



**COMPREHENSIVE REGIONAL IMPLEMENTATION PLAN FOR AVIATION
SAFETY IN AFRICA (AFI PLAN)**

AVIATION INFRASTRUCTURE FOR AFRICA GAP ANALYSIS WORKSHOP

Abuja, Nigeria, 19-21 March 2019

REPORT

27 March 2019

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NB: In addition to this report the concept note, the workshop programme and all presentations from the ICAO secretariat and Partners are available at the website: <https://www.icao.int/ESAF/Pages/AvInfra-Africa-GapAnalysis-2019.aspx>

1. Venue, date and attendance

1.1 The Aviation Infrastructure for Africa Gap Analysis workshop was held from 19 to 21 March 2019 in Abuja, Nigeria. The workshop was attended by 173 Participants including delegations from 22 ICAO member States, two members from the ICAO Council and the Air Navigation Commission (ANC), and 13 officials of invited international and regional organizations, industry and other partners and stakeholders. The list of participants is provided as an Appendix to this report.

2. Opening of the Workshop

2.1 During the opening session Mr. Sabiu Zakari, Permanent Secretary, Federal Ministry of Aviation welcomed the senior officials who represent the Federal Democratic Republic of Nigeria, ICAO and other regional and international organizations as well as participants from various States. Following the welcoming remarks, statements were delivered by Mr. Papa Atoumane Fall, Representative of the Secretary General of AFCAC, Dr. Olumuyiwa Benard Aliu, President, ICAO Council and Senator Hadi Abubakar Srika, Honourable Minister of State (Aviation), The Federal Republic of Nigeria.

2.2 In his address to the workshop, the representative of the Secretary General of the African Civil Aviation Commission (AFCAC), Papa Atoumane Fall, underlined the need for significant effort in air navigation expansion and upgrading programmes as well as gradually rehabilitate existing facilities and support aircraft technological advancements in the region in order to accommodate growth in passenger and cargo activities.

2.3 In his remarks, the ICAO Council President, Dr. Olumuyiwa Benard Aliu, expressed that with the potential of growth in the African Aviation industry, which have been augmented through the Single Africa Air transport market, it is apparent that growth in traffic must be accompanied by commensurate investment and commitment to new and modernize airport and air navigation infrastructure. It is, therefore, urgent for Africa to address its aviation infrastructure gaps given current awareness of how air connectivity has become such a unique and indispensable catalyst for socio-economic growth on the continent.

2.4 Dr. Aliu further remarked that the launch of the African Union’s Single Air Transport Market demonstrated Africa’s unity and agreement of the fact that aviation connectivity’s socio-economic benefits are real, sustainable, and worthy of the attention and commitments of African Governments. However, he also stressed that the rapidly-expanding air traffic and enhanced air connectivity can only be sustained with continued investment and development for aviation infrastructure, capacity and technology, supported by a regulatory framework which is ICAO compliant and therefore harmonized with other States and Regions.

2.5 In his opening remarks, the Minister of State, Aviation, Senator Hadi Sirika, expressed that, although aviation in Africa has created about seven million jobs and added about \$72 billion dollars to Africa’s GDP, African aviation industry is facing serious constraints in terms of infrastructure requirements to support future capacity.

2.6 The Minister therefore stressed that Africa aviation needs significant upgrade and expansion to meet the requirements of the projected growth but has to overcome the problem of insufficient access to financial resources for aviation development and modernization.

3. Session 1: The Air Transport Context in Africa

3.1 This session was moderated by Mr. Barry Kashambo, Regional Director, ICAO/ESAF Regional Office supported by Mr. Adiron Alberto, Regional Officer, AT/TC, ICAO/ESAF as Rapporteur. Two presentations were made by the African Civil Aviation Commission and the ICAO Secretariat.

3.2 During this session, information was provided on the current trends of the air transport market in Africa, the various continental policy instruments which are the Yamoussoukro Decision (YD), the Single African Air Transport Market (SAATM) and African Civil Aviation Policy aimed at enhancing air connectivity. The participants were also provided with information on the background and genesis of the Declaration and Framework for a Plan of Action for Development of Aviation Infrastructure in Africa among other outcomes of the Third ICAO World Aviation Forum (IWAF/3) relevant to the workshop.

3.3 The presentations during this session drew the attention of the workshop participants to the following key items:

- a) The framework for Air transport liberalization in Africa is the Yamoussoukro Decision which evolved towards the establishment of a Single African Air Transport Market (SAATM) under the leadership of the African Union and AFCAC identified as the Executing Agency;
- b) The revision of the prioritized action plan for the implementation of SAATM was commended, together with the step taken by AFCAC in developing measurable performance indicators to evaluate the implementation of SAATM;
- c) The need to strengthen the advocacy and promotion efforts to subscribe to the SAATM and build the necessary capacity for the implementation of SAATM by Member States;
- d) That the outcome of IWAF/3 formed the background for the demand to conduct this infrastructure gap analysis to determine the needs in Africa;
- e) IWAF/3 adopted a Communique and the Declaration and Framework for a Plan of Action for Development of Aviation Infrastructure in Africa that will be implemented with the African Union Programme for Infrastructure Development in Africa (PIDA) and included in its priority projects 2020-2030, in cooperation with AfDB, AUC, African Union Development Agency (AUDA);
- f) An aspirational goal is “no constraints of infrastructure capacity, technology and financial resources for aviation development” and follow-up of the Gap analysis will be conducted under the existing framework, namely AFI Plan, AFI SECFAL Plan and HRDF;
- g) In supporting implementation of the PIDA in a coordinated way, African States should deepen and broaden economic and financial cooperation among each other and with development partners in line with the SAATM and the African Union's Agenda 2063 and in support of the ICAO NCLB initiative;
- h) All investments in aviation infrastructure development and modernization in Africa should be directed to well-managed projects featuring solid business cases and due levels of accountability, transparency and quality assurance; and
- i) Aviation infrastructure programmes should be aligned and integrated with multi-modal and urban planning initiatives under the good governance.

4. Session 2: Global and Regional Requirements

4.1 This session was moderated by Mr. Mam Sait Jallow, Regional Director, ICAO/WACAF Regional Office supported by Mr. François Xavier Salambanga, Regional Officer, Communications, Navigation and Surveillance (CNS), ICAO/WACAF Regional Office as Rapporteur. Four Presentations were made by ICAO Secretariat and the African Civil Aviation Commission (AFCAC).

4.2 During this session information were provided on global and regional aviation safety, air navigation and security plans including their corresponding targets. Accordingly, the following key issues were presented and discussed during the workshop:

- a) The structure and components, as well as the importance and relevance of the ICAO Global Air Navigation Plan (GANP), Global Aviation Safety Plan (GASP), and Global Aviation Security Plan (GASeP) were explained;
- b) Information on the framework for regional and national planning and implementation was shared;
- c) The necessity of alignment of Regional Plans, especially the AFI Regional Air Navigation Plan (AFI ANP) with the global frameworks (GANP, GASP, GASeP) in terms of Goals, Objectives, Targets & indicators was emphasized;
- d) The AFI regional targets, mainly the revised Abuja safety targets and air navigation targets and indicators as well as the Windhoek declaration and targets for security and facilitation were presented; and
- e) The roles of Planning, Implementation and Monitoring mechanisms through Regional Groups: AFI Planning and Implementation Regional Group (APIRG), AFI Regional Aviation Safety Group (RASG-AFI), and AFI Comprehensive Regional Implementation Plans for Safety in Africa (AFI Plan) and for AFI Comprehensive Regional Implementation Plans for Security in Africa (AFI SECFAL Plan), were presented and explained.

5. Session 3: Aviation Infrastructure Gap Analysis and Master Plan Development Process-Exchange of experiences and lessons learned

5.1 This session was moderated by Mr. Toru Hasegawa, Deputy Director, Economic Development, Air Transport Bureau (ATB), ICAO supported by Mr. Albert Aidoo Taylor, Regional Officer, ATM/SAR, ICAO/WACAF Regional Office as Rapporteur. Seven presentations were made during this Session by ICAO Secretariat, Industry representatives (ACI, ASECNA and IATA), the Commission of the Economic Community of West African States (ECOWAS) and two States (Nigeria and Kenya).

5.2 This session provided an opportunity for sharing experiences and learning lessons from various similar Aviation Gap Analysis exercises conducted in different regions by various stakeholders including States. It was noted that the scope, method and information utilized by the various stakeholders analyzing the aviation infrastructure gaps varies. The following the key issues were raised across the presentations:

- a) Development of national and regional Civil Aviation Master Plans (CAMPs) is key to addressing gaps in infrastructure and as such, it was recommended that States should promote the importance of aviation development, noting that aviation contributes significantly to national, regional and global economy;
- b) The scope of aviation infrastructure projects is very large in and thus, a long timeframe from planning to completion should be observed, usually with multiple adjustments to the original plan along the way;
- c) Civil Aviation Master Plans should be clearly linked to ICAO's Global and Regional plans, as well as national development framework;
- d) Identified infrastructure gaps, as well as their causes, should be quantified and included in the Civil Aviation Master Plan; and
- e) Given the limited available resources and funds, investments to close the identified gaps should be made in order of priority and urgency, taking also into account value for money (VFM)

6. Session 4: Aviation Infrastructure for Africa Gap Analysis – 2019

6.1 This session was moderated by Mr. Mam Sait Jallow, Regional Director, ICAO/WACAF Regional Office supported by Mr. Eyob Estifanos, Associate Regional Programme Officer – ICAO/AFI Plan. Three Presentations were made by ICAO Secretariat.

6.2 During this session, the Aviation Infrastructure Gap analysis conducted by ICAO was presented in three main areas: Airports, Air Navigation Services (ANS) and Airlines (Aircraft and Equipage). Information was provided on the scope, methodology of survey data collection, developing matrices of prioritizing evaluation item, relevant metrics, as well as interpretation and summary results. The Gap Analysis was conducted based on information obtained from 26 States in response to the survey questionnaire with a varying degree of detail as well as additional data and information from ICAO database.

6.3 The key results of the Gap Analysis are summarized as follows:-

6.3.1 Airports

- a) A majority of international Airports are not certified;
- b) 40% have insufficient pavement strength with regard to intended use;
- c) 35% have insufficient aerodrome emergency planning and perimeter fencing;
and
- d) 20% have insufficient aerodrome capacity

6.3.2 Air Navigation Services

- a) *Air Traffic Management – Performance –based navigation (PBN)*. About 35% of international aerodromes have no PBN approaches while additional 11 % have only visual approach procedures; implementation of continuous climb operations (CCO) and continuous descent operations (CDO) procedures has not started to take full advantage of PBN approach procedures;

- b) **Communications.** Communication infrastructure gap is at a varying degree of implementation with:
- A high rate of implementation of aeronautical fixed telecommunication network (AFTN) requirements, a low level of implementation of Air Traffic Services Message Handling Systems (AMHS) and related interconnections, a very low level of ATS Inter-Facility Data Communications (AIDC) procedures, and no implementation of Voice over Internet Protocol (VoIP);
 - A good very high frequency (VHF) and high frequency (HF) radio coverage, and an increasing Controller-Pilot Data Communications (CPDLC) coverage; and
 - No implementation of VHF and HF data link (VDL and HF DL).
- c) **Navigation systems.** With regard to aeronautical navigational infrastructure, conventional radio navigation aids (VHF omnidirectional range (VOR), distance measuring equipment (DME), instrument landing system (ILS)) and global navigation satellite system (GNSS) core constellations have a good stage of implementation in the region. However, a low pace of implementation of augmented GNSS (satellite-based augmentation system (SBAS), ground-based augmentation system (GBAS)) is identified. GNSS services are currently provided through aircraft-based augmented systems (ABAS);
- d) **Surveillance.** Regarding the aeronautical surveillance infrastructure, it was noted progress in implementing Secondary Surveillance Radar (SSR) Mode S and Automatic Dependent Surveillance Contract (ADS-C) against a low pace of implementation of Automatic Dependent Surveillance Broadcast (ADS-B) and Multilateration (MLAT) stations across the AFI Flight Information Regions
- e) **Frequency spectrum management.** Spectrum monitoring and reporting systems are not implemented by States although increasing number of harmful interferences to aviation are experienced in the Region.
- f) **Aeronautical Information Management.** Progress was registered in aeronautical information exchange model (AIXM) - based electronic Aeronautical Information Publications (e-AIP) and electronic terrain and obstacle data (e-TOD) implementation. Most States also developed

Aeronautical information service (AIS)/Aeronautical information management (AIM) Transition Plans;

- g) ***Aeronautical Meteorology***. The availability rate of OPMETs increased over time, while implementation of Volcanic Ash contingency procedures is at a very low stage; and
- h) ***Search and Rescue***. Effective implementation of Rescue Coordination Centre (RCCs) or Rescue Secondary Centers (RSCs) and signature of effective search and rescue (SAR) agreements have a low level of implementation in the region.

6.3.3 Airlines

- a) Low connectivity and frequency of services among African States. Though some guarantee a potential for evaluation of direct routes, Passengers took connecting flights;
- b) Direct traffic from single African Air Transport Market (SAATM) States is mainly to Europe and intra-Africa, while traffic from SAATM to other regions is carried mainly through connecting flights;
- c) In terms of international frequencies offered a substantial portion of the service are offered by African carriers;
- d) In terms of origin-destination passengers, for 14 African States, over 50% of international passengers are carried by African carriers; and
- e) All the African States are facing load factors of their airlines lower than the world average.

7. Session 5: Breakout Sessions of Working Groups to review various components of the 2019 Aviation Infrastructure Gap Analysis

7.1 Under this session three groups focusing respectively on Airports, Air Navigation Services (ANS) and Airlines (aircraft and equipage) were constituted from participants with the support of the ICAO Secretariat. The Airports, Air Navigation Services (ANS) and Airlines Working Groups' discussions were facilitated by Mr. Rishi Thakurdin, Director Safety and Technical, Airports Council International –Africa (ACI-Africa); Ms. Mbayang Gueye, Head of the Strategy and Planning Department of the *Agence pour la securite de la navigation aerienne en Afrique et a Madagascar* (ASECNA), and Mr. Abderahmane Berthe, Secretary General of the African Airlines Association (AFRAA) respectively.

7.2 The Working Groups were tasked to review the preliminary survey results covering the three areas and determine the existing aviation infrastructure gaps as well as make recommendations and define requirements on the next steps towards the development of regional and national aviation infrastructure programmes and master plans based on determined strategic infrastructure requirements and in line with the level of predicted traffic growth and ICAO Global and Regional plans.

7.3 In reviewing the survey results, Working Groups were guided by the listed priority evaluation parameters and metrics as identified under each Working Group. To this effect, guidelines were prepared for each Working Group and provided to the Working Group facilitators.

7.4 Each Working Group evaluated the survey questionnaire, scope, methodology utilized in the Gap Analysis and recommended a set of action to improve the results of the analysis including to broaden the scope beyond the gap analysis to cover various elements that are instrumental for aviation infrastructure development and master plan study.

7.5 The results and recommendations of set of actions by each Working Group are presented under Session 6.

8. Session 6: Recommendations / Outcomes of the Working Group and Next Step

8.1 This session was moderated by Mr. Mam Sait Jallow, Regional Director, ICAO/WACAF Regional Office supported by Mr. Nika Meheza Manzi, Regional Officer, Aerodromes and Ground Aids (AGA), ICAO/WACAF Regional Office as Rapporteur. The Working Groups established under Session 5 to evaluate the Gap Analysis presented the outcome of their discussions, and recommendations to improve the aviation infrastructure gap analysis report.

8.2 The key recommendations by each Working Group to improve the Infrastructure Gap analysis and the way forward are presented as follows:

8.2.1 The Airport Working Group

- a) The airport Working Group suggested that the information gathered through the survey questionnaire can be improved to add some critical elements such as the land side facilities, environment (emission reduction, sustainable source of energy ...), Detailed facilities on aviation security and personnel and training.
- b) The group also suggested that the prioritized key items can be categorized in two major areas:
 - **Priority 1**
 - Lightings and visual aids
 - Electrical power supply
 - Perimeter fence
 - Passenger/Bag screening
 - Aerodrome Rescue and Fire Fighting Service (ARFFS)
 - Apron capacity
 - Pavement strength
 - Runway/Taxiway (RWY/TWY) dimensions
 - Certification
 - **Priority 2**
 - Cargo screening
 - Machine Readable Travel Documents (MRTDs)

- Cargo terminal design capacity
- Passenger terminal design capacity

8.2.2 The Air Navigation Services Working Group

The Air navigation services Working Group evaluated the questionnaire, scope and methodology, the key elements of the Gap Analysis including the interpretation of the results of the Gap Analysis. The Working Group recommended that:

- a) the survey questionnaire should evolve to identify ANS gaps in ANS human resources and training and to address emerging critical issues such as cyber resilience of CNS/ATM systems/infrastructure, increasing operations of UAS/RPAS, space travel, high flying balloons, supersonic flights, urban taxis etc.
- b) the links between the ANS gaps and the already existing APIRG regional infrastructure projects be clearly identified in order to address those critical gaps in the air navigation area; and
- c) a regular monitoring of ANS gaps by States with a six-month reporting cycle to ICAO.

8.2.3 The Airline Working Group

- a) The Airline Working Group suggested that the information gathered through the survey questionnaire can be improved to add some critical elements such as maximum connecting time, cargo data, and Average fleet utilization etc.
- b) The group recommended that the following set of action to be considered to improve the Gap analysis and future Steps:
 - To include the strengthen and expand the existing MRO in the gap analysis
 - To consider human development, training and retainment of aviation professionals,
 - Funding of Airlines form African financial institutions; and
 - Evaluation of the Governments Aviation Policies and Regulations

8.2.4 General Recommendations

8.2.4.1 The following general recommendations which are not specific to the areas of Airports, Air Navigation Services and Airlines, were formulated by the Working Groups:

- a) ICAO to improve and re-submit the questionnaire to States for completion of data collection;
- b) To present the results of the finalized GAP analysis to AU, RECs, Development Partners, etc. for consideration
- c) To put in place a regional programme to ensure the action plan/project is properly implemented;
- d) To develop a regional programme with specific plans and projects to ensure that the identified gaps are properly addressed.;
- e) To identify funding mechanisms at States' or regional level; and
- f) To ensure proper collection of data, the States are advised to coordinate appropriately with their aviation industry; and
- g) ICAO should put in place a better advocacy and top-down approach through CEOs/DGs of CAAs, for accurate and robust data gathering from States.

9 Closing Remarks

9.1 The AFI Plan Steering Committee Chairperson, Mr. Mr. Halidou Moussa expressed his appreciation for participants of the workshop that represents States, Industry and development partners for their active engagement during the course of the workshop. He also expressed appreciation for the excellent organization and support provided by the host, the Ministry of State, Aviation of the Federal Republic Nigeria.

9.2 The Chairperson informed the meeting that the implementation of the AFI Plan work programme over the years has had a positive impact on aviation safety in Africa. He attributed these achievements to the continuous and strong support of the ICAO President who consistently promote and guide the various initiatives that are instrumental enhancing the level of aviation activity in Africa.

9.3 In closing the meeting, the ICAO Council President, Dr. Olumuyiwa Benard Aliu expressed his appreciation to the host State, the Federal Republic of Nigeria for the usual

excellent organization and continuous support of ICAO. He also thanked the ICAO Secretariat from Headquarters and Regional Offices led by three Regional Directors from Dakar, Nairobi and Cairo.

9.4 He also expressed his gratitude and satisfaction for the active participation and representation of the States, Regional Organizations, and Industry and Development Partners in the workshop. Finally, he stressed the need to work fast and finalize the report of the workshop, while the finalized Gap Analysis report with all the feedback from the workshop should be ready for presentation at the 22nd meeting of the AFI Plan steering Committee scheduled to be held on 15 of May 2019 in Kampala, Uganda.

9.5 Finally, on behalf of the Permanent Secretary, Federal Ministry of Transportation, Nigeria, the Director-General of Nigeria Civil Aviation Authority (NCAA), Capt. Muhtar Usman, thanked all of those who made the workshop successful and formally closed the workshop.

LIST OF PARTICIPANTS

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
States					
1	ANGOLA	Venâncio Paulo	CNS Inspector for civil aviation	+244 923 401 731	venanciopaulo@gmail.com
2		Emanuel Candengue	Chief of Air Navigation Department		
3	BOTSWANA	Tebogo Maketlo	Inspector CNS	+26773236191	tmaketlo@caab.co.bw
4		Dineo Mavis Rakaisa	Chief Engineer	+26773765245	drakaisa@yahoo.com
5		Ontefetse Kgautlhe	Principal Meteorologist II	+26776788478	kgautlheonte@gmail.com
6		Emmanuel Masaswa	Technician engineer		emagagwa@gmail.com
7	BURKINA FASO	Louissette P. Bassonon Bonzi	Superviseur Exploitant Technique et Operations au sol	+22678875144	b_louissette@yahoo.fr
8	CAMEROON	Pierre Olivier Ntongmo	Sub-director for Air Navigation and Aerodromes	00237 697 63 29 84	olivier.ntongmo@ccaa.aero
9		Julien Hervé Tutab Aleokol	Directeur de l'exploitation et des Commendements d'Aéroports		
10		Jean Pierre Kouogueu	Directeur Technique		
11		Raymond Bisse Bell	Chef de la Division des Coopérations, réglementation et de la Communication Aérienne		
12	CÔTE D'IVOIRE	Anouan Tcho Sylvere	Head of aerodrome safety service	+22508914030	anouansylvere@anac.ci
13		Gnassou Sandrine	Head of CNS Department	0022589841470	sgnassou@anac.ci
14	EQUATORIAL GUINEA	Ngomo Mangué Margarita Nchama	inspectora	+240222555524	nchamargo@yahoo.fr
15	GABON	Toussaint Mvola Ndong	Chef de Service Navigation Aérienne	+241 04230440/06333280	toussaint.mvola@anac-gabon.com
16		Majinu MA Mbadanga Pasy	Head: Safety, Security & Env, Libreville Airport	+24102499695	pasy.majinu@arisenet.com
17	GHANA	Charles Kraikue	DATSE	+233501315637	ckraikue@gcaa.com.gh
18	GUINEA	Ousmane Diallo	Director, Flight Safety	664321214	diallodto69@yahoo.fr
19		Soumah Ahmed Tidiane	DGA	00224664202216	satidiane@yahoo.com
20		Oularé Kalagban	DNA	00224622412502	ka.oulare@agac-gn.com

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
21	KENYA	Anne Gitau	Chief Aeronautical Information Officer	+ 254 720 776802	agitau@kcaa.or.ke
22		Hitler Olwenge	Chief ATCO	0206827471-5	holwenge@kcaa.or.ke
23	MALI	Issiaka Konake	Directeur de la Sécurité Aérienne	+223 79278233	issiaka.konake@anac-mali.org
24		Mahamadou Diarra	Deputy General Manager	0022376130453	jumeaux1997@yahoo.fr
25	NAMIBIA	Abraham Kahenge	Senior ANS Safety Oversight Inspector	+264811286205	kahenge@ncaa.com.na
26		Humphrey Geiseb	High Commissioner of Namibia to Nigeria		hgeiseb@yahoo.com
27	NIGER	Abdoulaye Ibrahim	Chef Unité Exploitation AGA et ANS	+22788610404	iabdoulaye97@yahoo.fr
28		Mahaman Kanta	Head of CNS & ATM Service	0022790510761	mahamankantakanta@yahoo.com
29		Moussa Halidou	Représentant du Niger a l'OACI, Délégué de l'ASECNA	1 514 954 5820	mhalidou@icao.int
30	NIGERIA	Musa Nuhu	Representative of Nigeria on ICAO Council	514-954-8289	mnuhu@icao.int
31		Emmanuel Oluwaseun	SA MD/CE	2348034631793	runskian@yahoo.com
32		Titi Ube-Williams	Senior Air Traffic Control Officer	+2347031217210	ube.titi@gmail.com
33		Engr. Abdullahi Babanya	GM, Engineering		
34		Capt. D. Danraka	Director Operations		dayyabudanraka@aib.gov.ng
35		Engr. I. M. Wali	Director Engineering		
36		Akin Olateru	Commissioner/CEO	+234 8127050000	aolateru@aib.gov.ng
37		Capt. Nogie Meggison	Chairman		
38		Odumah Boniface	Maintenance Controller	+234 7032122685	boniface.odumah@arikair.com
39		Lai Are	MD/CEO		
40		Emmanuel	ONWODI		
41		Engr. Mrs. Bisi Makjuola	AGM, Projects		
42		Mr. Richard Tella	DGM, ARFFS	+234 8186447125	gbadevich@gmail.com
43		Mr. Auta Nehemah	DGM, Airfield Operations		naauta@gmail.com
44		Mr. Agbi Elifue	GM, Safety	+234 8033236948	elifueagbi@yahoo.com
45		Mrs. Olajumoke Oni	GM, Airport Operations		
46		Makanjuola Adebisi	AGM Project Civil Eng)	+234 8033063671	

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
47		Okorumkwo Ezinne	SEO Public Relations	+234 7063439816	zinnyc123@yahoo.com
48		Ezike Iffesinachi L.	Deputy General Manager Airport Operations	+234 8023118321	
49		Olaiya O.	Civil Engineering	+234 80339 22853	yemisysalako@gmail.com
50		Echoda Johnson	Civil Engineering	+234 7035264373	tooreallne@gmail.com
51		Eng. Saleh Dunoma	MD/CE	+234 803303582	contact@faannigeria.org
52		Usman Lawal Usman	Head Airfield Services	+234 8034582043	
53		Mukhtar Mohammad	GM Airfield Operations		ismat1027@gmail.com
54		Rabiu Yadudu	Director Airport DAO Operations		rabiuyadudu@yahoo.com
55		Tambo A.A.	OPS	+234 8036001858	
56		Salako N.O.	PAO (IR)		
57		Engr. Chidi Izuwah	MD		
58		Yusuf Haruna	Head, Aviation	+234 8033494599	y.haruna@icrc.gov.ng
59		Adamu Umar	Head Transport		
60		Adetoro Omolopo	Head of Engineering	+234 8033266199	adetoro.omolopo@medviewairline.com
61		Otogo Anthony	Rep Head of Flight OPS		anthony.otogo@medview-airline.com
62		Mr. Muneer Bankole	MD		
63		Sirajo Tanigo Baba	H.R.	+234 7038960670	sirajotanigobaba@gmail.com
64		Omotayo oluwaseun	Chief Air Traffic Control Officer	+2348034631793	eooluwaseun@nama.gov.ng
65		Hussaini Jibrin	Deputy General Manager ATC	+2348026506189	hussainijibrin@gmail.com
66		Muhammad Manko	Deputy General Manager ATC	+2348036138928	usman.manko@yahoo.com
67		Ahmed Bello	Air Traffic control Standards		bajbello13@gmail.com
68		Abdulateef Bello	Chief Air Traffic Control Officer	+234 8035386229	bellothefuture@yahoo.com
69		Adeoye Oyeyinka	Deputy General Manager ATC	+234 8036694922	adeoyeoyeyinka@gmail.com
70		Abayomi Agoro	Deputy General Manager (ATC)	+234 7036616961	agorosco@gmail.com
71		Mr. Matthew Pwajok	Director of Operations	+234 8050786333	mpwajok@nama.gov.ng
72		Engr. Farouk Ahmed Umar	Director of Engineering		
73		Mr. Oyenekan Oloyede			

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
74		Engr. Orishaleye Isaac	DGM, TS		
75		Capt. Fola Akinkuotu	Managing Director NAMA		info@namahqtr.net
76		Anifiok Umoh	Director F&A		
77		Anastatia Gbem	Legal Adviser	2 347 036 741 590	agbem@nama.gov.ng
78		Pawl Oki			
79		Ishaya Dung	DGM	+234 8035896091	chuwang2003@yahoo.com
80		Abdulaziz Maiwada	General Manager	+234 8057625745	mabdulaziz@nama.gov.ng
81		Haske Jibrin	GM AP		jhaske@nama.gov.ng
82		Arogunjo Rafiq Olubukola	General Manager SMS/QA		rarogunjo@nama.gov.ng
83		Muhammad Musa	Air Navigation Safety Officer	+234 7036669124	muhammadmusa313@gmail.com
84		Dakup Sylvanus Bawa	Aerodrome Safety Inspector		sylvanus.dakup@ncaa.gov.ng
85		Capt. Muhtar Usman	Director General NCAA	+234 8077090902	muhtar.usman@ncaa.gov.ng
86		T. A. Odunowo	Director, Aerodrome and Airspace Standards		
87		Grp. Capt. (Rtd) Edem Oyoita	Director, Air Transport Operations		
88		Capt. A. W. O. Williams	Aviation Safety Inspector		
89		O. F. Adegbesan	DGM, Air Transport Regulation		
90		Capt. Gerald Nmoka	Director of Operations		nmoka.g@acm.aero
91		Paul Ajakaiye	DGM, Air Navigation		
92		Sylvanus B. Dakup	Aerodrome Safety Inspector		sylvanus.dakup@ncaa.gov.ng
93		Hamza Ibrahim	AGM, AVSEC	+234 8035979881	ibrahim.hamza@ncaa.gov.ng
94		Engr. Suleiman Akwu	ASI, Airworthiness	+234 8056222033	suleiman.akwun@ncaa.gov.ng
95		Sule Ango	DGM, ATS		
96		Adegbesan Oyetoun	DGM (Economic Reg.)	+234 8166184373	oyetoun.adegbesan@ncaa.gov.ng
97		Diku Ataganen Erasmus	Air Navigation Safety Officer		ataganen.diku@ncaa.gov.ng
98		Jaafar Nasir Saeed	Public Relations Officer	+234 8067690160	jaafarsaeed64@gmail.com
99		Sadu Abdul Jabbar	Air Navigation Safety Officer	+234 8023265332	vabash2002@yahoo.com

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
100		Ango Shehu M.	DGM (ANS)	+234 8033413410	mohammed.angoshehu@ncaa.gov.ng
101		Adebayo Oladipo	DGM (AERO OPS)	+234 8029990849	dayo.adebayo@gmail.com
102		Oyo Ita	Director Air Transport Reg	+234 8118193936	
103		Dauda B. Yahaya	Deputy Rector		
104		S. T. Yahaya			
105		Engr. Z. A. Zubairu			
106		Mr. Rafiq Arogunjo	GM, SMS		
107		Capt. O. J. Achimugu	Pilot		
108		Jec Amadi	HPR	+234 8033492199	
109		Zakari Zubeiru	Chief aircraft Maintenance instructor	+234 8037039671	zzakariadamu@yahoo.com
110		Omotowa Dapo	Asst. Chief Instructor		omotowa@yahoo.com
111		Mr. Asaniya Taiwo	Head Aeromet Services/Qmr	+2348035875259	
112		Mr. Mukolu Samson	Manager, Forecast Office	+234 8038745417	
113		Engr. Abdullahi Magaji	Assistant General Manager	+234 8039701123	
114		Prof. Sani A. Mashi	Dg/CEO	+234 8099991919	saniamashi@nimet.gov.ng
115		Oluwatosin Itiowe	Senior Meteorologist	+234 8062435566	tosinitiowe@yahoo.com
116		Capt. Bukola Agbenike	Pilot		
117		Mushabati Brona	Second Secretary, Namibian High Commission in Nigeria		bmushabati@nhc.com.ng
118	REP. DEM. CONGO	Kabombo Mandamuna Joseph	Directeur des Aedromes, Congo AAC Rep. Dem. Congo		jokama_kabombo@yahoo.fr
119	SENEGAL	Badara DIOP	Aerodromes Standards and Safety Department	00221 77554 39 27	badara.diop@anacim.sn
120	SIERRA LEONE	Moses Tiffa Baio	Director General	+23276601788	mtbaio@slcaa.gov.sl
121		Brima S. T. Kebbie	Permanent Secretary	+232 78 408831	bestkebbie03@yahoo.com
122		Ebenezer Macauley	General Manager	+232 78 575361	ebenerzermacauley2020@yahoo.com
123	TANZANIA	Stephen Mhando	Principal Air Traffic Manager	+255 754269746	mhandosr@yahoo.com
124	TOGO	Tchaa Tchamdja	Chef Service Navigabilité des Aéronefs	00228 92 19 52 90	t.tchamdja@anac-togo.tg
125		Gnimdou KELEWOU	Civil aviation engineer	0022892518492	g.kelewou@anac-togo.tg

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
126	UNITED STATES OF AMERICA	Venerabilis Pantaleo	Principal Air Navigation Engineer	+255754364930	ypantaleo2000@yahoo.com
127	ZAMBIA	Vincent Banda	Representative of Zambia to ICAO		
International Organizations & Industry					
128	ACI	Rishi Thakurdin	Director Safety and Technical	+27823366609	rthakurdin@aci-africa.aero
129	AFCAC	James Danga	AFCAC Safety Expert	+221338598800	jdanga@afcac.org
130		Papa Atoumane Fall	Director of Safety	+221777875069	afall@afcac.org
131		Amaleboba Peter	Legal Adviser, AFCAC	+221778492838	pamaleboba@afcac.org
132	AFDB	Romain Ekoto	Chief Aviation Officer	+22575753267	R.ekoto@afdb.org
133	AFRAA	Abderahmane Berthe	Secretary General	+254746151529	aberthe@afraa.org
134	AIRBUS	Victor Udoh	Head Of Office, Airbus Nigeria	2348160000758	victor.udoh@airbus.com
135	ASECNA	Apollin Komguem Magni	Technical Adviser	00221 76 451 58 84	komguemmagniapo@asecna.org
136		Youssouf Tidjani	Cadre Direction Navigation aérienne	+221 781290983	youssouftid@asecna.org
137		Mbayang GUEYE	Head of Télécommunications Department	+221776358009	gueyemba@asecna.org
138	ASSA-AC	François Alexandre Kiapo	Directeur Général	+23590078902	kiapofrancois0@gmail.com
139	BAGASOO	Jailza Silva	Regional technical coordinator - Airworthiness	+2349070251652	jsilva@bagasoo.org
140		Tidiane Bah	Executive Director	+2349070346542	tbah@bagasoo.org
141		Jacob Idaewor	TC-Aerodromes	2348129125326	jidaewor@bagasoo.org
142	BOEING	Chamsou Andjorin	Director Government Affairs and Market Development	254741520002	chamsou.d.andjorin@boeing.com
143	DASITHA	Thabani Mthiyane	Managing Director	+27782989869	thabani@dasitha.africa
144	ECOWAS	Vivian Mba	Research Assistant	08065719800	vivianmba@yahoo.com
145		Yankhoba Traore	Executive Assistant to Commissioner	+2348162094786	yankhoba66@gmail.com
146		Paul Antoine Marie Ganemtore	PPO, Air Transport	+2348076638570	pganemtore@ecowas.int
147		Adeniran Saidat	Infrastructure Officer, ECOWAS	+2348033208473	Sadeniran@ecowas.int
148	IATA	Yassine El Charkaoui	Manager Safety and Flight Operations -ATM infrastructure	+234802 607 8817	charkaouiy@iata.org

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
149		Jennifer Yeates	Assistant Director Safety and Flight Operations (CWA)	+2349079168003	yeatesj@iata.org
150		Adeyemi Adefunke	IATA Regional Director,Africa	+2347087201893	adeyemia@iata.org
151		Mr. Taiwo Pater			
152		Dr. Samson Fatokun	Head of Account Management	+2348039799037	fatoguns@iata.org
153	IFATCA	Zaid Hesse	air traffic control	00233244730668	znhesse@gmail.com
154	WORLD BANK	Mohamed Aliyu	Transport Specialist Consultant	+234 8033260626	maliyu@worldbank.org
155	WORLD BANK	Olatunji Ahmed	Senior Transport Specialist		oahmed1@worldband.org
International Civil Aviation Organization					-
156	ICAO	Mam Sait Jallow	Regional Director	221774505692	MJallow@icao.int
157		Barry Kashambo	Regional Director	+254207622395	bkashambo@icao.int
158		Mohamed Khalifa Rahma	ICAO Regional Director Middle East	+201000470650	mrachma@icao.int
160		Iyabo Sosina	Special Adviser to the President of ICAO	+15149548219 ext 8012	isosina@icao.int
159		Toru Hasegawa	Deputy Director Economic Development, Air Transport Bureau	+15149548219 ext 8049	THasegawa@icao.int
161		Marco Merens	Chief Integrated Analysis	+15149548219 ext 8329	mmerens@icao.int
163		Prosper Zo'o Minto'o	Deputy Regional Director	+221338692402	pzoomintoo@icao.int
162		Arthemon Ndikumana	Deputy Regional Director	+82-44-201-4214	ANdikumana@icao.int
164		Francois-Xavier Salambanga	Regional Officer CNS	+221338692415	FSalambanga@icao.int
165		Nika Meheza Manzi	RO AGA, Regional Coordinator CAPSCA	+221 77 746 67 80	nmanzi@icao.int
166		Albert Taylor	Regional Officer, ATM & SAR	+221 33 869 24 13	ataylor@icao.int
167		Adiron Alberto	Senior Policy Officer, Air Transport	+251 911 549 378	aalberto@icao.int
168		George Baldeh	Regional Officer AIM	+221 338692405	gbaldeh@icao.int
169		Harvey Lekamisy	Regional Officer CNS	+254731588948	hlekamisy@icao.int
170		Eyob Estifanos Kebede	Associate Regional Programme Officer	+254771585857	estifanos@icao.int
171		Fatou Thioune ép. Sarr	Administrative Officer	+221338692403	fsarr@icao.int
172		Fartia Isabelle Maïga Danfakha	Senior Associate	+221-338692419	FMaiga@icao.int

#	States/Organization Name	Full Name	Job Title	Business Phone	Email
173		Babacar Malick Kone	ICT Assistant	+221776575011	Bkone@icao.int

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