economy has been severe. Economic growth declined significantly in 2020 to -13.5% from 3.9% in 2019 due to the significant disruptions in economic activities in Seychelles, driven by lower tourism activities which declined by more than 60%. In addition, the fiscal deficit widened to 22.6% of gross domestic product (GDP) in 2020 on account of lower revenues and higher COVID-19-related spending and is projected to be 15.3% in 2021. Recovery is expected to gradually begin in 2021 driven by a resumption of tourism and related capital flows.
ix. During June and July 2020, the World Bank conducted a COVID-19 Business Pulse Survey (COV-BPS) covering 1,000 small and medium enterprises in Tanzania. The survey data indicate that about 140,000 formal jobs were lost in June 2020, and another 2.2 million nonfarm informal workers suffered income losses.
x. For others like Djibouti, however, the country's medium-term economic outlook remains positive despite the impact of COVID-19. Ethiopia's succeeded in maintaining a real gross domestic product (GDP) growth of 6.1% in 2019/20 despite COVID-19.
xi. A regional locust infestation, which started early 2020, also affected some parts of Kenya, especially the Northeast, Ethiopia and Somalia.

xii. Oil producing countries like Angola are still suffering the effects of lower oil prices and production levels despite significant progress on macroeconomic stability and structural reforms. The oil sector accounts for one-third of GDP and more than 90% of exports of Angola. The transformation of a state-led oil economy to a private-sector-led growth model is a complex and long-term process and the oil sector will continue to play an important role during this transition period. Macroeconomic stability has been restored and maintained through a more flexible exchange rate regime, restrictive monetary policy, and fiscal consolidation. The authorities are actively addressing financial sector vulnerabilities.

xiii. Botswana has historically enjoyed strong and stable growth since independence, with sizable fiscal buffers and prudent policies playing a key role in shielding the economy. More recently, however, the limitations of Botswana's diamond-led development model have become more apparent: growth is slower, inequality remains high and job creation is limited. At the same time, increased diamond market volatility including growing competition from synthetic diamonds, reduced Southern African Customs Union transfers and fiscal expansion have resulted in eroded fiscal buffers.

xiv. There are several on-going IMF/World Bank macroeconomic stability, structural reforms and effective governance programmes with the States in ESAF. Burundi for instance receives financing from the Bank Group through the International Development Association (IDA) on a three-year performance-based cycle. A Systematic Diagnostic of the private sector to be conducted by the International Finance Corporation (IFC) is being prepared. This diagnostic will provide options for IFC's strategic engagement in Burundi.

xv. The COVID-19 and the related restriction measures affected trade between the Central African Republic and the rest of the world and is disrupting input and food supply chains. However, the sound performance of the agricultural sector helped reduce the downturn in economic activity.

xvi. The COVID-19 health crisis is impacting Comoros' economy through various channels. The slowdown of economic activity due to social distancing measures and the disruption of trade and tourism caused by the pandemic constitutes a threat for Comoros' trade and tourism-related sectors. The expected drop of remittances from the diaspora would substantially reduce households' income, especially the poorer ones. Revenues from trade, which represent the bulk of the government's domestic resources, will decrease significantly raising the fiscal deficit.

xvii. Djibouti is one of the smallest countries in Africa. The size of its economy limits its ability to diversify production and increases its reliance on foreign markets, making it more vulnerable to market downturns and hampering its access to external capital. Djibouti's

economy is driven by a state-of-the-art port complex, among the most sophisticated in the world. Trade through the port is expected to grow rapidly in parallel with the expanding economy of the country's largest neighbour and main trading partner, Ethiopia.

xviii. Djibouti's ongoing infrastructure projects, such as the construction of a ship repair yard, a new oil jetty at the Port of Damerjog and new hospitality infrastructure are also expected to boost growth and job creation, barring protracted delays in these new projects. The shipyard's repair and maintenance capabilities are expected to attract more ships to Djibouti, giving the country's main port a competitive advantage over neighbouring ports, and cementing its position as a regional trade and logistics hub.

xix. Eritrea's recent growth performance has been marked by significant volatility in part due to its dependence on a predominantly rain-fed agriculture sector, accounting for about one-third of the economy. In recent years, Eritrea has significantly tightened fiscal policy to reverse the chronic deficits it suffered after the increase in regional insecurity in 1998. In 2018, the fiscal surplus widened to around 11% of GDP. This was largely achieved by a sharp drop in capital spending as well as some revenue measures. However, fiscal pressures, both recurrent and wage-related are likely to mount.

xx. The economic outlook of Eritrea is potentially favourable in the medium term, reflecting the new mining operations coming on stream, but are also dependent on measures to relax restrictions on the private sector imposed and to reopen access to concessional development finance. Poverty appears to have remained widespread in Eritrea, but the lack of data limits available quantitative evidence.

xxi. Eswatini has close economic linkages to South Africa, which it depends on for about 70% of its imports and about 65% of exports. Eswatini is a member of the Common Monetary Area (CMA), with Lesotho, Namibia, and South Africa.

xxii. Ethiopia's main challenges are sustaining its positive economic growth and accelerating poverty reduction, which both require significant progress in job creation, as well as improved governance. The government is devoting a high share of its budget to pro-poor programs and investments. Large scale donor support will continue to provide a vital contribution in the near-term to finance the cost of pro-poor programs. Key challenges are related to:

    1. The unprecedented social and economic impact of the COVID-19 pandemic.
    2. Ethiopia has been experiencing the worst locust invasion in decades. This may undermine development gains and threaten the food security and livelihoods of millions of Ethiopians.

3. Political disruption, associated with social unrest, could negatively impact growth through lower foreign direct investment, tourism, and exports.
4. Limited competitiveness, which constrains the development of manufacturing, the creation of jobs and the increase of exports.
5. An underdeveloped private sector, which would limit the country's trade competitiveness and resilience to shocks.

xxiii. The government aims to expand the role of the private sector through foreign investment and industrial parks to make Ethiopia's growth momentum more sustainable.

xxiv. Ethiopian economy is supported by a strong aviation industry. Aviation accounts for over 80 percent of U.S. exports to Ethiopia. Prior to the spring of 2020, the sector had been growing rapidly with rising demand for air transportation, both passenger and cargo. It will continue to play an outsize role given Ethiopian Airlines status as the leading airline on the continent, and the airline's infrastructure ambitions.

xxv. The Ethiopian Airports Enterprise (EAE), a company within the Ethiopian Airlines Group, carried out an expansion of the Addis Ababa Bole International Airport. The objective is to triple the capacity of the airport from seven million passengers per year to 21 million. During the past decade, Ethiopian Airlines Group has registered average revenue growth of 20% per annum. EAG has been following an aggressive 15-year plan, called vision 2025, with a goal to make EAG the most competitive aviation group in Africa. According to CentreforAviation.com, EAG operates the largest number of aircraft in Africa followed by Egypt Air and South African Airways; with the latter two operating 68 and 64 passenger aircraft respectively. EAG today operates about 135 aircraft, with over 65% of these aircraft supplied by Boeing. EAG aspires to retain its leading African airline position in both passenger and cargo loads.

xxvi. Under Vision 2025, EAG seeks to double its fleet numbers, increase the number of destinations to 125, carry more than 18 million passengers and 800,000 metric tons of cargo, and improve its current $2.5 billion annual revenue to $10 billion.

xxvii. To support is ambitious plan the EAG has opened its own 4-star hotel, Skylight Hotel the most luxurious and the largest hotel in Ethiopia located at the heart of Africa's diplomatic hub Addis Ababa, just five minutes away from Bole International Airport to support transit passengers. The Ethiopian Academy also supports in the training of aviation professionals in several of the ICAO Strategy Objective areas. EAG has invested $100 million in expanding and upgrading its aviation academy.

xxviii. The scale and scope of the expansion seals the academy's position as the largest and the most advanced aviation academy in Africa with

an annual intake capacity of 4,000 students training in piloting, aircraft mechanics and technicians, cabin crew, ticket agents and procurement officials. In addition, EAG has invested another $100 million for the first phase of a new cargo terminal that will increase its cargo carrying capacity to 1 million tons, for both dry and perishable goods. The cargo terminal began operating in 2018.

xxix. Kenya has made significant political and economic reforms that have contributed to sustained economic growth, social development, and political stability gains over the past decade. However, its key development challenges still include poverty, inequality, climate change, continued weak private sector investment and the vulnerability of the economy to internal and external shocks.

xxx. Over 2015-2019, Kenya's economic growth averaged 5.7%, making it one of the fastest growing economies in Sub-Saharan Africa. The performance of the economy has been boosted by a stable macroeconomic environment, positive investor confidence and a resilient services sector.

xxxi. Nevertheless, moving into 2021 a significant economic recovery has been underway in Kenya, although it remains highly uneven across sectors (with some, such as tourism, remaining under severe pressure), and there continues to be elevated uncertainty regarding the outlook. The downside risks include a weaker than expected global economic recovery undermining Kenya's export, tourism and remittance inflows, renewed disruption to domestic economic activity from the pandemic, fiscal slippages, and weather-related shocks.

xxxii. In recent years, Lesotho's economic performance has been negatively affected by sluggish global economic growth amid a major downturn in both emerging markets and advanced economies, as well as natural disasters. Sustained political instability, coupled with slow economic growth in the South African economy, also contributed to slow economic performance. In the medium-term, economic growth is expected to be boosted by construction-related projects including the second phase of the Lesotho Highlands Water Project (LHWP II), the Lesotho Lowlands Water Development Projects (LLWDP -I and-II), and roads. The water and electricity subsectors are expected to be boosted by green energy projects, while the tertiary sector is envisaged to be supported inter alia by government initiatives to reinforce financial inclusion.

xxxiii. Prior to the COVID-19 (coronavirus) pandemic, Madagascar was on an upward growth trajectory. Following a prolonged period of political instability and economic stagnation, growth accelerated over the previous five years to reach an estimated 4.8% in 2019, its fastest pace in over a decade. Due COVID-19 vulnerable populations in urban areas are particularly exposed to economic hardship and poverty traps. Declining tax revenues and COVID-19-related

spending has widened the fiscal deficit and created a sudden increase in financing needs.

xxxiv. These developments emphasize the importance of implementing robust emergency measures to save lives, protect vulnerable populations, and safeguard jobs in the short term as well as accelerate reforms to stimulate investment for long-term recovery, strengthen resilience to future shocks, and maintain public debt at a sustainable course. The World Bank is committed to working with the government to achieve those objectives with the full array of its instruments.

xxxv. Given a widening fiscal deficit, the stock of public debt has continued to increase, in Malawi, largely driven by high-cost domestic debt. Malawi is at high risk of overall debt distress and moderate risk of external debt distress, with limited space to absorb shocks.

xxxvi. As the recent Mozambique Economic Update (March 2021) notes, the country needs to press ahead with its structural reform agenda as the pandemic subsides. In the near-term, measures to support viable firms and households would be crucial for a resilient and inclusive recovery. In the recovery phase, policies focusing on supporting economic transformation and job creation, especially for the youth, would be critical. Targeted interventions to support women and alleviate gender inequalities as well as to harness the power of mobile technology would support sustainable and inclusive growth in the medium term.

xxxvii. After experiencing average annual growth of 4.4% between 1991 and 2015, Namibia's economy fell into recession in 2016 and has since struggled to recover. Namibia is largely dependent on investments in mineral extraction and government spending, and has suffered from falling commodity prices, weak growth in key trade partners (Angola, South Africa) and tight fiscal policy on the back of government's effort to rebalance public finances.

xxxviii. Rwanda now aspires to reach Middle Income Country (MIC) status by 2035 and High-Income Country (HIC) status by 2050. This aspiration will be carried out through a series of seven-year National Strategies for Transformation (NST1), underpinned by detailed sectoral strategies that are aimed toward achievement of the Sustainable Development Goals. Rwanda's public-sector led development model has shown limitations, as public debt has increased significantly in recent years.

xxxix. Rwanda's growth model has relied heavily on large public investments (12.3% of gross domestic product (GDP) in 2019) leading to substantial fiscal deficits financed mainly through external borrowing. Consequently, the debt-to-GDP ratio rose to 56.7% in 2019 (from 19.4% in 2010). External financing through grants, concessional and non-concessional borrowing played an important role in financing public investments.

xl. Going forward, the private sector will play a bigger role in helping to ensure economic growth. Low domestic savings, skills, and the high cost of energy are some of the major constraints to private investment. Stronger dynamism in the private sector will help to sustain high investment rate and accelerate the growth.

xli. Somalia is continuing to rebuild economic governance institutions amid challenging circumstances. Continuous reform implementation enabled Somalia to reach the first milestone in obtaining debt relief and fully reengage with the international community in March 2020. However, an incomplete political settlement, vulnerability to shocks (such as climate related disasters, locust's infestation, and floods) are jeopardizing the recovery from fragility.

xlii. Somalia also has several opportunities. Rapid urbanization, growing use of digital technologies, planned investments in sectors such as energy, ports, education and health can support economic growth and job creation.

xliii. South Africa is a country on the southernmost tip of the African continent, marked by several distinct ecosystems. Inland safari destination, Kruger National Park, is populated by big game. The Western Cape offers beaches, lush winelands around Stellenbosch and Paarl, craggy cliffs at the Cape of Good Hope, forest and lagoons along the Garden Route, and the city of Cape Town, beneath flat-topped Table Mountain.

xliv. South Africa has therefore a large and varied economy (301.9bn US$ GDP in 2020). It made considerable strides to improve the wellbeing of its citizens since its transition to democracy in the mid-1990s, but progress has stagnated in the last decade. The percentage of the population below the upper-middle-income-country poverty line fell from 68% to 56% between 2005 and 2010 but has since trended slightly upwards to 57% in 2015 and is projected to reach 60% in 2020.

xlv. Structural challenges and weak growth have undermined progress in reducing poverty, which have been heightened by the COVID-19 pandemic. The achievement of progress in household welfare is severely constrained by rising unemployment, which reached an unprecedented 32.5 percent in the fourth quarter of 2020. The unemployment rate is highest among youths aged between 15 and 24, at around 63%.

xlvi. According to the "The Africa Report - 9 December 2019", South African Airlines, the national carrier, entered voluntary business rescue in December 2019 because of many years of financial losses, and suspended all operations the following year. In June 2021, the government announced that to revive the airline, it had entered into a partnership with the Takatso Consortium, which would hold a 51% controlling stake. The South African Civil Aviation Authority

confirmed on 4 August 2021 that SAA's air operator's certificate had been reissued with an approved fleet of eight aircraft.

xlvii. South Sudan economy is especially vulnerable to weather, oil price, and conflict related shocks. The economy had picked up strongly before the COVID-19 pandemic, with gross domestic product (GDP) real growth reaching 9.5% in FY2019/20. The oil sector has continued to be the primary driver of growth, with estimated oil production of 62.1 million barrels in FY2019/20, representing a 26.5% increase on the 49.1 million barrels realized in FY2018/19. In the agricultural sector, cultivated area increased by 6% in 2020 compared to the previous year, but it is still far from reaching the pre-conflict levels.

xlviii. Expenditures on key social sectors including health, education, water and sanitation, and agriculture and rural development are limited. Consequently, poverty levels are expected to remain extremely high on the back of severe food insecurity and limited access to basic services across the country. About 82% of the population in South Sudan is poor according to the most recent estimates, based on the $1.90 2011 purchasing power parity poverty line.

xlix. The main priority for the government is to address the underlying causes of the conflict and stabilize the economy.

l. The secession of South Sudan induced multiple economic shocks. The biggest one being the loss of the oil revenue that accounted for more than half of Sudan’s government revenue and 95% of its exports. This has reduced economic growth, and resulted in double-digit consumer price inflation, which, together with increased fuel prices, triggered violent protests in September 2013.

li. The outbreak of civil war in South Sudan damaged both economies depriving Sudan of much needed pipeline revenues. The war in South Sudan also precipitated an increase in Sudan’s already large population of refugees and internally displaced persons with Sudan now serving as a source, destination, and transit country for irregular migration, including refugees and asylum-seekers using the East African North-bound migratory route through Libya to Europe.

lii. Continuous food price hikes led to the December 2018 demonstrations which resulted in the removal of President El-Bashir from power in April 2019. This led to the formation of a Transition Government in September 2019.

liii. After the slowdown experienced in 2012, economic activity in Uganda has been gaining strength in the last three years, in a macroeconomic context without major imbalances, with low inflation and a recovery in the level of international reserves. In addition, Uganda's gross domestic product in 2018 has accelerated by almost 3 tenths compared to 2017, exceeding all estimates, due to strong growth in services, the strengthening of domestic demand, the recovery of the industry and the growth of manufacturing, and all

despite the postponement of the start of the oil industry in Lake Albert.

liv. Most of the products exported by Uganda historically remained in the Common Market of East and South Africa (COMESA), although the percentage of exports has fallen below 50% since 2013 in favour of the continent of Europe which received 25 % of total Ugandan exports in 2018, but especially with the emergence of the United Arab Emirates, and the establishment of direct cargo flights between Entebbe and Dubai.

lv. In the origin of its imports, Asia continues to be the main source for Uganda, reaching its highest percentage in 2019 with 64% of the total, partly thanks to the strong growth of China as the main supplier with 16% of imports. India and the United Arab Emirates also stand out, both with 11%, Kenya is now Uganda's fourth supplier, having exceeded the 10% threshold, leading the African bloc, which already represents 20% of Ugandan imports. In third position we find Europe with a total of 15% of total imports.

lvi. Reflecting strong income growth over the past decade, on July 1, 2020, the World Bank announced that Tanzania's gross national income (GNI) per capita increased from $1,020 in 2018 to $1,080 in 2019, exceeding the threshold for lower-middle income status. The country's broad vision of its development goals as a middle-income country in 2025 are set out in the Tanzania Development Vision 2025, characterized by high-quality livelihoods, peace, stability, and unity good governance, a well-educated and learning society, and a competitive economy capable of sustainable growth and shared benefits. Tanzania has fared relatively well compared to its regional peers, but economic growth has slowed significantly.

lvii. After 15 years of significant socio-economic progress and achieving middle-income status in 2011, Zambia's economic performance has stalled in in recent years. Between 2000 and 2014, the annual real gross domestic product (GDP) growth rate averaged 6.8%. The gross domestic product (GDP) growth rate slowed to 3.1% per annum between 2015 and 2019, mainly attributed to falling copper prices and declines in agricultural output and hydro-electric power generation due to insufficient rains, and insufficient policy adjustment to these exogenous shocks.

lviii. A gradual recovery is expected, with GDP growth projected at 1.8% in 2021 and will average 2.8% over 2021-23. Higher copper prices, the commissioning of a new hydro power station, and a return to normal rainfall patterns are expected to support growth in agriculture and electricity production, key contributors to Zambia's industry and service sectors. However, the impact of COVID-19 will continue to dampen activity, especially in tourism and retail and wholesale trade. The risks to this outlook are balanced.

lix. After facing an economic crisis exacerbated by the COVID-19 (coronavirus) pandemic, Zimbabwe's economy is set to rebound by 2.9% in 2021, supported by recovery of agriculture and due to base effects. Expected bumper harvest and continuation of rule-based monetary policy will stabilize food prices and improve food security. However, disruptions caused by the pandemic will continue to weigh on economic activity in Zimbabwe, limiting employment growth and improvements in living standards.

lx. Operating restrictions led to depressed manufacturing, non-mineral exports, and hospitality, trade, and transport sectors. Sales of manufacturing and services firms in July 2020 were about half sales in 2019. Supply-side shocks subsided after easing of mobility restrictions, but domestic demand was weak in an environment of triple-digit inflation, high unemployment, and income losses. Fiscal and monetary policy responses to the pandemic have been limited to contain volatility of prices. The pandemic and its impacts disrupted livelihoods, especially in urban areas, and added 1.3 million to the extreme poor. Estimates suggest the number of extreme poor reached 7.9 million in 2020 - almost 49% of the population. Surveys indicate that nearly 500,000 households have at least one member who lost their job in 2020, causing many to fall into poverty and worsening the plight of the existing poor.

Social Factors

i. The per capita income in Angola stands at 2,790.7 US $ at current prices (Source: World Bank, 2020), 6,966 US $ PPA. (Source: World Bank, 2019). The World Bank considers it a "Lower Middle Income" country.

ii. Living conditions have improved for the Botswana people, and poverty has fallen significantly. This rapid poverty reduction can be attributed mainly to a combination of increasing agricultural incomes, including subsidies, and demographic changes.

iii. Progress in reducing poverty has been accompanied by improvements in shared prosperity. However, Botswana's performance was only in the middle of the worldwide shared-prosperity distribution.

iv. Inequality has fallen as well, albeit still being high. The recent Botswana Multi-Topic Survey: Labour Force Module Report indicates that the unemployment rate has gone up to 24.5% with youth unemployment (32.4%) posing a critical challenge.

v. Burundi has experienced a unique economic situation over the last six years, due particularly to the decline in foreign aid since 2015, which has caused both fiscal and balance of payments difficulties and has impacted all macroeconomic accounts.

vi. The Comoros is densely populated, with approximately 465 inhabitants per km2, and more than half of the population (53%) is under the age of 20. High population density places intense pressure on natural resources and the environment. Due to its location and topography Comoros is among the most climate vulnerable countries in the world, and 54.2 percent of the population live in at-risk areas.

vii. Nearly one fourth of the population is extremely poor, unable to buy enough food to meet the minimum nutritional requirements of 2,200 kilocalories per person per day. While the Comoros compares reasonably well with lower middle-income countries in Sub-Saharan Africa, the country's Human Capital Index at 0.41 lags the global average for lower-middle income countries.

viii. Djibouti has a GDP per capita of 3,500 USD (2019 World Bank), GINI coefficient per capita of 41.6 (2017 World Bank) and an Illiteracy rate of 32.1%. Birth rate is however high at 22.7 (2019).

ix. Although there are no standardized indicators of wealth per inhabitant, poverty is one of the main socio-economic characteristics of Eritrea, which has nevertheless seen important advances in recent decades in issues such as the literacy rate, which is estimated to have reached about 75% of the adult population.

x. Furthermore, since 1960, many Eritreans have left their country first due to the wars of independence with Ethiopia and later due to other circumstances, including socio-economic deprivation and the lack of openness of the regime. Today Eritrea constitutes one of the main countries of nationality for asylum seekers in many Western countries and the money remittances sent to their country of origin by Eritreans living abroad represent 30% of Eritrea's Gross Domestic Product

xi. Poverty has persisted despite Eswatini's lower-middle-income status. 58.9% of the inhabitants lived below the national poverty line in 2017, following a decline from 63% in 2009, and 69.0% in 2001. Use of international poverty lines also supports the persistence of poverty: the $1.90/person/day (2011 purchasing power parity (PPP)) international poverty rate has hover around 30% since 2016, estimated at 29.7% in 2020. This rises to 52.7% when the 2011 PPP $3.20 per person per day poverty line for lower middle-income countries is used. Thus, poverty levels have historically been high and there has been little progress in reducing them.

xii. With more than 112 million people (2019), Ethiopia is the second most populous nation in Africa after Nigeria, and the fastest growing economy in the region. However, it is also one of the poorest, with a

per capita income of $850. Ethiopia aims to reach lower-middle-income status by 2025.

xiii. The consistent higher economic growth in Ethiopia brought with it positive trends in poverty reduction in both urban and rural areas. The share of the population living below the national poverty line decreased from 30% in 2011 to 24% in 2016. The government has launched a new 10-year perspective plan which will run from 2020/21 to 2029/30. The plan aims to sustain the remarkable economic growth achieved under the Growth and Transformation Plans, while putting more emphasis on the private sector.

xiv. Kenya has made major gains in social development including reducing child mortality, achieving near universal primary school enrolment, and narrowing gender gaps in education. Interventions and increased spending on health and education are paying dividends.

xv. Kenya has the potential to be one of Africa's success stories, given its growing youthful population, a dynamic private sector, skilled workforce, improved infrastructure, a new constitution, and its pivotal role in East Africa.

xvi. The COVID-19 pandemic in Lesotho is expected to lead to a significant increase in poverty and to a setback in human capital accumulation. While the human capital index increased from 0.34 in 2010 to 0.40 in 2020, Lesotho already fares below the average of lower middle-income countries and the situation has been exacerbated by the COVID-19 pandemic. In addition to the immediate impact of income losses, disruptions in essential health and education services are likely to reverse progress made in human capital accumulation and poverty alleviation thus far. The World Bank's macro-poverty outlook projections estimate that an additional 3.2% of the population has already been pushed into extreme poverty because of the pandemic, with the extreme poverty rate now estimated at 30.5%.

xvii. Furthermore, in February 2021, the government declared state of emergency after Lesotho experienced heavy rains that covered the whole country from the end of December 2020 to the end of January 2021, causing devastating damage to infrastructure such as roads, bridges, houses and fields which were washed away.

xviii. High HIV/AIDS prevalence and tuberculosis (TB) remain Lesotho's greatest health challenges. The HIV prevalence rate in Lesotho is 25% in the adult population (15-49 years), the second highest in the world. The incidence of TB stands at 611 cases per 100,000, according to the World Health Organization's Global TB Report 2019. While high health costs exert more pressure to the fiscal

burden, high HIV/AIDS and TB rates continue to contribute to persistently high inequality and poverty.

xix. Lesotho has a high birth rate 31 births per / 1,000 and a high illiteracy rate (2015): 35.3% (adults)

xx. Malawi has made progress in building its human capital, the knowledge, skills, and health that people accumulate over their lives, in recent years. However, poverty and inequality remain stubbornly high. The latest poverty figures show the national poverty rate increased slightly from 50.7% in 2010 to 51.5% in 2016, but extreme national poverty decreased from 24.5% in 2010/11 to 20.1 percent in 2016/17. Poverty is driven by low productivity in the agriculture sector, limited opportunities in non-farm activities, volatile economic growth, rapid population growth, and limited coverage of safety net programs and targeting challenges.

xxi. Malawi's development challenges are multi-pronged, including vulnerability to external shocks such as weather and health. Other challenges include rapid population growth and environmental degradation. Energy shortages still stand out, with about 11.4% of the population having access to electricity. Infrastructure development, the manufacturing base, and adoption of new technology are low, and corruption levels remain high with Transparency International ranking Malawi at 129/180 economies in 2020

xxii. Mauritius has the largest per capita income in Africa ($) ((2017): 22000 and a relative low illiteracy rate (% from 15 years) (2017): 7.4 and birth rate (per 1000 people) (2017): 1.75

xxiii. Since its independence in 1990, Namibia had achieved notable progress in reducing poverty, However, in part due to the negative impact of COVID-19 on livelihoods, poverty rates are projected to increase in the near to medium term, with the upper middle-income poverty rate projected to stay around 64% until 2022. Progress toward reducing inequality has been slow and as a result, Namibia remains one of the most unequal countries in the world.

xxiv. Rwanda's strong economic growth was accompanied by substantial improvements in living standards, with a two-thirds drop in child mortality and near-universal primary school enrolment. Mortality rate and poverty levels have been dropping since the 1990s. However, the COVID-19 crisis is dramatically increasing poverty, and threatening human capital.

xxv. Among Seychelles' development challenges is the importance to focus on greater productivity, participation and performance of its economy as means to increasing shared prosperity. Some of the main institutional challenges in this regard are notably barriers to open and operate businesses, inefficiencies in public sector

management, such as limited statistical capacity, scope for a more strategic and sustainable approach to social protection, as well as the need to broaden access to quality education and skills development. Climate change adaptation, including through strengthened disaster preparedness systems and enhanced coastal management, is also key.

xxvi. The 2011 Provisional Constitution, the 2012 establishment of the federal government, and the subsequent formation of four new Federal Member States are re-drawing Somalia's new federal map and creating the space for a political settlement.

xxvii. South Africa's political transition is known as one of the most remarkable political feats of the past century. However, inequality and poverty remain high. It was estimated that the persistence of the COVID-19 pandemic at the global and domestic levels will continue to constrain the economic recovery during the first half of 2021. In addition, as economic activity restarts, pre-existing structural constraints, such as electricity shortages, are becoming binding again. The World Bank estimates that the economy contracted by 7% in 2020, as the pandemic weighed heavily on both external demand and domestic activity as the government implemented containment measures.

xxviii. The Republic of South Sudan became the world's newest nation and Africa's 55th country on July 9, 2011. Renewed conflicts in December 2013 and July 2016 have undermined the development gains achieved since independence and worsened the humanitarian situation. As a consequence, South Sudan remains caught in a web of fragility, economic stagnation, and instability a decade after independence. Poverty is ubiquitous and has been reinforced by a history of conflict, displacement, and shocks. Insecurity, lack of basic services, and unresolved housing, land and property issues prevented people from returning home in large numbers.

xxix. Uganda's Human Capital Index (HCI) is low; a child born in Uganda today is likely to be 38% as productive when she grows up, as she could be if she enjoyed complete education and full health. Only 95 out of 100 children born in Uganda survive to age 5. Undernutrition is high and stunting affects 29% of children in Uganda aged 5 years and below. Beyond disrupting the economy, the COVID-19 pandemic risks rolling back the recent gains in health and human capital development if effective prevention and control measures do not continue to be implemented rapidly and at scale.

xxx. Tanzania's rapid population growth has caused the number of people living below the national poverty line to steadily increase. In 2020, the pandemic-induced economic slowdown caused the poverty rate to rise to an estimated 27.2%, compounding the effect

of population growth on the absolute number of people living in poverty. Because a large share of Tanzania's population is close to the poverty line, even a mild economic shock can push numerous households into poverty. The impact of the crisis has been especially acute among households that rely on self-employment and informal microenterprises in urban areas.

xxxi. Zambia is experiencing a large demographic shift and is one of the world's youngest countries by median age. Its population, much of it urban, is estimated at about 17.9 million and growing rapidly at 2.8% per year, partly because of high fertility, resulting in the population doubling close to every 25 years. This trend is expected to continue as the large youth population enters reproductive age, which will put even more pressure on the demand for jobs, health care and other social services.

xxxii. The economic challenges and extraordinary shocks caused by the drought, cyclone, and pandemic provide opportunities to press forward with measures to protect lives and livelihoods, and support Zimbabwe's longer-term recovery. The 2021-25 National Development Strategy1, sets out an ambitious plan to support the recovery. Meeting the Government 2030 aspiration of attaining upper middle-income status will also require authorities to strengthen governance; ensure greater transparency and accountability; and increase public financing and investments focused on critical sectors.

Technological Factors

i. The development of technology in the ESAF region has been very varied but overall, much better than in WACAF. Admittedly, considerable efforts have been made by several countries particularly in Kenya in developing Information, Communication and Technology (ICT) areas such as Telecommunications and Broadcasting; Mobile/Cellular Service; Mobile Money transaction, Fibre Optic Coverage; International Internet bandwidth; 3G/4G Coverage; Internet Domains; Broadcast Services and Subscriptions (Frequency Modulation); Newspaper Circulation and online Newspaper Readership.

ii. The Ministry of Science and Technology in Angola launched in 2013 and 2014 the first National Study of Science, Technology and Innovation. The study fundamentally emphasized seven areas of incidence of the National Policy of Science, Technology, and Innovation. These are Agriculture, Energy and Water, Health, Telecommunications and Information Technologies, Food Safety, Oil and Gas and Education. Angola has very advanced means for

technological and scientific research in the oil sector. Angola has a National System of Science, Technology, and Innovation (SNCTI) that is dedicated to scientific research, development and innovation.

iii. The Botswana Technology Centre (BOTEC) are dedicated to identifying technology needs and providing professional expertise to develop solutions to those needs. In line with the country's overall government strategy, BOTEC's main focus is on renewable energy. In 1998, BOTEC opened a solar (photovoltaic) power plant that supplies electricity to a clinic, a primary school, street lighting and up to 14 households in the village of Motshegaletau. This project has improved the quality of life of the residents and has led to the growth of local businesses. These and other previously developed technologies have been successfully transferred to local companies. Sustainable architecture is another area of expertise for which BOTEC has become known. The building that houses the Centre, completed in 2001, is designed as a demonstration project incorporating energy-efficient and climate-friendly features such as evaporative cooling, a lattice atrium, solar chimneys, rainwater harvesting and wastewater recycling.

iv. The outcome of Burundi’s TNA culminated in the making of two Technology Action Plans. In the barrier analysis, the limited means available to implement the plans has been highlighted as a risk in respect of most of the technologies. On this basis the TNA emphasizes that commitment on the part of Burundi’s government is essential to mobilize funding to implement the project ideas to actively involve the stakeholders identified.

v. The Comoros started on its TNA process in 2020 as part of the TNA IV project, at which point it was to start deciding its priority sectors and technologies for both mitigation and adaptation. The Comoros, as an island developing nation, is highly vulnerable to the impacts of climate change. The main hazards related to climate change are increases in temperatures and sea levels, changes in precipitation and more intense tropical cyclones, the modification of the wind regime and the acidification of the ocean

vi. Djibouti is currently in the process of working on its TNA. In Djibouti, climate change is having significant impacts on vulnerable sectors, including water resources and agriculture. Given the increase in external events such as droughts and flooding, water erosion will rise and groundwater recharging will be reduced, affecting the mobilization of underground water resources for human and animal consumption and irrigation.

vii. Moreover, Djibouti, which has an arid to semi-arid climate, is experiencing major challenges from its water supply being subject to chronic deficits.

viii. The Researchers in Eritrea, particularly those engaged in empirical research, are facing several challenges. Some of the important problems identified and listed below include:
- Lack of a scientific training in the methodology of research.
- Lack of Interaction between University research departments.
- Unsatisfactory Mode of Functioning Libraries.
- Problem of Conceptualization.

xiv. Due to favourable insolation in Eswatini, solar photovoltaics was chosen as priority technology in the TNA, with a dissemination project also being outlined. Its target is to install 13,000 1.5 kW solar home systems and 15,000 50 kW institutional solar photovoltaic systems from 2019 to 2024. The overall aim for the technology is ultimately to generate 12,950 GWh, which will lead to a reduction of 9,971 gigatons of CO2e over a 25-year period.

xv. Eswatini has large quantities of renewable biomass resources, and some companies from its well-developed sugar and timber industries are already using biomass combined heat and power technology. This technology was highlighted as a priority for further dissemination, but the TNA revealed that cheap energy imports from the South African company Eskom are hindering the local uptake of this technology

xvi. The revised National Science, Technology and Innovation Policy of Ethiopia has been operational since 2010. It seeks to 'build competitiveness through innovation'. Its strengths include upgrading the Science and Technology Commission to ministerial level with a consequential name change to Ministry of Science and Technology, advocating an annual government allocation of at least 1.5% of GDP for STI in all sectors and the creation of a centralized innovation fund for R&D resourced from a contribution of 1% of the annual profits realized in all productive and service sectors.

xvii. According to the Business Monitor International (BMI), Kenya's ICT market was valued at $717mn at the end of 2019 with computer hardware accounting for nearly 60% of the total ICT investments and the remaining balance from ICT services. Kenya is at the forefront of technological innovations and is often referred to as the 'Silicon Savannah' of Africa. The Government of Kenya (GOK) has invested heavily in the broadband sector. There are currently four undersea fiber optic cables that land off the coast of Kenya: SEACOM, TEAMS, EASSY, and LION2, which are the core drivers of the heavy fixed internet penetration in the country making it one of the highest, fastest, and most reliable in the region.

ix. As mentioned above, Kenya is a regional leader in terms of internet connectivity, general ICT infrastructure investments, value added services, mobile money, and mobile banking services.

x. Lesotho is starting on its technological needs assessment (TNA) process in 2020 as part of the TNA IV project, at which point it will start deciding its priority sectors and technologies for both mitigation and adaptation.

xi. Lesotho is focusing on energy efficiency and demand management, coupled with increasing investments in a renewable energy programme for the electricity, construction, and waste sectors.

xii. The island of Madagascar is located near southern Africa, off the coast of Mozambique. Climate change impacts are worsening, and extended droughts, floods and an increasingly variable rainfall regime have become commonplace. These conditions are challenging for the large proportion of the population that base their livelihoods on agriculture.

xiii. Madagascar completed its TNA in 2018. The TNA prioritized agroforestry, industry expansion and bioplastics as a technology to support Madagascar's mitigation efforts. To secure technology diffusion, the Technology Action Plans details a project in which the relevant stakeholders agreed to establish three bioplastic manufacturing units. It is estimated that this action will lead to a reduction of 360 tCO2, as well as reducing sales of conventional plastics by ninety tonnes and increase employment.

xiv. Malawi is currently in the process of working on its TNA. It has completed its sectors and technology prioritization process and is currently working on its second reports (Barrier Analysis and Enabling Frameworks). Currently, most rural communities are experiencing chronic food deficits in many parts of the country on a year-round basis owing to the effects of floods and droughts.

xv. Mauritius used to rely mainly on its sugar and tourism industries, but the Government of Mauritius has sought to diversify and remains active in trying to develop new sectors to create growth in the economy. The Ebene Cybercity in Mauritius was developed with the idea of being a hi-tech hub and has now developed into a modern financial centre providing high-quality offices and amenities. It is now regarded as the second business city of Mauritius after Port-Louis, and many businesses have subsequently moved there.

xvi. Namibia launched a National Space Science and Technology Policy on 4 June 2021. The policy framework aims to guide the use of space resources to contribute towards the socio-economic growth and development of Namibia.

xvii. Rwandan situation was exacerbated by the 1994 genocide, which led to the loss of its meagre human and infrastructural resources in the science base. Today Rwanda has a vision on science and technology, which is the surest route to developing the nation. Vision 2020 envisages Rwanda as "a modern nation, able to generate and

disseminate technological knowledge and innovation", and as "a centre of excellence at a regional level in the area of technologies, particularly with ICT."

xviii. Building on that Vision, the National Policy on Science, Technology, and Innovation main objective policy is: "To integrate Science, Technology, Scientific Research and Innovation in the context of the issues facing Rwanda."

xix. Seychelles completed its Technological Needs Assessment (TNA) in 2018. For Seychelles to withstand dry periods, the Technology Action Plan details actions for the diffusion of rooftop rainwater harvesting and water-efficient appliances with the goal of implementing the two technologies in 25,000 households over a period of five years. Besides creating jobs, this will stabilize water security, reduce water restrictions, and enable the selected households to save money on water bills.

xx. Another ambitious project based on the TNA is the implementation of waste-heat recovery technologies at the Roche Caiman power station. The project aims to install a total capacity of 12 MW in two stages: 5 MW in 2020 and an additional 7 MW in 2028. From 2030, this will potentially lead to yearly reductions of 361,000 tCO2 and avoid costs of USD 80 million.

xxi. Somalia jumped up the list maintained by International Telecommunication Union's Regulatory Tracker. While it had 16 points when the project began, in 2014, it had risen to 63 points out of a possible 100 by 2020. This ranking positions Somalia alongside regional peers that have much more mature markets. The core objective of the Information Communication Technology (ICT) department in Somalia is to ensure the smooth functioning of the ICT systems and processes to become an enabling tool for the all Ministry employees and the Somali public. The department provides a secure, safe and controlled environment where the Ministry can host its data applications & data storages.

xxii. South Africa has one of the largest information and communications technology (ICT) markets in Africa. It shows technological leadership in the mobile software field, security software as well as electronic banking services. As an increasingly important contributor to South Africa's GDP, the country's ICT and electronics sector is both sophisticated and developing. Several international corporates operate subsidiaries from South Africa, including IBM, Unisys, Microsoft, Intel, Systems Application Protocol (SAP), Dell, Novell, and Compaq. It is seen as a regional hub and a supply base for neighbouring countries. South Africa's ICT products and services industry is penetrating the fast-growing African market. South African companies and locally based subsidiaries of international

companies have supplied most of the new fixed and wireless telecoms networks established across the continent in recent years.

xxiii. The Government, via its programs and agencies will embark on an extensive skills development programme aimed at training one million young people by 2030 in Robotics, Artificial Intelligence, Coding, Cloud computing and Networking.

xxiv. Leading U.S. companies such as Microsoft are elevating South Africa into the lead group of countries for new product releases reflecting the growing importance of the market and the region. IBM opened an IBM Cloud Data Centre in Johannesburg in 2016. IBM will provide clients with a complete portfolio of cloud services. This is the result of close collaboration with South African, 100% black-owned firm Gijima and Vodacom and is designed to support cloud adoption and customer demand across the continent. This again demonstrates the willingness of foreign companies to invest in this market and use the local skills force to penetrate the market and the region. Amazon Web Services has also opened a data centre in Cape Town. CISCO and Dell both have training academies within South Africa to assist with the development of skilled labour within this sector.

xxv. South Sudan started on its technological needs assessment (TNA) process in 2020 as part of the TNA IV project. Energy generation and use, reforestation and transport are, among others, the sectors in which South Sudan wishes to develop strategies aimed at decreasing its level of CO2 emissions.

xxvi. Uganda launched a UNESCO 3-year “Future Earth Capacity Programme” financed by the Swedish International Development and Cooperation Agency which aims at building and mobilising the necessary scientific and research capacity in Bolivia, Ethiopia, Kenya, Rwanda, Tanzania, and Uganda. The UNESCO programme focuses on these countries in a bid to encourage full representation and participation of developing countries within the Future Earth Initiative, and as an opportunity for involving local communities and sharing scientific, local and indigenous knowledge on sustainable development. Currently Uganda’s ICT is still underdeveloped.

xxvii. The reform of Tanzania’s science, technology, and innovation (STI) system was launched 2007 within the One UN programme. UNESCO heads the Innovation and Technology Thematic Area, also involving the World Bank and Finland, whose activities are spread across three Joint Programmes. Under the Joint Programme on Wealth Creation, Employment and Economic Empowerment,

UNESCO coordinates the section on policies and plans of action for the explicit integration of STI into the economy.

xxviii. International Trade Administration has reported that the ICT sector saw growth following the establishment of a National ICT policy for regulating the telecom sector in Zambia. The telecom sector comprises public switched telephone network (PSTN), international voice, local loop, national voice, mobile, private data networks, and internet operators. PSTN and international voice are monopolistic sub-sectors, however the national voice, local loop, mobile internet, and private data networks are competitive sectors. The Zambian government supports and encourages networking of electronic services and applications by promoting eCommerce, eAgriculture, eHealth, and eEducation and trade promotion programs for goods and services. The government is working to establish additional government online services.

xxix. The government is currently focused on upgrading 3G/4G platforms nationwide. In Q1 2021, MTN Zambia activated the 800Mhz 4G spectrum to expand coverage and build out VoLTE, which was recently released by Zambia's industry regulator ZICTA.

xxx. Opportunities include provision of retail fiber optic, mobile, and internet service providers, software development, and ICT parks. In Q1 2021, the Ministry of Transport and Communication (MoTC) and ZICTA awarded Beeline Telecoms Limited an International Network and National Service License to become the fourth mobile operator in Zambia, in hopes of further expanding and promoting healthy competition within the telecommunication sector. Beeline had until the end of 2021 to commence operations, or their license may be revoked.

xxxi. Zimbabwe is in the process of implementing several interventions to enhance ICT development and its impact for instance, mobile infrastructure roll out and optimisation to increase network coverage, data centre services expansion, optimisation of optic fibre backbone network, internet gateway upgrade and deployment of computers to schools especially in marginalised areas and internet connectivity.

c. AFI-EUR/NAT

Political Factors

i. The EUR/NAT region consists of three countries that belong to the AFI Region, namely, Algeria, Morocco and Tunisia.

ii. The Algerian political system is of the presidential type since the constitutional reform of 2008. The president, elected by direct universal suffrage has broad prerogatives (government appointment, establishment and direction, political project, call for

referendum, foreign policy, etc). The Government is accountable to the President and there is a mechanism for parliamentary control.

iii. On February 22, 2019, a massive popular movement began against the candidacy of the acting president, Abdelaziz Buteflika, to a fifth term with the holding of demonstrations every Friday. On March 11, President Buteflika announced his resignation from opting for a fifth mandate. On March 19, Prime Minister Ahmed Ouyahia was replaced by Nourredin Bedoui, until then Minister of the Interior. Mobilization on the streets continued and on April 2, Buteflika resigned from his position. On 9 April Abdelkader Bensalah was appointed interim president, president of the Council of the Nation, the upper house of the Algerian Parliament.

iv. According to the provisions of the Constitution, Abdelkader Bensalah, called for presidential elections. Abdelmajid Tebboune was the winner in the first round with 58% of the votes cast. The new president took office on December 19.

v. The first steps taken by President Tebboune confirmed his willingness to promote a reformist agenda. The cabinet abounds with senior officials with vast experience.

vi. The current political framework in Morocco is established by the Constitution adopted in 2011.

vii. The 2011 Constitution represents an important advance towards the parliamentary monarchy. The prime minister becomes head of government and must be part of the party with the most votes in the general elections; the position of the King as commander of the believers is maintained, but his normative powers are limited to religious matters; an ambitious catalogue of fundamental rights and freedoms is established and the process of "advanced regionalization" is constitutionalized. Overall, it can be said that the new Constitution strengthens the position of the Government, although the Crown continues to enjoy certain executive powers

viii. Morocco created in April 2017 a Constitutional Court (successor to the previous Constitutional Council) and a Superior Council of the Judiciary.

ix. King Mohamed VI appointed the twelve members of the Constitutional Court, chaired by Saïd Ihraï, as well as the twenty members of the new General Council of the Judicial Power, which replaces the previous Superior Council of the Magistracy and has as delegate president, the president of the Court of Cassation, Mustapha Fares.

x. Tunisia is advancing in its transition to democracy, after the Revolution that triggered the fall of the Ben Ali regime on January 14, 2011. After the constituent elections of October 2011, the first three years were dominated by the government of what was called a “troika” formed by the Islamists of Al Nahda, Al Takatul and the Congress for the Republic to which the interim president of the

Republic, Moncef Marzuqi, belonged. It was a period troubled by the economic crisis and political and social polarization, in which Tunisia was also immersed in regional instability caused by the terrorist phenomenon.

xi. The strength of social agents and non-governmental organizations, especially those that work for women's rights, has been one of the distinctive features of the new Tunisian democracy.

xii. The death of the head of State, Béji Caïd Essebsi, 92, on July 25, 2019, a few months before the end of his term, brought forward the entire electoral cycle and was a real test of resistance for the young Tunisian democracy. In general, both Presidential and legislative elections were well organized by the Superior Independent Electoral Instance (ISIE).

xiii. In the former, the professor of constitutional law, Kaïs Saïed, was elected new president, with 72% and great support from young people in elections.

xiv. The legislative elections were held on October 6 and had a 42% turnout, resulting in a highly fragmented ARP led by Al Nahda as the largest parliamentary group. From that moment on, negotiations have taken place to try to form a government. Al Nahda's proposed candidate, Habib Jemli, was rejected by Parliament in early 2020.

xv. On July 15, 2020, the Prime Minister resigned due to problems related to an alleged conflict of interest. The President of the Republic commissioned the former Minister of the Interior, Hichem Mechichi, to form a government. The Assembly of People's Representatives gave its approval to Mechichi and his Government in the early hours of September 2.

xvi. Subsequently, some members of the Government have been dismissed. The appointment of the new holders of the affected portfolios has been done while other members of the Government have assumed on an interim basis the responsibilities of the ministries affected by the dismissals.

Economic Factors

i. Algeria's heavy dependence on oil prices represents the main challenge for the Algerian economy. Specifically, the hydro sector. Carbides accounts for 98% of foreign exchange earnings and 60% of state tax revenues, so that the economic growth profile of Algeria is highly conditioned by the evolution of the prices of pro products coming from natural resources such as gas or oil.

ii. In 2016, Algeria had to draw on its foreign exchange reserves and the Fund for the Regulation of Hydrocarbon Resources, to cope with the impact due to its public deficit and external deficit from the continuous fall in energy prices.

iii. Faced with this situation, in 2018 the implementation of import control measures was intensified and there was the suspension of imports to Algeria of 950 tariff positions.
iv. On January 27, 2019, the Algerian Government published an executive decree that put into effect the new additional safeguard tariffs (DAPS for its acronym in French) that replaced the list of suspended imports. These DAPS were initially applied to 1,095 tariff positions. The Algerian authorities undertook to review these tariffs on a quarterly basis, open to a possible modification of the list of products and of the tariff rates. Since then, the decree has been modified twice and 2022, a new list of 2,608 goods subject to DAPS has been released.
v. The government's intention is to protect national production to diversify its industry. According to the Ministry of Commerce of Argelia, DAPS are temporary in nature and will be in effect for three to five years. Despite this, the measure could be prolonged or revised depending on the evolution of the market.
vi. The Algerian government has proposed to promote the growth of those sectors not dependent on hydrocarbons. The Finance Act for 2020 estimates that these sectors may grow by 1.8% in that same year. The industrial diversification of the country, to make it less dependent on hydrocarbons, is one of the main challenges of the Algerian economy Algerian
vii. The country's top clients account for almost 53% of exports: France, Italy, Spain, USA, and Turkey. According to the latest data available from the IMF (2018), the primary sector represents 14% of total GDP, and employs 30.9% of the population active.
viii. The tourism sector represents, according to data from the Ministry of Tourism and Crafts in 2019, 1.4% of GDP
ix. The Moroccan government has started to rollout the economic recovery roadmap the King announced in July 2020. Beside reform of State-Owned Enterprises, the government has approved a law that sets technical and institutional frameworks in place for expanding social welfare to segments of the population vulnerable to falling into poverty. This includes universal access to public health services. The Mohammed VI Investment Fund, to support major investment projects as public-private partnerships and contribute to capitalizing Moroccan Small- and Medium-size Enterprises (SMEs), will also soon take form, as an official decree for it has also been approved. A development vision for the Kingdom - outlined by a commission established in December 2019 - is expected to guide political debate around reforms that are due to take place in the run-up to the country’s general elections, tentatively scheduled for September 2021.
x. The shock of COVID-19 has pushed the Moroccan economy into its first recession since 1995. Economic output contracted by 15.1% in

the second quarter of 2020, primarily because of the lockdown but also of a sharp reduction in exports caused by the pandemic's disruption to global value chains and the collapse of receipts from tourism. The shock to supply and demand, triggered by the pandemic, has been compounded by the fall in agricultural production due to a severe drought. Although activity picked up in the third and fourth quarters of 2020, the government's preliminary estimates indicate that Morocco's real GDP contracted by 7% in 2020, leading to an increase in unemployment from 9.2% to 11.9%.

xi. GDP growth is expected to accelerate to 4% in 2021 and current account deficit is expected to stabilize below 4% of GDP as exports and imports gain traction. The budget deficit is expected to fall only gradually as the authorities postpone fiscal consolidation until the economic recovery is well entrenched

xii. Tunisia has experienced a sharper decline in economic growth than most of its regional peers, having entered this crisis with slow growth and rising debt levels. GDP growth contracted by 8.8% in 2020. Unemployment increased from 15% prior to the pandemic to 17.8% by the end of the first quarter of 2021. Moreover, it continues to affect women (24.9%) and young people aged 15–24 (40.8%) in particular.

xiii. In 2020, extreme poverty—measured using the international poverty line of living on US$1.90 per day - remained below 1% in Tunisia; however, poverty measured within the US$3.20 per day bracket was estimated to have increased from 2.9% to 3.7%. Additionally, the percentage of the population described as being "vulnerable" to falling into poverty was expected to have increased as well. Using a threshold of US$5.50 per person per day, the number of poor and of vulnerable together is expected to have increased from 16.7% to 20.1% of the country's total population of about 11.7 million (World Bank 2021, 2019).

Social Factors

i. The Algerian economy recovered partially in 2021 from the health and economic crises caused by the COVID-19 pandemic. Algeria's slow pace of vaccination suggests, however, that some containment measures could remain in place in the country until 2022.

ii. Starting with a Socio-Economic Recovery Plan, the Algerian authorities have announced a longstanding reform effort to shift the economy toward a sustainable private sector-led model, engage in a transition toward renewable energy, reduce severe imbalances in the country's macroeconomy, and protect the population's livelihoods.

iii. Algeria is considered to have achieved universal primary education, with a 97% primary net enrolment rate in 2015 (with gender parity) and has lifted higher education enrolment rates. The quality of education can still be improved upon, however, with Algeria ranking 71 out of 72 for the performance of its student cohort of 15-year-olds in sciences, mathematics, and reading in the 2015 Program for International Student Assessment (PISA).
iv. And, according to the World Bank Group's 2020 Human Capital Index (HCI), which provides a pre-pandemic baseline on the health and education of children, despite working toward improvement, Algeria's HCI value remained relatively unchanged at 0.53 between 2010 and 2020. While higher than average for lower middle-income countries, this is below the given average for the World Bank's Middle East and North Africa region.
v. In Tunisia, a new government was sworn in on September 2, 2020. Its Prime Minister, Hichem Mechichi, says his priority is to address the economic and social situation, rebalance public finances (through talks with lenders), and begin reforms to cut subsidies and programs sustaining organizations like State Owned Enterprises. In April 2021, Tunisia provided international partners with draft reform programs, but the government has yet to present a comprehensive, detailed strategy to confront the country's deep economic and financial challenges, now reflected in unprecedented levels of budget deficit and public debt.

Technological Factors

i. Algeria is considered to be the largest market in North Africa and the largest in terms of land area in Africa. Currently, Information and Communication Technologies (ICT) development is the focus of governmental attention with economic and social development strategies and policies in the country.
ii. According to the International Telecommunication Union (ITU, 2018), Algeria ranked as the third most dynamic country in terms of ICT deployment, and position as the most dynamic country for the implementation, deployment, and use of new technologies in 2017. It has also been rated as the country that made the most substantial progress in ICT development.
iii. The ICT sector in Morocco generates between 5% and 6% of GDP, of which telecommunications companies represent about half. However, technological developments coupled with strong political will and economic imperatives are pushing Morocco's ICT sector growth beyond the telecommunications subsector. "Incorporating digital solutions in business operations is not an option – it is a must to keep Moroccan companies at the forefront of regional and

international standards," Lamiae Benmakhlouf, the managing director of Moroccan Information TechnoPark Company (MITC), is reported to have said.

d. AFI-MID

Political Factors

i. The MID region consists of three countries in that belong to the AFI Region, namely, Egypt, Libya and Sudan.
ii. Sudan is in the Sahara Desert. Hard climate conditions and lack of natural resources were always responsible for the poor life conditions. But **the country's political instability and internal conflict** has increased the poverty.
iii. In September 1983, the then President of Sudan, Yaafar Mohammed Numeiri, created a federal state that included three federated states in South Sudan, but later dissolved them, sparking the start of the second civil war between Sudanese troops and the secessionist Sudan People's Liberation Army. The Sudanese government allowed the autonomy of the region after a peace agreement signed on January 9, 2005, in the Kenyan city of Naivasha.
iv. The separation of South Sudan, after a referendum agreed with Khartoum in 2011, meant for Sudan the loss of a large part of its population, a third of its territory and most of its public income, which came from the oil that is extracted in that area. Since then, the economic situation in Sudan has remained very complicated, with a chronic shortage of foreign exchange, a very high public deficit and inflation that exceeded 200% in 2020.
v. The overthrow on April 11, 2019, of the Omar Al Bachir regime, which for three decades plunged the country into economic stagnation and international ostracism, paved the way for a political agreement between the Transitional Military Council (CMT) and the Forces of Freedom and Change (FLC) and the Constitutional Charter of August 17. This is temporary in nature and should lead to the drafting of a new Constitution and the holding of free elections after the transition period.
vi. Armed conflicts in Sudan's westernmost region of Darfur have subsided but many parts of the region remain precarious because of the proliferation of arms and banditry. Efforts to settle conflict in South Kordofan and Blue Nile remain deadlocked. The Transitional Government has engaged in peace negotiations with relevant armed groups and signed a peace deal on October 3, 2020 with Sudan Revolution Front (SRF) expected to put an end to the long-standing conflicts that divert huge resources from much needed

social programs and investments in human capital to military build-up.

vii. In December 2020 the mandate of UNAMID, the UN peacekeeping mission and the African Union ended, starting the operation of the new UNITAMS mission, the UN's integrated mission for assistance in Sudan, which has an initial 12-month mandate to support the transitional government's efforts towards democratic governance, as well as to support the protection of human rights and peace in the country.

viii. Nine years after the fall of Muammar Qaddafi, Libya continues to struggle to end its violent conflict and build state institutions. External actors have exacerbated Libya's problems by funneling money and weapons to proxies that have put personal interests above those of the Libyan people. U.N. efforts to broker a lasting peace have not yet succeeded, overshadowed by competing peace conferences sponsored by various foreign governments. Meanwhile, Libya's borders remain porous, particularly in the southern Fezzan, facilitating an increase in trafficking and smuggling of illicit materials, including weapons.

ix. At the subnational level, many local conflicts reflect long-standing feuds between various factions, tribes, and ethnic groups. Though Libya's national conflict has stalled in recent months, prospects for a political solution are complicated by the country's deep political and tribal divides.

x. Following in the wake of the Tunisian revolution, Egypt embarked on a wave of demonstrations on January 25, 2011, which, eighteen days later, ended with the resignation of Hosni Mubarak, who had ruled the country since 1981.

xi. In May and June 2012, Egyptians were called to the polls to elect the President of the Republic. A tight result finally gave the Muslim Brotherhood candidate, Mohamed Morsi, victory over General Ahmed Shafiq, Mubarak's former prime minister.

xii. The Army intervened on July 3, removing Mohamed Morsi, and appointing the President of the Constitutional Court, Mr. Adli Mansur, as acting substitute.

xiii. Presidential elections were held in May 2014, in which the former Defense Minister General Abdelfatah Al Sisi won the support of 93% of the population against the leftist candidate Hamdin Sabahi.

xiv. Since his arrival at the head of State, the president's objectives have been fundamentally: to end terrorism, which slows the return of tourism and investment, secondly, the economic relaunch of the country and thirdly, the recovery of the role of Egypt in the region.

xv. Despite the serious terrorist attacks that have taken place in recent years, the current general perception is of a marked improvement in the security situation in most of the country. The exception is the northern territories of the Sinai Peninsula, where the Army faces

the insurgency of the self-styled “Sinai Province” (Wilayat Sinai), a terrorist group that has sworn obedience to DAESH.

xvi. In March 2018, new presidential elections took place in which President Sisi was re-elected, with a percentage of support of 97.08%. Turnout was 41.05% compared to 47.45% in the 2014 presidential elections. In November 2018, the Sheikh II World Youth Forum was held in Sharm in which the president defended the freedom of religion and belief of Egyptians.

Economic Factors

i. Overall, the Libyan economy contracted by about 31% in 2020. The precipitous fall in its hydrocarbon output damaged its external balance and fiscal position in 2020, filtering through to weaker government spending, reduced private consumption, and lower imports. The economic collapse also had adverse effects on the non-hydrocarbon economy: water shortages were prevalent, with reports of the sabotage of water wells. Power outages persisted throughout the year; only 13 of 27 power plants were functioning. As late as mid-December 2020, three months after ports had been reopened, the government was still urging consumers to stop queueing at gasoline stations.

ii. The heavy dependence of government finances on hydrocarbon revenues will likely persist until Libya creates a more diversified economy, a gargantuan task even for the advanced-economy oil and gas producers of the Gulf Cooperation Council that have accelerated their economic diversification efforts with ambitious Vision policies and programs in recent years. More strikingly, Libya’s expenditure structure is highly rigid even as its hydrocarbon revenues are volatile: its wage bill, which has accounted for 61% of total expenditures, makes it among the costliest and least cost-efficient public sectors in the world. Subsidies that cover the gamut of fuel, electricity, water, sewage, and sanitation have amounted to 16% of total expenditures in 2020.

iii. The secession of South Sudan induced multiple economic shocks in Sudan. The biggest one being the loss of the oil revenue that accounted for more than half of Sudan’s government revenue and 95% of its exports. This has reduced economic growth and resulted in double-digit consumer price inflation.

iv. Egypt’s recent macroeconomic and structural reforms stabilized the economy and have allowed the country to enter the global COVID-19 crisis with improving fiscal and external accounts. However, the adverse repercussions of the pandemic have since undermined this recent progress, shedding light on longstanding challenges. These include sluggish private sector activity and job-creation, especially in the formal sector, underperforming non-oil exports and Foreign

Direct Investment (FDI), elevated government debt-to-GDP ratio (despite its significant reduction in recent years), below-potential revenue mobilization, and an unfavourable budget structure, with limited allocations to key sectors, such as health and education.

v. International reserves remain relatively ample, at US$40.1 billion at end-January 2021, although still below their pre-crisis peak of US$45.5 billion. External accounts were still bolstered by remittances, rebounding foreign portfolio inflows, and external financing, notably from the IMF, Eurobond issuances, and an innovative Green-bond. Growth is forecast to decline from 3.6% in FY2019/20 to 2.3% in FY2020/21, in light of the ongoing effect of the pandemic, and especially the renewed surge in the COVID-19 cases since end-2020. The slowing of economic activity is expected to have adverse social implications.

Social Factor

i. The 3 African countries of MID share common borders and geographically located at the crossroads of Sub-Saharan Africa and the Middle East.

Technological Factors

ii. During the first phase of the Spanish funded project on Capacity-Building in science, technology, and innovation (STI) Policy in Africa, UNESCO provided policy advice in the process of reformulating Sudan's national STI policy and that the government, in collaboration with UNESCO, organized an international workshop to examine the draft policy and to discuss with the concerned policy makers and scientists the way forward. The recommendations adopted by the workshop were used by the government to finalize the national STI policy.

iii. There is a predominance of foreign labour in scientific and technical positions. Al-Fatah University at Tripoli (founded in 1973) has faculties of science, engineering, agriculture, medicine, pharmacy, veterinary medicine, nuclear engineering, and petroleum and mining engineering. The University of Garyounis at Banghazi (founded in 1955) has faculties of science and engineering. Bright Star University of Technology at Marsa al-Brega (founded in 1981) has faculties of basic engineering science, electrical and electronic engineering, mechanical and production engineering, chemical engineering, and petroleum engineering. Al-Arab Medical University at Benghazi was founded in 1984. Sebha University has faculties of science, agriculture, medicine, and engineering. A posts and telecommunications institute is at Tripoli.

iv. Libya is also highly interested in nuclear power. A 10-MW research reactor is located at Tajura. 1987–97, Libya had 493 technicians per million people engaged in research and development.

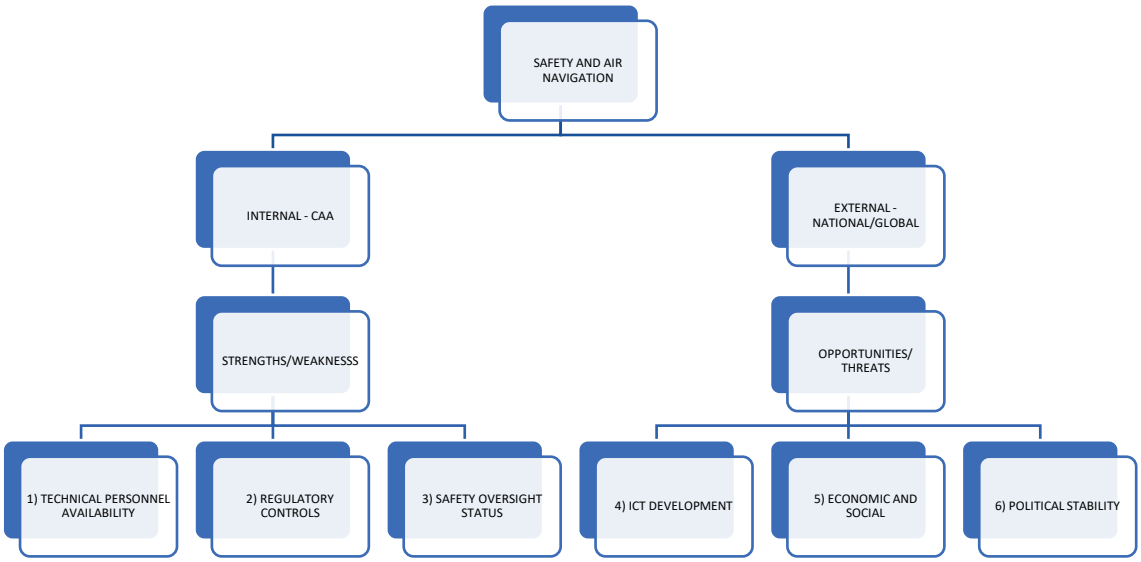
v. In Egypt, research and development in the public sector include 11 research centres and institutes affiliated to the Ministry of Scientific Research and 14 research centres, institutes and entities affiliated to other ministries.

vi. Female researchers account for 41% of the total number of researchers. Majority of researchers hold a doctorate degree (75%), while the researchers with a master's degree represent 18% and researcher with only bachelor's degree account for 7% of the total number of full-time researchers. The centres with the largest number of researchers is the Agricultural Research Centre affiliated to the Ministry of Agriculture, as it embraces 41% of the total number of researchers in the public sector, followed by the National Research Centre affiliated to the Ministry of Scientific Research, which represents 20% of the total number of researchers.

23. THE SWOT ANALYSIS

SWOT ANALYSIS METHODOLOGY

i. **Contents and Criteria** - The SWOT analysis will help to match resources and capabilities in the Safety and Air Navigation domains. As such, it is instrumental in strategy thinking and decision making. The following diagram shows how the current SWOT analysis fits into the safety and air navigation domain. It presents some of the variables that need to be taken into consideration when planning the SWOT analysis.



ii. The following paragraphs describe the criteria used to conduct the SWOT analysis. It also includes an explanation as to why that variable has been chosen.

iii. **Set of selected variables** - The SWOT Analysis summary is grouped into the ICAO Regional zones, WACAF and ESAF and is based on the following criteria:

a. External Factors - These factors are at the National or International level and define the Opportunities and Threats to the State Safety Oversight System. These factors have been discussed in the PEST Analysis and will be summarized as Opportunities and Threats in the SWOT Analysis Summary Table.

b. Internal Factors - The Internal Factors capture the Strengths and Weakness of the State Safety Oversight System. The information is sourced from the latest data as captured in the ICAO Portal – ISTARS. Internal Factors also includes information obtained from questionnaire sent to States on the available number of inspectors,

information received from ATOs, and a review of previous work done on ATOs by Association of African Aviation Training Organizations (AATO). The State Safety Oversight System is analysed by the following variables:

1) Safety Oversight Index - The safety oversight index (SOI) analysis the level of implementation in three functional areas:
    a) Operations: which includes the areas of PEL/OPS/AIR
    b) Air Navigation: which includes the areas of ANS/AGA
    c) Support: which includes the areas of LEG/ORG/AIG

   A State is given a target effective implementation score which is calculated based on a global linear regression of traffic versus effective implementation of all ICAO Member States. The Safety Oversight Index is the ratio between the target EI (effective implementation) and the actual EI. A State with a high safety oversight index (>1) would be considered to have sufficient regulatory controls in place to cover its existing traffic volume. A State with a low safety oversight index (<1) would be considered to have an insufficient oversight system taking into consideration its traffic volume.

2) State Safety Briefing – This variable provides an overview of different State safety indicators such as USOAP effective implementation, number of Significant Safety Concerns, Aerodrome Certification, and PBN percentage implementation level,

3) Global Aviation Training - This variable indicates the number of ICAO Global Aviation Training Academies per region. It also details the number of courses delivered.

4) Staff Needs - Ratio of Inspectors Compared to other Similar Countries - variable compares each State numbers of safety oversight inspectors with those of other States that have similar operating environments. This benchmarking information can be used as a starting point to determine the adequacy of the State's inspector resources.
   The number of inspectors in a State is most closely correlated with the number of operators/aircraft models/aerodromes. There are other factors that can affect the number of inspectors (such as the geographical size of the State) that could not be considered in this benchmarking tool.

24. SAFETY OVERSIGHT INDEX (SSI) ANALYSIS

Safety Indexes provide a risk-based prioritization of operational, air navigation and support related USOAP areas. In each of the 3 functional areas, a State is given a target effective implementation score which is calculated based on a global linear regression of traffic versus effective implementation of all ICAO Member States.

A State with a high safety index over 1 would be considered to have sufficient regulatory controls in place to cover its existing traffic volume. A State with a low safety index below 1 would be considered to have an insufficient oversight system taking into consideration its traffic volume.

The new GASP is no more considering State Safety Oversight Index. The analysis based on SSI has therefore been expunged from the final report.

25. STATE SAFETY BRIEFING – WACAF USOAP

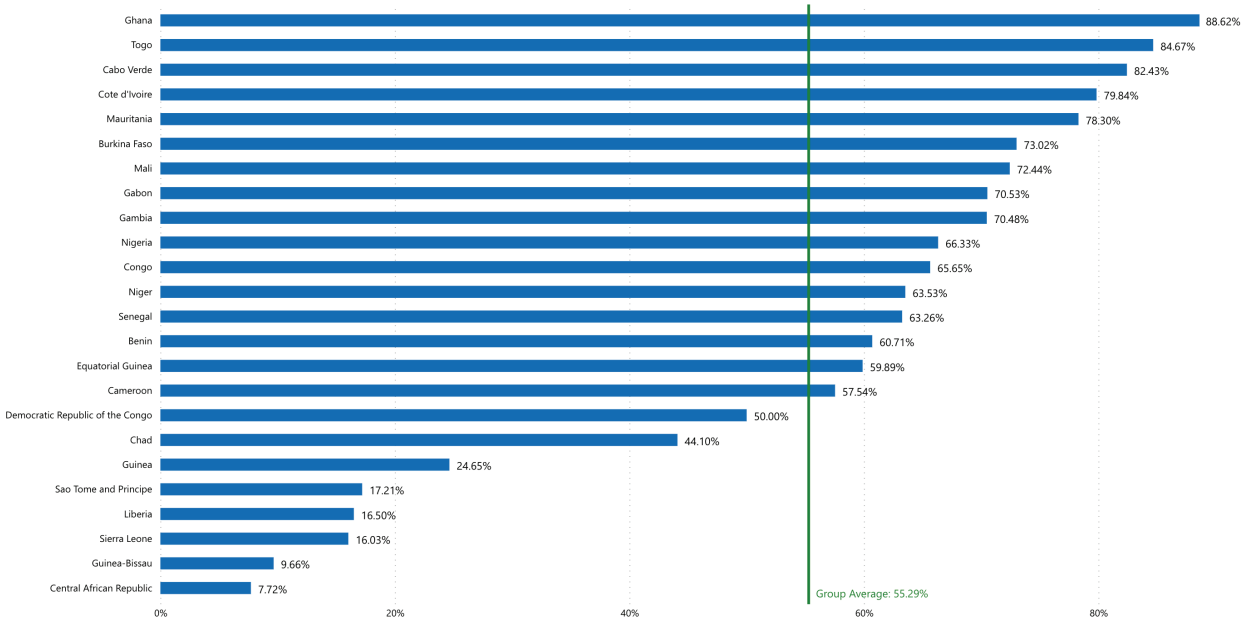
A. Overall Performance

WACAF consists of 24 States. All States in the region have received a USOAP CMA audit. The USOAP score for States in WACAF from the ICAO OLF as at 25/02/2023 is 55.4% which is below the world average of 67.6%. Nine states representing 37.5% have reached the world average target of world average 67.6%. However, for the purpose of data analysis the data in iStars 4.0 2/25/2023 is used.

The current GASP Target is 75% EI. Within this group 5 states have achieved this target representing only 20.83% as follows: 4 states have EI between 75% (incl) and 85% (excl), 1 state between 85% (incl) and 95% (excl), 0 states between 95% (incl) and 100% (excl) and 0 states with EI of 100%.

10 States fall below 60% and 6 states below 30% as per the details in the table below.

USOAP Group Results - WACAF



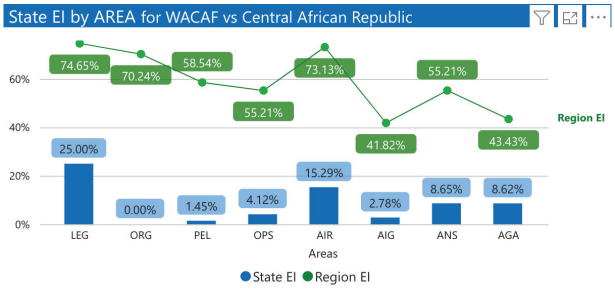
Source: iStars 4.0 25/02/2023

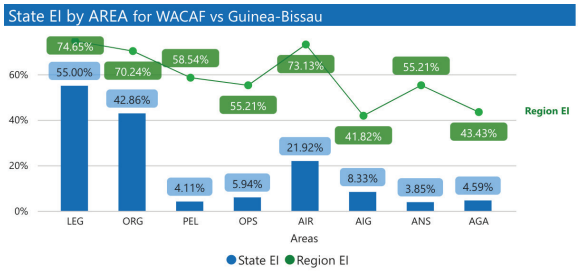
B. Area and Critical Elements

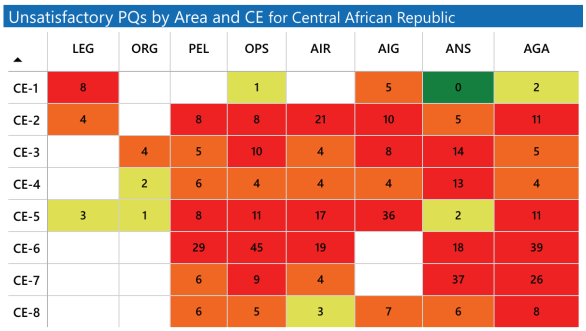
A review, of the 10 WACAF States with EI less than target 60%, of their currently open USOAP protocol findings shows that the highest number of protocol findings concern in:

1. Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Operations (OPS); Air Navigation (ANS), Aerodromes (AGA) and Licensing (PEL) in that order.
2. Technical Personnel and Training (CE-4) in the area Air Navigation (ANS) is particularly bad in all these countries and to a lesser extent in the area of Operations (OPS).
3. Surveillance (CE-7) in the area of Air Navigation (ANS).
4. Organization (CE-3) in the area of Air Navigation (ANS).
5. CE-5 and CE-6 in the area of Airworthiness is also of concern albeit to a lesser extent.

USOAP Results by Area and Critical Element of 4 Worse Performing States

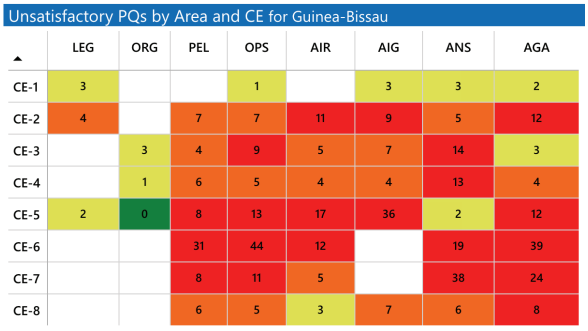






Unsatisfactory PQs by Area and CE for Central African Republic

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	8			1		5	0	2
CE-2	4		8	8	21	10	5	11
CE-3		4	5	10	4	8	14	5
CE-4		2	6	4	4	4	13	4
CE-5	3	1	8	11	17	36	2	11
CE-6			29	45	19		18	39
CE-7			6	9	4		37	26
CE-8			6	5	3	7	6	8

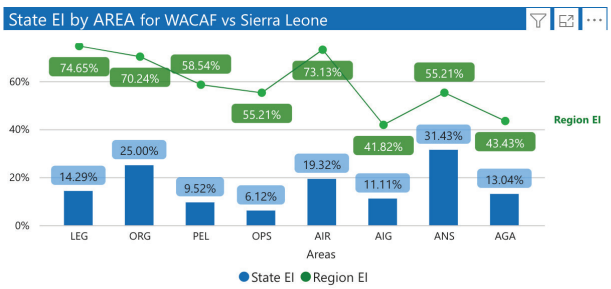


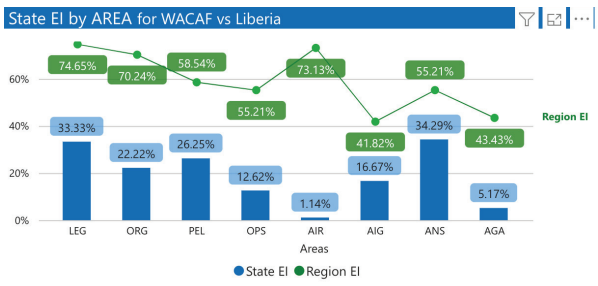
Unsatisfactory PQs by Area and CE for Guinea-Bissau

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	3			1		3	3	2
CE-2	4		7	7	11	9	5	12
CE-3		3	4	9	5	7	14	3
CE-4		1	6	5	4	4	13	4
CE-5	2	0	8	13	17	36	2	12
CE-6			31	44	12		19	39
CE-7			8	11	5		38	24
CE-8			6	5	3	7	6	8

Central African Republic EI 7.72%. No areas and no critical elements are above 60% EI.

Guinea Bissau EI 9.66 %. No areas and no critical elements are above the target of 60% EI.





Unsatisfactory PQs by Area and CE for Sierra Leone

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	11			3		7	0	2
CE-2	4		7	8	23	7	3	12
CE-3		5	4	5	3	8	12	3
CE-4		0	4	4	3	4	9	3
CE-5	3	1	6	14	10	33	2	8
CE-6			15	44	22		15	36
CE-7			1	10	6		28	28
CE-8			1	4	4	5	3	8

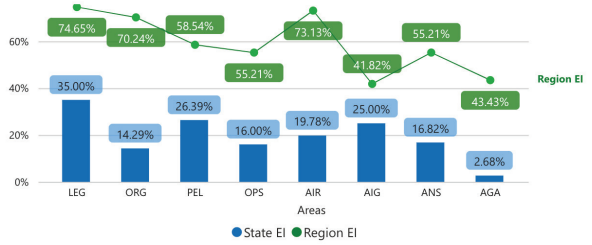
Unsatisfactory PQs by Area and CE for Liberia

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	6			2		7	0	2
CE-2	5		9	8	24	4	1	12
CE-3		6	5	7	5	8	12	5
CE-4		1	4	4	4	4	9	4
CE-5	3	0	9	13	20	32	2	11
CE-6			23	44	24		14	38
CE-7			5	8	6		28	30
CE-8			4	4	4	5	3	8

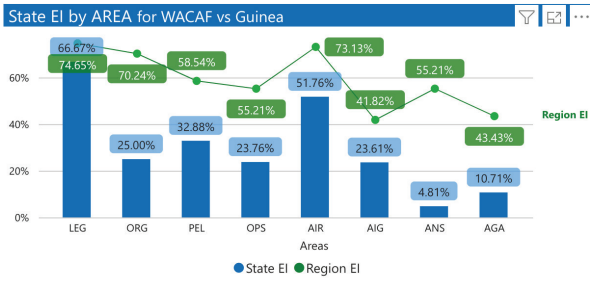
Sierra Leone EI 16.03%. No areas and no critical elements are above 60% EI.

Liberia EI 16.50 %. No areas and no critical elements are above 60% EI.

State EI by AREA for WACAF vs Sao Tome and Principe



State EI by AREA for WACAF vs Guinea



Unsatisfactory PQs by Area and CE for Sao Tome and Principe

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	6			0		0	0	2
CE-2	4		3	7	13	5	3	12
CE-3		4	3	9	6	8	14	5
CE-4		2	5	3	3	4	13	4
CE-5	3	0	5	9	18	31	2	11
CE-6			25	40	21		15	42
CE-7			6	11	7		36	25
CE-8			6	5	5	6	6	8

Unsatisfactory PQs by Area and CE for Guinea

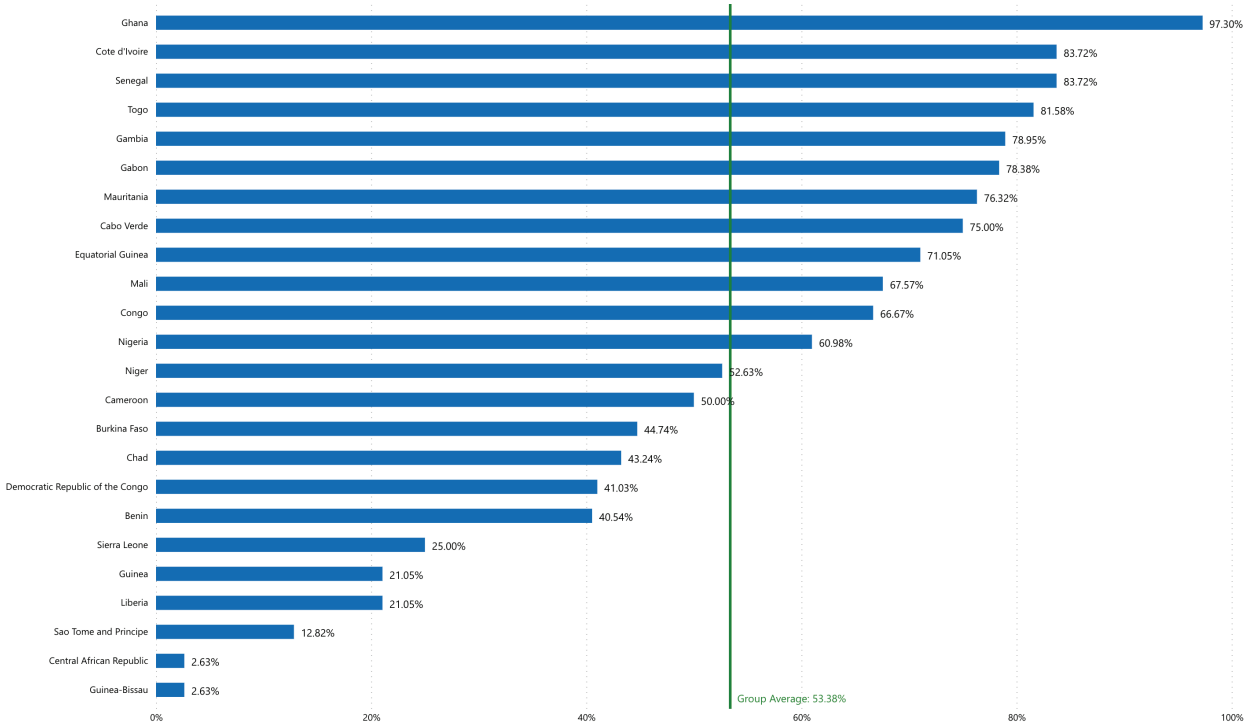
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	5			0		2	2	2
CE-2	1		2	4	3	3	5	9
CE-3		5	2	6	1	8	13	4
CE-4		1	4	3	2	3	13	4
CE-5	1	0	3	5	5	33	2	6
CE-6			25	43	20		19	43
CE-7			7	11	6		39	24
CE-8			6	5	4	6	6	8

Sao Tome and Principe EI 17.21 %. No areas and but one critical element CE1 are above 60% EI.

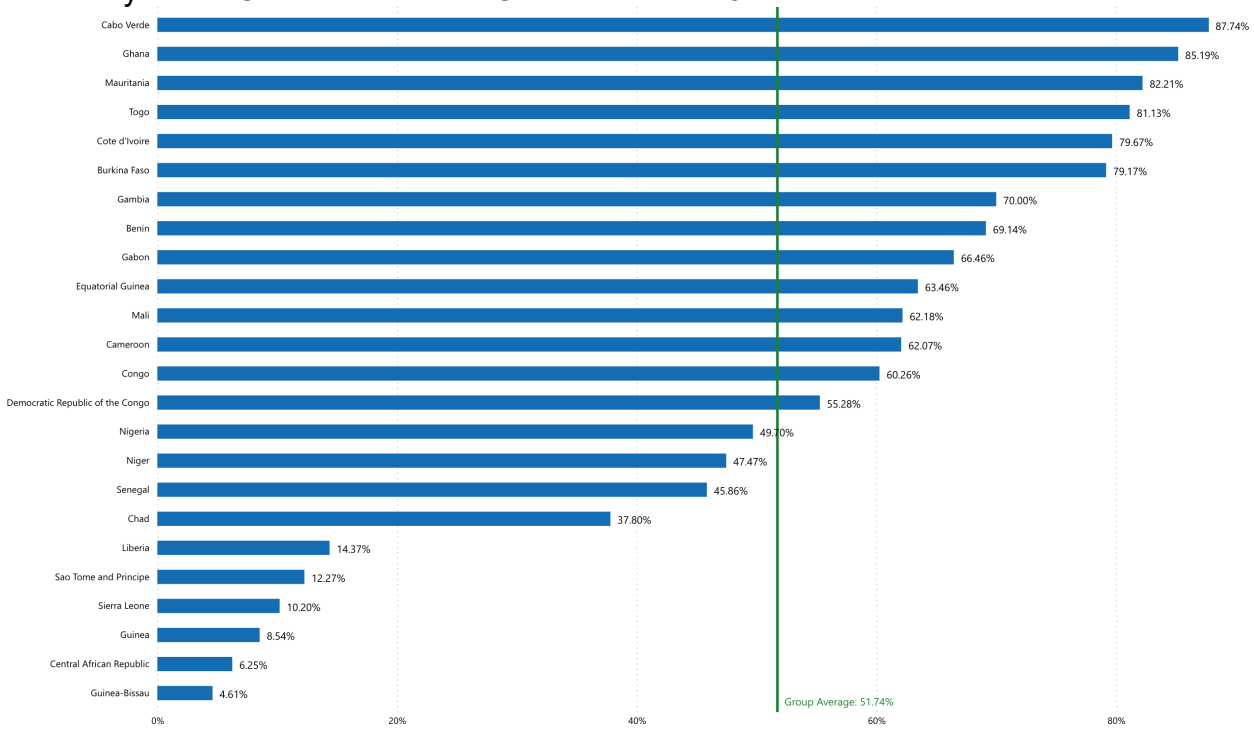
Guinea EI 24.65%. One area LEG and but no critical element is above 60% EI.

Source: iStars 4.0 2/25/2023

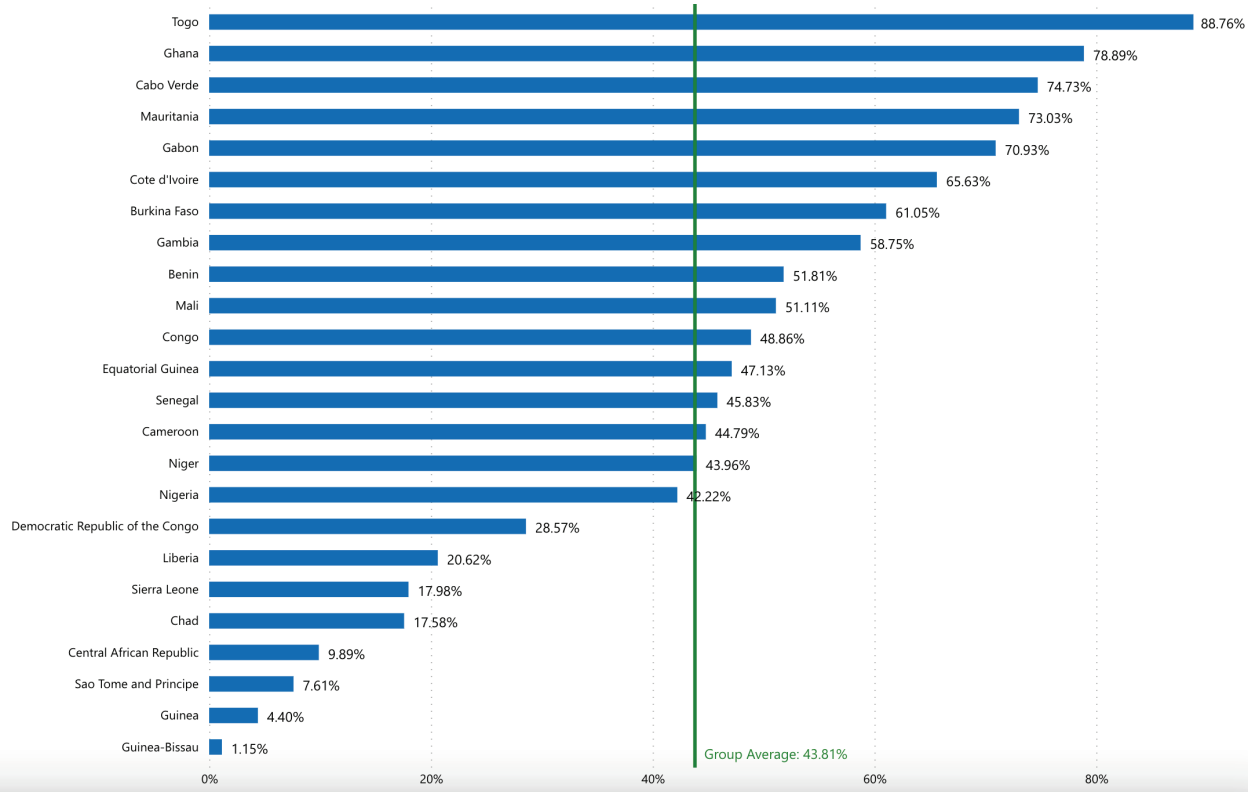
Summary of WACAF State EIs for Critical Element 4



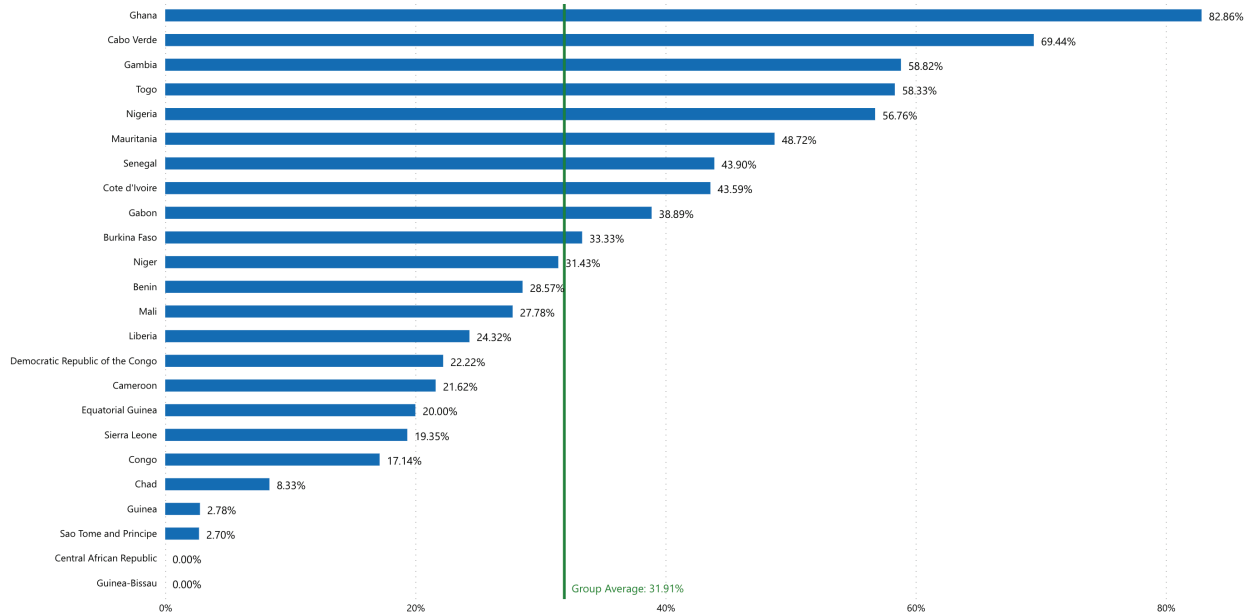
Summary of WACAF State EIs for Critical Element 6



Summary of WACAF State EIs for Critical Element 7



Summary of WACAF State EIs for Critical Element 8

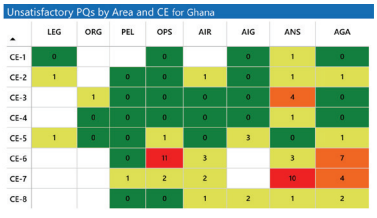


Conclusions of a review of some States with relatively high EIs does not depart from the above observations. Analysis of States, including Ghana, Cape Verde and

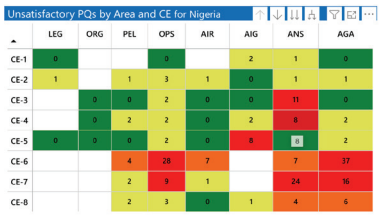
Nigeria, with relatively much higher EIs shows concerns in Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Operations (OPS); Air Navigation (ANS), Aerodromes (AGA) and Licensing (PEL) in that order still dominates. Technical Personnel and Training (CE-4) in the area of Air Navigation (ANS) in Nigeria for instance and Surveillance (CE-7) and RSC (CE 8) in the area of Air Navigation (ANS) are also of concern.

It is important to emphasise that there is a direct correlation between EI in CE 4 and EI in the implementation CEs (CE6, CE7 & CE8). Challenges with Technical Personnel Training has often led to poor implementation of safety Oversight.

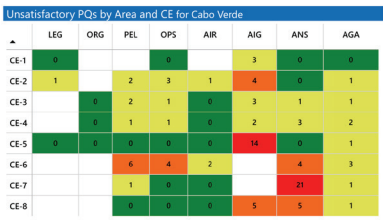
USOAP Results by Area and Critical Element



Ghana EI 89.6%. Notice the challenges are more with ANS, AGA and Ops.



Nigeria EI 66.3%. Notice the challenges are more with ANS, AGA and Ops.



Cape Verde EI 82.4 Notice the challenges are more with ANS, AGA and Ops.

Source: ICAO OLF 26/02/2023

C. PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation

The implementation of Performance-based Navigation (PBN) is presently the global aviation community's highest air navigation priority. The PBN concept offers significant benefits including improved safety through more straight-in instrument approaches with vertical guidance, increased airspace capacity, increased airport accessibility, more efficient operations, reduced infrastructure costs and reduced environmental impact.

Implementation target was set at 100% by 2016. Five WACAF States are yet to achieve the 100% target, namely: Nigeria, Cape Verde, Sao Tome and Principe, Democratic Republic of Congo, and Cameroon.

No WACAF State has an SSC

All WACAF States are at various stages of SSP Foundation and Implementation Levels

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation Summary						
SRL	REGION	COUNTRY	SSC	PBN IMPL	SSP FOUNDATION %	SSP IMPL LEVEL %
1	WACAF	Benin	0	100	78.85	3
2	WACAF	Burkina Faso	0	100	69.11	2
3	WACAF	Cabo Verde	0	0	93.87	2
4	WACAF	Cameroon	0	80	87.27	2
5	WACAF	Central African Republic	0	100	15.23	0
6	WACAF	Chad	0	100	65.05	0
7	WACAF	Congo	0	100	64.39	3
8	WACAF	Côte d'Ivoire	0	100	61.83	3
9	WACAF	Democratic Republic of the Congo	0	77.78	24.71	1
10	WACAF	Equatorial Guinea	0	100	63.22	1
11	WACAF	Gabon	0	100	70.5	3
12	WACAF	Gambia	0	100	81.78	3
13	WACAF	Ghana	0	100	85.61	2
14	WACAF	Guinea	0	100	82.51	0
15	WACAF	Guinea-Bissau	0	100	8.88	0
16	WACAF	Liberia	0	100	50.19	0
17	WACAF	Mali	0	100	65.27	3
18	WACAF	Mauritania	0	100	63.67	3
19	WACAF	Niger	0	100	79.23	1
20	WACAF	Nigeria	0	90.91	94.62	3
21	WACAF	Sao Tome and Principe	0	0	33.97	0
22	WACAF	Senegal	0	100	80.97	1
23	WACAF	Sierra Leone	0	100	23.92	1
24	WACAF	Togo	0	100	90.70	3

These figures may not be up to date per OLF and are for comparative analysis only –

Source: iStars 4.0 2023

26. STATE SAFETY BRIEFING – ESAF USOAP

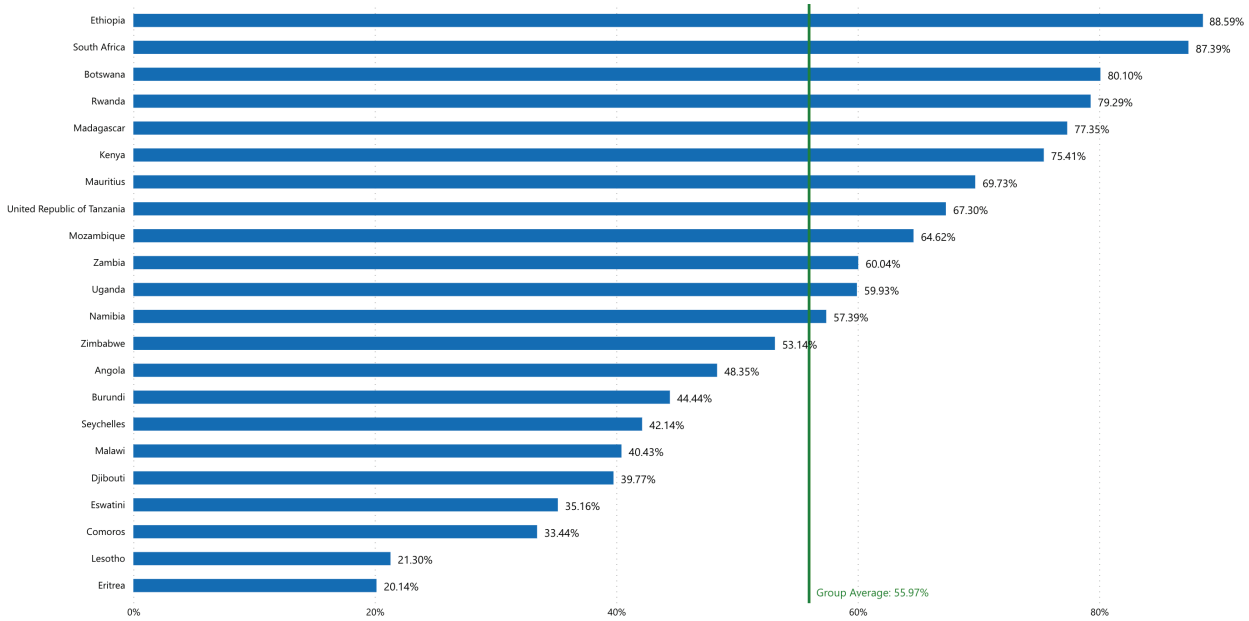
A. Overall

ESAF consists of 24 States. 2 States have not yet received a USOAP audit. The USOAP average score for States in ESAF from the ICAO OLF as at 25/02/2023 is 55.97% which is below the world average of 67.6%. Seven (7) states representing 29.16% have reached the world average of world average 67.6%. However, for the purpose of data analysis the data in iStars 4.0 25/02/2023 is used.

The current GASP Target is 75% EI. Within this group 6 states have achieved this target representing only 25% as follows: 4 states have EI between 75% (incl) and 85% (excl), 2 state between 85% (incl) and 95% (excl), 0 states between 95% (incl) and 100% (excl) and 0 states with EI of 100%.

12 States fall below 60% and 2 states below 30% as per the details in the table below.

USOAP Group Results - ESAF



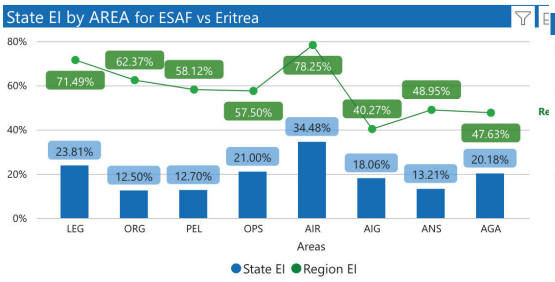
B. Area and Critical Elements

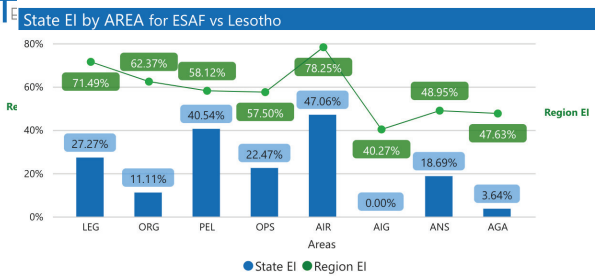
A review, of 6 of the worse ESAF States with EI less than target 60%, of their currently open USOAP protocol findings shows that the highest number of protocol findings concern in:

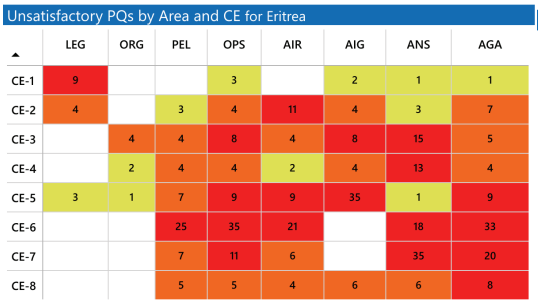
1. Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Operations (OPS); Aerodromes (AGA), Air Navigation (ANS), and Licensing (PEL) in that order.
2. Technical Personnel and Training (CE-4) in the area Air Navigation (ANS) in particularly bad in all these countries. It is curious that finding concerns in CE-4

in the area of Operations (Ops) is not particularly high in these states, yet we have high concerns in certification obligations. This could be due lack of adequate OJT training?

3. Surveillance (CE-7) in the area of Air Navigation (ANS) and Aerodromes (AGA).
4. Organization (CE-3) in the area of Air Navigation (ANS).
5. Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Airworthiness is also of concern albeit to a lesser extent.
6. CE-8 is also of concern for all areas.

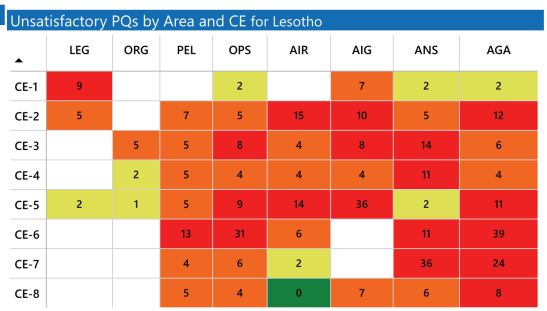






Unsatisfactory PQs by Area and CE for Eritrea

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9			3		2	1	1
CE-2	4		3	4	11	4	3	7
CE-3		4	4	8	4	8	15	5
CE-4		2	4	4	2	4	13	4
CE-5	3	1	7	9	9	35	1	9
CE-6			25	35	21		18	33
CE-7			7	11	6		35	20
CE-8			5	5	4	6	6	8

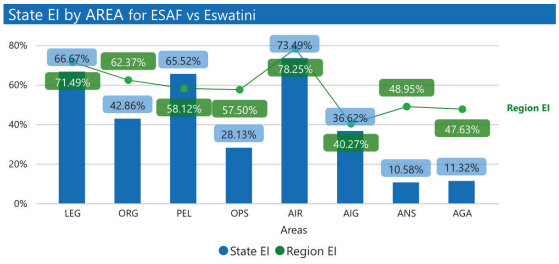


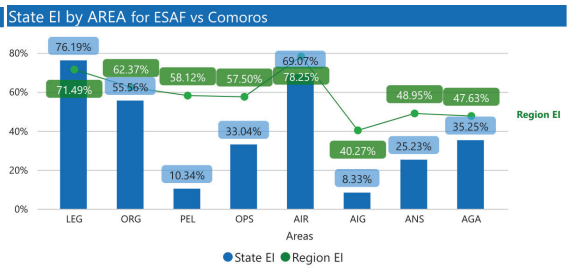
Unsatisfactory PQs by Area and CE for Lesotho

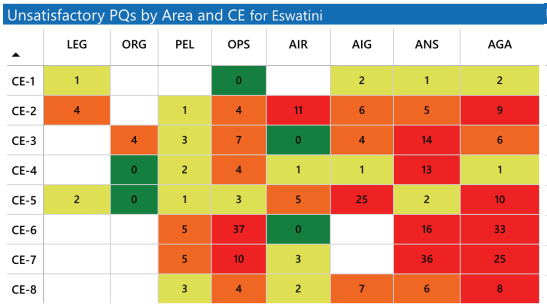
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9			2		7	2	2
CE-2	5		7	5	15	10	5	12
CE-3		5	5	8	4	8	14	6
CE-4		2	5	4	4	4	11	4
CE-5	2	1	5	9	14	36	2	11
CE-6			13	31	6		11	39
CE-7			4	6	2		36	24
CE-8			5	4	0	7	6	8

Eritrea EI 20.14%. No areas and no critical elements are above 60% EI.

Lesotho EI 21.30%. No areas and no critical elements are above 60% EI.

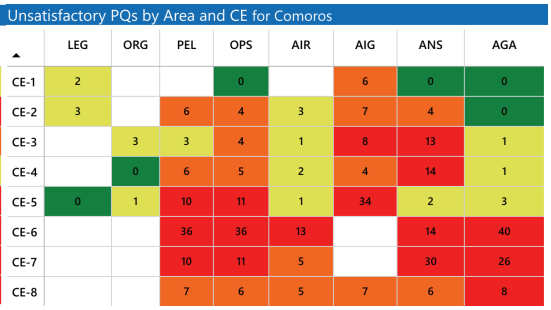






Unsatisfactory PQs by Area and CE for Eswatini

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	1			0		2	1	2
CE-2	4		1	4	11	6	5	9
CE-3		4	3	7	0	4	14	6
CE-4		0	2	4	1	1	13	1
CE-5	2	0	1	3	5	25	2	10
CE-6			5	37	0		16	33
CE-7			5	10	3		36	25
CE-8			3	4	2	7	6	8

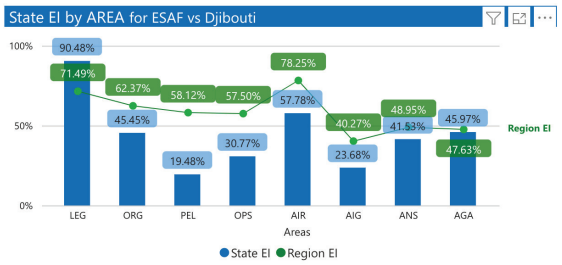


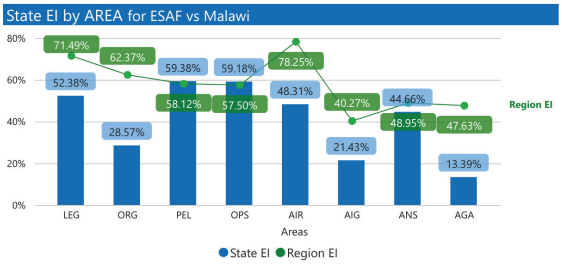
Unsatisfactory PQs by Area and CE for Comoros

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	2			0		6	0	0
CE-2	3		6	4	3	7	4	0
CE-3		3	3	4	1	8	13	1
CE-4		0	6	5	2	4	14	1
CE-5	0	1	10	11	1	34	2	3
CE-6			36	36	13		14	40
CE-7			10	11	5		30	26
CE-8			7	6	5	7	6	8

Eswatini EI 35.16%. 3 areas and one critical elements are above the target of 60% EI.

Comoros EI 33.44%. 2 areas and 2 critical elements are above the target of 60% EI.





Unsatisfactory PQs by Area and CE for Djibouti

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	1			0		3	1	0
CE-2	1		5	4	2	5	2	0
CE-3		3	1	5	3	7	7	2
CE-4		1	4	2	2	3	7	1
CE-5	0	2	6	2	3	34	0	0
CE-6			32	44	21		14	38
CE-7			8	10	4		34	18
CE-8			6	5	3	6	4	8

Unsatisfactory PQs by Area and CE for Malawi

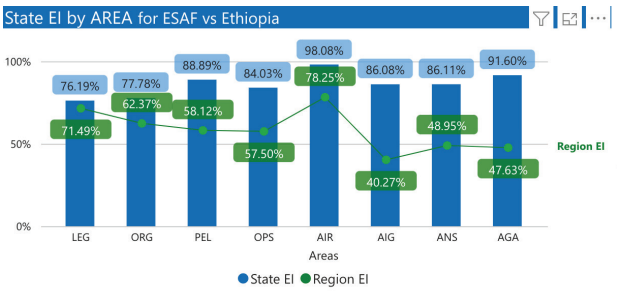
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	6			2		4	0	1
CE-2	3		4	4	10	5	4	10
CE-3		4	2	2	6	5	10	7
CE-4		1	3	1	3	4	10	5
CE-5	1	0	1	6	16	31	2	10
CE-6			8	14	7		6	37
CE-7			4	8	3		21	19
CE-8			4	3	1	6	4	8

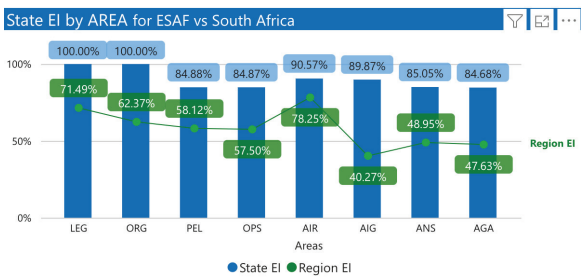
Djibouti EI 39.77%. 1 area and 2 critical elements are above 60% EI.

Malawi EI 40.43%. One area and no critical elements are above of 60% EI.

Source: iStars 4.0 2/25/2023

A review of some States with high EIs do not depart from the above observations. The following States with relatively much higher EIs buttress this argument. Rwanda for instance has a high EI (80.10%) but still has challenges especially in AIG, ANS and AGA whilst Madagascar has challenges of implementation (CE6, CE7, & CE8) in almost all areas.





Unsatisfactory PQs by Area and CE for Ethiopia

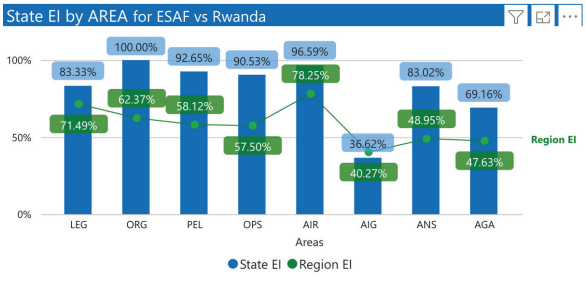
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	1			0		1	0	0
CE-2	4		1	3	2	0	1	1
CE-3		1	0	2	0	0	0	0
CE-4		0	2	3	0	0	1	0
CE-5	0	1	0	2	0	7	0	1
CE-6			4	5	0		1	4
CE-7			1	1	0		11	3
CE-8			1	3	0	3	1	1

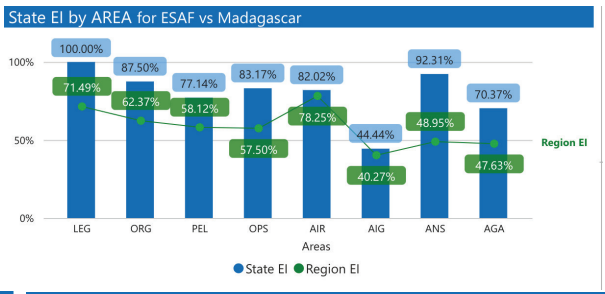
Unsatisfactory PQs by Area and CE for South Africa

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	0			0		4	0	0
CE-2	0		0	0	0	0	1	4
CE-3		0	3	1	0	0	5	0
CE-4		0	3	1	2	1	5	0
CE-5	0	0	0	1	0	1	0	1
CE-6			5	12	3		3	9
CE-7			2	1	2		2	3
CE-8			0	2	8	2	0	2

Ethiopia EI 88.59%. 8 areas and 8 critical elements are above the 60%EI.

South Africa EI 87.39%. 8 areas and 8 critical elements are above the target of 60% EI.





Unsatisfactory PQs by Area and CE for Rwanda

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	1			0		2	1	0
CE-2	2		0	1	1	3	1	3
CE-3		0	0	0	0	3	0	3
CE-4		0	0	0	0	3	1	2
CE-5	0	0	0	1	0	28	0	3
CE-6			2	4	0		2	9
CE-7			3	1	0		12	10
CE-8			0	2	2	6	1	3

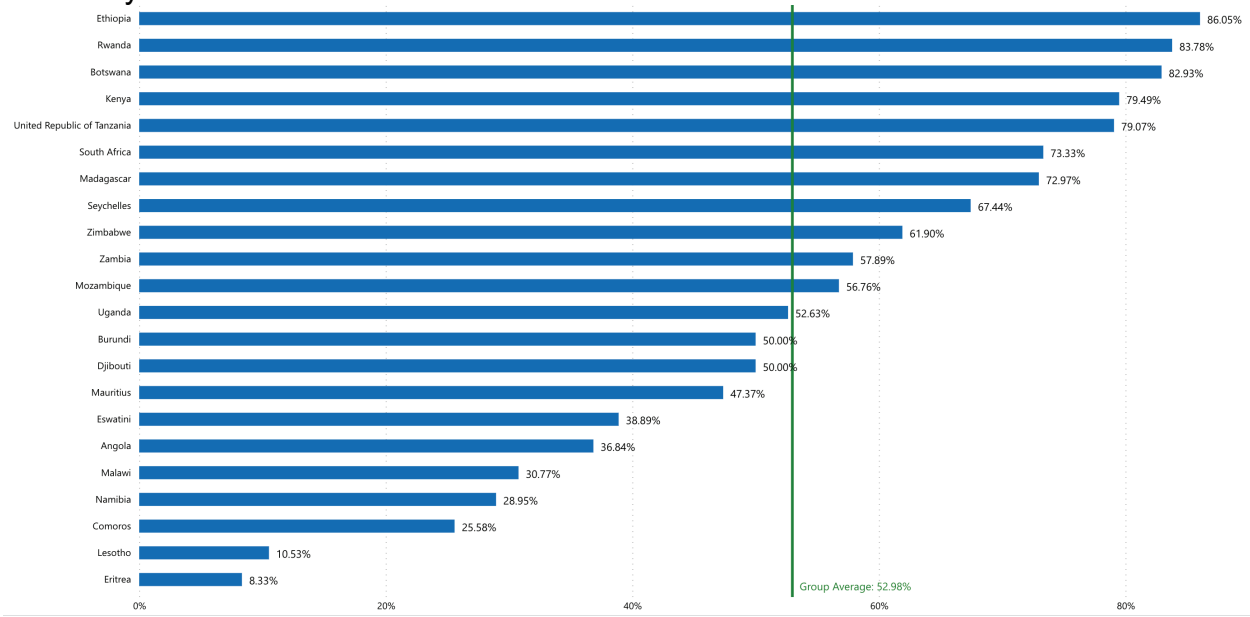
Unsatisfactory PQs by Area and CE for Madagascar

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	0			0		0	0	0
CE-2	0		0	0	0	4	0	0
CE-3		1	0	1	2	6	2	0
CE-4		0	2	1	2	4	0	1
CE-5	0	0	0	2	0	20	0	0
CE-6			5	6	5		1	19
CE-7			5	4	4		4	8
CE-8			4	3	3	6	1	4

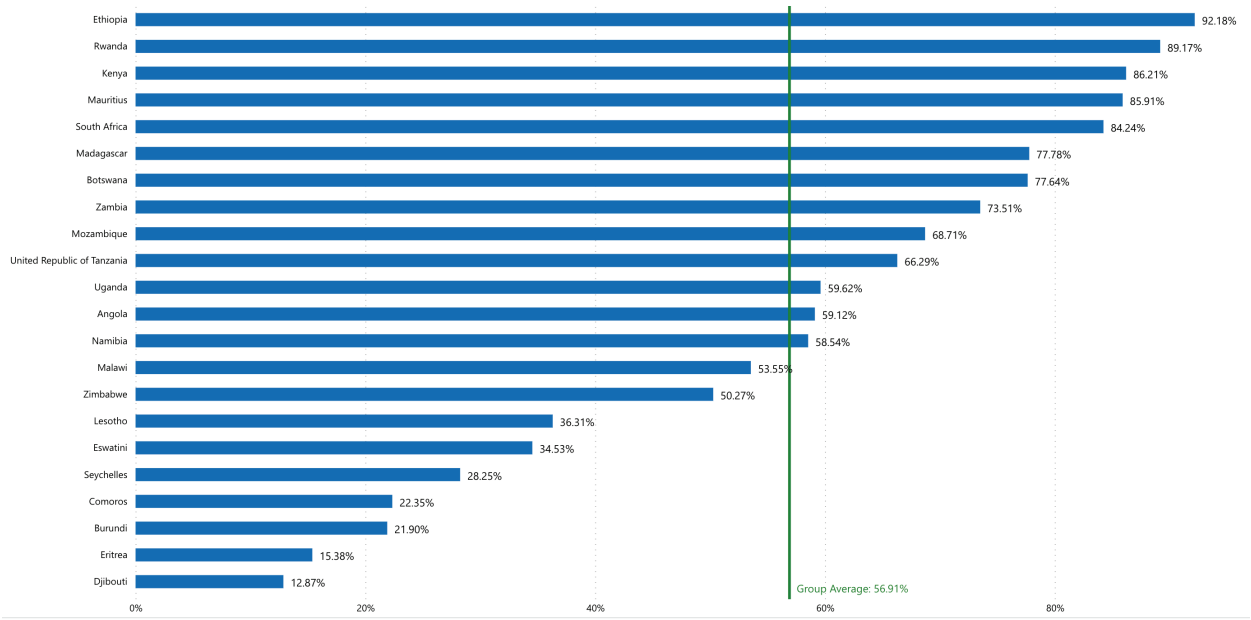
Rwanda EI 80.10%. 7 areas and 8 critical elements are above 60% EI.

Madagascar EI 77.35%. 7 areas and 7 critical elements are above 60% EI.

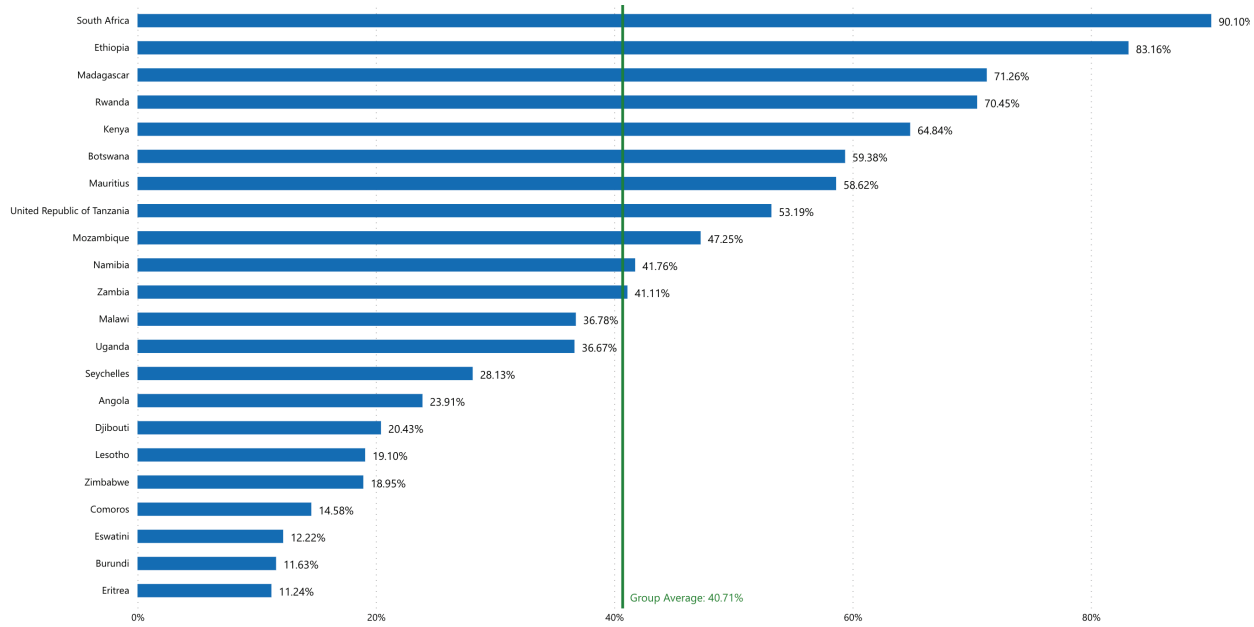
Summary of ESAF State EIs for Critical Element 4



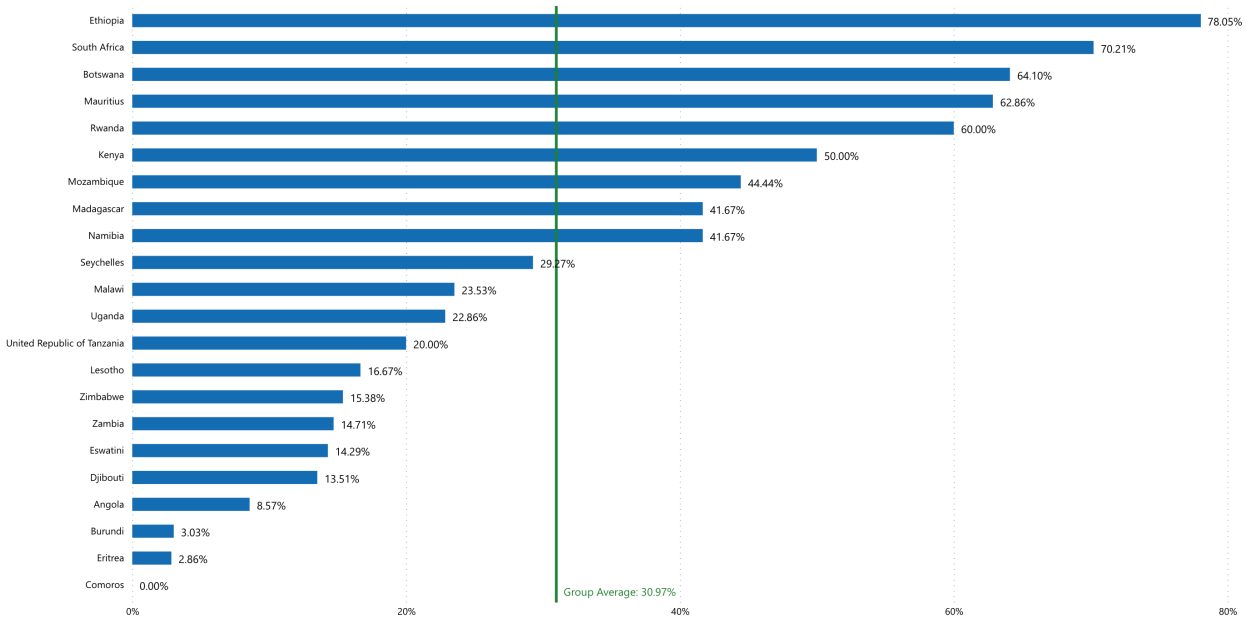
Summary of ESAF State EIs for Critical Element 6



Summary of ESAF State EIs for Critical Element 7



Summary of ESAF State EIs for Critical Element 8



Source: iStars 4.0 2/25/2023

C. PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation

PBN implementation target was set at 100% by 2016. 7 ESAF States are yet to achieve the 100% target, namely: Angola, Burundi, Eswatini, Madagascar, South African, Zambia and Zimbabwe. Somalia and South Sudan have not been assessed.

No ESAF State currently is on SSC

All ESAF States are at various stages of SSP Foundation and Implementation Levels

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation Summary - ESAF						
SRL	**REGION**	**COUNTRY**	**SSC**	**PBN IMPL**	**SSP FOUNDATION**	**SSP IMPL LEVEL %**
1	ESAF	Angola	0	75%	39.61%	1
2	ESAF	Botswana	0	100%	45.04%	2
3	ESAF	Burundi	0	0%	20.36%	1
4	ESAF	Comoros	0	100%	30.77%	1
5	ESAF	Djibouti	0	100%	26.36%	1
6	ESAF	Eritrea	0	100%	75.48%	0
7	ESAF	Eswatini	0	0%	29.57%	1
8	ESAF	Ethiopia	0	100%	85.99%	2
9	ESAF	Kenya	0	100%	77.69%	3
10	ESAF	Lesotho	0	100%	16.36%	0

11	ESAF	Madagascar	0	75%	59.85.4%	3
12	ESAF	Malawi	0	100%	46.33%	0
13	ESAF	Mauritius	0	100%	96.33%	3
14	ESAF	Mozambique	0	100%	40.3%	1
15	ESAF	Namibia	0	100%	65%	3
16	ESAF	Rwanda	0	100%	69.3%	4
17	ESAF	Seychelles	0	100%	72.36%	1
18	ESAF	Somalia				
19	ESAF	South Africa	0	92.86%	95.13%	3
20	ESAF	South Sudan				
21	ESAF	Uganda	0	100%	73.54%	2
22	ESAF	United Republic of Tanzania	0	100%	68.32%	3
23	ESAF	Zambia	0	75%	53.78%	3
24	ESAF	Zimbabwe	0	0%	66.03%	2

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation in ESAF – Source iStars

27. STATE SAFETY BRIEFING – EUR USOAP

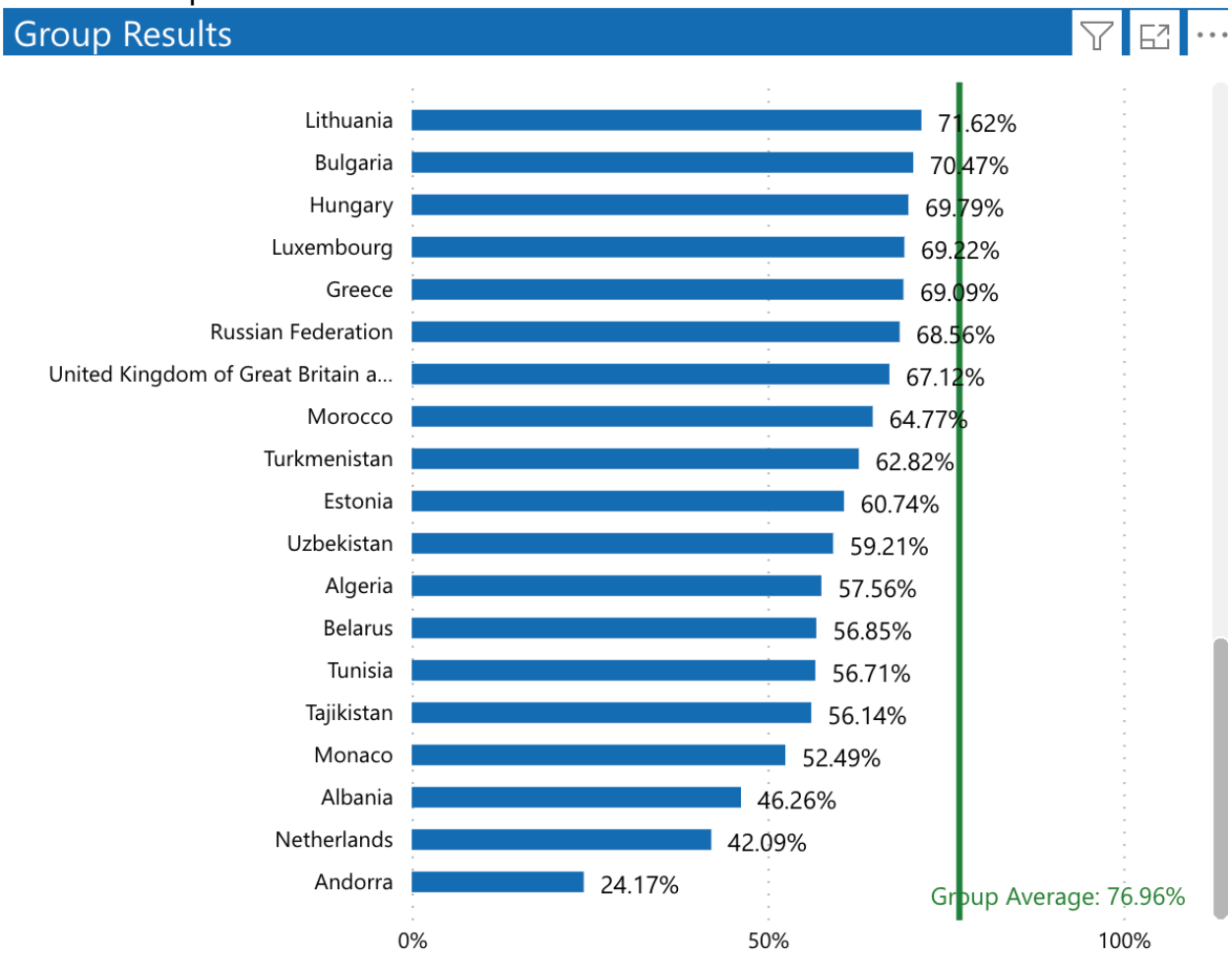
A. Overall Performance

There are 3 AFI States in the EUR/NAT region. All three are below the regional average of 76.96%. Two of the 3 AFI States within the EUR region are below the target 60% EI as follows: Algeria 57.56%; Tunisia 56.71%; and Morocco 64.77%

The current GASP Target is 75% EI. Among these 3, no state has achieved this GASP target

12 States fall below 60% and 2 states below 30% as per the details in the table below.

USOAP Group Results - EUR

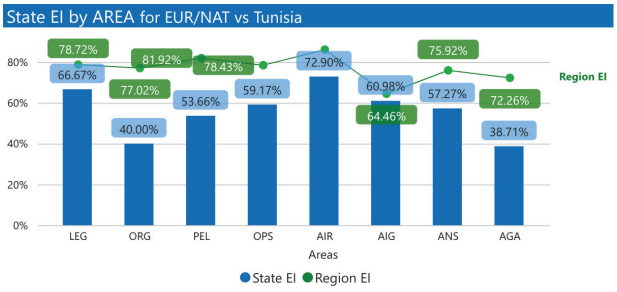


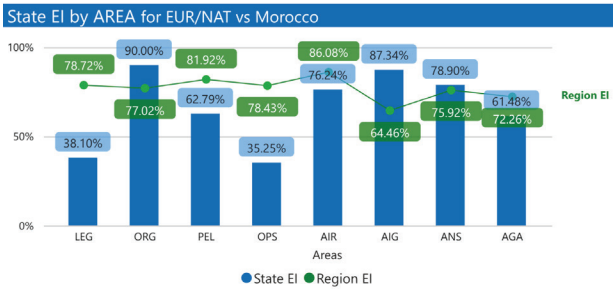
B. Area and Critical Elements

A review, of the 3 AFI – EUR States, of their currently open USOAP protocol findings shows that the highest number of protocol findings concern in:

1. Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Aerodromes (AGA); Operations (OPS); and Licensing (PEL) in that order.
2. Technical Personnel and Training (CE-4) in the area Air Navigation (ANS) in particularly bad in all these countries and to a lesser extent in the area of Operations (OPS).
3. Surveillance (CE-7) in the area of Air Navigation (ANS) and Aerodromes (AGA).
4. Organization (CE-3) in the area of Air Navigation (ANS).
5. Tools (CE-5) in the area of AIG and Operations (OPS) is also of concern albeit to a lesser extent.

USOAP Results by Area and Critical Element





Unsatisfactory PQs by Area and CE for Tunisia

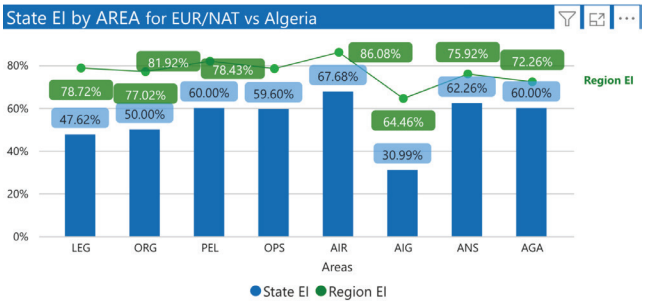
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	5			1		8	2	1
CE-2	2		7	5	6	2	1	2
CE-3		4	1	5	0	3	6	1
CE-4		1	1	2	2	4	13	4
CE-5	0	1	4	7	3	11	0	3
CE-6			14	19	8		7	38
CE-7			7	9	5		17	21
CE-8			4	5	5	4	1	6

Unsatisfactory PQs by Area and CE for Morocco

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	9			1		3	0	1
CE-2	3		6	4	5	3	4	6
CE-3		1	3	5	0	2	4	1
CE-4		0	6	2	2	0	2	3
CE-5	1	0	2	13	6	2	0	2
CE-6			8	38	7		2	18
CE-7			2	10	2		10	12
CE-8			5	6	2	0	1	4

Tunisia EI 56.71%. 3 areas and 3 critical elements are above 60% EI.

Morocco EI 64.77%. 6 areas and 6 critical elements are above 60% EI.



Unsatisfactory PQs by Area and CE for Algeria

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	5			0		7	0	1
CE-2	5		4	5	7	9	2	5
CE-3		4	3	6	3	4	12	4
CE-4		0	6	4	4	3	13	5
CE-5	1	0	4	5	2	22	1	3
CE-6			7	10	8		3	12
CE-7			3	5	4		9	10
CE-8			1	5	4	4	0	6

Algeria EI 57.56 %. 5 areas and 3 critical elements are above 60% EI.

Source: iStars 4.0 26/02/2023

Summary of AFI EUR/NAT State EIs for Critical Element 4
Algeria – 10.26%
Tunisia – 38.64%
Morocco – 65.12%

Summary of AFI EUR/NAT State EIs for Critical Element 6
Algeria – 60.32%
Tunisia – 53.26%
Morocco – 60.75%

Summary of AFI EUR/NAT State EIs for Critical Element 7
Algeria – 66.35
Tunisia – 38.54%
Morocco – 62.11%

Summary of AFI EUR/NAT State EIs for Critical Element 8
Algeria – 45.95%
Tunisia – 40.48%
Morocco – 57.14%

C. PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation

Implementation target was set at 100% by 2016. None of the 3 AFI States in the EUR/NAT region has achieved the 100% target. Morocco is at 58.33%, Algeria 5.71%, and Tunisia is at 0.0%

No ESAF State has an SSC

All ESAF States are at various stages of SSP Foundation and Implementation Levels

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation Summary						
SRL	**REGION**	**COUNTRY**	**SSC**	**PBN IMPL**	**SSP FOUNDATION %**	**SSP IMPL LEVEL %**
1	EUR	Algeria	0	5.71	45.42	0
2	EUR	Tunisia	0	0	70.99	0
3	EUR	Morocco	0	58.33	73.41	2

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation in EUR/NAT

Source iStars 4.0 28/02/2023

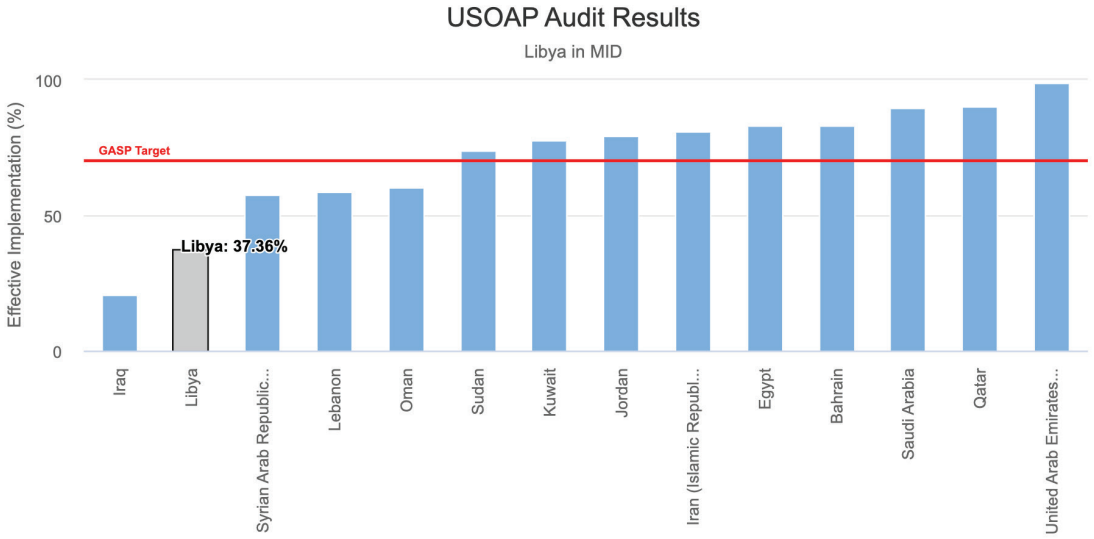
28. STATE SAFETY BRIEFING – MID USOAP

A. Overall Performance

There are 3 AFI States in the RASG-MID region. All three are below the regional average of 74.71%. Two of the 3 AFI States within the MID region are above 60% EI as follows: Libya 37.36%; Sudan 73.96%; and Egypt 83.13%

The current GASP Target is 75% EI. Among these, only one state has achieved this target.

USOAP Group Results – RASG-MID

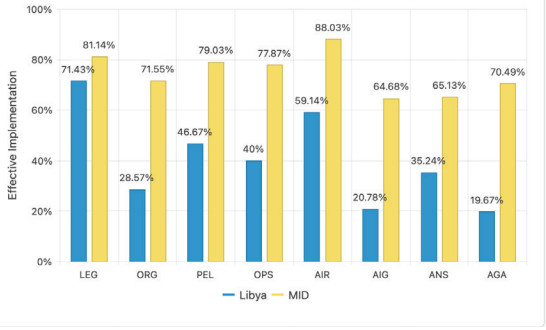


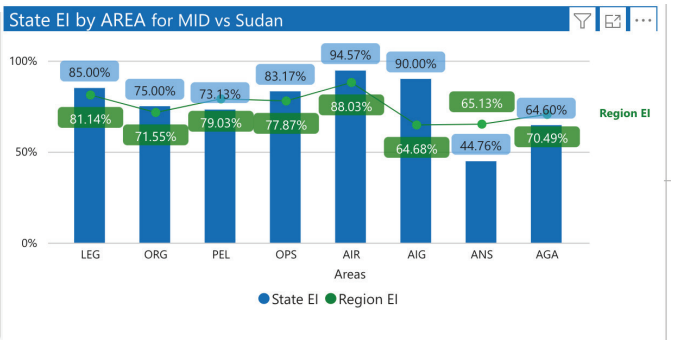
B. Area and Critical Elements

A review, of the 3 AFI – MID States, of their currently open USOAP protocol findings shows that the highest number of protocol findings concern in:

1. Licensing, Certification, Authorization and Approval Obligations (CE-6) in the area of Operations (OPS); Aerodromes (AGA); and Air Navigation (ANS) in that order.
2. Technical Personnel and Training (CE-4) in the area Air Navigation (ANS) in particularly bad in all these countries
3. Surveillance (CE-7) in the area of Air Navigation (ANS) and Aerodromes (AGA).
4. Organization (CE-3) in the area of Air Navigation (ANS).
5. Tools (CE-5) in the area of AIG and Air Navigation (ANS) is also of concern albeit to a lesser extent.

USOAP Results by Area and Critical Element





Unsatisfactory PQs by Area and CE for Libya

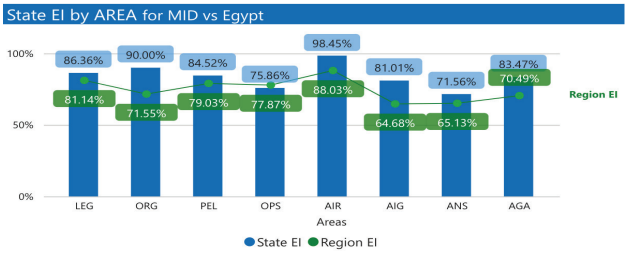
	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	2			0		3	1	2
CE-2	3		2	6	5	6	2	13
CE-3		3	3	4	4	7	9	4
CE-4		2	5	3	2	4	13	4
CE-5	1	0	1	4	8	35	1	8
CE-6			19	32	12		13	38
CE-7			5	10	5		23	22
CE-8			5	4	2	6	6	7

Libya EI 37.36 %. 1 area and 1 critical element are above the 60% EI.

Unsatisfactory PQs by Area and CE for Sudan

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	0			1		1	0	1
CE-2	2		1	1	2	1	1	4
CE-3		2	0	1	0	2	7	0
CE-4		0	3	2	0	2	11	2
CE-5	1	0	2	1	0	1	0	6
CE-6			4	3	0		7	11
CE-7			3	3	2		26	10
CE-8			5	5	1	0	6	6

Sudan EI 73.96%. 7 areas and 5 critical elements are above 60% EI.



Unsatisfactory PQs by Area and CE for Egypt

	LEG	ORG	PEL	OPS	AIR	AIG	ANS	AGA
CE-1	2			0		7	3	0
CE-2	1		0	0	0	2	2	0
CE-3		1	0	3	0	1	1	0
CE-4		0	3	0	0	0	5	6
CE-5	0	0	1	2	0	1	0	1
CE-6			3	13	2		3	9
CE-7			4	7	0		15	2
CE-8			2	3	0	4	2	2

Egypt EI 83.13%. 8 areas and 7 critical elements are above 60% EI.

Source: iStars 4.0 28/02/2023

Summary of AFI MID State EIs for Critical Element 4
Egypt – 70.33%
Libya – 15.38%
Sudan -

Summary of AFI MID State EIs for Critical Element 6
Egypt – 84.13%
Libya – 31.33%
Sudan -

Summary of AFI MID State EIs for Critical Element 7
Egypt – 70.83%
Libya – 27.78%
Sudan -

Summary of AFI MID State EIs for Critical Element 8
Egypt – 69.05%
Libya – 16.67%
Sudan –

C. PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation

Implementation target was set at 100% by 2016. Two States (Egypt and Sudan) of the 3 AFI States in the MID region have achieved the 100%. Libya is at 0.0%

No MID State has an SSC

All MID States are at various stages of SSP Foundation and Implementation

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation Summary						
SRL	**REGION**	**COUNTRY**	**SSC**	**PBN IMPL**	**SSP FOUNDATION %**	**SSP IMPL LEVEL %**
1	MID	Libya	0	0	79.25	2
2	MID	Sudan	0	100	73.28	3
3	MID	Egypt	0	100	91.54	2

PBN Implementation, Significant Safety Concerns (SSC), SSP Implementation in MID –

Source: iStars 4.0 28/02/2023

29. SAFETY PARTNER PROGRAMMES – AFI REGION

The Federal Aviation Administration (FAA) rates States through their International Aviation Safety Audit (IASA) programme. The FAA does not allow air carriers from category 2 States to operate to the United States of America.

In Africa, 1 State is rated Category 2: Ghana

The European Commission can decide to ban certain airlines from operating in European airspace, if they are found to be unsafe and/or they are not sufficiently overseen by their authorities.

In Africa, 15 States have operational restrictions with regard to European airspace: **Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Liberia, Libya, Nigeria, Angola, Congo, Gabon, Sudan, Sao Tome and Principe, Sierra Leone, Zimbabwe, Comoros**

30. STAFF NEEDS ASSESSMENT

Data on "Staff needs assessment" was compiled by the previous consultant based on questionnaire sent out to member states of AFI. The responses have been incomplete in some instances and **NO** responses from the AFI MID and AFI EUR/NAT and are summarized as follows:

Number of Responses

ESAF	Number	%
Response provided	5	21%
Response pending	19	79%
WACAF		
Response provided	19	79%
Response pending	5	21%
Total	48	100%

Data Completeness

ESAF	Number	%
Data complete	1	20%
Data missing	4	80%
WACAF		
Data complete	9	47%
Data missing	10	53%
Total	24	100%

The data from the respondents is relatively low and sometimes incomplete. Some states for instance provided data on current numbers for ANS but not on required numbers. The table is extrapolated nonetheless, and an analysis is made below putting the data together for the AFI region.

An analysis of the Staffing Needs Assessment

Strategic Objective	Lowest Staff Size	Highest Staff Size	Lowest Staffing Gap	Highest Staffing Gap
Safety (A)	AIG	ANS	PEL	AGA
Air Navigation Capacity and Efficiency (B)	PANS-OPS	AOP	AIM/CHART	AOP
Security and Facilitation (C)	FAL	SEC	SEC	FAL
Economic Development (D) and Environmental Protection (E)	ENV	AT	LEG	AT

*AOP – Aerodrome Operational Planning

Details of Responses – Strategic Objective A

WACAF Staff Needs Reponses – Flight Standards (Safety) & AIG

	PEL			OPS			AIR			AIG		
State	Current staff (total)_ PEL	Required staff_PEL	Gap_PEL	Current staff (total)_ OPS	Required staff_OPS	Gap_OPS	Current staff (total)_ AIR	Required staff_ AIR	Gap_ AIR	Current staff (total)_ AIG	Required staff_ AIG	Gap_ AIG
Benin	1	2	1	6	3	-3	5	3	-2	8	5	-3
Burkina Faso	1	2	1	3	4	1	2	3	1	0	1	1
Cabo Verde	2	2	0	1	2	1	3	5	2	2	4	2
Cameroon	6	5	-1	12	8	-4	14	7	-7	3	4	1
Central African Republic	2	2	0	5	4	-1	5	5	0	0	4	4
Chad	3	3	0	3	9	6	3	7	4			0
Congo	5	10	5	4	8	4	8	12	4	5	11	6
Côte d'Ivoire	3	7	4	5	5	0	4	7	3	2	4	2
Democratic Republic of the Congo	8	25	17	14	40	26	9	28	19	0	15	15
Equatorial Guinea			0			0			0			0
Gabon	4	5	1	4	5	1	7	8	1	0	4	4
Gambia	4	4	0	3	3	0	6	6	0	0	0	0
Ghana	4	3	-1	13	14	1	12	12	0	1	40	39
Guinea			0			0			0			0
Guinea-Bissau	3	3	0	1	3	2	2	3	1	2	3	1
Liberia	1	3	2	2	6	4	4	4	0	0	0	0
Mali	3	3	0	3	4	1	4	3	-1	1	1	0
Mauritania			0			0			0			0
Niger			0			0			0			0
Nigeria			0			0			0			0
Sao Tome and Principe			0			0			0			0
Senegal	4	7	3	6	4	-2	6	9	3	8	3	-5
Sierra Leone	3	5	2	5	10	5	5	10	5	1	4	3
Togo	4	4	0	6	6	0	4	4	0	6	10	4
Total	79	124	45	134	172	38	103	136	33	39	113	74
Extrapolation	105	165	60	178	229	50	137	181	44	52	150	98

WACAF Staff Needs Reponses – ANS

	ANS												
State	Current staff (total)_ATM/SAR	Required staff_ATM/SAR	Current staff (total)_PANS-OPS	Required staff_PANS-OPS	Current staff (total)_AIM/CHART	Required staff_AIM/CHART	Current staff (total)_CNS	Required staff_CNS	Current staff (total)_MET	Required staff_MET	Current staff (total)_ANS	Required staff_ANS	Gap_ANS
Benin	1	1	1	1	1	1	1	1	1	1	5	5	0
Burkina Faso	1	2	1	1	1	1	2	1	0	1	5	6	1
Cabo Verde	0	0	1	1	0	0	0	1	0	0	1	2	1
Cameroon	3	3	0	0	3	3	4	4	3	4	13	14	1
Central African Republic	0	4	5	10	6	5	6	5	0	2	17	26	9
Chad	1	1	1	1	1	1	1	1	1	1	5	5	0
Congo	3	4	0	2	4	4	1	3	0	3	8	16	8
Côte d'Ivoire	3	2	2	3	2	3	3	3	2	2	12	13	1
Democratic Republic of the Congo	0	20	0	5	0	10	0	15	0	4	0	54	54
Equatorial Guinea											0	0	0
Gabon	3	3	1	2	5	7	2	2	1	2	12	16	4
Gambia	0		2				0		2	2	4	2	-2
Ghana	2	2	2	1	2	2	1	2	1	2	8	9	1
Guinea											0	0	0
Guinea-Bissau	1	1	0	1	1	1	0	1	1	1	3	5	2
Liberia		1		1	1	2	2	2		1	3	7	4
Mali	3	3	1	2	1	2	1	2	1	1	7	10	3
Mauritania											0	0	0
Niger											0	0	0
Nigeria											0	0	0
Sao Tome and Principe											0	0	0
Senegal	5	3	2	1	2	1	2	2	2	2	13	9	-4
Sierra Leone	1	2	1	1	1	1	2	2	2	2	7	8	1
Togo	4	2	3	1	1	1	1	1	1	1	10	6	-4
Total	31	54	23	34	32	45	29	48	18	32	133	213	80
Extrapolation	41.3333333	72	30.6666667	45.3333333	42.6666667	60	38.6666667	64	24	42.6666667	177.333333	284	106.666667

WACAF Staff Needs Responses – AGA

	AGA										
State	Current staff (total)_Civil Engineering	Required staff_Civil Engineering	Current staff (total)_Electrical Engineering	Required staff_Electrical Engineering	Current staff (total)_Operations	Required staff_Operations	Current staff (total)_RFF/Wildlife Mgmt	Required staff_RFF/Wildlife Mgmt	Current staff (total)_AGA	Required staff_AGA	Gap_AGA
Benin	1	1	1	1	1	1	1	1	4	4	0
Burkina Faso	1	1	1	1	1	1	0	1	3	4	1
Cabo Verde	1	1	1	1	1	1	0	0	3	3	0
Cameroon	3	2	1	2	2	2	2	2	8	8	0
Central African Republic	1	3	0	4	2	5	0	4	3	16	13
Chad									0	0	0
Congo	2	3	2	2	0	3	2	4	6	12	6
Côte d'Ivoire	2	3	2	2	0	2	1	2	5	9	4
Democratic Republic of the Congo	0	10	0	10	0	10	0	5	0	35	35
Equatorial Guinea									0	0	0
Gabon	3	3	1	2	1	2	1	2	6	9	3
Gambia	0		0		4	4	0		4	4	0
Ghana	1	1	1	1	1	1	1	1	4	4	0
Guinea									0	0	0
Guinea-Bissau	2	1	0	1	0	1	0	1	2	4	2
Liberia	1	1	1	1					2	2	0
Mali	2	3	1	2	1	2	1	2	5	9	4
Mauritania									0	0	0
Niger									0	0	0
Nigeria									0	0	0
Sao Tome and Principe									0	0	0
Senegal	1	1	2	1	3	3	1	1	7	6	-1
Sierra Leone	2	2	0	1	1	1	0	1	3	5	2
Togo	2	1	0	1	3	2	0	1	5	5	0
Total	25	37	14	33	21	41	10	28	70	139	69
Extrapolation	33.33333333	49.33333333	18.66666667	44	28	54.66666667	13.33333333	37.33333333	93.33333333	185.3333333	92

ESAF Staff Needs Reponses – Flight Standards & AIG

	PEL			OPS			AIR			AIG		
State	Current staff (total)_PEL	Required staff_PEL	Gap_PEL	Current staff (total)_OPS	Required staff_OPS	Gap_OPS	Current staff (total)_AIR	Required staff_AIR	Gap_AIR	Current staff (total)_AIG	Required staff_AIG	Gap_AIG
Angola			0			0			0			0
Botswana			0			0			0			0
Burundi			0			0			0			0
Comoros	2	4	2	4	6	2	2	4	2			0
Djibouti			0			0			0			0
Eritrea			0			0			0			0
Eswatini			0			0			0			0
Ethiopia			0			0			0			0
Kenya			0			0			0			0
Lesotho			0			0			0			0
Madagascar			0			0			0			0
Malawi			0			0			0			0
Mauritius			0			0			0			0
Mozambique	8	11	3	4	8	4	7	12	5	4	6	2
Namibia			0			0			0			0
Rwanda			0			0			0			0
Seychelles	1	2	1	18		-18			0			0
Somalia	2	6	4	5	9	4	2	4	2	1	4	3
South Africa			0			0			0			0
South Sudan			0			0			0			0
Uganda	5	6	1	7	11	4	9	17	8	1	4	3
United Republic of Tanzania			0			0			0			0
Zambia			0			0			0			0
Zimbabwe			0			0			0			0
Total	18	29	11	38	34	-4	20	37	17	6	14	8
Extrapolation	86.4	139.2	52.8	182.4	163.2	-19.2	96	177.6	81.6	28.8	67.2	38.4

ESAF Staff Needs Reponses – ANS

	ANS										
State	Current staff (total)_PANS-OPS	Required staff_PANS-OPS	Current staff (total)_AIM/ CHART	Required staff_AIM/ CHART	Current staff (total)_CNS	Required staff_CNS	Current staff (total)_MET	Required staff_MET	Current staff (total)_ANS	Required staff_ANS	Gap_ANS
Angola									0	0	0
Botswana									0	0	0
Burundi									0	0	0
Comoros	0	1	0	2	0	1	0	1	0	5	5
Djibouti									0	0	0
Eritrea									0	0	0
Eswatini									0	0	0
Ethiopia									0	0	0
Kenya									0	0	0
Lesotho									0	0	0
Madagascar									0	0	0
Malawi									0	0	0
Mauritius									0	0	0
Mozambique	1	2	4	4	2	2	1	2	8	10	2
Namibia									0	0	0
Rwanda									0	0	0
Seychelles									0	0	0
Somalia	0	1	1	1	1	1	1	1	3	4	1
South Africa									0	0	0
South Sudan									0	0	0
Uganda			1	1	1	1	1	2	3	4	1
United Republic of Tanzania									0	0	0
Zambia									0	0	0
Zimbabwe									0	0	0
Total	1	4	6	8	4	5	3	6	14	23	9
Extrapolation	4.8	19.2	28.8	38.4	19.2	24	14.4	28.8	67.2	110.4	43.2

ESAF Staff Needs Reponses – AGA

	AGA										
State	Current staff (total)_Civil Eng	Required staff_Civil Eng	Current staff (total)_ Electrical Eng	Required staff_ Electrical Eng	Current staff (total)_ Operations	Required staff_ Operations	Current staff (total)_ RFF/Wildlife Mgmt	Required staff_RFF/ Wildlife Mgmt	Current staff (total)_ AGA	Required staff_ AGA	Gap_ AGA
Angola									0	0	0
Botswana									0	0	0
Burundi									0	0	0
Comoros	1	2	0	1	1	1	1	1	3	5	2
Djibouti									0	0	0
Eritrea									0	0	0
Eswatini									0	0	0
Ethiopia									0	0	0
Kenya									0	0	0
Lesotho									0	0	0
Madagascar									0	0	0
Malawi									0	0	0
Mauritius									0	0	0
Mozambique	4	4	0	2	0	2	0	2	4	10	6
Namibia									0	0	0
Rwanda									0	0	0
Seychelles									0	0	0
Somalia	2	4					24	60	26	64	38
South Africa									0	0	0
South Sudan									0	0	0
Uganda	1	2	1	1	2	3	0		4	6	2
United Republic of Tanzania									0	0	0
Zambia									0	0	0
Zimbabwe									0	0	0
Total	8	12	1	4	3	6	25	63	37	85	48
Extrapolation	48	72	6	24	18	36	150	378	222	510	288

Details of Responses – Strategic Objective B

WACAF Strategic Objective B Responses – ANS

State	Air Traffic Management (ATM)/ Search and Rescue (SAR)			Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS)			Aeronautical Information Management (AIM)/ Aeronautical Charts (Chart)			Communications, Navigation and Surveillance (CNS)			Aeronautical Meteorology (MET)			Aerodrome Operational Planning (AOP)		
	Current staff (total)_ATM /SAR	Required staff_ATM/SAR	Gap_ATM/SAR	Current staff (total)_PANS-OPS	Required staff_PANS-OPS	Gap_PANS-OPS	Current staff (total)_AIM /CHART	Required staff_AIM/ CHART	Gap_AIM/ CHART	Current staff (total)_ CNS	Required staff_CNS	Gap_CNS	Current staff (total)_ MET	Required staff_ MET	Gap_ MET	Current staff (total)_ AOP	Required staff_AOP	Gap_AOP
Benin	4	1	-3	2	1	-1	5	1	-4	1	1	0	2	1	-1	4	4	0
Burkina Faso	1	2	1	1	1	0	1	1	0	2	1	-1	0	1	1	3	4	1
Cabo Verde	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	3	3	0
Cameroon	3	3	0	0	0	0	3	3	0	4	4	0	3	4	1	8	8	0
Central African Republic	11	5	-6	5	10	5	6	5	-1	6	5	-1	0	2	2	3	16	13
Chad	1	1	0	1	1	0	1	1	0	1	1	0	1	1	0			
Congo	3	4	1	0	2	2	4	4	0	1	3	2	0	3	3	6	12	6
Côte d'Ivoire	3	2	-1	2	3	1	2	3	1	3	3	0	2	2	0	5	9	4
Democratic Republic of the Congo		20	20		5	5		10	10		15	15		4	4	0	35	35
Equatorial Guinea																		
Gabon	3	3	0	1	2	1	5	7	2	2	2	0	1	2	1	6	9	3
Gambia			0			0			0			0			0	4	4	0
Ghana	3	2	-1	2	1	-1	2	2	0	1	2	1	1	2	1	4	4	0
Guinea			0			0			0			0			0			

Guinea-Bissau	1	2	1	0	1	1	1	1	0	0	1	1	1	1	0	2	4	2
Liberia			0			0	1	2	1	2	2	0			0	2	2	0
Mali	3	3	0	1	2	1	1	2	1	1	2	1	1	1	0	5	9	4
Mauritania																		
Niger																		
Nigeria																		
Sao Tome and Principe																		
Senegal																7	6	-1
Sierra Leone	1	2	1	1	1	0	1	1	0	2	2	0	2	2	0	3	5	2
Togo	5	2	-3	4	1	-3	3	1	-2	3	1	-2	2	1	-1	5	5	0
Total	42	52	10	21	32	11	36	44	8	29	45	16	16	27	11	70	139	69
Extrapoation	46	57	11	23	35	12	39	48	9	32	49	17	17	29	12	77	152	75

ESAF Strategic Objective B Responses - ANS

State	Air Traffic Management (ATM)/ Search and Rescue (SAR)			Procedures for Air Navigation Services — Aircraft Operations (PANS-OPS)			Aeronautical Information Management (AIM)/ Aeronautical Charts (Chart)			Communications, Navigation and Surveillance (CNS)			Aeronautical Meteorology (MET)			Aerodrome Operational Planning (AOP)		
	Current staff (total)_ATM/SAR	Required staff_ATM/SAR	Gap_ATM/SAR	Current staff (total)_PANS-OPS	Required staff_PANS-OPS	Gap_PANS-OPS	Current staff (total)_AIM/CHART	Required staff_AIM/CHART	Gap_AIM/CHART	Current staff (total)_CNS	Required staff_CNS	Gap_CNS	Current staff (total)_MET	Required staff_MET	Gap_MET	Current staff (total)_AOP	Required staff_AOP	Gap_AOP
Angola																		
Botswana																		
Burundi					1	1												
Comoros	1	2	1				0	2	2	1	2	1	1	2	1	3	5	2
Djibouti																		
Eritrea																		
Eswatini																		
Ethiopia																		
Kenya																		
Lesotho																		
Madagascar																		
Malawi																		
Mauritius					2	2												
Mozambique	6	6		1		-1	4	4	0	2	2	0	1	2	1	4	10	6
Namibia																		
Rwanda			0		2	2												
Seychelles	5	10	5	2	1	-1												
Somalia	40						31			20			26			26	64	38
South Africa																		

South Sudan					4	4												
Uganda	8	10	2	4		-4	8	8	0	7	7	0	1	2	1	4	6	2
United Republic of Tanzania																		
Zambia																		
Zimbabwe																		
Total	20	28	8	7	10	3	12	14	2	10	11	1	3	6	3	37	85	48
Extrapoation	120	168	48	42	60	18	72	84	12	60	66	6	18	36	18	177.6	408	230.4

Details of Responses – Strategic Objective B

WACAF Strategic Objective C Responses - Security and Facilitation

State	Security			Facilitation		
	Current staff (total)_ Security	Required staff_ Security	Gap_ Security	Current staff (total)_Facilitation	Required staff_Facilitation	Gap_Facilitation
Benin	7	7	0	0	4	4
Burkina Faso	2	7	5	0	3	3
Cabo Verde	1	2	1	1	1	0
Cameroon	7	15	8	3	10	7
Central African Republic	20	5	-15	1	5	4
Chad	4	7	3	1	5	4
Congo	12	20	8	12	20	8
Côte d'Ivoire	6	6	0	2	2	0
Democratic Republic of the Congo	30			0	5	5
Equatorial Guinea						
Gabon	4	4	0	2	2	0
Gambia	7	10	3	7	10	3
Ghana	4	12	8	2	3	1
Guinea			0			
Guinea-Bissau	5	4	-1	2	5	3
Liberia						
Mali	5	8	3			
Mauritania						
Niger						
Nigeria	30	40	10	15	33	18
Sao Tome and Principe						0
Senegal	9	9	0	3	3	0
Sierra Leone	8	8	0	3	3	0
Togo	11	7	-4			
Total	106	155	49	54	114	60
Extrapolation	182	266	84	81	171	90

Strategic Objective C Responses - EASA

State	Security			Facilitation		
	Current staff (total)_Security	Required staff_Security	Gap_Security	Current staff (total)_Facilitation	Required staff_Facilitation	Gap_Facilitation
Angola						
Botswana						
Burundi						
Comoros	4	6	2	1	3	2
Djibouti						
Eritrea						
Eswatini						
Ethiopia						
Kenya						
Lesotho						
Madagascar						
Malawi						
Mauritius						
Mozambique	7	8	1	1	2	1
Namibia						
Rwanda						
Seychelles	8	8	0	8	8	0
Somalia	2	6	4	1	1	0
South Africa						
South Sudan						
Uganda	6	8	2	6	8	2
United Republic of Tanzania						
Zambia						
Zimbabwe						
Total	27	36	9	17	22	5
Extrapolation	130	173	43	82	106	24

Details of Responses – Strategic Objective C

WACAF Strategic Objective D Responses – Legal and Air Transport Experts

State	Legal Experts			Air Transport Experts		
	Current staff (total)_Legal Experts	Required staff_Legal Experts	Gap_Legal Experts	Current staff (total)_Air Transport Experts	Required staff_Air Transport Experts	Gap_Air Transport Experts
Benin	3	3	0	1	3	2
Burkina Faso	1	2	1	2	2	0
Cabo Verde	3	3	0	2	3	1
Cameroon	5	5	0	9	9	0
Central African Republic	7	4	-3	1	6	5
Chad						
Congo	6	10	4	6	14	8
Côte d'Ivoire	6	5	-1	2	4	2
Democratic Republic of the Congo	2	4	2	3	7	4
Equatorial Guinea						
Gabon	3	4	1	1	2	1
Gambia	2	2	0	5	6	1
Ghana	2	4	2	2	3	1
Guinea			0			0
Guinea-Bissau	5	3	-2	2	2	0
Liberia		1	1	7	10	3
Mali	1	2	1	1	2	1
Mauritania						
Niger						
Nigeria	22	22	0	19	30	11
Sao Tome and Principe						0
Senegal	1	2	1	4	2	-2
Sierra Leone	2	1	-1	5	5	0
Togo	4	4	0	2	5	3
Total	61	72	11	74	115	41
Extrapolation	105	123	18	104	162	58

ESAF Strategic Objective D Responses - Legal and Air Transport Experts

State	Legal Experts			Air Transport Experts		
	Current staff (total)_Legal Experts	Required staff_Legal Experts	Gap_Legal Experts	Current staff (total)_Air Transport Experts	Required staff_Air Transport Experts	Gap_Air Transport Experts
Benin	3	3	0	1	3	2
Burkina Faso	1	2	1	2	2	0
Cabo Verde	3	3	0	2	3	1
Cameroon	5	5	0	9	9	0
Central African Republic	7	4	-3	1	6	5
Chad						
Congo	6	10	4	6	14	8
Côte d'Ivoire	6	5	-1	2	4	2
Democratic Republic of the Congo	2	4	2	3	7	4
Equatorial Guinea						
Gabon	3	4	1	1	2	1
Gambia	2	2	0	5	6	1
Ghana	2	4	2	2	3	1
Guinea			0			0
Guinea-Bissau	5	3	-2	2	2	0
Liberia		1	1	7	10	3
Mali	1	2	1	1	2	1
Mauritania						
Niger						
Nigeria	22	22	0	19	30	11
Sao Tome and Principe						0
Senegal	1	2	1	4	2	-2
Sierra Leone	2	1	-1	5	5	0
Togo	4	4	0	2	5	3
Total	75	81	6	74	115	41
Extrapolation	106	114	8	104	162	58

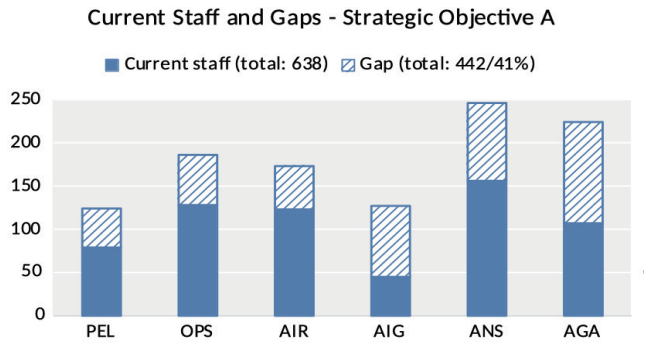
Details of Responses – Strategic Objective E

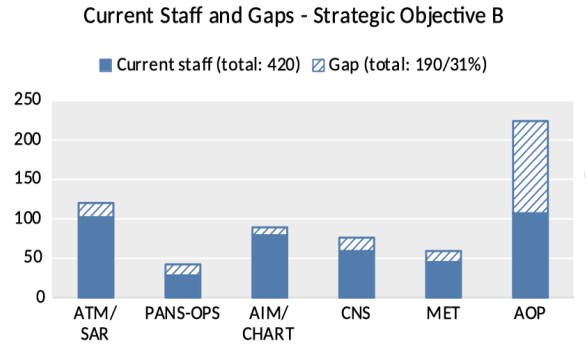
WACAF Strategic Objective E Responses – Environmental Protection

State	E - Environmental Protection		
	Current staff (total)_ Environment	Required staff_ Environment	Gap_ Environment
Benin	1	3	2
Burkina Faso	2	2	0
Cabo Verde	0	1	1
Cameroon	2	2	0
Central African Republic	0	2	2
Chad			0
Congo	1	3	2
Côte d'Ivoire	1	2	1
Democratic Republic of the Congo	0	5	5
Equatorial Guinea			
Gabon	1	2	1
Gambia			0
Ghana	1	1	0
Guinea			0
Guinea-Bissau	1	1	0
Liberia			
Mali	0	1	1
Mauritania			0
Niger			0
Nigeria	7	17	10
Sao Tome and Principe			
Senegal			
Sierra Leone	0	1	1
Togo	5	4	-1
Total	22	47	26
Extrapolation	37.	81	44

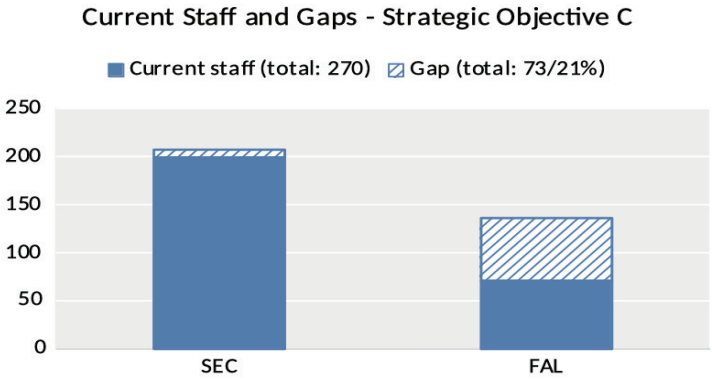
Strategic Objective E Responses – ESAF

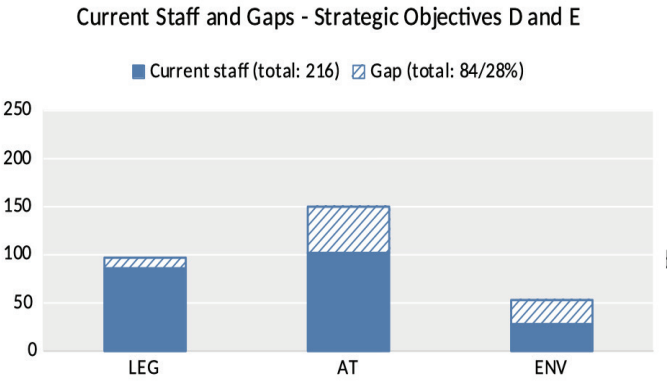
State	E - Environmental Protection		
	Current staff (total)_Environment	Required staff_Environment	Gap_Environment
Angola			
Botswana			
Burundi			
Comoros			
Djibouti			
Eritrea			
Eswatini			
Ethiopia			
Kenya			
Lesotho			
Madagascar			
Malawi			
Mauritius			
Mozambique	1	1	0
Namibia			
Rwanda			
Seychelles	4	4	0
Somalia	1	1	0
South Africa			
South Sudan			
Uganda			
United Republic of Tanzania			
Zambia			
Zimbabwe			
Total	6	6	0
Extrapolation	36	36	0





Source – Compilation from Questionnaire





Extrapolated Values

WACAF											
	PEL		OPS		AIR		AIG		ANS		AGA
Crurrent Staff	105		179		137		52		177		93
Gap	60		51		44		99		107		92
ESAF											
Crurrent Staff	86		182		96		29		67		222
Gap	53		-19		82		38		43		288
Total Staff											
Crurrent Staff	192		361		233		81		245		315
Gap	113		31		126		137		150		380

WACAF									
	SEC		FAC		LEG		AT		ENV
Crurrent Staff	182		81		105		104		37
Gap	84		90		18		58		44
ESAF									
Crurrent Staff	130		106		106		104		36
Gap	43		24		8		58		0
Total Staff									
Crurrent Staff	312		187		211		208		73
Gap	127		114		26		116		44

Based purely on the above, the strategy towards increasing the number of technical personnel should therefore be prioritized as follows:

- Strategic Objective A: AGA, ANS, AIG, OPS, Air and PEL in that order
- Strategic Objective B: AOP, CNS, ATM/SAR, PANS-OPS, MET, AIM/CHART in that order
- Strategic Objective C: FAL, SEC in that order
- Strategic Objective D: AT, ENV, LEG in that order

To validate this conclusion, an on-line version of the questionnaire should be developed as part of a database to collect and be continuously updated by states and analysed automatically via dashboards created in the database.

Such a database analysis will help the probable causes behind the GAPS by area (lack of qualified personnel in the market, lack of resources to recruit, poor retention, not competitive salaries…) and what could be the solutions to address them by domain

For the existing technical personnel, the database will help identify the gaps in terms of expertise, training (by level) in specific areas, including SSP and SMS.

31. TRAINING ORGANISATIONS ASSESSMENT

The work done by the previous consultant sort to gather information on ATOs in the AFI region, courses developed/offered and list of instructors. Further reading shows that the “Association of African Aviation Training Organizations (AATO)” has already carried out an extensive exercise contained in a report “AFRICAN AVIATION TRAINING ROADMAP - 2019” with recommendations for specific actions. No further work was done in that direction in this report.

None of the Actions required in the roadmap have been verified in this report. It is particularly recommended that the action to “Develop a Database” should be implemented if not yet done.

Summary of Report - “AFRICAN AVIATION TRAINING ROADMAP - 2019”

The role of personnel qualification and training is recognized to be crucial to reach the safety and security targets and thus endow states with necessary tools to build solid Human Resource capacity to sustain the industry growth.

The AFI Plan steering committee at their meeting held in Montreal in 2015, tasked AATO, to work with ICAO GAT, East African School of Aviation (EASA) to develop an African Aviation Training Roadmap.

AATO conducted two training needs surveys in 2014 and 2015. Additionally, results of similar surveys from Singapore Aviation Academy and East African School of Aviation were used to prepare the aviation training roadmap. In developing the Roadmap, the first meeting was held at EASA. This meeting identified an itinerary of aviation courses including basic, specialisation and advanced. The meeting also identified the immediate, medium and long term areas of aviation training interventions in line with the TNA.

The draft roadmap was presented to the 18th AFI SC in Montreal and AATO, GAT and stakeholders were tasked to continue with refining the Roadmap and submit it during the 19th AFI SC meeting. The 11th AATO Council decided that, the draft roadmap be shared with aviation training stakeholders.

AATO collaborated with ICAO ESAF Office to convene a stakeholder meeting back-to-back with the 4th ICAO Global Aviation Training Symposium in Addis Ababa on 10th April 2017.
The meeting adopted a model for Roadmap development and other concepts such as the one proposed by FAA.

The aviation training and capacity-building Roadmap for Africa is a strategic document that outlines the human resource requirements for states to achieve their national objectives in air transportation. The outcomes of the roadmap are related to the resolution of performance problems identified in state’s audit reports or expected performance problems identified through gap analysis. It also identifies national education and training institutions that contribute to meeting training needs by naming existing programs offered by Approved Training Organizations (ATO) and eventually other institutions that offer aviation training.

Paragraph 8 of the (draft) report defines the Key Outputs; Key Actions; Timelines; Resources; and Actors in the Roadmap Implementation Actions categorized into 3

different time spans: Short Term 1 – 5 years; Medium Term 5 – 10 years; and Long Term 10 – 20 years.

The report also contains summaries of important data contained in appendices as follows:

- *Appendix A - List of Training Organizations in Africa*
- *Appendix B - List of Standardized Training Packages (STPs), ITPs and Other Standardized Courses*
- *Appendix C - Actual Training Need*
- *Appendix D - Instructors Database*

It was recommended in the "Actions" to Develop a Database by Dec 2019.

32. SWOT/PEST ANALYSIS SUMMARY – WACAF

SWOT/PEST ANALYSIS – WACAF	
	INTERNAL
STRENGTHS	1. No significant safety concerns 2. 5 states (20.8%) have achieved the GASP Target of 75% EI 3. 9 states (37.5%) have reached the world average target of world average 67.6%. **4.** >79% at 100% PBN Implementation
WEAKNESSES	1. 10 States fall below 60% and 6 states below 30% 2. Weak performance in Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, ANS and PEL 3. No State has achieved SSP Implementation Level 4 4. Staffing gaps Strategic Objective A: AGA, ANS, AIG, OPS, Air and PEL in that order 5. Staffing gaps Strategic Objective B: AOP, CNS, ATM/SAR, PANS-OPS, MET, AIM/CHART in that order 6. Staffing gaps Strategic Objective C: FAL, SEC in that order 7. Staffing gaps Strategic Objective D: AT, ENV, LEG in that order 8. Unsatisfactory aerodrome certification 9. Most CAAs underfunded and under resourced

SWOT/PESTANALYSIS – WACAF	
	EXTERNAL
OPPORTUNITIES	1. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, and PEL 2. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in Air 3. The COVID-19 pandemic threat has reduced and economies opening up *4.* High mobile telephone penetration 5. Exceptional natural mineral resource such as cobalt and copper, gold, diamond and hydropower potential, significant arable land, immense biodiversity among some members states 6. Great production of industrial crops and food among some member states: timber, cocoa, coffee, cotton, pineapples, bananas, and rubber. 7. Africa expected to have “demographic dividend" by 2035, when its young and growing labour force will have fewer children
THREATS	1. No GSI Course in Licensing, Certification, Authorization and Approval Obligations (CE-6) in area ANS 2. No GSI Course for Surveillance Obligations (CE-7) 3. No GSI Course for RSC Obligations (CE-8) 4. Political instability and uncertainty in the region particularly West Africa. 5. Longest road transportation times for travel between countries and some of the highest travel costs per kilometre of any region in the world 6. High rate of unemployment, poverty, and limited spending capacity of the populace 7. Low national GDP 8. Rising public debts and deteriorating exchange rate of national currencies. Guinea Bissau, Ghana, Togo, Sierra Leone, Gabon, Congo have over 70% debt to GDP 9. Insufficient supply of reliable and affordable power (electricity) 10. Limited ICT deployment in several states 11. Limited and expensive broadband internet connectivity 12. The COVID-19 pandemic depressed the economies of all states in 2020 leading to GDP growth contraction.

33. SWOT/PEST ANALYSIS SUMMARY – ESAF

SWOT/PEST ANALYSIS – ESAF	
	INTERNAL
STRENGTHS	1. No state has significant safety concern 2. 6 states (25%) have achieved the GASP Target of 75% EI 3. 7 states representing 29.16% have reached the world average of world average 67.6% 4. >66.67% at 100% PBN Implementation 5. At least one State has achieved SSP Implementation Level 4 6. ESAF states have a strong RSOO (this enables harmonized procedures and regulations) 7. Well established regional ATOs (ATNS, EASA) this enables ease of training of aviation staff)
WEAKNESSES	1. 12 States fall below 60% and 2 states below 30% 2. Weak performance in Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, ANS and PEL 3. Only one State has achieved SSP Implementation Level 4 4. Staffing gaps Strategic Objective A: AGA, ANS, AIG, OPS, Air and PEL in that order 5. Staffing gaps Strategic Objective B: AOP, CNS, ATM/SAR, PANS-OPS, MET, AIM/CHART in that order 6. Staffing gaps Strategic Objective C: FAL, SEC in that order 7. Staffing gaps Strategic Objective D: AT, ENV, LEG in that order 8. Unsatisfactory aerodrome certification 9. Most CAAs underfunded and under resourced

SWOT/PEST ANALYSIS – ESAF	
	EXTERNAL
OPPORTUNITIES	1. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, and PEL 2. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in Air 3. The COVID-19 pandemic threat has reduced and economies opening up *4.* High mobile telephone penetration 5. Strong conscious strides in ICT among some member states 6. Increasing development of renewable energy 7. Several ESAF States have on-going TNAs supported by international organisations 8. Exceptional natural mineral resource such as cobalt and copper, gold, diamond and hydropower potential, significant arable land, immense biodiversity among some members states 9. Great production of industrial crops and food among some member states: grains and cereals such as rice, wheat, barley, and soybeans in South Africa; tomatoes, potatoes, carrots, cabbage, butternuts, beans and groundnuts, dates, grapes, watermelons, span speck, citrus and others in Namibia; cotton, sunflower, pyrethrum, barley, tobacco, sisal, coconut, cashew and bixa in Kenya; coffee, sugarcane, chat (stimulant plant), tobacco, castor oil seed, cotton, tea, jatropha in Ethiopia etc. 10. Africa expected to have “demographic dividend" by 2035, when its young and growing labour force will have fewer children
THREATS	1. No GSI Course in Licensing, Certification, Authorization and Approval Obligations (CE-6) in area ANS 2. No GSI Course for Surveillance Obligations (CE-7) 3. No GSI Course for RSC Obligations (CE-8) 4. Political instability and uncertainty among several states in the region. 5. High rate of unemployment, poverty, and limited spending capacity of the populace 6. Low national GDPs

	7. Drought, locust infestation, floods natural challenges in the region 8. Rising public debts and deteriorating exchange rate of national currencies**.** South Africa, Eritrea, Angola, Mozambique, Kenya and Zambia have more than 70% of debt to GDB 9. Insufficient supply of reliable and affordable power (electricity) 10. Limited ICT deployment in several states 11. Limited and expensive broadband internet connectivity 12. The COVID-19 pandemic depressed the economies of all states in 2020 leading to GDP growth contraction. 13. Too many unapproved ATOs in the region: danger of inadequately trained personnel, lack of harmonised syllabus

34. SWOT/PEST ANALYSIS SUMMARY – AFI-EUR

SWOT/PEST ANALYSIS – AFI-EUR	
	INTERNAL
STRENGTHS	1. No significant safety concerns **2.** 2 of 3 (66.67%) have over 60% Target
WEAKNESSES	1. No state has achieved the GASP 75% EI. 2. 1 of 3 (33.33%) below 60% Target 3. 0.00% at 100% PBN Implementation 4. Weak performance in Licensing, Certification, Authorization and Approval Obligations (CE-6) in AGA, OPS and PEL 5. No State has achieved SSP Implementation Level 4 6. Staffing gaps Strategic Objective A, B, C D: AGA, ANS, AIG, OPS, Air and PEL - NO DATA

SWOT/PEST ANALYSIS – AFI-EUR	
	EXTERNAL
OPPORTUNITIES	1. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, and PEL 2. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in Air

	3. The COVID-19 pandemic threat has reduced and economies opening up 4. High mobile telephone penetration 5. 2 of 3 AFI-EUR States are Oil Producers 6. All 3 AFI-EUR States are high tourism destinations 7. Exceptional natural mineral resource such as iron, zinc, lead, copper, fluorine, silver, manganese, salt, cobalt and gold in Morocco; phosphates, petroleum, zinc, lead and iron ore in Tunisia; iron, zinc, lead, copper, fluorine, silver, manganese, salt, cobalt and gold in Morocco. 8. Relative stability among the 3 AFI-EUR member states 9. Modest national GDP 10. Relative sufficient supply of reliable and affordable power (electricity) 11. Good ICT development 12. Great production of industrial crops and food among the 3 AFI-EUR member states: Wheat and barley; olives, dates, and fresh citrus fruits; potatoes, oats, grapes, and figs. 13. Africa expected to have “demographic dividend" by 2035, when its young and growing labour force will have fewer children
THREATS	1. No GSI Course in Licensing, Certification, Authorization and Approval Obligations (CE-6) in area ANS 2. No GSI Course for Surveillance Obligations (CE-7) 3. No GSI Course for RSC Obligations (CE-8). 4. Limited and expensive broadband internet connectivity 5. The COVID-19 pandemic depressed the economies of all states in 2020 leading to GDP growth contraction.

35. SWOT/PEST ANALYSIS SUMMARY – AFI-MID

SWOT/PEST ANALYSIS – AFI-MID	
	INTERNAL
STRENGTHS	1. No significant safety concerns 2. One state is above 75% GASP 75% target. 3. 66.67% (2 of 3) have over 60% Target **4.** 66.67% (2 of 3) at 100% PBN Implementation
	1. 1 of 3 (33.33%) below 60% Target

WEAKNESSES	2. Weak performance in Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, AGA, and ANS in that order 3. No State has achieved SSP Implementation Level 4 4. Staffing gaps Strategic Objective A, B, C D: AGA, ANS, AIG, OPS, Air and PEL - NO DATA 5. Sudan and Libya expected to have funding challenges at for the CAA

SWOT/PEST ANALYSIS – AFI-MID	
	EXTERNAL
OPPORTUNITIES	1. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in OPS, and PEL 2. Availability of GSI Courses for Licensing, Certification, Authorization and Approval Obligations (CE-6) in Air 3. The COVID-19 pandemic threat has reduced and economies opening up *4.* High mobile telephone penetration 5. Exceptional natural mineral resource such as petroleum and deposits of gold, iron ore, silver, copper, tungsten, mica, chromium ore, and zinc in Sudan; gold, copper, silver, zinc, platinum, and several other precious and base metals in Egypt; clay, cement, salt, and limestone in Libya. 6. Great production of industrial crops and food among some member states: potatoes, cotton, and fresh fruit, primarily citrus peanuts (groundnuts), sesame, gum arabic, sorghum, sugarcane, wheat, barley, olives, dates, citrus, vegetables, peanuts, soybeans; cattle. 7. Africa expected to have “demographic dividend" by 2035, when its young and growing labour force will have fewer children
THREATS	1. No GSI Course in Licensing, Certification, Authorization and Approval Obligations (CE-6) in area ANS 2. No GSI Course for Surveillance Obligations (CE-7) 3. No GSI Course for RSC Obligations (CE-8) 4. Political instability and uncertainty in the Libya and Sudan. 5. High rate of unemployment, poverty, and limited spending capacity of the populace in Sudan and Libya 6. Low national GDP for Sudan and Libya

	7. Insufficient supply of reliable and affordable power (electricity) in Sudan and Libya 8. Limited ICT deployment Sudan and Libya 9. Limited and expensive broadband internet connectivity 10. The COVID-19 pandemic depressed the economies of all states in 2020 leading to GDP growth contraction.