



ICAO ESAF GANP 8th Edition and ASBU Implementation Data Submission Workshop

Windhoek, Namibia

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**INTERNATIONAL
CIVIL AVIATION
ORGANIZATION**



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Applicable AMET Elements

ASBU Block 0 & Block 1 — Required Facilities, Products & Services and Guidance for Implementation

Scope of Applicable AMET Elements

AMET-B0

Maturity: Ready for implementation

Global, regional and local meteorological information to support flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

- **AMET-B0/1** Meteorological observations products
- **AMET-B0/2** Meteorological forecast and warning products
- **AMET-B0/3** Climatological and historical meteorological products
- **AMET-B0/4** Dissemination of meteorological products

AMET-B1

Maturity: Standardization

Meteorological information supporting automated and integrated decision-making — standardized observation, forecast, climatological and dissemination information across the network.

- **AMET-B1/1** Meteorological observations information
- **AMET-B1/2** Meteorological forecast and warning information
- **AMET-B1/3** Climatological and historical meteorological information
- **AMET-B1/4** Dissemination of meteorological information



☐ Previous edition of the GANP

Main Purpose Meteorological observations in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

New Capabilities Provision of observations of additional meteorological parameters/elements. More automated observations. Higher temporal and spatial resolution for lightning, radar and satellite information.

Description This element represents the provision of meteorological observational products including:

- Automatic Weather Observation System (AWOS) information (including real-time exchange of wind and RVR data)
- Local reports (MET REPORT / SPECIAL)
- Aerodrome reports (METAR / SPECI)
- Lightning information
- Ground-based weather radar information
- Meteorological satellite imagery
- Aircraft meteorological report (ie. ADS-B, AIREP, AMDAR etc.)
- Vertical wind and temperature profiles
- Volcano Observatory Notice for Aviation (VONA)
- Wind shear alerts



☐ Previous edition of the GANP ?

Main Purpose ? Meteorological forecasts, advisories and warnings in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning.

New Capabilities ? Improved visualisation of meteorological forecast products. Greater resolution (spatial and temporal) of gridded WAFS information (e.g. wind, temperature, icing, turbulence, CB clouds).

Description ? This element represents the provision of meteorological forecast (including advisory and warning) products including:

- World Area Forecast System (WAFS) gridded products
- Significant Weather (SIGWX)
- Low-level Area Forecast (GAMET)
- Aerodrome Forecast (TAF)
- Trend Forecast (TREND)
- Take-off Forecast
- Tropical Cyclone Advisory (TCA)
- Volcanic Ash Advisory (VAA)
- AIRMET
- SIGMET
- Aerodrome Warning
- Wind Shear Warning

☐ Previous edition of the GANP 

Main Purpose  Climatological products in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.

New Capabilities  Nil

Description  This element represents the provision of climatological products including:

- Aerodrome climatological tables;
- Aerodrome climatological summaries.

This element also represents the provision of historical products including meteorological observations, forecasts, advisories and warnings.

☐ Previous edition of the GANP 

Main Purpose  Dissemination of meteorological products in support of flexible airspace management, improved situational awareness, collaborative decision-making and dynamically optimized flight trajectory planning

New Capabilities  Commencement of the exchange of meteorological information using the ICAO Meteorological Information Exchange Model (IWXXM), being the conversion of Traditional Alphanumeric Code (TAC), using an IWXXM schema, into XML/GML.

Description  This element represents the dissemination of meteorological products using a variety of formats and means.

Formats include:

- TAC
- Gridded
- Graphical (i.e., PNG format)
- BUFR code
- IWXXM (in XML/GML)

Dissemination means includes aeronautical fixed service (AFTN with increasing use of AMHS), and via secure internet services (ie. WIFS/SADIS).

AMET-B1/1

Meteorological observations information

Information


☐ Previous edition of the GANP

Main Purpose Meteorological observation information supporting automated decision processes and ATM impact conversion.

New Capabilities Commencement of change from product-centric to data-centric information. Commencement of space weather and enhanced hazardous weather services. Introduction of new and enhanced space-based observations. Introduction of new observational information from both un-manned and manned aircraft (ie. observations from lidar).

Description Meteorological observations will begin to transition from traditional alphanumeric code (TAC) form to data-centric information to better support the common understanding on the various operational constraints, capabilities and needs. An increase in the use of performance measures (via availability and timeliness indices) of meteorological observations.

Maturity Level Standardization

Human Factor Considerations

1. Does it imply a change in task by a user or affected others? **No**
2. Does it imply processing of new information by the user? **Yes**
3. Does it imply the use of new equipment? **Yes**
4. Does it imply a change to levels of automation? **Yes**

☐ Previous edition of the GANP 

Main Purpose  Meteorological forecast and warning information supporting automated decision processes and ATM impact conversion.

New Capabilities  Commencement of change from product-centric to data-centric information. Commencement of space weather and enhanced hazardous weather services. First steps in the provision of probabilistic information derived from ensemble prediction systems.

Description  Meteorological forecasts and warnings will begin to transition from traditional alphanumeric code (TAC) form to data-centric information to better support the various operational constraints, capabilities and needs.

Verification of quality (accuracy) of forecast parameters. An increased use of performance measures (via availability and timeliness indices) of forecast parameters.

Maturity Level  Standardization

Human Factor Considerations

1. Does it imply a change in task by a user or affected others? **Yes**
2. Does it imply processing of new information by the user? **Yes**
3. Does it imply the use of new equipment? **Yes**
4. Does it imply a change to levels of automation? **Yes**

☐ Previous edition of the GANP 

Main Purpose  Climatological information in support of the design and planning of infrastructure, flight routes and airspace management. Historical meteorological observations, forecasts, advisories and warnings in support of incident and accident investigations.

New Capabilities  Enhanced climatological data.

Description  This element represents the provision of climatological information for the range of meteorological parameters and phenomena and their associated characteristics (metadata).

This element also represents the provision of historical information including meteorological observations and forecasts and their associated characteristics (metadata).

Climatological information services will be required to support the design and planning of infrastructure, flight routes and airspace management. The following climatology parameters and phenomena will begin to be made available to users and will include:

- En-route winds
- Airport parameters (i.e. air and surface temperature, wind, precipitation, etc.)

Characteristics of the climatological information will include:

- Averages (daily/monthly/yearly) over 10, 20, 30, 50 years
- Extremes over 1, 5, 10, 20, 30 years, since start of measurement

☐ Previous edition of the GANP 

Main Purpose  Dissemination of meteorological information in support of automated decision process or aids, involving meteorological information, meteorological information translation, ATM impact conversion and ATM decision support.

New Capabilities  Meteorological information in ICAO Meteorological Information Exchange Model (IWXXM) form starts to replace traditional alphanumeric code (TAC) products. Human-readable products will start to be derived from the IWXXM information (rather than the other way around). The introduction of web services allows for progressive replacement of fixed line dissemination systems.

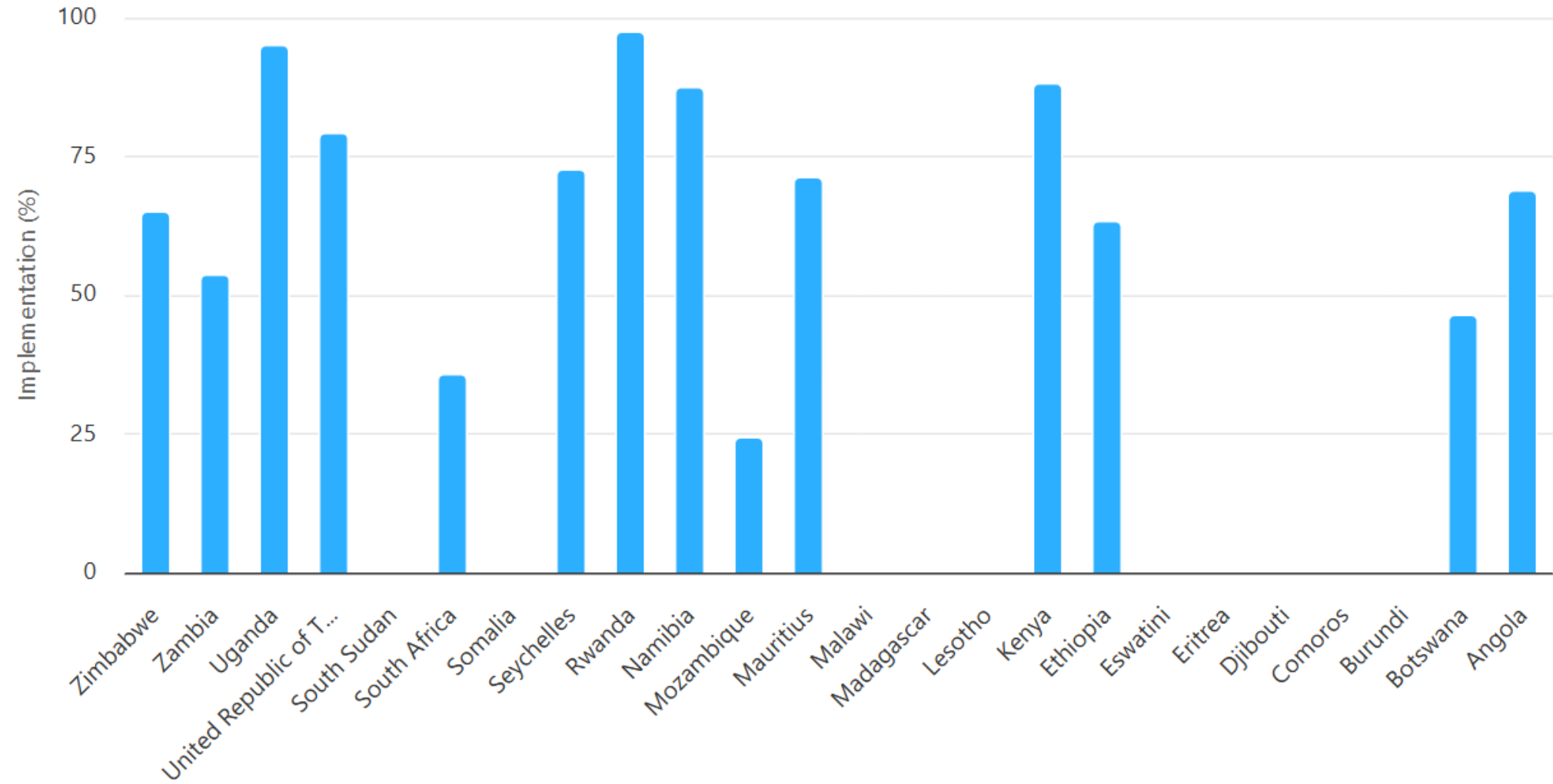
Description  This element represents the dissemination of meteorological products using a variety of formats, including:

- Tailored products (human-readable)
- Impact-translated products
- Gridded
- Graphical (PNG and BUFR to be phased out)
- ICAO Meteorological Information Exchange Model (IWXXM) format
- Traditional alphanumeric code (TAC) – being phased out

Dissemination means include aeronautical fixed service (ie. AMHS) and via secure internet services (ie. WIFS/SADIS).

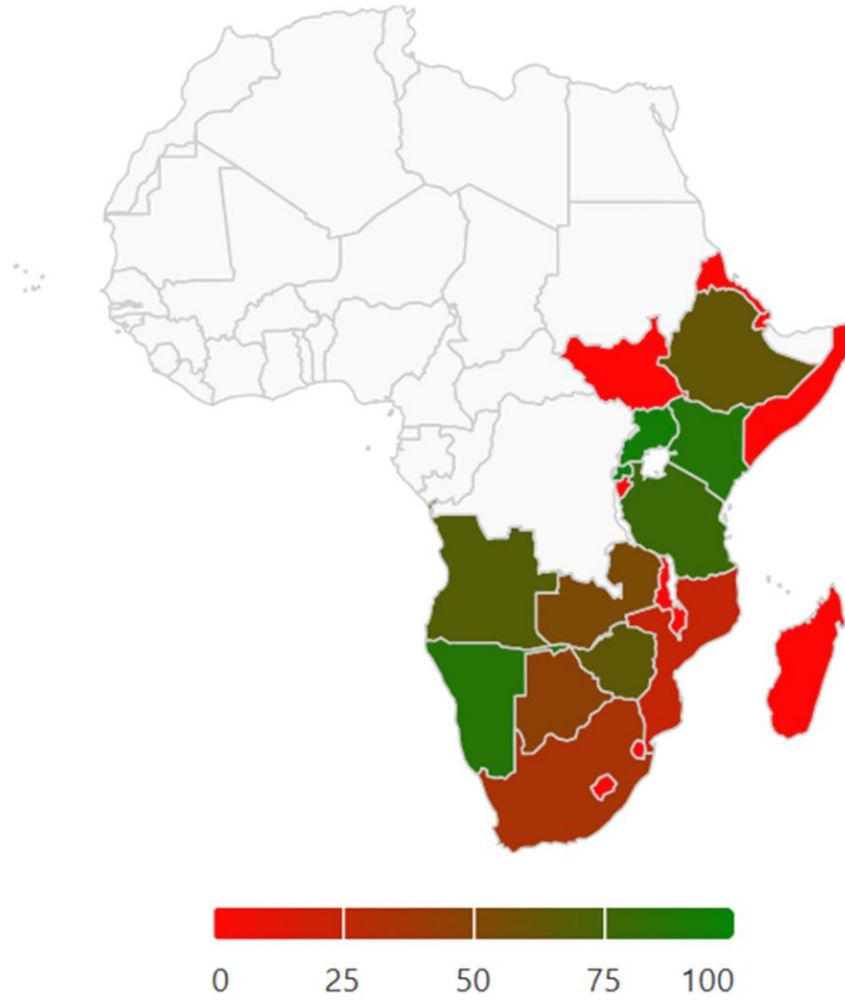
Commencement of SWIM-compliant web service capability to access the exact meteorological information required by users (in terms of geographical coverage, resolution etc).

ESAF States Implementation Status [AMET-B0]

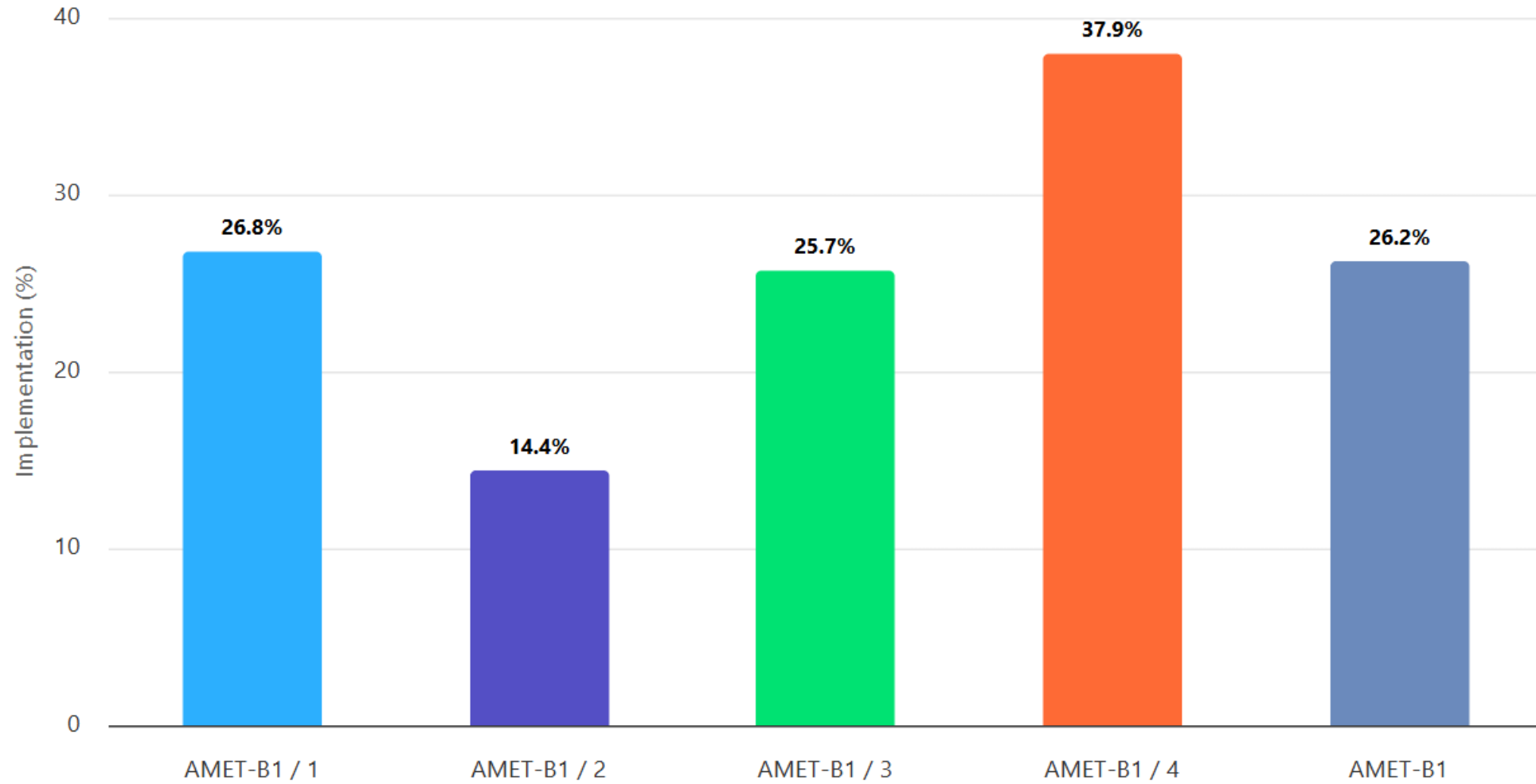


ESAF AMET-B0 Implementation Status

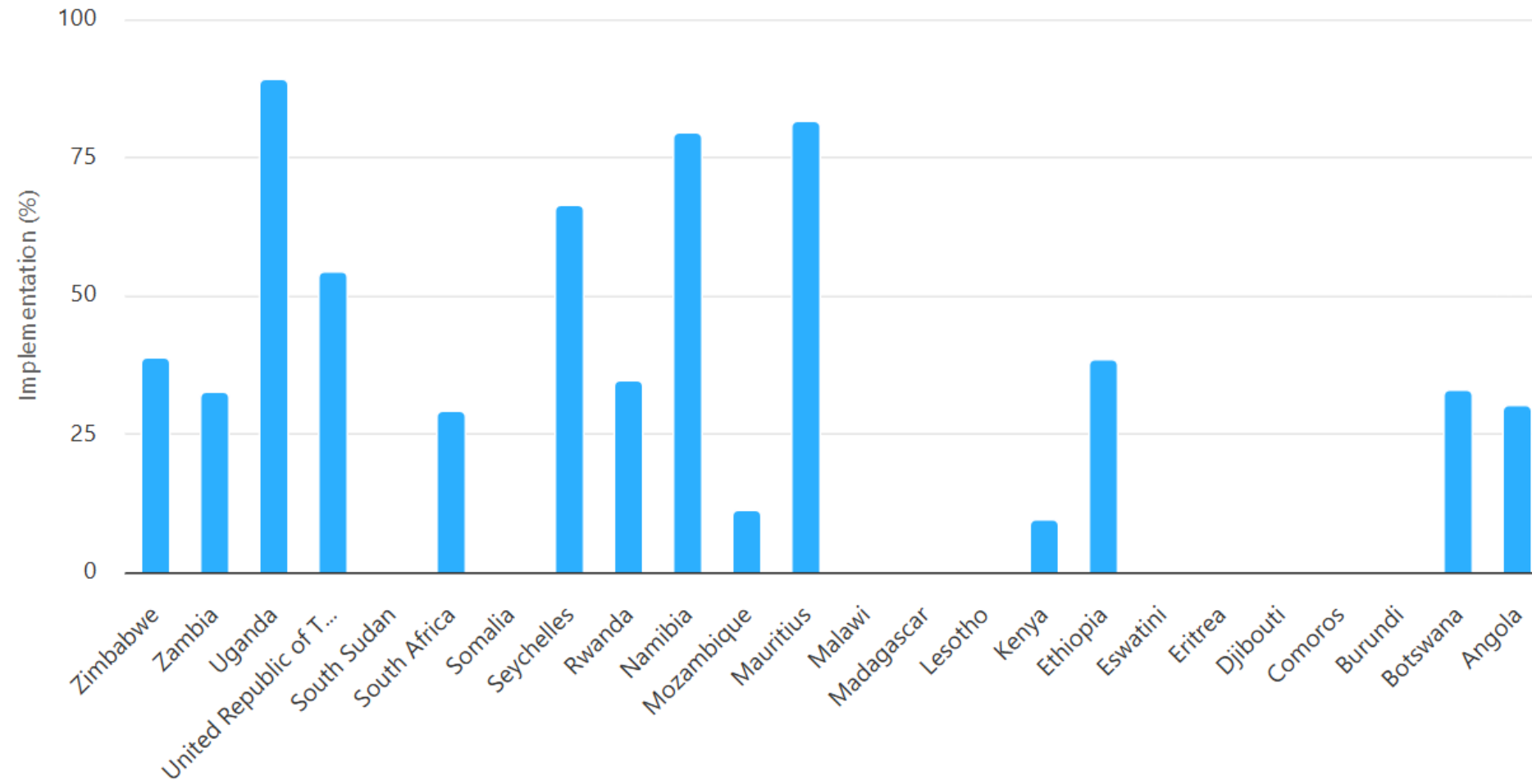
Source map: Africa



ESAF ASBU Elements Implementation Status [AMET-B1]



ESAF States Implementation Status [AMET-B1]



Thank You

