

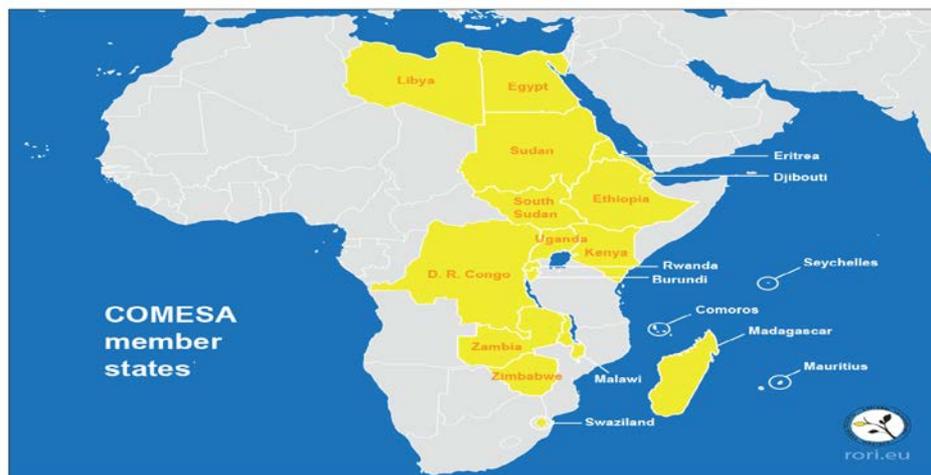
AVI AFRIQUE 2017 |
Africa Aviation Innovation Summit



Welcome to
AVI AFRIQUE 2017



Single African sky and Functional Airspace Blocks: Improving Air Traffic Management



The **global ATM operational concept** is fundamental framework drive ATM operational **requirements, objectives** and **benefits**. On this basis, a global ATM described as a worldwide system that meets the following:

- A. Agreed levels of **safety**,
- B. Provides for **optimum operations**,
- C. Is **environmentally sustainable** and,
- D. Meet national **security** requirements.



Future growth of COMESA's aviation sector is certainly bringing a number of **challenges** as well as **opportunities**. **COMESA sustainable aviation strategy** should be based on a **balance approach** between **the three pillars of sustainability** including **environment, social** and the **economy**

Aviation negative impacts include land use, noise, air pollution, **climate change**, biodiversity impacts, water use, and effects on the social structure of local communities.

On the other hand **positive impacts** include direct and indirect employment, and social and economic benefits to people who fly. A fundamental initiative for COMESA'S Civil Aviation Authorities is to develop a **safe efficient airspace** that has the **capacity** to meet reasonable **demand balance the needs** of all users and mitigates the **impact of aviation on the environment**. The link **between air transport growth and economic development** has become increasingly important, due to the ongoing growth of the **global economy and society**. The benefits of **meeting this demand** will be significant and will be critical for **COMESA's economy**; where **high-speed ground transport infrastructure is poorly developed**.

Environmental issues impact on the development and operation of aviation in a variety of ways:

- **Regulatory responses to climate change** are putting more and more pressure upon airports and airlines to reduce carbon emissions.
- **Operational and growth constraints** arise when the adverse impacts associated with the operation of airports exceed regulatory limits (or ICAO requirements) or tolerance amongst local communities.
- Meanwhile, the **changing climate** is already starting to have significant implications for the operation of the air transport system **both at airports and in the en-route phase of flight.**

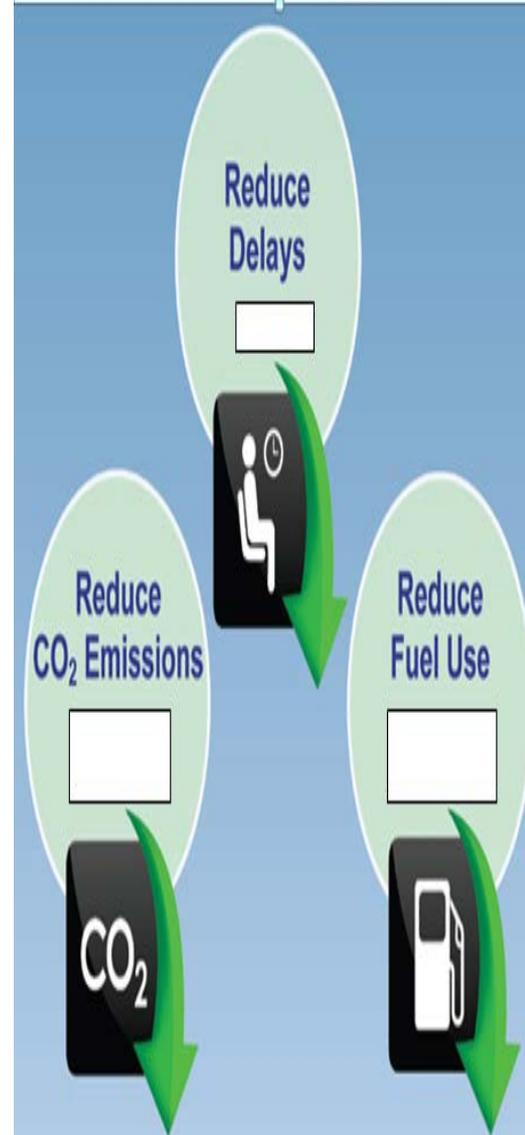
COMESA civil aviation authorities, has to meet the conflicting **demands** of the airport operator and airlines, and deliver effective **environmental improvement**, whilst simultaneously:

- **Meeting regulatory requirements.**
- **Ensuring sustainable long-term growth.**
- **Maximising operational capacity and efficiencies.**
- **Minimising operating costs.**
- **Meeting customer expectations – in terms of service standards and on-time operations.**
- **Ensuring high levels of safety.**

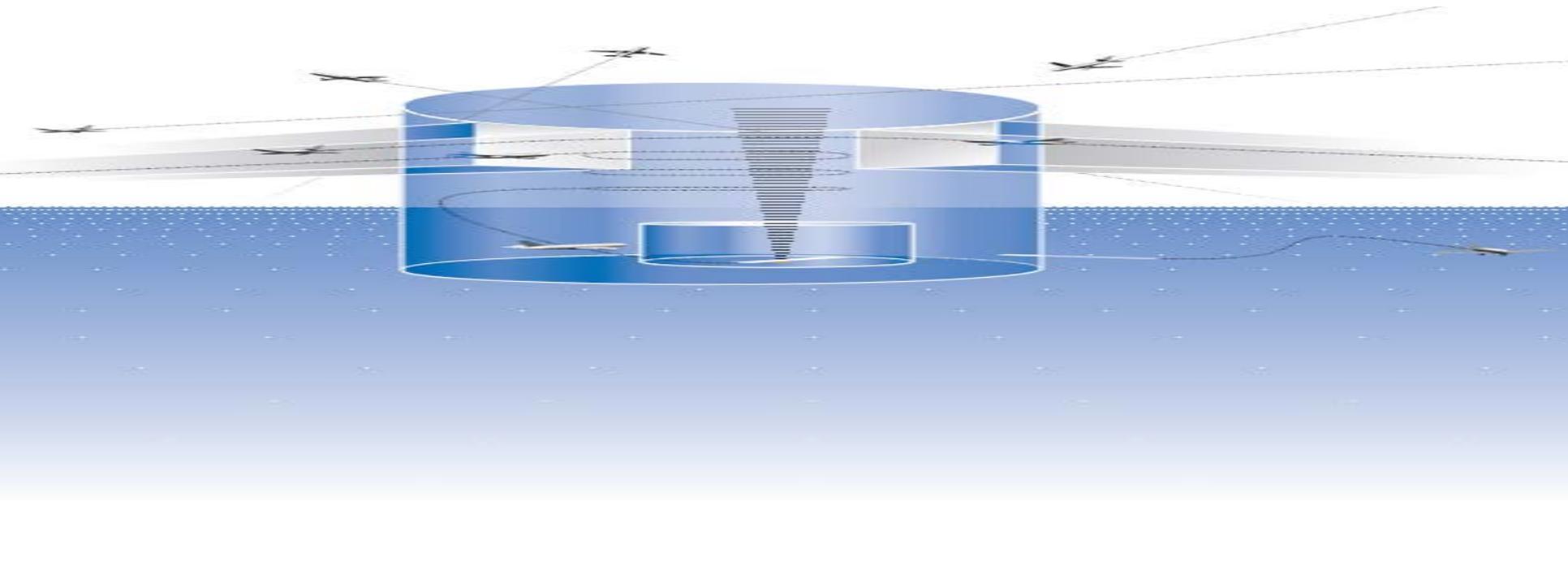
As the aviation industry grows, the **impact of air traffic operations on the global atmosphere** becomes increasingly important in addition to the local effects of noise and air quality. Efforts to **control or reduce the environmental impact of air traffic** have identified a range of **options** that might reduce the impact of aircraft engine emissions.



In particular by optimization of cruising levels and route, and through implementation of continuous climb departures/ descent arrival and approaches, it is expected that improvement in ATM could help reduce aviation fuel burn, thereby mitigating the effect of increased traffic on global aircraft engine emissions. Methodologies and tools for estimating global emissions and fuel usage for evaluating the impact of various global plan initiatives already exist.



Functional Airspace Block (FAB): Improving ATM in Africa



Functional Airspace Block (FAB) is defined as an airspace block based on operational requirement and established regardless of state boundaries, where the provision of air navigation service and related functions are **performance driven** and **optimized** with a view to **introduced cooperation** among air navigation service providers or where appropriate **integrated** providers.



Functional Airspace Blocks was established and supported by a mandate issued by the European Commission to Euro-control Agency. Nine functional airspace blocks have been created by the European commission. FAB strategic **objectives** include:

- 1. Safety.**
- 2. Capacity.**
- 3. Cost-effectiveness.**
- 4. Flight efficiency.**
- 5. Environment.**
- 6. Military mission effectiveness.**

FABs aimed also to fulfill three concepts:

- a. Designed on the basis of operational requirements;**
- b. More integrated management of the airspace;**
- c. Free from the constraints of national borders.**



FABs should meet seven criteria:

- 1. Be supported by safety case;**
- 2. Enable optimum use of airspace, taking into account air traffic flows;**
- 3. Be justified by their overall added value, including optimal use of technical and human resources, on the basis of cost-benefit analysis;**
- 4. Ensure a fluent and flexible transfer of responsibility for air traffic control between air traffic services units;**
- 5. Ensure compatibility between the configuration of upper and lower airspace;**
- 6. Comply with conditions stemming from regional agreements concluded within the ICAO, and**
- 7. Respect regional agreements.**

FAB ultimate goal is safety. **Reducing air traffic controller's workload** would **directly increase safety** in air traffic control system. **Air traffic controllers' workload** depends on three factors:

- A. Traffic supervision,**
- B. Conflicts resolution**
- C. Coordination**



Evolution to global plan initiatives:

ICAO has established **Homogeneous ATM area** which defined as **airspace with a common ATM interest**, based on **similar characteristics of traffic density, complexity, air navigation system infrastructure requirements or other specific conditions.**



Major traffic flows:

Homogeneous ATM areas and major traffic flows/
routing areas in Africa:

AR1: Europe – South America (EUR/SAM) (Oceanic):

AR2: Atlantic Ocean interface between AFI, NAT and
SAM regions

AR3: Europe – Eastern Africa routes including the area of
the Indian Ocean

AR4: Europe to Southern Africa:

Type of area covered: Continental en-route low density

AR5: Continental Western Africa including coastal areas.

AR6: Trans- Indian

Airspace functional blocks (AFB) is a realistic approach for air traffic management in Africa. This required a feasibility studying of **regional integration** and **sub-regional blocks**. Looking at Africa, there are many sub-regional groups which had a common interest of **economic, social** and **political integration**. African sub-regional blocks include **East African Community of States (ECA)**, **Economic Community of Central African States (ECCAS)**, **Economic Community of West African States (ECOWAS)**, and **Common Market for Eastern and Southern Africa (COMESA)**.

Presently **upper airspace management is delegated between some COMESA states** such as Sudan is providing air traffic services in Southern Sudan FIR and Ethiopia is providing air traffic services in Djibouti, Tanzania is providing air traffic services in Rwanda and Burundi, Kenya is providing air traffic services in Somalia also South Africa is providing air traffic services in Swaziland.

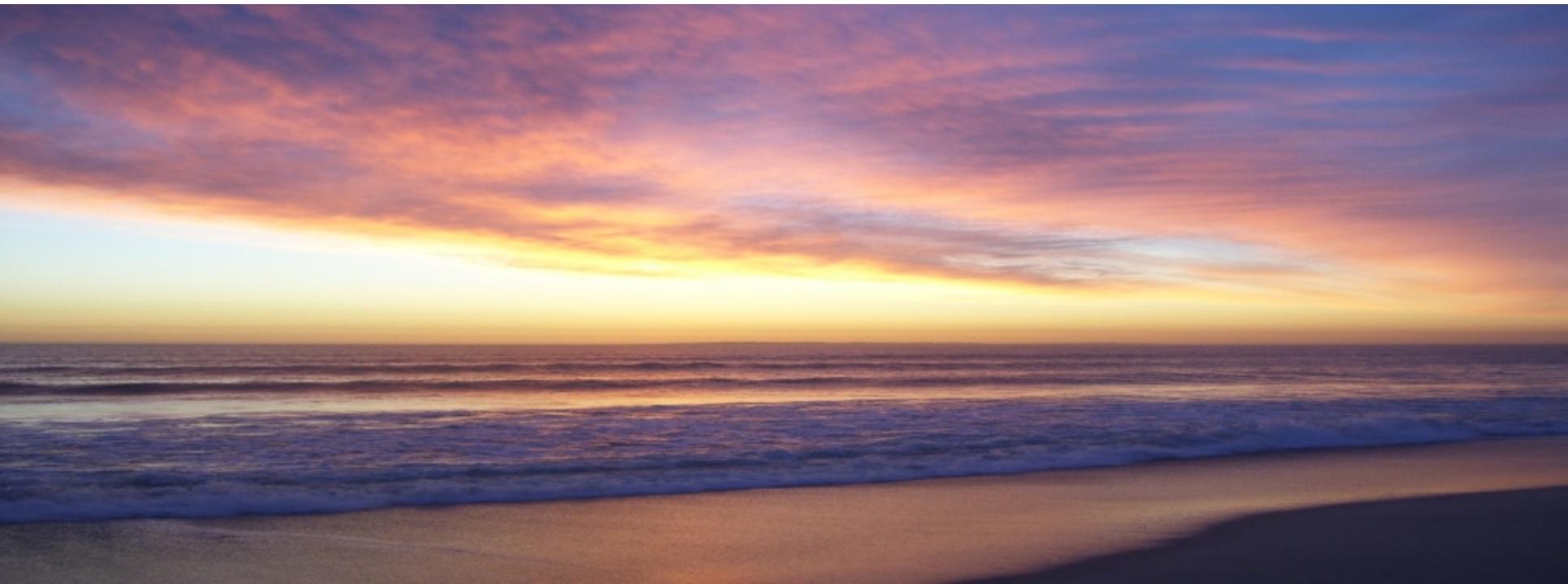
Although, delegation of air traffic services in these airspaces had been agreed for some years, communication, navigation and surveillance services are still very poor there.

Since the **COMSA region** got long rainy season, aircraft delay increases during the months of year characterized by thunderstorms have been the principal cause of the dramatic **delay** growth in the region aviation system over the past three years. Some of the key initiatives for reducing convective weather delays are strategic **traffic flow management (TFM)** through **collaborative convective forecast product (CCFP)**, the strategic **planning team**, and **collaborative routing (CR)**.

The African Development Bank (ADB) has funded the initial study for COMESA Airspace Integration Project. This study established a legal and regulatory framework for upper airspace traffic Control Company and upper airspace regulatory agency. The project has three phases including establishing environment phase (this phase completed this year 2017), financing and construction phase, and operation phase. First step is set up the following:

- 1. legal and institutional framework,**
- 2. Technical and financial feasibility,**
- 3. Regulatory framework, and**
- 4. Project management and audit.**

A seven years program starting in 2018 will eventually culminate in the establishment of a seamless upper airspace based on harmonized civil aviation rules and procedures.



AVI AFRIQUE 2017 |
Africa Aviation Innovation Summit



Thank you

