**SUMMARY FOR TRANSLATION TO FRENCH**

# 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: 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, Zimbabwe, and Seychelles. 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, Global Aviation Training, and Staff Needs.

XVI. A summary of the SWOT Analysis by region is detailed in paragraphs 32 to 35.

# PART 2

**“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)”**

**EXECUTIVE SUMMARY**

I. In line with the 8 critical elements of ICAO and other industry practices adoption of a common training policy should recognise the following training categories:
   a. Administrative/General Technical Functions (CE1 t0 CE5)
   b. Certification, Authorisation and Approvals Functions (CE6)
   c. Personnel Licensing or Competence Assessment (CE6)
   d. Surveillance and AVSEC Quality Control Functions; (CE7) and
   e. Resolution of Safety Issues Functions (CE8)

II. The study lists Global Aviation Training (GAT) courses and Inspector Training System (ITS) Formal Course Profiles. It must be emphasised that the Formal Training Profiles includes several recommended GAT courses.

III. Continuation and advanced training may be State specific but generally, inspectors should complete two specialty or advanced training courses every three years, and recurrent training courses within three to five years. For example, flight operations inspectors should receive recurrent flight training on aircraft supplemented periodically by training in a flight simulation training device.

IV. Recurrent training courses must be provided for each inspector every 36 months, or more often if required, to maintain proficiency in all assigned Inspector Job Tasks.

V. On-the-Job Training (OJT) must be completed during initial training for every Job Task that an Inspector will be authorized to conduct without assistance.

VI. Recommended formal courses to be completed for all inspectors within the next ten years are contained in Table 1.

VII. In the short to medium term there is the need to have some GSI Instructors who have attended the respective courses certified to teach Course 15212001 – Surveillance and Course 15209001 – Resolution of Safety Concerns.

VIII. In the medium to long term ICAO should encourage ATOs or interested parties to develop generic versions of “GSI - Surveillance of Service Providers” and “GSI - Resolution of Safety Concerns” as GSI Courses or the BAGASOO Formal Course Standards (suggested curriculum) to develop other relevant courses

IX. The full list of Recommended ICAO (GAT) Formal Classroom courses is contained in Table 2. Some of these Formal Classroom Courses may be substituted with their virtual classroom equivalents listed in Table 3 including the following.
   a. Safety Management System
   b. ICAO GSI Ops – 120 hours
   c. ICAO GSI Air– 120 hours

d. ICAO GSI PEL– 120 hours
e. 15209001 Resolution of Safety Concerns (RSC) 40 hours
f. 15212001 Surveillance of Service Providers 56 hours.

X. ATOs especially in the AFI region be encouraged to develop courses in OJT Techniques

XI. Each AFI state should be encouraged to have at least one qualified OJT Instructor for each speciality and in each major Job Function area.

XII. In the short to medium term AFI States that have an EI less than the GASP target of 60% should be targeted as priority for support.

XIII. In addition, the 5 states of the 15 AFI States that have operational restrictions with regard to European airspace but with EI greater than 60% should be included among the target priority states. Perhaps the assistance of a European partner be sought in this regard.

XIV. The number of ICAO certified active GSI Instructors in the AFI region is as follows:

| GAT GSI INSTRUCTOR DISTRIBUTION IN AFI REGION | | | | | |
|---|---|---|---|---|---|
| GSI AIRWORTHINE | | GSI PERSONNEL LICENCE | | GSI FLIGHT OPERATIONS | |
| Total | 8 | Total | 7 | Total | 5 |
| WACAF | 5 | WACAF | 4 | WACAF | 2 |
| ESAF | 3 | ESAF | 3 | ESAF | 3 |

XV. States should encourage qualified individuals apply for so we have at least one more Airworthiness instructor (in ESAF region), and two PEL and 2 OPS instructors, one each from WACAF and ESAF region.

XVI. ICAO to lead negotiations with the following institutions and agencies among others for financial support to meet the objectives of this project:

a. FAA/DOT
b. EASA
c. Singapore Government through the Singapore Academy
d. World Bank
e. IMF
f. African Development Bank
g. ICAO Member States
h. Other Agencies

## AFI PRIORITY TRAINING

## FORMAL CLASSROOM COURSES

1. As stated in paragraph 10 above, to provide a new hire inspector with a sound foundation for the work of his specialty, tasks from at least the following inspector job function areas should be taught in the inspector initial training courses.

    a. Administrative/General Technical Functions
    b. Certification, Authorisation and Approvals Functions
    c. Personnel Licensing or Competence Assessment
    d. Surveillance and AVSEC Quality Control Functions; and
    e. Resolution of Safety Issues Functions

2. Based on the SWOT analysis the following 21 Formal Courses **are recommended** for the short to medium term implementation with the distribution details in Table 1.

    a. New Hire Employment Orientation / Indoctrination (CAA Specific)
    b. Introduction to Authorizing Documents
    c. Introduction to Investigations
    d. GSI OPS
    e. GSI AIR
    f. GSI PEL
    g. CAA Approval of Training Organization
    h. Surveillance of Service Providers
    i. Auditing Techniques
    j. Resolution of Safety Concerns (RSC)
    k. Various - Aircraft Accident Investigation
    l. Human Factors Principles
    m. Safety Management (SM EN): Online
    n. State Safety Programme
    o. ANS ATM Inspector
    p. ANS AIS Inspector
    q. ANS MET Inspector
    r. ANS CNS Inspector
    s. Aerodrome Certification
    t. Incident Investigation Techniques
    u. Integrated Safety Management Systems

## ONLINE OR WEB BASED TRAINING (WBT/CBT)

1. Global Aviation Training (GAT) has several online courses covering various areas of safety and safety management, aerodromes and ANS. The full short listed courses is in Table 4.

2. The also FAA also provides several WBT/CBT courses primarily limited for the benefit of its inspectors of the Flight Standards Division as listed in Table 5. Some of these courses are mandatory for all new hire inspectors whilst others prepare inspectors for specific job tasks. These courses are NOT usually available to non FAA staff, however under a special arrangement, access has been granted to inspectors of the BAG Member States to take several of these courses as applicable to their specialty and job functions.

3. In the immediate to medium term, as part of the recommendations to the AFI Strategy, **a similar request for selected courses may be made to the benefit of inspectors of the AFI Region.** In the end an agreement will be required between, either ICAO or AFCAC on the one hand and the FAA/DOT on the other hand, to actualize such an arrangement.
4. Both ICAO and FAA online courses cost about $150 per participant per course. **However, negotiations may be made to seek funding for the course fees as part of this programme**.

## ON-THE-JOB TRAINING

1. As stated in paragraph 41, inspectors must complete OJT training from a qualified OJT Instructor for every Job Task that an Inspector will be authorized to conduct without assistance. FAA WBT/CBT Course 27100186 gives an Overview of On-The-Job Training (OJT) Techniques whilst the FAA Course 25702 covers more OJT Techniques. A CAA must have at least one qualified OJT Instructor for each speciality and in each major Job Function.

2. This is a course that, in the short term, **ICAO could negotiate with the FAA to have some qualified GSI instructors who have attended this course certified by the FA**A to teach the course. In the long term AFI ATO should be encouraged to develop this course.

## TARGET STATES

1. As part of the strategy for the immediate future it is recommended that the following states that have an EI less than the GASP target of 60% should be targeted as priority for support.

**WACAF**

In descending order of priority

| Country | Likely Training Language |
|---|---|
| 1. Central African Republic | Francophone |
| 2. Guinea Bissau | Portuguese |
| 3. Sierra Leone | English |
| 4. Liberia | English |
| 5. Sao Tome and Principe | Portuguese |
| 6. Guinea | Francophone |
| 7. Chad and | Francophone |
| 8. Democratic Republic of Congo | Francophone |

**EASAF**

In descending order of priority

| | |
|---|---|
| 1. Eritrea | English |
| 2. Lesotho | English |
| 3. Eswatini | English |
| 4. Comoros | Francophone |
| 5. Djibouti | Francophone |
| 6. Malawi | English |
| 7. Seychelles | English/French |
| 8. Burundi | Francophone/English |
| 9. Angola | Portuguese |
| 10. Zimbabwe | English |

**RASG EUR**

In descending order of priority

| | |
|---|---|
| 1. Algeria | Francophone |
| 2. Tunisia | French/English |

**RASG MID**

| | |
|---|---|
| 1. Libya | English/French |

2. One of the challenges facing the AFI region is language variation. Most of the base ICAO courses such as the GSIs are in English with no translations into ICAO official languages. Several inspectors from Francophone countries do

attend these courses in English though but it is difficult to determine how beneficial it has been as against if the courses were in the French language.

3. As part of the medium to long term strategy, **ICAO should consider translating the GSI courses at least into French.**

4. Secondly, for the short term more **Instructors fluent in French and English should be certified to teach the GSI courses.** That way further explanations could be rendered to participants with limited English language proficiency by instructors as and when required during course instruction.

5. The 5 states of the following 15 AFI States that have operational restrictions, as at the time of preparing this report, with regard to European airspace but with EI greater than 60% should be included among the target priority states: Democratic Republic of the Congo, Djibouti, Equatorial Guinea, Eritrea, Liberia, Libya, Nigeria, Angola, Congo, Gabon, Sudan, Sao Tome and Principe, Sierra Leone, Zimbabwe, Comoros. The 5 states are:

    1. Equatorial Guinea
    2. Nigeria
    3. Congo
    4. Gabon
    5. Sudan

## ICAO GSI INSTRUCTOR CERTIFICATION

1. Data from the ICAO Global Aviation Training (GAT) website **igat.icao.int/tpems** shows the following distribution of certified GSI instructors who are **current** by native location in the AFI Region:

Table 5

| GAT GSI INSTRUCTOR DISTRIBUTION IN AFI REGION | | | | | |
|---|---|---|---|---|---|
| **GSI AIRWORTHINESS** | | **GSI PERSONNEL LICENCE** | | **GSI FLIGHT OPERATIONS** | |
| Ghana | 3 | Ghana | 3 | Ghana | 1 |
| Kenya | 2 | Kenya | 2 | Kenya | 2 |
| South Africa | 1 | Tanzania | 1 | South Africa | 1 |
| Tanzania | 1 | Nigeria | 1 | Nigeria | 1 |
| Nigeria | 1 | | | | |
| Niger | 1 | | | | |
| | | | | | |
| **Total** | **8** | **Total** | **7** | **Total** | **5** |
| **WACAF** | **5** | **WACAF** | **4** | **WACAF** | **2** |
| **ESAF** | **3** | **ESAF** | **3** | **ESAF** | **3** |

2. Currently, recruitment as instructors is voluntary subject to meeting the qualification and experience requirements of GAT. Some have suggested that more instructors be certified in several states. However, GAT has its own policy on certification of instructors which should meet at least two criteria in addition to qualification and experience; uniform regional distribution and opportunity for each instructor to teach at least one class per every 18 months to maintain currency.

3. It will be interesting to seek GAT opinion on increasing the number of instructors in the AFI region. As stated in paragraph 50 above, a few more instructors fluent in French should be certified to teach the GSI courses possibly pairing with more experienced English-speaking instructors for courses where participants will be predominantly French speaking. **States should encourage qualified individuals apply for so we have at least one more Airworthiness instructor (in ESAF region), and two PEL and 2 OPS instructors, one each from WACAF and ESAF region.**

## IMPLEMENTATION STRATEGY AND REQUIRED RESOURCES

## IMPLEMENTATION STRATEGY

3. Costing the implementation of the above plan is very difficult as data for the exact number of beneficiaries is not readily available and the courses have varied pricing. This section of the report seeks to suggest some sources and methods by which recommended training may be achieved.

4. GAT and FAA online courses typically cost 150 US $ per course per participant. **However, a discount or a waiver of this fee may be negotiated for the purpose of this programme.**

5. The (ICAO) Government Safety Inspector (GSI) training courses, namely Airworthiness (AIR), Personnel Licensing (PEL) and Operations (OPS), are now available at all TRAINAIR PLUS Programme (TPP) Members' Training Centres. Training Centres typically plan and request approval from GAT to host the courses. The course fees and are invoiced by GAT for:

    a. Instructors teaching fees
    b. Instructor travel costs if applicable
    c. Instructor DSA including accommodation
    d. Other ICAO administrative charges

6. Where instructors are recruited staff of the Training Centre or staff of the local CAA teaching fees are usually handled according to the working conditions applicable at the Training Centre or the CAA. **Some centres pay about 40% of the normal ICAO rate of 450 US $ per day to its own instructors as an incentive**. Where such arrangements have not been agreed it has typically been very difficult to get local instructors interested in teaching these 3 weeks courses.

7. Where available **the use of Training Centre or staff of the local CAA as instructors has been very economical** as Travel Costs and DSA are avoided. Experience, however, shows that local instructors are typically distracted as they continue to perform other tasks for the CAA during the training period. Alternatively, the same economy of cost can be attained via virtual classroom instruction which is available for all three GSI courses.

8. In view of the above variations, course fees vary depending on the centre. All the three GSI Courses are of almost 3 weeks duration each and course fees vary between 2,300 US $ in some AFI Training Centres to about 5,400 US $ at the FAA Academy.

9. The course fees for FAA 15209001 Resolution of Safety Concerns (RSC) (40 hours) and FAA 15212001 Surveillance of Service Providers (56 hours) are about US $ 1,900 and 1,950.00 respectively and are available in virtual classroom. As these courses are currently taught by FAA instructors, it is **recommended that negotiations are made with the US DOT to seek a direct funding support.**

10. In the short term therefore, **it is recommended that one each of the following 5 courses be organised in the virtual classroom for the AFI region**.

    a. GSI Ops
    b. GSI Air
    c. GSI PEL
    d. Surveillance
    e. RSC

11. Depending on the success and feedback they may be repeated as many times as required to bridge the gap or substituted with the classroom versions.

**FUNDING OPTIONS**

12. Funding has always been a challenge. It is important to state that, fundamentally, the State (nationally CAA) is responsible for funding the training of its technical personnel (Inspectors). In the past the US DOT through Safe Skies Africa has been extremely supportive of funding training courses such as the 3 GSI courses (OPS, AIR and PEL) in Africa through the FAA.

13. Others, such as EASA, have also funded some training such as the Safety Assessment of Foreign Aircraft (SAFA) and Special Approvals, whilst other states such as Singapore offered scholarships to some participants from Africa for training at the Singapore Aviation Academy on various courses.

14. In 2009, ALSA S.A - Luxembourg Aviation Safety Agency under the funding of the Luxemburg Government provided sponsored training to Inspectors from the AFI region in Operational Safety Audit.

15. It is possible that there may be several other examples of these types of support. A mechanism to get support is probably to table a proposal at say a **special stakeholder event** or workshop where an appeal could be made to individual Agencies, Organisations, ICAO Member States etc for support.

16. It is therefore **recommended that negotiations be had with the following institutions and agencies among others for financial support to meet the objectives of this project:**

    a. FAA/DOT
    b. EASA
    c. Singapore Government through the Singapore Academy
    d. World Bank
    e. IMF
    f. African Development Bank

    ICAO Member States

# PART 3

# “Review of the Present Capacity of Aviation Approved Training Centres to Meet the Forecast Capacity Building Demand”

BACKGROUND

1. In 2019 the Association of African Aviation Training Organizations (AATO), prepared a report dubbed "**The African Aviation Training Roadmap"** for ICAO**.** The AATO was given the task, in collaboration with ICAO Global Aviation Training (GAT), by the International Civil Aviation Organisation (ICAO) to research and design an Aviation Training Roadmap for the African Continent.

2. The Roadmap was developed with a view to provide guidance on the development of training aviation personnel in Africa to meet future demands for the industry and in congruent with the ICAO strategic objectives, global and regional plans. It was intended to assist stakeholders develop and implement plans to ensure improved human resource requirements whilst providing harmonized and standardized quality training in Africa and to address performance issues identified through gap analysis.

3. The performance enablers that the Roadmap addressed were: Standard of Training, Curriculum design, Accreditation of qualifications, Collaboration and Sharing of data. The measurable outcomes addresses: The Roadmap, List of accredited ATOs, List of available courses, List of Instructors and their Qualifications, the Actual Training Needs, Facilities and Infrastructure. The roadmap also detailed the intended audience as well as the stakeholders who will be the consumers of the information while risks in implementing the roadmap were highlighted according to the PESTLE model and local relevancy.

4. An action plan with short, medium and long term goals was included in the roadmap. In the short term, the Roadmap focused on improving capacity and assisting states at the lowest compliance levels to achieve effective implementation of 60% and improving to 90% for States currently with above 60%. In the medium term, the focus was to ensure adequate qualified personnel to replace the ageing staff, develop capacities for new technologies, harmonise and standardise training and designating centres of excellence in aviation training.

5. A training needs survey was recommended to be undertaken to inform future training requirements and ensure continuous data improvement and sharing across the continent.

6. This project, unlike the "Roadmap Study", has been limited to the training of Civil Aviation Safety Inspectors. In Part 2 courses recommended for immediate attention were summarized in Table 1 of paragraph 42. Within this scope and relying on the data already gathered in the Roadmap study, this part of the current project reviews the capacity of Approved Training Organisation in the AFI region.