

NATIONAL PERFORMANCE FRAMEWORK FOR AIR NAVIGATION SYSTEMS

TANZANIA AIR NAVIGATION PLAN

Characteristics of the industry

- During 2009/10, the number of total passengers increased by 6.1% compared to 2008/09.
- Aircraft movements also increased by 5.8% during the same period.
- However, Cargo traffic declined by 8.8% during the same period.
- This trend in passenger and aircraft movements is expected to continue for the next 5 years while the relevant authorities of the State are putting maximum effort in selling Tanzanian horticultural products overseas thereby projecting increased cargo aircraft movements.
- NDBs Still in wide application with scarcity of aids in remote areas

Characteristics of the industry

- Surveillance is limited to Radar cover extending only 200nm from the main International airport (JNIA)
- ANSP structured under CAA Regulatory body

Challenges:

- To improve communication facilities to cover entire FIR
- Replace NDBs with more reliable navigational aids (D-VOR/DME, ILS)
- To develop new routes in order to comply with the PBN operation (RNAV En-route and Arrival/Departure and Landing)
- Separation of ANSP from Regulatory body

The air navigation service provider

- Autonomous public sector organization (Corporate body) that is separate from the executive arm of the government but the government has total ownership of the organization;
- As a body corporate, the Authority has autonomy which allows it to make faster decisions and implement plans more expeditiously
- User charges levied for air navigation services are retained by the organization;

The air navigation service provider

- the organization provides all types of air navigation services and also provides related services such as search and rescue coordination.
- the organization is self-financing and is required to achieve a financial return on capital employed;
- the organization charges for its services and uses revenue from these charges to fund operating expenses and to finance capital expenditure. Some prescribed operations (e.g. military and services to State and diplomatic aircraft) are exempted from charges and negotiations are expected to be initiated for the cost to be borne by government;
- Regulatory sections of the Corporate body provide economic and safety oversight of the service provider.

Major stakeholders/partners

- Kenya Airways, KLM, Tanzania Airports Authority, TPDF, Coastal Travels, IATA, Tanzania Pilot Association, Tanzania Air Traffic Controller Association, Civil Aviation Authority, CAA Air Navigation Services, Kilimanjaro Airport Development Company, Zanzibar Ministry of Communication and Transport, ICAO, Condor Air, Precision air, Edlweiss, Air Tanzania,

potential funding sources.

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Problem definition

- Lack of airborne equipment in the region for calibration of ground based navigation aids and that makes the exercise very costly.
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- Periodic maintenance of the remotely located extended VHF relay stations, Navigation aids and VHF communication facilities.
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- Efforts will be directed towards the implementation of WGS-84 for all information published in the AIP and the eventual implementation of electronic Terrain and Obstacle database. Additionally, the automation of the AIS static data (AIP), including linkages with the proposed AFICAD-Africa Central AIS Database will be undertaken during the period.
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- Longer routes -routes are established dependent on the location of Navaid.

geographical scope of the National Air Navigation Plan

- The transition from the current conventional Air Traffic Management environment to a more performance-based system aimed at mitigating the aviation challenges in regard to air space congestion, efficiency, fuel consumption and environmental requirements will be given greater impetus so as to enhance flight safety, efficiency, capacity and usability of available airspace. The way forward is to start implementing the performance based navigation concept and the application of Area Navigation and Required Navigation Performance.

geographical scope of the National Air Navigation Plan

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geographical scope of the National Air Navigation Plan

- During the period, alternate means of surveillance will be studied and possibility of adopting ADS-B, multi-lateration or other non-radar surveillance systems will be reviewed.
- At the regional level, for the purpose of achieving seamless flight operations, the Authority will continue to collaborate with its partners and other regional and international bodies to implement the ADS-B Project, unified Upper Flight Information Region for the EAC States by 2014 and possibly with the SADC States too.

geographical scope of the National Air Navigation Plan

- **Major traffic flows:** North –South (Nairobi-Middle East/Southern Africa. Traffic tend to arrive and depart at a more or less common time - mainly afternoon.
- **Vision for achieving a seamless Global ATM system:** The civil aviation system in Tanzania to be amongst the safest, most orderly and sustainable in the world.
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Risk Management

- Budget and capacity constraints
- Flight operations equipage and capacity
- **Mitigation:**
- loan from Financial Institutions (e.g. World Bank, EIB)
- awareness of the system to the stakeholders well in advance for the planning purposes
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PERFORMANCE FRAMEWORK FORMS FOR EFFICENCY

STRATEGIC OPERATIONAL IMPROVEMENT/ NATIONAL PERFORMANCE OBJECTIVE – 1				
REDUCTION OF AIR TRAFFIC INCIDENTS WITHIN DAR FIR				
Performance Benefits				
Safety	Enhance safety level by improving communication systems			
Efficiency	1. smooth of traffic flow			
Participation by the ATM community	1. increase awareness			
Performance Measurement				
Metrics	1. Number of incidents reduction to a rate of 0.56 per 10,000 movements			
<i>Strategy</i> Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AOM, DCB, TS and CM	1. Installation of VSAT link in the VHF area cover	July 2011 - October 2012	DANS	Business plan FY11/12
	2. To improve ATS-DS	July 2011 - October 2013		Strategic Plan
	3 Seminar and workshop for all ATM community	April 2011		
Risk Management	Risk factors: lack of funding; delay in procuring process;			
	Risk mitigation: identification different funding sources;			
Linkage to GPIs	GPI/9: situational awareness; GP/10 Terminal area design and management; GPI/12 functional integration of ground systems with airborne systems; GPI/20 WGS-84; GPI/21 Navigation systems; and GPI/22 Communication infrastructure.			

STRATEGIC OPERATIONAL IMPROVEMENT/ NATIONAL PERFORMANCE OBJECTIVE – 2				
ENHANCE FLIGHT OPERATIONS IN TANZANIA				
Performance Benefits				
Safety	safety level maintained			
Environment	Reduced emissions through shorter flights and use of optimum routes/trajectories			
capacity	Reduce workload for pilots and Air Traffic controllers			
Cost effectiveness	1. Fuel cost reduction through availability of more optimized routes/trajectories; and 2. Ability of aircraft to conduct flight more closely to preferred trajectories			
Performance Measurement				
Metrics	1. At least 2 PBN routes and 2 RNAV approaches implemented by June 2014			
	2. Percent difference between optimal and actual route			
	3. Number of aircraft entering a specified volume of airspace/hr			
	4. Pounds of fuel burn per operations			
	5. User comments			
<i>Strategy</i> Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AOM, DCB, TS and CM	1. Formulate airspace concept and determine near term operational improvements including development of RNAV SIDs/ STARs for major airports	Jan 2011 - Dec 2011	Tanzania	Database under preparation
	Stakeholder consultations for the airspace	Jan 2012- June 2012		
	Survey of WGS /84 coordinates of identified major airports	July 2012- Dec 2013		
	Design RNAV SIDs/ STARs for major airports	Jan 2014- June 2014		
	Analyze the en-route ATS route structure and identify RNAV routes	July 2012- Dec 2013		
	Flight checks validation for RNAV routes SIDs and STARs	Jan 2014- June 2014		
	Implementations of the routes and of RNAV SIDs/ STAR	Oct 2014		
Risk Management	Risk factors: source of funding and delay in aircraft equipage			
	Risk mitigation: identification different funding sources; involvements of stakeholders in the assessment			
Linkage to GPIs	GPI/1: Flexible use airspace; GPI/5: performance-based navigation; GPI/7: dynamic and flexible ATS route management; GPI/8: collaborative airspace design and management; GPI/9: situational awareness; GPI/12: FMS-based arrival procedures; GPI/17 Data link applications; GPI/20 WGS-84;			

STRATEGIC OPERATIONAL IMPROVEMENT/ NATIONAL PERFORMANCE OBJECTIVE – 3				
ENHANCE SURVEILLANCE IN THE DAR FIR				
Performance Benefits				
Safety	1.	Safety level maintained or improved		
	2.	enhanced traffic management.		
	3.	enhanced surveillance capability		
Environment	1.	Reduced emissions through shorter flights and use of optimum routes/trajectories		
Capacity	1.	Increased capacity through better utilization airspace resources		
Cost effectiveness	1.	Fuel cost reduction through availability of more optimized routes/trajectories; and		
	2.	Ability of aircraft to conduct flight more closely to preferred trajectories		
Performance Measurement				
Metrics	1.	Reduction of traffic delays by 50%		
	2.	Stakeholder feedback		
	3.	reduction of flight delays by 50% and resulting in reduction of emission		
	4.	Number of incidents reduction to a rate of 0.56 per 10,000 movements		
	5.			
Strategy Medium term (2010 - 2015)				
ATM Operational Concept Components	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
AOM, DCB, TS and CM			States /Territories	Database under preparation
	1. identify areas requiring ADS-B coverage;	2008	DANS	Completed the ADS-B project study
	2. discussion EAC partners on regional cooperation plan and implementation	2008		Completed the ADS-B project study
	3. Stakeholder awareness of the implementation of the ADS-B	2009		Preliminary awareness session with stakeholder
	4. Technical capacity building	2010/2013		
	5. Installation of ADS-B ground stations	2013		
	6. Trail and implementation of ADS-B	2014		
	Projects/Tasks	Timeframe Start/End	Responsibility	Status (as of ...)
Risk Management	Risk factors: lack of funding; delay in aircraft equipage;			
	Risk mitigation: identification different funding sources; involvement of aircraft operators in the decision making; access to commercial databases			
Linkage to GPIs	GPI/7: dynamic and flexible ATS route management, GPI/8: collaborative airspace design and management, GPI/9: situational awareness, GPI/16: decision support and alerting systems, GPI/22: communications infrastructure			