



ICAO

**Twenty-second Meeting of the AFI Planning and Implementation Regional Group &
Fifth Meeting of the Regional Aviation Safety Group for the AFI Region
(APIRG/22 and RASG-AFI/5)
(Accra, Ghana, 29 July – 02 August 2019)**

Agenda Item 3: ICAO AFI Plan Aviation Infrastructure for Africa Gap Analysis

3.1 Review of the outcomes of AFI Plan 2019 Aviation Infrastructure for Africa Gap Analysis

(Presented by the Secretariat)

EXECUTIVE SUMMARY

This paper reports on the 2019 Aviation Infrastructure for Africa Gap Analysis, conducted in response to ICAO Council Decision, C-DEC 24/7, on the implementation of the Declaration and Framework for a Plan of Action for Development of Aviation Infrastructure in Africa, and the request of the AFI Plan Steering Committee that the Secretariat prepares an appropriate programme to implement the required actions including the aviation infrastructure gap analysis.

1. INTRODUCTION

1.1 The APIRG/21 meeting, under its Decision 21/03 requested the Secretariat to coordinate APIRG inputs to the Third ICAO World Aviation Forum (IWAF/3, Abuja, Nigeria 20-22 November 2017), in order to assist in the following tasks:

- a) Determination, through appropriate gap-analyses, of the aviation infrastructure needs of African States taking in to consideration requirements of the ICAO Global Plans, Regional Plans and existing and future capacity requirements; and
- b) Preparation and incorporation in the PIDA work plan, of an aviation infrastructure development plan for Africa and coordinate its implementation.

1.2 Under its Conclusion 21/08, APIRG/21 also requested States to take due account of the contribution of air transport to social-economic development and ensure that air navigation needs – including planning, implementation, operation, maintenance, human resources and training - are incorporated/addressed in their National Development Plans.

1.3 The IWAF/3 adopted a Declaration and Framework for a Plan of Action for Development of Aviation Infrastructure in Africa. The ICAO Council at its 213th and 214th Sessions in considering the report on the outcomes of the World Aviation Forum decided, under C-DEC 24/7, that activities and actions assigned to ICAO in the Declaration and Plan of Action be implemented under existing arrangements, especially the ICAO Comprehensive Regional Implementation Plan for Aviation Safety in Africa (AFI Plan).

1.4 The AFI Plan Steering Committee thereafter decided, at its 21st meeting that the AFI Plan Secretariat should prepare a programme and implement the required actions indicated in the said ICAO Council Decision. The Gap Analysis exercise covering Airports, Air Navigation Services, and Aircraft fleet capacity and equipment was conducted accordingly, and its outcome validated through a workshop held in Abuja, from 19 to 21 March 2019. The Workshop was attended by the President and Representatives of the ICAO Council, Air Navigation Commission, with 173 delegates from 22 States and various stakeholder organizations.

2. DISCUSSION

2019 AVIATION INFRASTRUCTURE GAP ANALYSIS EXERCISE

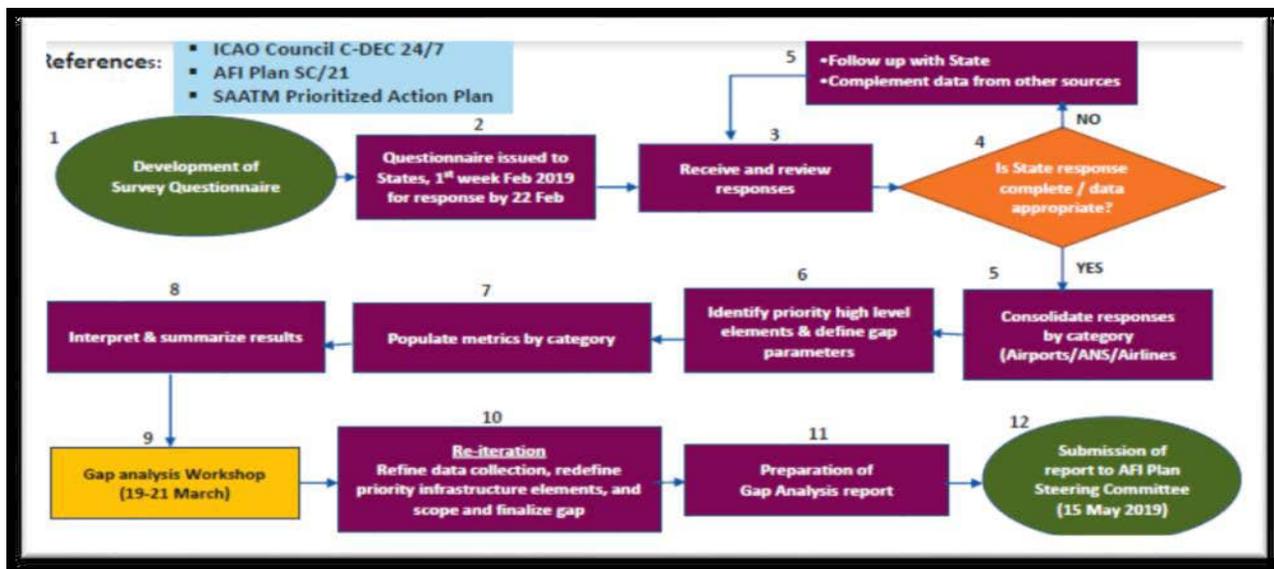
2.1. Objectives and Scope

2.1.1. The objective of the gap analysis was to carry out a State-by-State evaluation and determine the current status of implementation of aviation infrastructure based on global, regional and national requirements, taking in to account existing traffic levels, demand and capacity in the African region. The gap analysis is to serve as basis and provide in puts for the preparation of regional and national aviation Master plans and ensure that the development of aviation infrastructure complies with ICAO Standards and Recommended Practices, and responds adequately to traffic and capacity demands

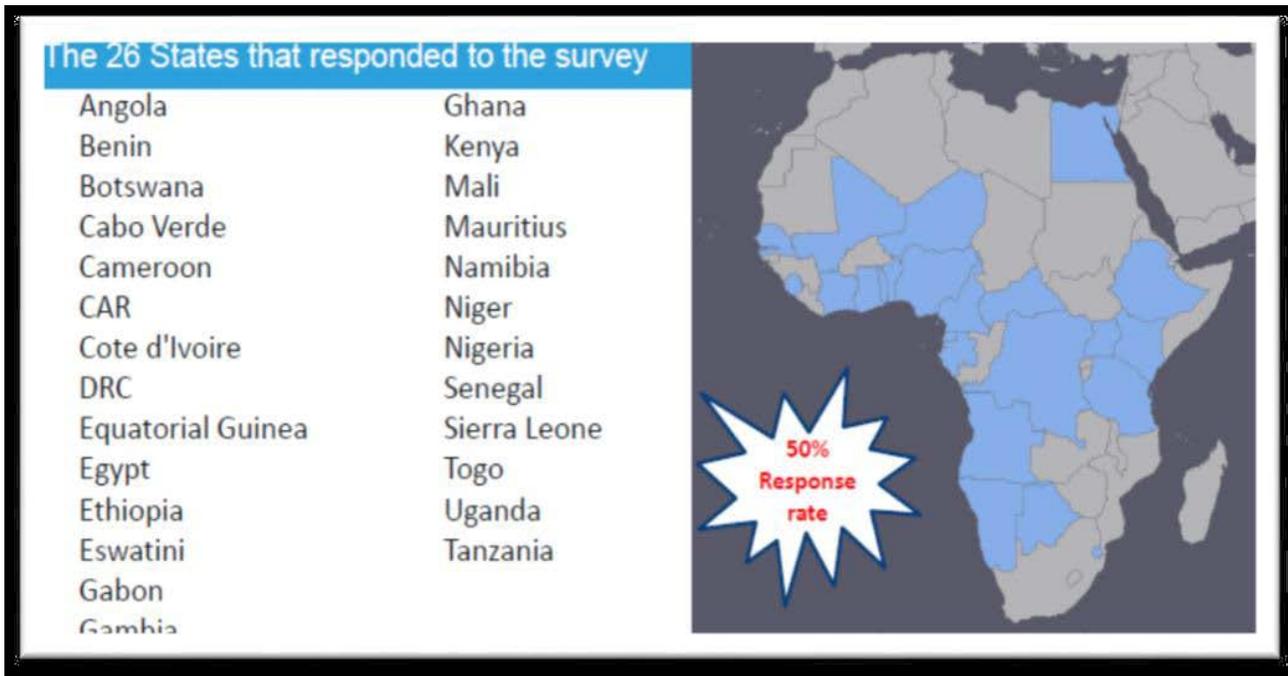
2.1.2. In this respect, the exercise involved all African countries and covered aspects related to International Airports, Air Navigation Services, and Aircraft fleet capacity and Equipage. It was also conducted within the context of operationalizing the Single African Air Transport Market (SAATM), a flagship project of Agenda 2063 of the African Union.

2.2. Methodology and Process

2.2.1. **Survey Strategy and Process:** In line with the objective of the gap analysis, a preliminary survey on aviation infrastructure in Africa covering Airports, Air Navigation Services and Air Operators with respect to fleet capacity was conducted by the ICAO Secretariat. The questionnaires used for the survey are provided as **Appendices A, B and C** to this working paper. The data obtained from the survey were supplemented by additional information from various stakeholders. The survey strategy and process is summarized in the **figure below**:



2.2.2. **Survey / Data collection** - For the purpose of the exercise, information was gathered through a detailed State survey and complemented with material from the ICAO database and other sources. The survey questionnaire was sent to all African States and responses were received from 26; a response rate of approximately 50%.



2.2.3. **Gap analysis metrics and key high level elements** - A large volume of data and detailed information was required in the survey questionnaire. It was therefore necessary to identify and focus on key high level infrastructure related elements and determine the appropriate parameters to define the gaps in each of these. Similarly, the relevant references and applicable standards/plans were mapped out and used in evaluating level of implementation and measuring the associated gap(s) in a quantifiable manner.

2.2.4. The following key elements and parameters were employed:

- **International Airports** - Certification status, Runway capacity, aircraft parking, Terminal Building capacity (passenger/cargo), Rescue and Firefighting services, MRTDs, security screening equipment, and standby power / Airfield lighting.
- **Air Navigation Services** – PBN, ATS capacity, ATM Master plan, communications (systems, networks, circuits), navigation and surveillance station, and AIXM (e-AIP, AIS/AIM Transition, e-TODD), availability of operational meteorological (OPMET) data, volcanic Ash Contingency Plans.
- **Airline fleet, equipment and equipage** – market share (available seat kilometers of local carriers, passengers carried), connectivity (African/non-African destinations served by local airlines, weekly frequencies), capacity (load factors), Aircraft ownership (% /leased)/ Cape Town Convention ratification.

2.2.5. The global and regional requirement references used include the GASP, GANP, GASeP, ANP, and Decisions and Conclusions of Regional Groups / Plans established by ICAO (APIRG, RASG-AFI, AFI Plan, AFI SECFAL Plan, etc.), as well as the safety and security targets for Africa.

Summary Results

International Airports

- a) 70% of international Airports not certified;
- b) 35% of international Airports with inadequate pavement strength;
- c) 42% of international Airports with insufficient emergency plans/perimeter;
- d) 20% of international Airports with inadequate RFFS capacity;
- e) 18% of international Airports without adequate passenger/cargo terminal capacity
- f) 18% of international Airports with insufficient apron capacities;
- g) 17% of international Airports with deficient electrical power systems;
- h) 15% of international Airports without adequate airfield lighting systems;
- i) 9% of international Airports facing runway/taxiway dimension problems; and
- j) 8% of international Airports without adequate screening and MRTD equipment.

Air Navigation Services

- a) 35% of international Airports without PBN;
- b) 95% of States have no ATM Master plan;
- c) 95% of AFTN networks implemented;
- d) 15% ATS Message Handling Systems (AMHS) implemented;
- e) 5% ATS Inter-Facility Data Communications (AIDC) implemented
- f) 50% Controller-Pilot Data Communications (CPDLC) coverage;
- g) 0% implementation of VHF Data Link;
- h) 97% Ground aids/GNSS navigation systems implemented;
- i) 3% augmented GNSS (SBAS) implemented;
- j) 64%SSR-S,57%ADS-C,16%ABS-B,3%MLAT implemented;
- k) 78%e-AIP, 70% e-TODD, 80% AIS/AIM Plans implementation;
- l) Availability rate of OPMETs increased to 97% over time; and
- m) Implementation of Volcanic Ash contingency procedures is at a very low stage of about 36%.

Airlines:

- a) Low connectivity - 27% of services among African States;
- b) Direct traffic from 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, 76% of the intra-Africa market served by African carriers;
- d) In terms of origin-destination passengers, for 14 African States, over 50% of international passengers are carried by African carriers;
- e) Airlines of all African States had an average load factor of 70.8% in 2017 (lower than the world average of 82%); and
- f) 27 African States are party to Cape Town Convention.

2.3. Key Conclusions and Recommendations:

2.3.1. The gap analysis having built on the outcomes of the Abuja validation Workshop, provided a series of conclusions and recommendations, details of which are outlined in the report. These include, but are not limited to:

- a) The development of guidance material by ICAO to assist States and Regions in preparing aviation Master
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plans be expedited.

- b) States and RECs utilize available guidance material from ICAO and the results of the gap analysis to prepare national and regional Aviation Master Plans.
- c) APIRG finalizes the development and adoption of the remaining parts of the AFI Air Navigation Plan, and ensure continuous monitoring of aerodrome and air navigation deficiencies.
- d) The aviation infrastructure gap assessment methodology be aligned with that of State Safety Programmes on the ICAO iSTARS Online Tool, with overall indicators to give level of progress of States.
- e) APIRG and States prioritize air navigation related projects taking due account of prevailing targets, including SAR organization, AIS/AIM and PBN implementation.

2.4.2 The following activities of relevance to APIRG work were also identified as part of the Next Steps:

- a) Preparation of gap analysis of a long term horizon based on 25-year projections of traffic growth, operational and capacity / regulatory requirements, and demand for aviation professionals;
- b) Determine the funding required to bridge the long term infrastructure gaps and identify appropriate financing mechanisms at State and / or regional level;
- c) States and RECs utilize available guidance material from ICAO and the results of the gap analysis to prepare national and regional Aviation Master Plans; and
- d) Regional programme with specific plans, projects and effective implementation monitoring mechanism be developed to ensure that the identified gaps are properly addressed.

2.4. The report of the Aviation infrastructure for Africa Gap Analysis is available on the ICAO public website.

3. Conclusion

3.1 The meeting is invited to:

- 1) Note the Report on the AFI Plan 2019 Aviation Infrastructure for Africa as presented in this working paper;
- 2) Commend the AFI Plan Secretariat for the conduct of the 2019 Aviation Infrastructure for Africa Gap Analysis;
- 3) Request APIRG and RASG-AFI to take action as appropriate on the key conclusions and recommendations in Section 2.3 here above; and
- 4) Provide further guidance as necessary.

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APPENDICES

STATE:

AVIATION INFRASTRUCTURE GAP ANALYSIS FOR AFRICA SURVEY QUESTIONNAIRE

FEBRUARY 2019



APPENDIX A

AVIATION INFRASTRUCTURE GAP ANALYSIS FOR AFRICA

SECTION A: INTERNATIONAL AERODROMES

NAME OF THE INTERNATIONAL AERODROME:.....

REPORTING ENTITY:.....

Abbreviations

Lighting aids

- PA - Precision approach lighting system, Category I, II or III shown by an "x" if the aid is the same category as the runway type or if it is different by the numeral 1, 2 or 3 against the runway to be served, to indicate the type of system.
- SA - Simple approach lighting system, shown by an "x" against the runway to be served.
- VA - Visual approach slope indicator system, shown by an "L" or a "S" against the runway to be served. The letter "L" indicates that the system is PAPI or T-VASIS (AT-VASIS) and the letter "S" indicates that the system is PAPI (APAPI).
- RWY - Runway edge, threshold and runway end lighting. An "x" indicates that these aids are provided.
- CLL - Runway centre line lighting, shown by an "x" against the runway to be served.
- TDZ - Runway touchdown zone lighting, shown by an "x" against the runway to be served.
- TE - Taxiway edge lighting. An "x" indicates that the aid is provided. This requirement pertains to the entire aerodrome and only one entry is made when planning requirements for more than one runway are shown.
- TC - Taxiway centre line lighting. An "x" indicates that this is provided for the particular runway with which the entry is associated.
- STB - Stop bars. An "x" indicates that stop bars are provided for the runway with which the entry is associated.

Marking aids

- DES - Runway designation marking, shown by an "x" against the runway to be served.
- CLM - Runway centre line marking. An "x" indicates that the aid is provided.
- THR - Runway threshold marking, shown by an "x" against the runway to be served.
- TDZ - Runway touchdown zone marking, shown by an "x" against the runway to be served.
- SST - Runway side stripe marking. An "x" indicates that the aid is provided.
- AMG - Aiming point marking, shown by an "x" against the runway to be served.
- TWY - Taxiway centre line and, where required, edge marking. An "x" indicates that the aid is provided.
- HLD - Runway holding position marking shown by an "x" against the runway to be served. The pattern of the marking should conform to the provisions of Annex 14, Volume I

Runway visual range (RVR)

- TDZ - Observations should be provided representative of the touchdown zone.
- MID - Observations should be provided representative of the middle of the runway.
- END - Observations should be provided representative of the end portion of the runway.

A1-General information/Annual traffic

	2014	2015	2016	2017	2018
Total Passengers					
Cargo (Tonnes)					
Aircraft Movements					

A2-Airport Master Plan

Master Plan developed (Yes/No)	Year Date :	Responsible Entity

A3-Airport certification status

Certified (Y/N)	Year Date :	Certifying Authority

A4-Airport Facilities

Design capacity Passenger Terminal	Design capacity Cargo Terminal	Fuel Supply

A5-Runways (RWY)

RWY number	Year of construction or its last overlay	Ref. code	Rwy type	Largest type of aircraft expected	length	Width	PCN/year of assessment	Pavement condition	Transverse slopes – (min and max)	Rwy surface condition / friction

Other comments:

A6-Shoulders/Strips/RESAs/OLS/Drainage

Rwy number	Rwy shoulders			Rwy strips			RESAS dimensions		OLS		Drainage system
	Width	Strength	Surface condition	Width	Strength	Surface condition	Clear and graded	Not	Existing	Not	

Other comments:

A7-Taxiways

Identification	Taxiway shoulders			Taxiway strips			Pavement surface condition	PCN / Year of assessment
	Width	Strength	Surface condition	Width	Strength	Surface condition		

Other comments:

A8-Apron

Number of parking positions	
Isolated aircraft parking position (yes/No)	
Pavement surface condition	
PCN / Year of assessment	
Apron lighting	

Other comments:

A9-Lighting and PAPI

Rwy / Twy	Type of Rwy	Lighting aids									Status/Year of installation	Electrical system status (cables, ...)	Operational status
		PA	SA	VA	RWY	CLL	TDZ	TE	TC	STD			

Other comments:

A10-Markings

Rwy / Twy	Type of Rwy	Markings								Status/Year of installation	Status
		DES	CLM	THR	TDZ	SST	AMG	TWY	HLD		

Other comments:

A11-MET equipment

RVR			Wind speed and direction indicators		Air Temperature and humidity		ceilometer
TDZ	MID	END	TDZ	MID	TDZ	END	900 – 1200m from TDZ

Other comments: Wind shear detection equipment at 1000 to 1500m from the TDZ if required through on occurrence study.

A12-Electrical power supply systems for air navigation facilities

Electrical load of technical facilities in KVA (ATC, Nav aids, Airfield, etc)	
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Status of the primary power supply	
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Status of the secondary power supply		Year of installation	Operational status
	Generator 1		
	Generator 2		
	UPS		

Electric power supply connections status	
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Time interval between failure of the primary source of power and the complete restoration of the services	
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Other comments:

A13-Rescue and firefighting services and equipment

RFF category (Protection level)	Response time (seconds)

A14-Vehicles

Vehicle	Year of purchase	Operational status	Spares availability	Water capacity	Foam type/capacity	Complementary agents	Acceleration	Top speed	Discharge rate	communication

Other comments:

A15-Fire station

Location	Vehicle housing	Accommodation for personnel and related equipment							Watchrooms	General aspects	Communications and alarm systems	Appropriate storage
		Locker room	Mess room	Washroom	Drying room	Offices	Training facilities	Fitness facilities				

Other comments:

A16-Water supply and other facilities and equipment

RFF personnel PPE	
Water supply system	
Emergency access roads	
Rescue equipment carried on RFF vehicles	
Ambulances	
Other rescue equipment	
Communication and alarm system	

Other comments:

A17-RFF personnel

Number per shift	
Total number	
Trainings completed (Levels and numbers)	

Other comments:

A18-Other infrastructures, equipment, ...

EOC	
Mobile Command post	
Communication system for aerodrome emergencies	
Perimeter fences	
Emergency equipment for aerodromes surrounded by difficult environments	
Access roads for RFFS	
Security perimeter control roads	
Removal of disabled aircraft plan/equipment	

Other comments:

A19-Wildlife Strike Hazard Control and Reduction

Wildlife strike hazard programme	Equipment	Personnel	Risk assessment	Procedures	Trainings

Other comments:

A20-Preventive Maintenance Capacity Programmes

	Programmes	Personnel	Training	spares
Civil				
Electrical				
Mechanical				

Other comments:

A21-Aviation Fuel

Number of suppliers	Total capacity	Annual fuel throughput
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A22-Aircraft Maintenance/Repair Capacity

Name of AMO(s)	Category			
	A	B	C	D

Other comments:

A23-Ground Handling

Ground Service Providers	Ground Services												Security measures				
	Organization and Management		Load Control		Passenger and Bag Handling		Aircraft Handling and Loading		Aircraft Ground Movements		Cargo and Mail Handling						
	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No			

Other comments:

A24 - Aviation Security

Number of screening machines for Passengers	
Number of screening machine for hold baggage	
Number of screening machine for Cargo and mail (EDS, X-ray)	
Number of Explosive trace detector (ETD)	
Number of Advance Imagery Technology (body scanner)	

Please list only serviceable equipment

Other comments

Other general comments:

APPENDIX B

AVIATION INFRASTRUCTURE GAP ANALYSIS FOR AFRICA

SECTION B: AIR NAVIGATION SERVICES

REPORTING ENTITY:.....

AIR TRAFFIC MANAGEMENT (ATM)

B1-AIR TRAFFIC SERVICES (ATS)

ATS Unit(s)	Working Hours	Number of Controllers	Equipment (Complete/Incomplete)		Airspace Classification	Contingency Plan	Number of flights per day
			Yes	No			
TWR							
APP							
ACC							
FIC							

B2-PERFORMANCE BASED NAVIGATION (PBN)

PBN Plan		LNAV		LNAV/VNAV		LPV		RNP AR		PBN SID/STAR	
Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No

COMMUNICATIONS, NAVIGATION AND SURVEILLANCE (CNS)

B3-AERONAUTICAL FIXED TELECOMMUNICATIONS NETWORK (AFTN) PLAN

EXPLANATION OF THE TABLE

Column

- The AFTN Centres/Stations of each State are listed alphabetically. Each circuit appears twice in the table. The categories of these facilities are as follows:
M - Main AFTN COM Centre
T - Tributary AFTN COM Centre
S - AFTN Station
- Category of circuit:
M - Main trunk circuit connecting Main AFTN communication centres.
T - Tributary circuit connecting Main AFTN communication centre and Tributary AFTN Communications Centre.
S - AFTN circuit connecting an AFTN Station to an AFTN Communication Centre.
- Type of circuit provided:

LTT/a - Landline teletypewriter, analogue (e.g. cable, microwave)
LTT/d - Landline teletypewriter, digital (e.g. cable, microwave)
LDD/a - Landline data circuit, analogue (e.g. cable, microwave)
LDD/d - Landline data circuit, digital (e.g. cable, microwave)
SAT/a/d - Satellite link, with /a for analogue or /d for digital
- Circuit signalling speed in bits/s.
- Circuit protocols
- Data transfer code (syntax):
ITA-2 - International Telegraph Alphabet No. 2 (5-unit Baudot code).
IA-5 - International Alphabet No. 5 (ICAO 7-unit code).
CBI - Code and Byte Independency (ATN compliant).
- Remarks

State/Station	Category	Requirement				Remarks
		Type	Signalling Speed	Protocol	Code	
1	2	3	4	5	6	7

B4- REQUIRED ATN INFRASTRUCTURE ROUTING PLAN
EXPLANATION OF THE TABLE

Column

- 1 Name of the Administration and Location of the ATN Router
- 2 Type of Router (in end systems (ES) of the Administration shown in column 1)
- 3 Type of Interconnection:
Inter-Regional: Connection between different Regions/ domains
Intra-Regional: Connection within a Region/ domain.
- 4 Connected Router: List of the Administration and location of the ATN routers to be connected with the router shown in column 1.
- 5 Bandwidth: Link Speed expressed in bits per second (bps)
- 6 Network Protocol: If Internet Protocol Suite is used, indicate version of IP (IPv4 or IPv6)
- 7 Via: The media used to implement the interconnection of the routers. (in case of IP service bought from a service provider, indicate VPN)
- 8 Remarks

Administration and Location	Type of Router	Type of Interconnection	Connected Router	Bandwidth	Network Protocol	Via	Remarks
1	2	3	4	5	6	7	8

B5-ATS DIRECT SPEECH CIRCUITS PLAN
EXPLANATION OF THE TABLE

Column

- 1 and 2 Circuit terminal stations are listed alphabetically by the Terminal I.
- 3 A — indicates ATS requirement for the establishment of voice communication within 15 seconds.
D — indicates requirements for instantaneous communications.
- 4 Type of service specified:
LTF — landline telephone (landline, cable, UHF, VHF, satellite).
RTF — radiotelephone.
SAT— Aeronautical Satellite VSAT Digital Line
- 5 Type of circuits; Direct (DIR) or Switched (SW).
D — indicates a direct circuit connecting Terminals I and II.
S — indicates that a direct circuit does not exist and that the connection is established via switching at the switching centre(s) indicated in column 6.
- 6 Location of switching centre(s). Alternate routing location, if available, is indicated in brackets.
- 7 Remarks

ATS REQUIREMENTS FOR SPEECH COMMUNICATIONS			CIRCUIT			REMARKS
TERMINAL I	TERMINAL II	TYPE	SERVICE	DIR/SW	TO BE SWITCHED VIA	
1	2	3	4	5	6	7

B6-HF-VHF NETWORK DESIGNATORS
EXPLANATION OF THE TABLE

Column

- 1 Name of station, preceded by its location indicator.
- 2 Network designators assigned to the facility providing HF radiotelephony en-route communications (selected from the provisions of the allotment plan in Appendix S27 to the ITU Radio Regulations).

Name of station preceded by its Location indicator and its function	VHF	HF En route/
1	2	

B7-NAVIGATION AIDS
EXPLANATION OF THE TABLE

Column

- 1 Name of the State/Territory, city and aerodrome and, for en-route and terminal area aids, the location of the facility.
- 2 Type of runway:
NINST — non-instrument
NPA — non-precision approach runway
PA1 — precision approach runway, Category I PA2 — precision approach runway, Category II
- 3 The function served by the aids shown in columns 4 to 8 :

A/L — approach and landing
E — en-route
T — terminal
- 9 The distance and altitude to which signal protection of the VOR or VOR/DME is required, indicated in nautical miles (NM) and in hundreds of feet, or recommended rated coverage of NDB expressed in nautical miles.
- 10, 11 To be developed.
GNSS — global navigation satellite system (including GBAS and SBAS).
GBAS (ground-based augmentation system) implementation planned to be used in precision approach and landing CAT I, CAT II, CAT III.
SBAS (satellite-based augmentation system) planned to be used for route navigation, for terminal, for non-precision approach and landing.
An "X" indicates service availability; exact location of installation will be determined.

Station/Territory	Rwy type	Function	ILS	L	DME	VOR	NDB	Coverage	GNSS		Remarks
									GBAS	SBAS	
1	2	3	4	5	6	7	8	9	10	11	12

B8-ATS Surveillance systems
EXPLANATION OF THE
TABLE

Column

- 1 Name of State/Territory and location of radar head facility or FIR
- 2 Area of routing
- 3 Air traffic services unit served by the facility or FIR
- 4 Primary surveillance radar
- 5 Coverage of primary surveillance radar in nautical miles
- 6 Secondary surveillance radar and modes, namely Modes A, C or S
- 7 Coverage of secondary surveillance radar in nautical miles
- 8 Automatic dependent surveillance broadcast (under development)
- 9 Automatic dependent surveillance contract

- 10 Remarks
- Note.— The following codes are used in columns 4, 6, 8, 9 and 10:
- I — Required and implemented
 - Column 6
 - I — implementation using conventional SSR MI
 - implementation using monopulse SSR
 - X — Required but implementation status not determined
 - N — Required but not implemented
 - A — Existing facility provided to supplement or substitute the requirement
- F — Future plan
- <-Year — Planned commissioning year to be used as appropriate in conjunction with "F" and "N"
- >-Year — Planned commissioning year to be used as appropriate in conjunction with "A" and "I"

State/Territory and Location	A R	ATS unit served	PS R	Coverage (NM)	SSR Modes (A,C or	Coverage (NM)	ADS-B	ADS-C	Remarks
1	2	3	4	5	6	7	8	9	10

B9- SSR II CODES
EXPLANATION OF THE TABLE

- Column
1. Name of State/Territory
 2. Abbreviations for the State
 3. Location of radar head facility
 4. Surveillance sensor
 5. Interrogator Identification Code

COUNTRY	ABBR.	LOCATION	SERVICE	II CODE
1	2	3	4	5

B10 – USE AND PROTECTION OF AERONAUTICAL FREQUENCY SPECTRUM

EXPLANATION OF THE TABLE

- Column
1. Name of State /Location of the station
 - 1-4 Number of stations with frequency affected by harmful interferences
 - 5-6 Aeronautical spectrum monitoring systems and procedures

7. Remarks

State/Location	Number of stations with frequency affected by harmful interferences			Aeronautical spectrum monitoring systems and procedures		Remarks
	VHF Voice	VHF Radio Nav/Aids	VSAT station Frequency	Yes	No	
1	2	3	4	5	6	7

B11-ATM AUTOMATION SYSTEMS

EXPLANATION OF THE TABLE

Column

- 1 Name of State/Territory and location of radar head facility or FIR
- 2 Area of routing
- 3 Air traffic services unit served by the ATS automation systems. The abbreviations for this column are: AACC — Area approach control centre SMC — Surface movement control
ACC — Area control TCU — Terminal control unit APP — Approach control TMA — Terminal control area EC — En-route centre TWR — Tower control
FIS — Flight information service
- 4 Surveillance sensor linked to the ATS automation systems. Four-letter FIR identifier, enclosed in brackets, shall be shown for sensors outside the FIR.
- 5 Radar data processing system
- 6 Fight data processing system
- 7 Minimum safe altitude warning system
- 8 Automatic dependent surveillance
- 9 Controller-pilot data link communications
- 10 ATS inter-facility data link communications
- 11 Processing area of the radar data processing system in (nautical miles)²
- 12 Number of ATS positions
- 13 Remarks

Note.— The following codes are used in columns 5 to 12:

- I — Required and implemented.
- X — Required but implementation status not determined
- N — Required but not implemented
- A — Existing facility provided to supplement or substitute the requirement
- F — Future plan
- <-Year — Planned commissioning year to be used as appropriate in conjunction with "F" and "N"
- >-Year — Planned decommissioning year to be used as appropriate in conjunction with "A" and "I"

State/Territory and location	A R	ATS unit served	Data source	RDP S	FDP S	MSA W	ADS -C	CPDL C	AID C	PA/RDP S (NM)	NPO S	Remarks
1	2	3	4	5	6	7	8	9	10	11	12	13

State	FIR or CTA where meteorological service is required	ICAO Location indicator	MWO responsible for the provision of MET service to FIR / CTA	ICAO Location indicator	SIGMET	SIGMET - WA	SIGMET - WC	AIRMET
1	2	3	4	5	6	7	8	9

METEOROLOGY (MET)

B12-METEOROLOGICAL WATCH OFFICES

EXPLANATION OF THE TABLE

Column

- 1 Name of the State where meteorological service is required
- 2 Name of the flight information region (FIR) or control area (CTA) where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 3 ICAO location indicator of the FIR or CTA
- 4 Name of the meteorological watch office (MWO) responsible for the provision of meteorological service for the FIR or CTA
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 5 ICAO location indicator of the responsible MWO
- 6 Requirement for SIGMET information (excluding for volcanic ash and for tropical cyclones) to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required
- 7 Requirement for SIGMET information for volcanic ash to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required
- 8 Requirement for SIGMET information for tropical cyclone to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required
- 9 Requirement for AIRMET information to be provided by the MWO for the FIR or CTA concerned, where:
Y – Yes, required
N – No, not required

B13-AERODROME METEOROLOGICAL OFFICES

EXPLANATION OF THE TABLE

Column

- 1 Name of the State where meteorological service is required
- 2 Name of the AOP aerodrome where meteorological service is required
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 3 ICAO location indicator of the AOP aerodrome
- 4 Designation of AOP aerodrome:
RG - international general aviation, regular use
RS - international scheduled air transport, regular use
RNS - international non-scheduled air transport, regular use
AS - international scheduled air transport, alternate use
ANS - international non-scheduled air transport, alternate use
- 5 Name of the aerodrome meteorological office responsible for the provision of meteorological service
Note: The name is extracted from the ICAO Location Indicators (Doc 7910) updated quarterly. If a State wishes to change the name appearing in Doc 7910 and this table, ICAO should be notified officially.
- 6 ICAO location indicator of the responsible aerodrome meteorological office

- 7 Requirement for METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required
- 8 Requirement for information on the state of the runway provided by the appropriate airport authority to be included as supplementary information in METAR/SPECI from the aerodrome concerned, where:
Y – Yes, required
N – No, not required
- 9 Requirement for trend forecast to be appended to METAR/SPECI from the aerodrome concerned, where
Y – Yes, required
N – No, not required
- 10 Requirement for TAF from the aerodrome concerned, where
C - Requirement for 9-hour validity aerodrome forecasts in TAF code (9H)
T - Requirement for 18/24-hour validity aerodrome forecasts in TAF code (18/24H)
X - Requirement for 30-hour validity aerodrome forecasts in TAF code (30H)
N – No, not required
- 11 Requirement for maximum and minimum temperature (expected to occur during the period of validity of the TAF) to be included in TAF from the aerodrome concerned, where:
Y – Yes, required
N – No, not required
- 12 Availability of METAR/SPECI and TAF from the aerodrome concerned, where:
F – Full availability : OPMET information as listed issued for the aerodrome all through the 24-hour period
P – Partial availability: OPMET information as listed not issued for the aerodrome for the entire 24-hour period

State	AOP Aerodrome where meteorological service is to be provided			Responsible aerodrome meteorological office		Observations and forecasts to be provided					METAR/SPECI and TAF availability
	Name	ICAO Location Indicator	Use	Name	ICAO Location Indicator	METAR/SPECI	State of the runway	Trend forecast	TAF	Temperature Tx/Tn	
1	2	3	4	5	6	7	8	9	10	11	12

State	Name of and RCC/RSC	SPOC	Details of rescue facilities	SAR Agreements	Remarks
1	2	3	4	5	6

SEARCH AND RESCUE (SAR)
B14-SEARCH AND RESCUE FACILITIES
 EXPLANATION OF THE TABLE

Column

- 1 State
- 2 Name of the Rescue Coordination Centre (RCC) and Rescue Sub-Centre (RSC).
- 3 SAR points of contact (SPOC). Name of the SPOC.
- 4 Details of rescue facilities
- 5 SAR Agreements
- 6 Remarks. Supplementary information such as the type of RCC (e.g. maritime or aviation or joint).

AERONAUTICAL INFORMATION MANAGEMENT (AIM)
B15-RESPONSIBILITY FOR THE PROVISION OF AIS/AIM FACILITIES AND SERVICES
 EXPLANATION OF THE TABLE

Column:

- 1 Name of the State or territory
- 2 Designated international NOTAM Office (NOF)
- 3 Designated State for AIP production
- 4 Designated State for aeronautical charts (MAP) production
- 5 Designated State for the provision of the authoritative Integrated Aeronautical Information Database (IAID)
- 6 Designated State for the provision of pre-flight information services
- 7 Remarks — additional information, as appropriate.

State	NOF	AIP	MAP	IAID	Pre-flight briefing	Remarks
1	2	3	4	5	6	7

B16-PRODUCTION RESPONSIBILITY FOR SHEETS OF THE WORLD AERONAUTICAL CHART - ICAO 1:1 000 000 OR AERONAUTICAL CHART — ICAO 1: 500 000

State	Sheet number(s)	Remarks
1	2	3

B17-AIS/AIM TRANSITION

Phase	Status			
	Planning	Developing	In Progress	Completed
Phase 1				
Phase 2				
Phase 3				

B16-AVIATION SYSTEM BLOCK UPGRADES (ASBUs)

Block 0 Modules	Need Analysis of Modules				Implementation Status			
	Not Started	In Progress	Need	N/A	Planning	Developing	Partially Implemented	Implemented
B0-ACAS								
B0-ACDM								
B0-AMET								
B0-APTA								
B0-CCO								
B0-CDO								
B0-DATM								
B0-FICE								
B0-FICE								
B0-FRTO								
B0-NOPS								
B0-RSEQ								
B0-SNET								
B0-TBO								
B0-WAKE								

APPENDIX C

AVIATION INFRASTRUCTURE GAP ANALYSIS FOR AFRICA
SECTION C: AIRCRAFT FLEET AND EQUIPAGE

REPORTING ENTITY:.....

C1-AIRCRAFT FEET CAPACITY / TYPES OF AIRCRAFT

STATE AOC AIR OPERATORS	TYPE OF OPERATIONS		NUMBER OF AIRCRAFT	TYPES OF AIRCRAFT
	International (Yes/No)	Domestic (Yes/No)		
Name of air operator 1				AAA, BBB, etc.
Name of air operator 2				
Name of air operator 3				
Etc.				

C2-AVIONIC EQUIPAGE

1. OPERATIONAL APPROVALS

Type of approval	Number of aircraft
Oceanic In-Trail Climb/Descent Procedure (ITP)	
Reduced Vertical Separation Minimum (RVSM)	
Performance Based Navigation (PBN)	
Extended Diversion Time Operations (EDTO)	
Extended Operations (ETOPS)	

2. COMMUNICATIONS

Equipment	Number of aircraft
VHF (25kHz)	
VHF (8.33kHz)	
CPDLC	
ACARS	
Iridium cockpit voice	
Inmarsat cockpit voice	
ARINC data link	
ELT (TSO-C91a)	
ELT (TSO-C126)	
HF	
HFDL	

3. NAVIGATION

Equipment	Number of aircraft
VOR	
DME	
ILS	
INS/IRU	
RNAV	
RNAV 1	
RNAV 5 / B-RNAV	
RNP < 0.3	
RNP 1 / P-RNAV	
RNP 2	
RNP 4	

Equipment	Number of aircraft
RNP APCH	
RNP AR APCH	
APV Baro VNAV	
LPV (SBAS)	
FMS RTA	
FMS RF	
FMS FRT	
GNSS	
GBAS	
MMR (Multimode receiver)	

4. SURVEILLANCE

Equipage	Number of aircraft
ADS-C	
ADS-B OUT	
ADS-B IN	
MODE S ELS	
MODE S EHS	
FMS WPR	