



SYNERGY
BETWEEN
AIRPORTS
AND URBAN
DEVELOPMENT
FOR SUSTAINABLE
DEVELOPMENT
CONCEPT
NOTE



ICAO

UN HABITAT
FOR A BETTER URBAN FUTURE



SUSTAINABLE
DEVELOPMENT
GOALS

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1. Project Background

The human society is based on perpetual association with the biotic and abiotic components of the environment. Over the course of human history, mobility has played a key role in human civilizations and influenced human activities and settlement patterns. Transportation has thus been a major determinant of the manner in which human societies have exploited resources from the environment to earn a livelihood and establish human settlements.

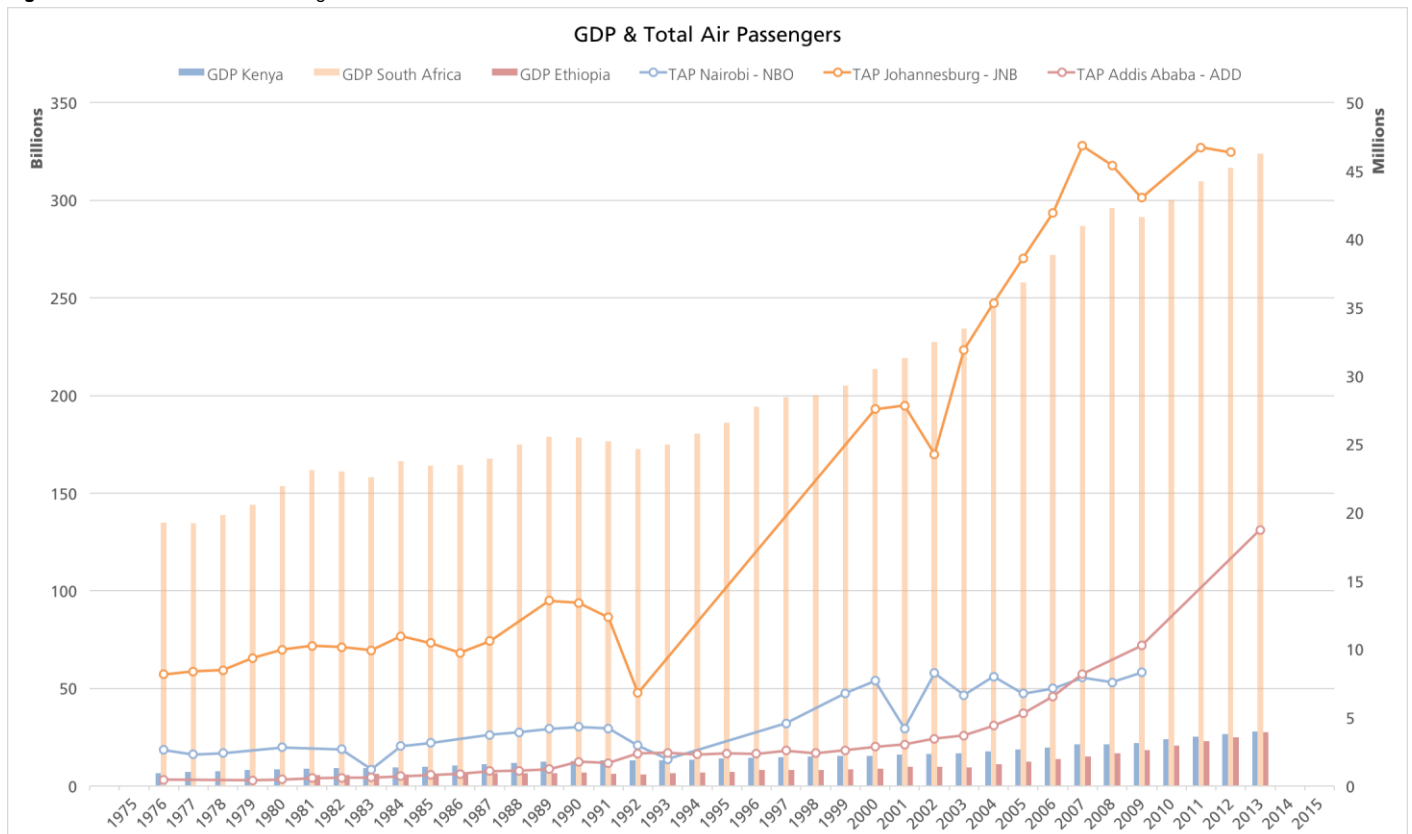
From the early 20th century, the aviation industry has grown to bridge the need for rapid short and long distance travel. Air transport has become a crucial segment of human transport in the 21st century, more so in influencing human activities such as urban forms, settlement patterns and economic activity. To support the ever growing need for air travel, aviation infrastructure has been undergoing changes in equal measure to accommodate the growing global demand for connectivity and mobility. Airports have evolved from simple grassy and gravel airfields to elaborate airport cities (Aerotropolis); with large scale airport infrastructure to

handle human traffic, cargo and their attendant aviation services. Modern airports have a complex mesh of land uses to support aviation activities and services, and other associated needs¹.

In 2014, the total economic impact of aviation reached 3.5 per cent of the world’s GDP or 2.4 trillion US dollars. The sector supported the global employment of 58.1 million people, given its cross-cutting nature and multiple links to other economic sectors. Aviation supported 8.5 million jobs in 2014 and its direct economic impact reached approximately USD 700 billion. Over 1.1 billion tourists crossed international borders, over half of who travelled by air to their destinations and up to 80 per cent of visitors to certain small island states. Air freight constitutes 34.6 per cent of world trade by value despite this being only 0.5 per cent by volume.

¹ Yigitcanlar, T. (2010). *Sustainable Urban and Regional Infrastructure Development: Technologies, Applications and Management*.

Figure 1: GDP and Total Air Passengers



Source: GDP data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI)2010. TAP data provided by ICAO

Air transport is forecast to grow from 33 million departures today to 60 million by 2030. Aviation infrastructure is thus expected to undergo changes in equal measure to accommodate the growing global demand for connectivity and mobility. To enable this growth and the socio-economic benefits that aviation generates, it is of significant importance that all States develop quality and resilient aviation infrastructure compliant with the international standards and policies adopted by International Civil Aviation Organization (ICAO).

Airports are considered an integral and essential component of the aviation infrastructure in a State. A poorly designed and overseen aerodrome or an aerodrome which does not meet international requirements adopted by ICAO has been proven to be a safety risk, as well as a barrier for the economic development of a State. Given the importance of aviation, especially in Least Developing Countries (LDCs), Landlocked Developing Countries (LLDCs) and Small Island Developing States (SIDS), a single aviation accident can have a substantial knock on effect for their economies. They therefore require international support and partnerships to ensure that essential aviation infrastructure including aerodromes, navigation aids and fire safety equipment are upgraded to modern international standards and operated effectively to guarantee safety and economic stability.

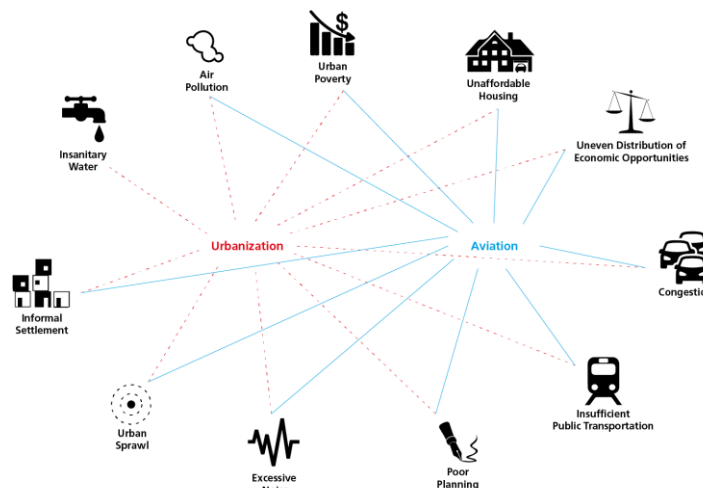
Despite air transport's clear economic significance and demonstrated ability to serve as a foundation and catalyst for global connectivity, economic growth and urban development, only 2.6 per cent of global funding for infrastructure and services (in 2005-2015) supported aviation development.

Airports have important bearings on planning around and beyond the city and region of location. Airports are located in close proximities to major cities or other major land uses such as tourism sites and major economic zones; to offer faster and convenient travel modes to the users of other land uses in the proximity of the airport. Some airports have been designed to serve as regional and global air transport hubs to support the transfer of passengers, goods and services from one flight to another and intermodal transfer.

The proximity of airports to major cities throughout the world has led to the creation of development corridors between the airport facilities and the core city and beyond as a means to facilitate movement of people, goods and services between the two places. The links from airports to other land uses create other centres and activity areas along development lines in a city, hence creating different levels of interdependencies and interrelationships that affect the activities and settlements in the city. The development axis to the core city and towards the rural interphase adjacent to the city is a crucial link in connecting people to opportunity at and beyond the local level; and for integration of societies.

With the objective of examining, identifying and promoting synergistic relations between airport and urban sustainable development, ICAO and the United Nations Human Settlements Programme (UN Habitat) partnered in April 2016 to conduct a pilot project aimed at assessing the synergy between the airports and urban development in Nairobi, Addis Ababa and Johannesburg, accordingly formulate recommendations for consideration by relevant decision makers and stakeholders.

Figure 2: Shared challenges by Aviation and Urbanization



Source: UPP data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI) 2010. TAP data provided by ICAO

2. UN-Habitat and ICAO Added Value to the Project

The United Nations system works towards promotion of international peace and security, by promoting human welfare through socio-economic development. On 25 September 2015, the UN General Assembly adopted the 2030 Agenda for Sustainable Development (2030 Agenda), which includes a set of 17 Sustainable Development Goals (SDGs) supported by 169 targets, that balances the economic, social and environmental dimensions of sustainable development. ICAO is leading a global indicator agreed to monitor progress towards achieving SDG 9, Target 9.1 relating to infrastructure development: passenger and freight volumes carried by air transport. Further, the Inter-Agency Task Force on Financing for Development report for 2016 points at the low level of effective implementation of safety oversight in the area of aerodromes to monitor the quality, reliability, sustainability and reliance of the aerodrome infrastructure. Further, the Agenda 2030 calls for a global partnership that brings together Governments, private sector, civil society, UN system and other actors to mobilize all available resources for its implementation.

The United Nations Human Settlements Programme (UN Habitat) works towards socially, economically and environmentally sustainable human settlements; at the urban and rural level. As the world is urbanizing rapidly, urban areas are increasingly getting predisposed to be trend setters in social, political, economic and environmental strife. Sustainable urbanization is currently a pressing need, because management of urban and rural development patterns, provision of adequate shelter and associated services in urban and rural settlements are needed more urgently and at an ever increasing scale.

The relation between air travel and the core city lead to emergence of development corridors to connect the two places. The corridors also attract land uses that supplement or complement the functions of the core city and the airport as a transport hub. The correct management of the development axis between the airport and the core city, and the regulation of land use activities around airport facilities are useful in ensuring sustainable land use development around the airport and along the

corridor route. UN Habitat has carried out several projects across the world on sustainable urbanization, human settlements, redistribution of urbanization dividends and sustainable land use correlations in its quest to achieve socially and environmentally sustainable human settlements and the adequate shelter for all. It will thereby bring into the project a wide array of international experience and best practices that will be relevant in achieving project goals.

Consistent with Article 44 of the Convention on International Civil Aviation (Doc 7300), one of the objectives of ICAO is to develop principles and techniques of international air navigation and foster the planning and development of international air transport so as to inter alia meet the needs of the peoples of the world for such an air transport system. To achieve this objective, ICAO serves as the global forum for its 191 Member States and industry groups to reach consensus on Standards and Recommended Practices (SARPs), policies and global plans to coordinate multilateral strategic progress and growth of international air transport. In turn, Member States implement these SARPs, plans and policies to ensure that their local civil aviation operations conform to global norms. This allows the effective operation of aviation's global network in every region of the world and its resulting socio-economic benefits.

In addition to its standard-making activities, ICAO coordinates technical assistance and capacity development in States to achieve development objectives in the aviation sector, produces global plans to coordinate multilateral progress for safety and air navigation, produce reports on air transport performance metrics and audits of civil aviation oversight capacity for countries for safety and security. Since its inception, ICAO has undertaken major steps that have led to smooth regulation and operation of civil aviation operations worldwide. They have been a major advisor on the location of airport infrastructure in many countries; with a considerable global experience in aviation policy, and monitoring and evaluation processes of policies, programmes and projects.

3. Project Rationale

A. The Urban Development Scenario in Africa

With an annual growth rate of 3.36 per cent per year from 2005 to 2010, African urban areas are growing 1.7 times faster than the urban growth rate of the world in the same period. This means that some urban centres will double their population in 15 years, others even in a shorter period. Projections indicate that populations of the cities of Lagos, Cairo and Kinshasa will surpass 12 million by 2020².

Africa's population hit the one billion mark in 2009. It was estimated that by 2017, Africa's urban population would be 569 million people which will be larger than the total urban population of Europe at 553 million people. It will also be larger than the urban population of Latin America and the Caribbean which will stand at 533 million people.

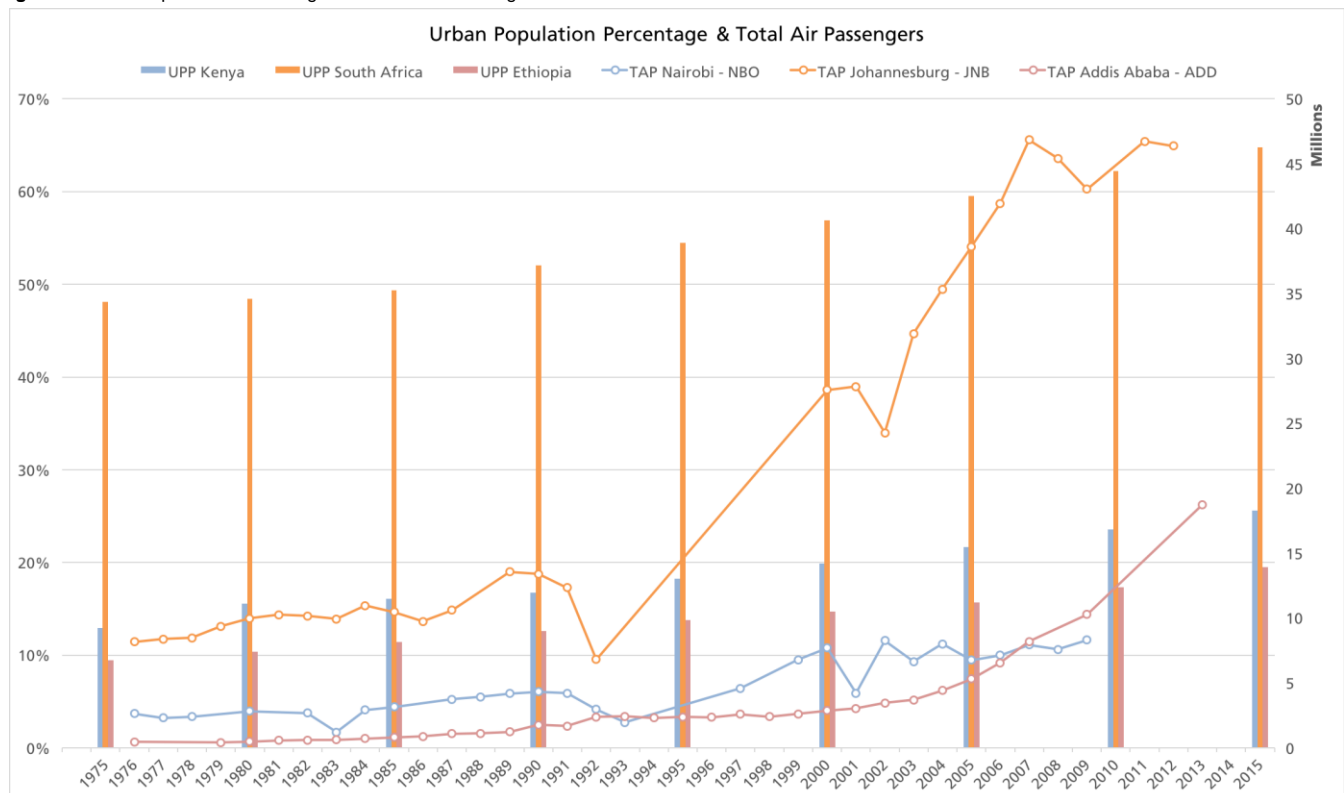
² United Nations Economic Commission For Africa: Contribution To The 2014 United Nations Economic And Social Council (ECOSOC) Integration Segment Accessible on: <http://www.un.org/en/ecosoc/integration/pdf/economiccommissionforafrica.pdf>

This situation represents opportunities and challenges for housing and Urban Development in Africa³.

Although urbanization and economic growth has not gone hand in hand in Africa, the relationship between level of urbanization and GDP per capita from 1960 to 2010 is positive with a moderate correlation. Low income countries have a very low level of urbanization; concomitantly high income economies are highly urbanized. In fact, over 60% of GNP in African countries is generated from urban centres. In this respect, urbanization in itself provides vital opportunities in the Continent for positive economic development such as industrialization and entry into export markets, as well as social and human advancement. Urban centres create economies of agglomeration that are important to sustain economic growth and generate jobs and opportunities. Cities and towns are also attracting national and foreign investments.

³ The Nairobi Declaration: 4th session of the African Ministerial Conference on Housing and Urban Development; held in Nairobi, Kenya from 20 – 23 March 2012.

Figure 3: Urban Population Percentage and Total Air Passengers



Source: UPP data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI)2010. TAP data provided by ICAO

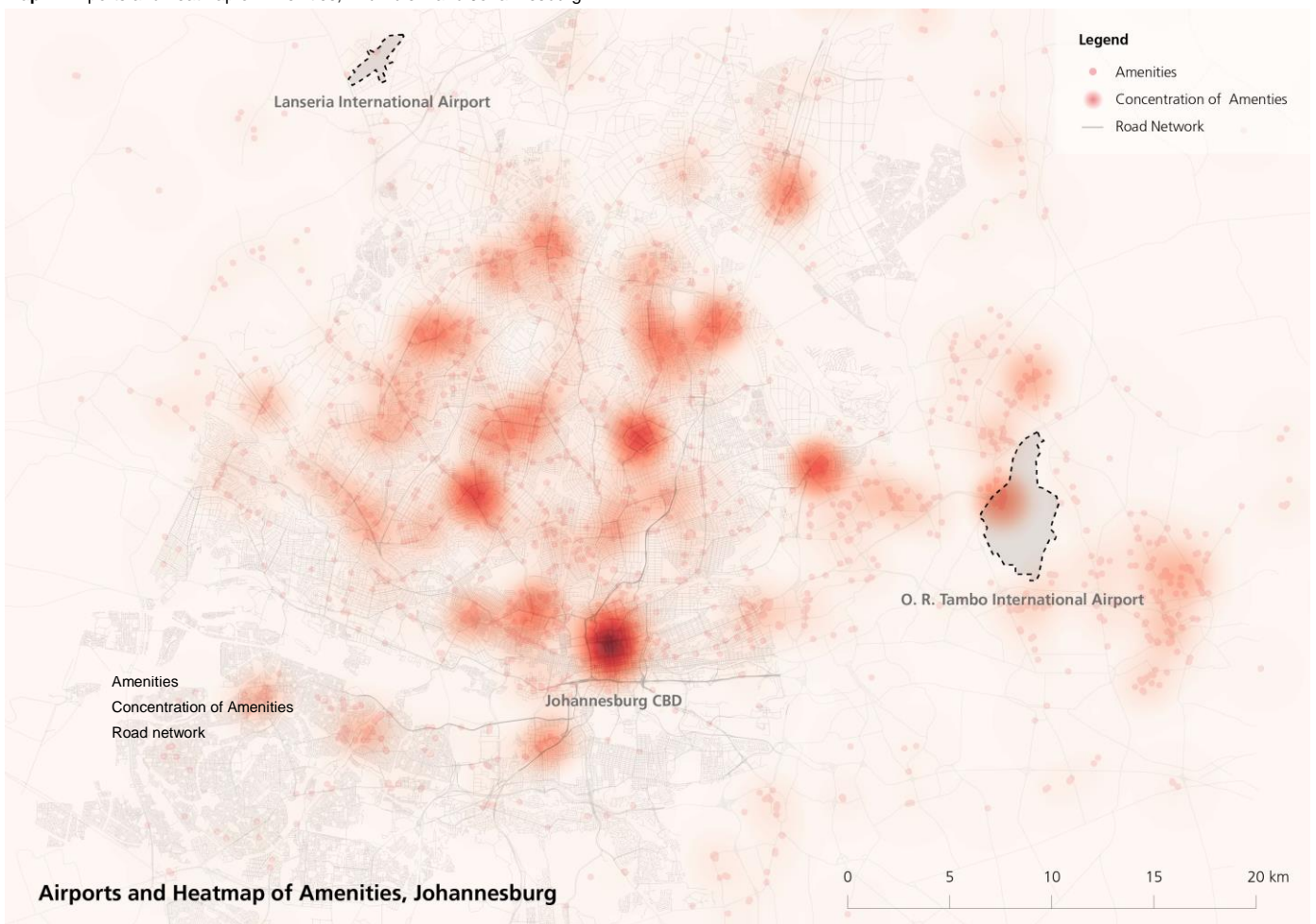
B. Urbanization Level vs. Country GDP

While the above prospects are evident, the opportunity associated with urbanization has not been fully and adequately appreciated and harnessed. As a result, a number of challenges have prevailed that if not urgently addressed will continue to impair Africa’s potential for sustainable and accelerated development. In most countries in Africa, urbanization is characterized by congestion, poor planning, lack of adequate and affordable housing resulting in a significant majority of urban residents residing in informal settlements, dysfunctional urban transportation systems, urban poverty and exclusion, and poor access to sanitation and potable water.

Urban centres have thus been insufficiently generating the stimulus for sustainable urban and rural development. While the direction of development is towards increasing urbanization, the systems for optimizing the advantages and mitigating the challenges are not fully in place. In realization of the need for immediate action on urban challenges, African Heads of State and Governments in

Assembly/AU/Decision 29(II) of 2003 in Maputo decried the chaotic state of urbanization and called for immediate and concerted action. African Ministers responsible for Housing and Urban Development therefore took a cue from the Heads of State and Government and established the African Ministerial Conference on Housing and Urban Development (AMCHUD) in 2005 through the Durban Declaration. This was facilitated by a collaboration between the African Union, UN-HABITAT and the Government of South Africa during the Fifth General Assembly of the African Population Commission (APC) which transformed itself into an Expert Group Meeting that served as the First African Ministerial Conference of Housing and Urban Development (AMCHUD) under the theme “Urbanization, Shelter and Development: Towards an Enhanced Framework for Sustainable Cities and Towns in Africa”. Since the inception of AMCHUD, member countries have been committed to the housing and urban development agenda. AMCHUD has thus become the voice of Africa on the promotion of sustainable human settlements in Africa.

Map 1: Airports and heatmap of Amenities, Ekurhuleni and Johannesburg



Source: Raw data extracted from @Openstreetmap

C. Aviation in Africa

Africa is a vast continent. With 11.6 million square miles, it is three times as big as the United States of America. Of its 54 countries, 15 are landlocked (up to 24% of Africa's total land mass). Surface travel in Africa using road and rail is faced by many challenges such as poor infrastructure and long distances; making aviation the most convenient model of travel in regional, continental and intercontinental travel.

Compared to other regions in the world however, Africa's aviation industry continues to lag behind the rest of the world. Despite housing 12% of the world's population, it contributes only 4% to the global aviation services. The effective implementation of safety standards by African States (48.53%) is below global average (63.67%), the establishment of autonomous civil aviation authorities is being implemented at low pace and qualified personnel serving in the aviation sector is insufficient.

As aviation traffic is growing worldwide, Africa is one of the regions where air traffic growth is the fastest. ICAO's long-term forecast is for scheduled traffic to double from 3.3 billion passengers in 2014 to more than 6 billion by the year 2030. The number of departures should also double, from 30 million to 60 million a year over the same period. With regard to carriage of cargo by air transport, the total value of goods transported by air represents 35 per cent of all international trade and 0.5 per cent by volume, a trend that is expected to continue in the future. Preference of transportation of high value and perishable goods by Air continues to progressively gain prominence.

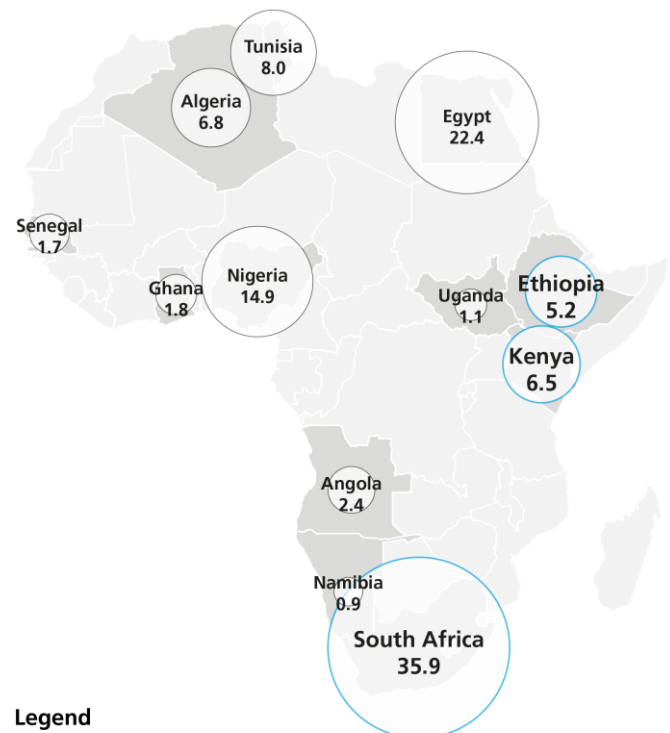
Africa's aviation sector has signs of dividends due to continued improved performance. The African Development Bank⁴ revealed that the demand for air transport in Africa has been rising steadily. Freight traffic grew by 45% while passenger traffic raised by 80%. This trend is projected to keep growing to economic growth in most African economies, demographic boom in the continent (averaging at 2.3%), increasing urbanization and an expanding middle class that is projected to be spending between \$0.8 trillion and \$2.0 trillion⁵.

⁴ African Development Bank: Africa's Aviation Industry: Challenges and Opportunities, 20th November, 2012
<http://www.afdb.org/en/blogs/afdb-championing-inclusive-growth-acrossafrica/post/africas-aviation-industry-challenges-and-opportunities-10025>
⁵ Airport-Technology.com: Oliver R Tambo (Johannesburg) International Airport (JNB/FAJS), South Africa
<http://www.airport-technology.com/projects/johannesburg>

The African aviation industry is a crucial catalyst that continues to spur socio-economic growth and development. It has led to improved business, trade, tourism and social interactions of people within the African continent and beyond. Recent economic growth in various countries has led to an upsurge in the demand for air travel; for local, intraregional flights, interregional flights and intercontinental routes. The growth of air traffic in Africa has led to a network of airports; serviced by a number of transport corridor facilities such as roads, waterways and rails. In addition, airports are a backbone that spur and promote various economic activities in many countries.

Map 2: Air Passenger Movements by Country

AIR PASSENGER MOVEMENTS BY COUNTRY



Legend

- Focal Passenger Flow (millions)
- Passenger Flow (millions)
- Countries Covered in Study
- Countries

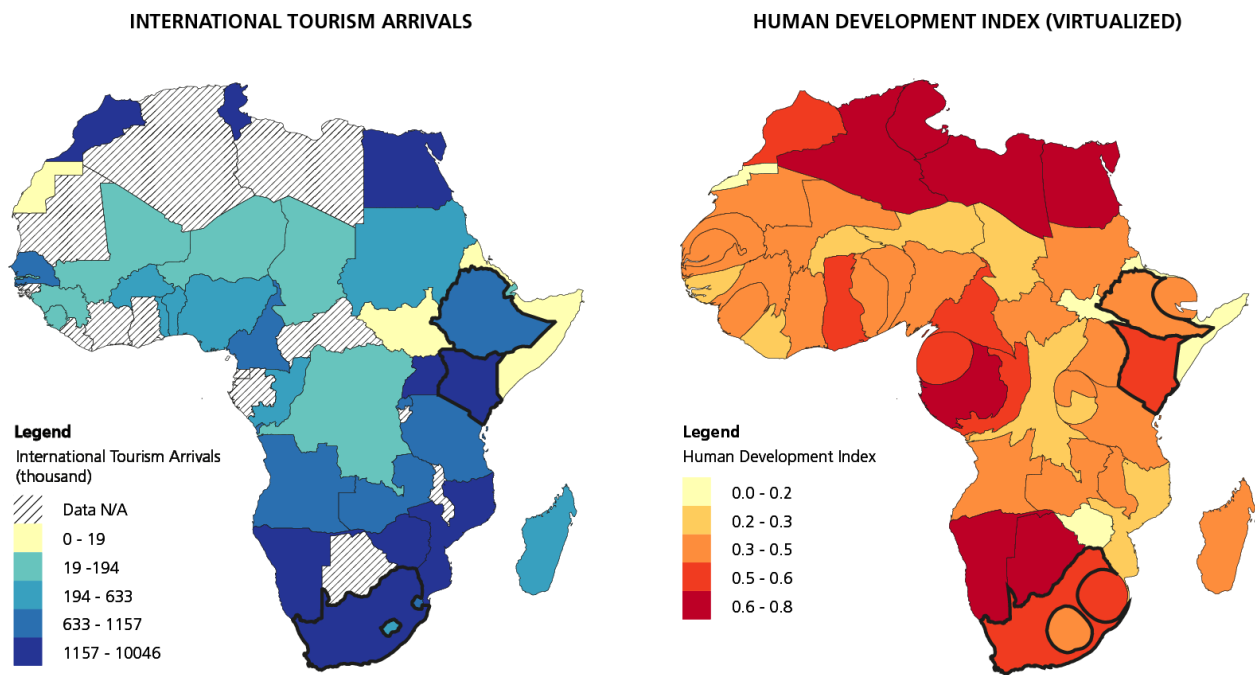
Source: Data extracted from "2011 World Airport Traffic Report" by Airports Council International, 2012

A study done by International Airlines Association (IATA) in collaboration with the African Airlines Association (AFRAA) and the African Civil Aviation Commission (AFCAC) demonstrated significant economic benefits to be gained from liberalization of air services markets in Africa by implementing the Yamoussoukro Decision. In that case, liberalization between only 12 countries (Algeria, Egypt, Tunisia, Ethiopia, Kenya, Uganda, Angola, Namibia, South Africa, Ghana, Nigeria and Senegal) is estimated to generate about 155,100 jobs in aviation, tourism, and the wider economy and add US\$1.3 billion to annual GDP (about 0.07% of the GDP) of the 12 countries.

In comparing the impact of tourism for instance on a country's HDI, countries with more tourists recorded higher levels of HDI as demonstrated in Map 3.

Urban planning is thereby needed to harness and replicate the value realized from the growth of the aviation sector in Africa to ensure there is an even and planned distribution economic opportunities to many people in society; as a result of the airport. Through planning, governments can promote the effective implementation of standards and policies adopted by ICAO to facilitate and propagate the proper growth and functioning of aviation infrastructure and services in Africa to harness the growing aviation industry benefits for the socio economic development. Planning will be able to ensure that the conditions are established to simulate development scenarios of the independent and interdependent correlation between various sectors of production in the urban and rural area, how they are affected by airports; and how the existing development models can be improved between the city, airport and rural area to spur and promote the growth and development of the airports and urban areas.

Map 3: Comparison of HDI and Tourism arrivals in Africa



International inbound tourists (overnight visitors) are the number of tourists who travel to a country other than that in which they have their usual residence, but outside their usual environment, for a period not exceeding 12 months and whose main purpose in visiting is other than an activity remunerated from within the country visited. When data on number of tourists are not available, the number of visitors, which includes tourists, same-day visitors, cruise passengers, and crew members, is shown instead. Source: World Tourism Organization, Yearbook of Tourism Statistics, Compendium of Tourism Statistics and data files.

The HDI (human development index) is a summary measure of human development. It measures the average achievements in a country in three basic dimensions of human development:

- A long and healthy life, as measured by life expectancy at birth
- Knowledge, as measured by the adult literacy rate (with two-thirds weight) and the combined primary, secondary and tertiary gross enrolment ratio (with one-third weight)
- A decent standard of living, as measured by GDP per capita (PPP US\$)

*Data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI)2010

Source: Raw data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI), 2010.

D. Role of Airports in Urban Development

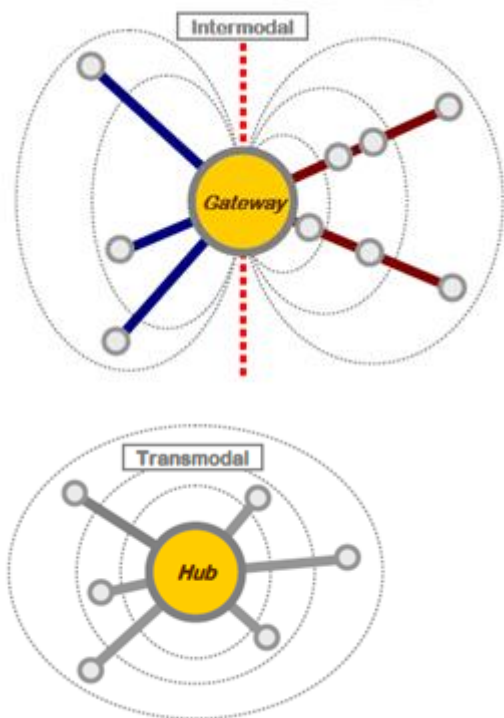
In urban and regional planning, transportation takes up one of the largest proportions of land use allocation. Airports have in turn been key development nodes in the planning matrix, and their unique role in facilitating movement and distribution systems has largely affected urban and regional planning. There develops a strong correlation between airports and development of metropolitan areas.

Airports are gateways to countries and regions because they promote continuous circulation of goods and services to service supply and distribution chains. Apart from terminal facilities in airports, there are other uses such as warehouses, distribution centres, banking, hospitality and other industries that are located in or near airports, forming part of its ecosystem. These in totality facilitate entry and exit of goods, services and people from the catchment area of the airport to other locations. They also form hubs by virtue of their location and aviation role. They collect, sort, trans-ship and distribute passengers, goods and services.

Airports hubs create nodal points in a city region. They are connected to the city and the rural area using transport corridors to facilitate circulation of goods and services. Consequently, there are established other transportation links from other areas such as the CBD and rural hinterlands of the city to connect the airport. Such links can be roads, railways or waterways. The transport links realized forms a crucial circulation factor that is used to facilitate movement of goods, people and services between other land uses in a metropolitan area and the airport. The resultant transportation factor can be harnessed to boost economic growth and development neighbouring corridor routes and the neighbouring urban area.

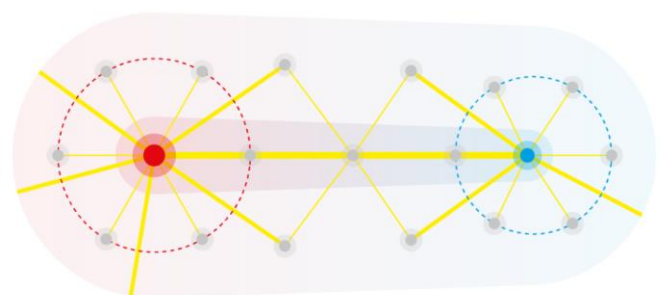
Airports are thus crucial planning tools in cities and regions that can inform the development character and other development options that can be exploited to enhance economic output and promote prosperity in cities, regions and countries. Development policies based on transit oriented development models applied to airport development and urban development are crucial determinants in the level of economic activity and the spread of the value of goods and services associated with the use of airport facilities.

Figure 4: Airports as Gateways and Hubs



Source: Rodrigue, J.P (2007) Gateways, Corridors and Global Freight Distribution: Transpacific Issues

Figure 5: Transport Corridors in Metropolitan Development



Legend

- CBD
- Airport
- Peripheral focal points
- Flows
- Corridors

Source: Adapted from Rodrigue, J.P (2007) Gateways, Corridors and Global Freight Distribution: Transpacific Issues

E. Location: Proximity of the Airport to the City Centre and Adjoining Land Uses

Aircrafts need a large clearance along the landing and take-off flight paths; which are preferably undeveloped areas. Airports are thus mostly located on the peripheral locations of the city boundaries to provide for a convenient location with plenty of space. As such, airports have become important facilities that affect planning in and beyond the city. Most civilian airports are built in relation to the proximity to the city centre or economic hubs in a region. Adjacent land uses determine the location of airports.

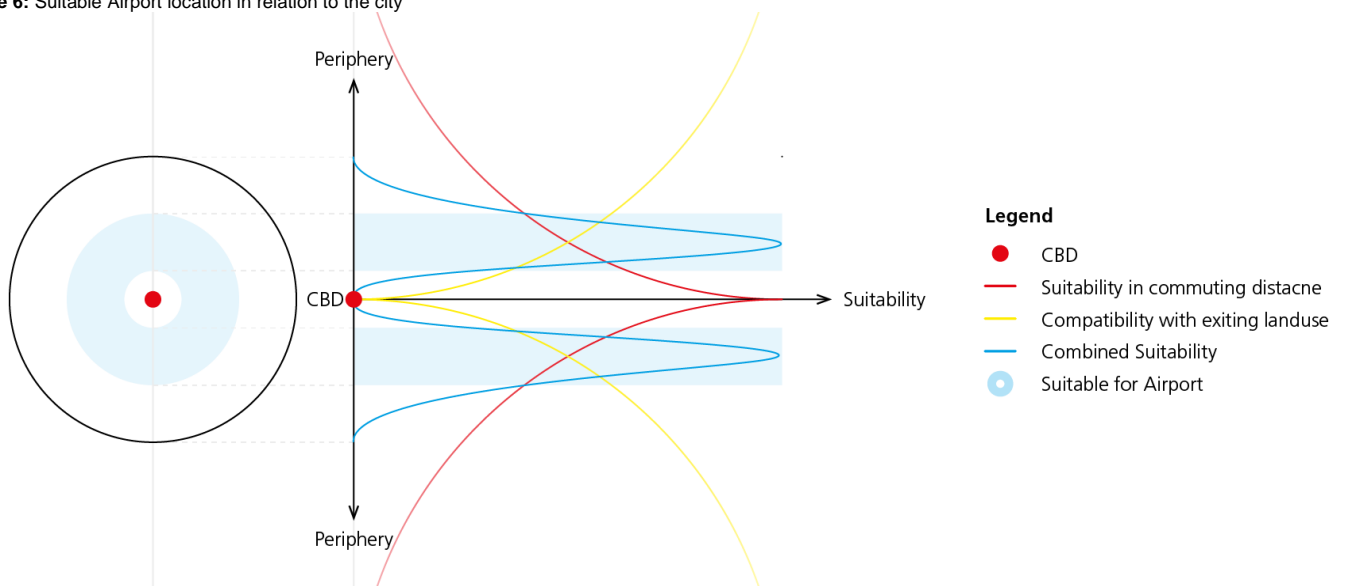
Airports close to the CBD have benefits of short commuting distance to the service areas. A location further from the city centre creates inefficiencies in accessing the airport, and thus raises commuting costs. Location of airports close to the CBD faces several land use incompatibilities of existing land uses and noise. Essentially, it is worth noting that urban development constrains and stifles the development of airports because of the building and height regulations that are required for all airport facilities. Residential and office blocks cannot be located along the flight path for health and safety reasons, thus constraining urban development. Airport locations thus have to be thought out well in advance using accurate future urban growth projections and requisite land use activities scheduled along the flight paths to ensure there is land use compatibility and adequate policy guidelines to effect safety and land use harmony around airports. In addition, there is a need for shared responsibility in managing air navigation facilities installed in metropolitan zone. These

facilities provide safety of aircraft operations over the city and beyond. Therefore, while the aviation sector provide required maintenance to the equipment, metropolitan authority should including them in the mapping of protected sites and provide security services to prevent any unlawful interference which may occur.

In all cases, airport facilities are major emitters of greenhouse gases. This is due to the emissions made by aircrafts, motorized vehicles accessing connecting the airport to other land uses such as CBD bus and rail shuttle connections, and other activities within the airports. However, in the recent past, airport facilities management authorities have sought to make 'Green-Airport Cities' that minimize as much as possible the carbon footprints of airports. This is done using innovative design options that limit the need to use non-renewable energy sources (harnessing solar and wind power), adoption of design features that limit movements within the terminals and use of mass public transport to travel to and from the airports.

The process of steering airports and cities towards synergistic sustainability as they develop will be enhanced by harnessing the asset base of airports and urban centres to effectively deploy organic links to other sectors in the economy and integration into the overall development agenda. Airports and urban development are strategically related to provide the horizontal and vertical linkages for implementing the Continental agenda for overall socio-economic welfare.

Figure 6: Suitable Airport location in relation to the city



Source: Adapted from Hofstra University (2015)

4. Project Objectives

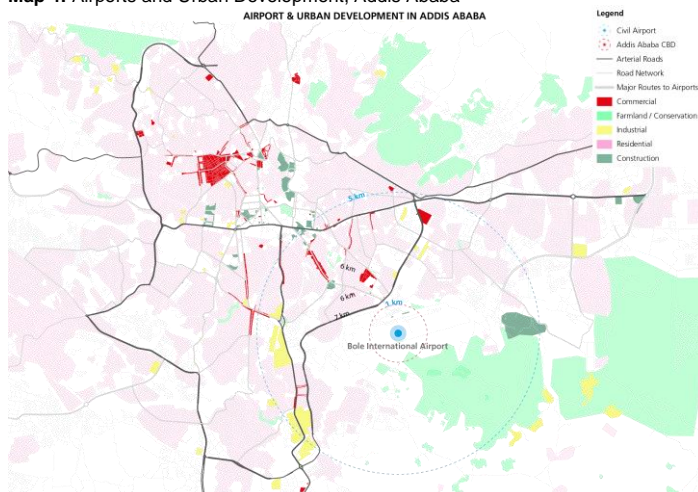
The project objectives include to:

1. Identify global good practices and principles, consistent with ICAO standards, guidance and policies, in urban and regional planning and management around air transport infrastructure that can be applied to help sustainably develop air transport infrastructure and services to achieve airport-city (-ies) development axis (corridors).
2. Assess and document the trends in and impacts of airports and air traffic on land use around the airport and along the airport-city corridor in selected airports to track land use changes and compliance to relevant ICAO standards, guidance and policies, urban planning regulations, its related socio-economic and environmental impacts to sustainable urban development.
3. Develop conceptual, methodological and operational spatial and visualization frameworks that will highlight the role of airport systems (infrastructure and services) to urban development beyond the city, along the airport-city axis and the airport-rural area trajectory; and study the synergistic relations to sustainable development.
4. Develop, in consistency with existing ICAO documents, guidelines that assist to enhance the synergy between airport and urban sustainable development.

5. Methods

1. Review of existing regulations and the situation to ascertain the trends in aviation, land use and associated activities and use the reviewed information to propose optimal development options for the airport cities.
2. Using studio/design workshops to help illustrate and visualize the relationship between airports and urban development, particularly along the corridor patterns and possible land use approaches to optimize socio-economic and ecological returns.
3. There will be seminar and webinars with experts on related aviation areas to study the trends and deliberate on arising issues and best options for development in the aviation sector.
4. There will be conducted a conference/workshop with stakeholders to present the findings and brainstorm in areas of engagement.
5. There will be scoping field visit to the project sites to ascertain the situation on the ground.
6. There will be exhibitions on airports and their relation to urban and rural development.
7. The proposed project will include hands-on approaches in land use design to help in the dissemination of knowledge pertaining on aviation and corridor development to local implementing agencies for capacity development purposes.
8. In the long run, this is expected to increase awareness and appreciation of airports as key structural instruments for urban development; that promote sustainable urban and regional planning, air transport development and socio economic development for the urban, peri-urban and rural areas.

Map 4: Airports and Urban Development, Addis Ababa
AIRPORT & URBAN DEVELOPMENT IN ADDIS ABABA



6. Expected Outputs and Activities

Outputs and Activities

OUTPUT 1: MoU and Concept Note

- Activity 1.1 Develop and sign an MoU to define the activities and modalities of both parties engaging in the whole project
- Activity 1.2 Develop and adopt a concept note and the Terms of Reference for the working modalities of UN Habitat and ICAO in the project activities

OUTPUT 2: Best practices and principles in sustainable urban land use and land management around air transport infrastructure are identified and documented

- Activity 2.1 Develop a questionnaire to query relevant stakeholders on the trends and measures used to effect sustainability in airport development, management and land use management in and around airport facilities
- Activity 2.2 Review of case studies based on the analysis of selected urban policies, plans and strategies taking into account inter-alia the ICAO Airport Planning Manual (Part 2).
- Activity 2.3 Conduct a mission to the three cities to expedite data collection from relevant stakeholders including IATA, AFRAA, AU Commission and AASA
- Activity 2.4 Organize an expert group meetings to produce inputs to the outcome document of the case study review

OUTPUT 3: Spatial changes around the airport and along the airport-core-city development axis documented and tools to gauge the impacts of land use regulation in and around the airport developed

- Activity 3.1.1 Trends in land uses in and around the airport facilities to determine changes over time taking into consideration the ICAO land use planning and environmental control SARPs and guidance around the airport
- Activity 3.1.2 Land use changes along the transport links between the city and the airport over time documented to find out the impact of the airport on the activities taking into account the existing best practices in the field
- Activity 3.1.3 Land use changes along transport links between the airport and the rural hinterland carried out to find out any impacts of the airport on other land use activities taking into account the existing ICAO guidelines
- Activity 3.2 Correlate the impact of air traffic growth in the land use patterns of the airport vicinity and the related socio-economic and environmental impacts along the airport-core city axis in accordance with SARPs, published ICAO Airport Planning Manual (Part 2)
- Activity 3.3 Develop a methodological tool to gauge the impacts of the airport facilities on land use activities in the urban and rural hinterland to the airport using case studies based on approved ICAO methodology and related documentation, i.e. the Airport Planning Manual (Part 2)
- Activity 3.4 Promote best practices in related to the project outreach activities, mainly posters, booklets, video documentary and possible side events as an ICAO/UN-Habitat legacy project'

OUTPUT 4: Framework for operationalizing the good practice manual developed and piloted

- Activity 4.1 Initialling and signing of the MOU as well as promotion and exhibition of the final concept note and the report of the pilot project
- Activity 4.2 Conduct joint ICAO/UN-Habitat Experts' Group Meeting for review and a Stakeholders' Validation Workshop for validation of the pilot project report
- Activity 4.3 Based on the outcome of the pilot project, develop global guidelines for synergy between airport and urban sustainable development taking into account ICAO relevant guidance documents

7. Location of Pilot Project

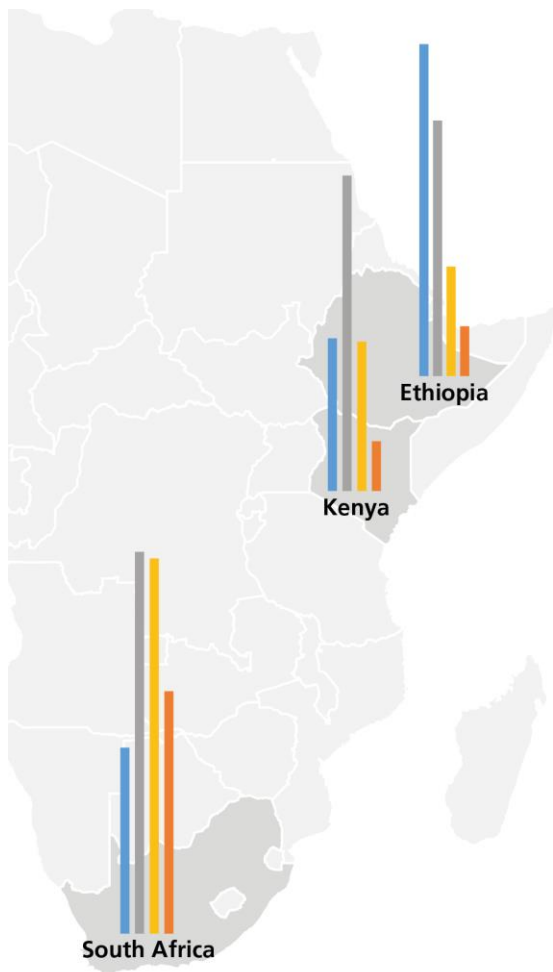
The Eastern, Southern Africa regions have been selected as the study sites for this study. The regions have steadily been growing around regional hubs in Johannesburg, Addis Ababa and Nairobi. These hubs are projected to be handling over 36% of international air traffic in Africa. This implies more people transiting their airports, and subsequent increased demand for goods and services consumed within and around the airports, and more employment opportunities. Eventually, this translates into socio economic growth of a city due to the increased economic activities realized and other ripple effects in the economy.

In the US for instance, it's recorded that over half of the Fortune 500 headquarters are located within 10 miles of U.S. airport hubs. This implies that airports have a crucial role to play in economic growth.

The project will take place in three countries; with studies spanning five airports;

- Kenya: Nairobi (Jomo Kenyatta International Airport and Wilson Airport)
- Ethiopia: Addis Ababa (Bole International Airport)
- South Africa: Ekurhuleni and Johannesburg (OR Tambo International Airport and Lanseria International Airport)

Map 5: Overview of Country profile



Overview of Country Profile

Legend	Profile	Kenya	S. Africa	Ethiopia
Blue bar	Population (million)	45	55	99
Grey bar	HDI	0.548	0.666	0.442
Yellow bar	Urbanization Rate	26%	65%	19%
Orange bar	GDP (billion)	143	725	144

Sources:

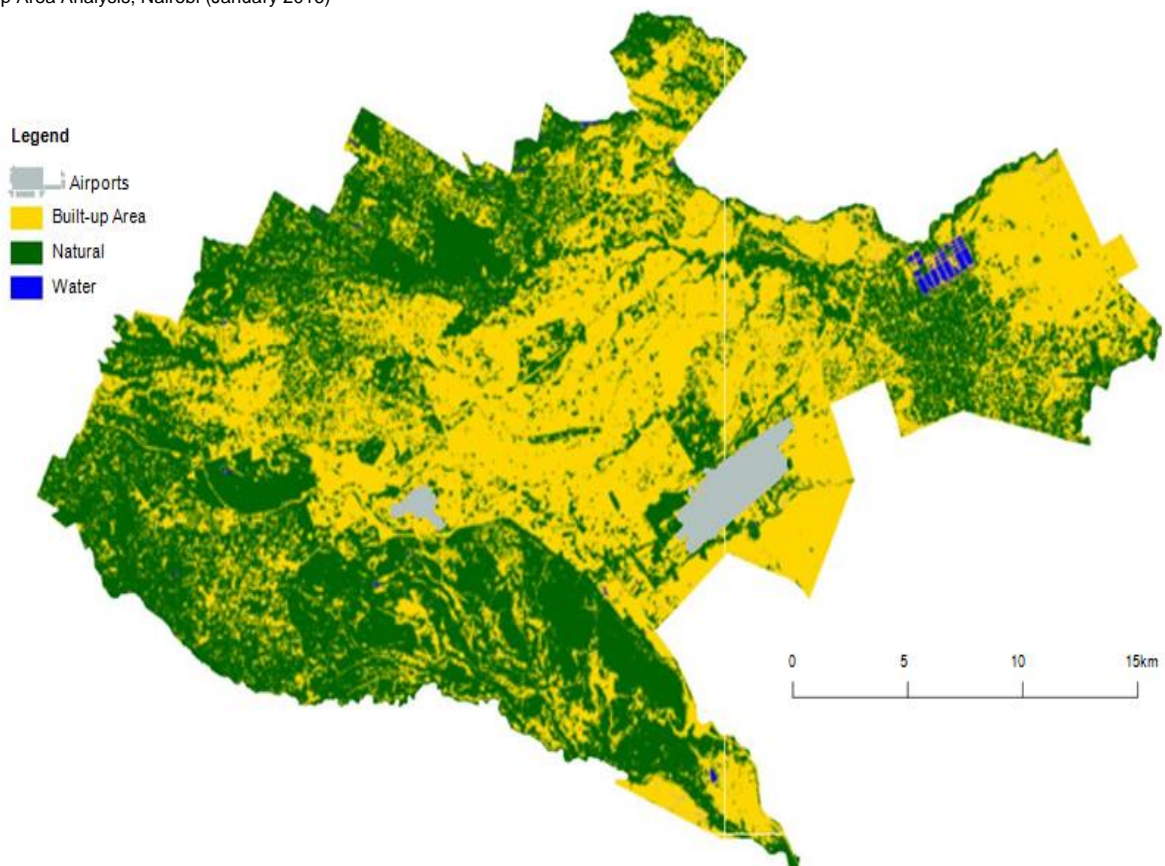
- International Monetary Fund
- Country Comparison: Population, The World Factbook
- Human Development Report, United Nations Development Programme

8. Project Stakeholders

The stakeholders in the project will include:

ICAO	UN-Habitat
Civil aviation authorities in Ethiopia, Kenya and South Africa	Local authorities in charge of Addis Ababa, Nairobi and Johannesburg
Airport management authorities in Ethiopia, Kenya and South Africa (both public and private)	Land users close to the airports in Ethiopia, Kenya and South Africa
Ministry in charge of aviation in Ethiopia, Kenya, and South Africa	Regional Centre for Mapping of Resources for Development
AFCAC (Africa Civil Aviation Commission)	Ministry in charge of land, planning and urban development in Kenya, Ethiopia and South Africa
IATA (International Air Transport Association)	
AFRAA (Africa Airlines Associations)	
Aircraft manufacturers such as Boeing Corporation and Airbus	
Airlines	
Aviation experts from Ethiopia, Kenya, Mauritius, Rwanda, South Africa and Uganda	

Map 6: Built-up Area Analysis, Nairobi (January 2016)



Source: Raw data extracted from USGS @ <http://landsat.usgs.gov>

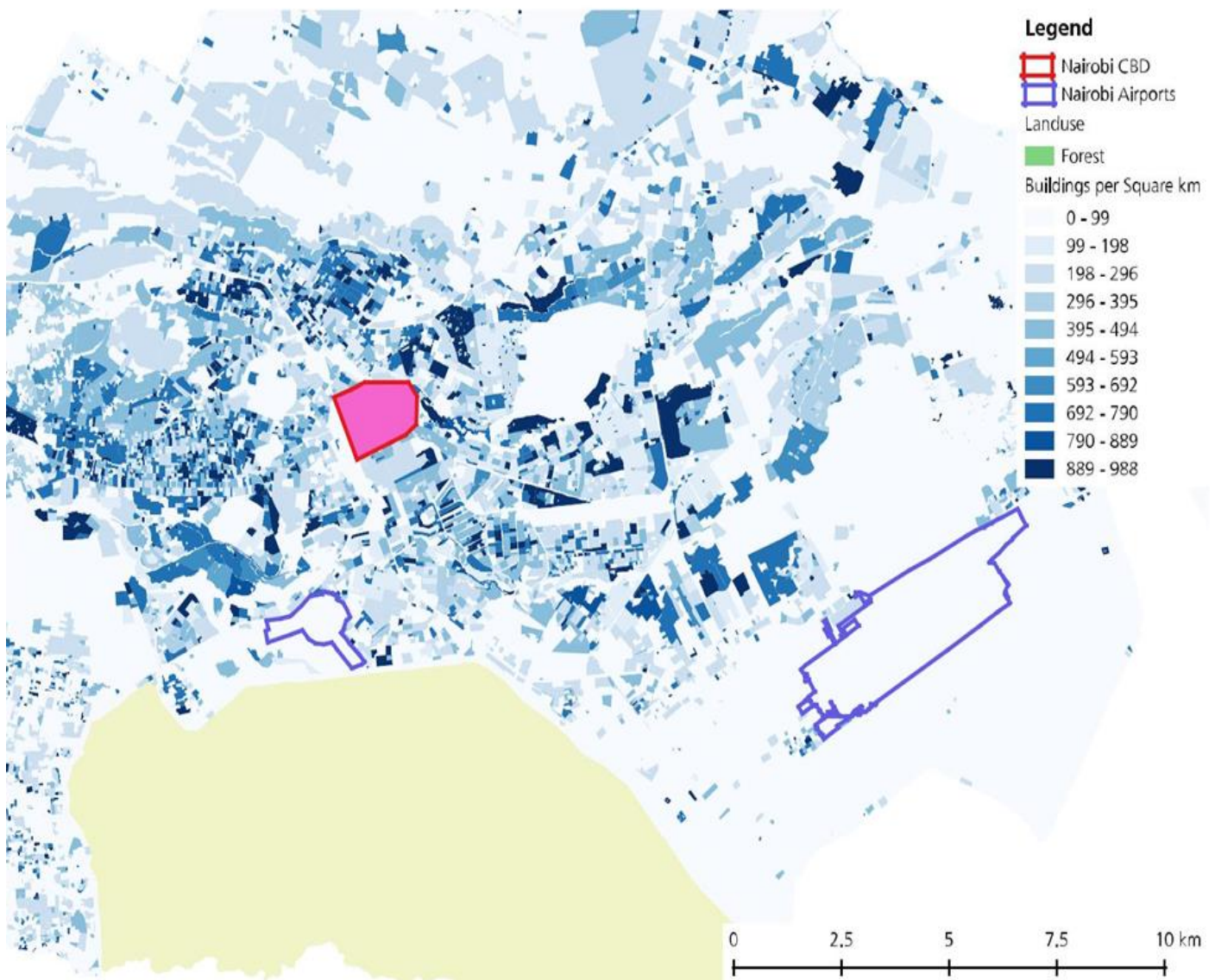
9. Habitat III and Aviation

Habitat III is a UN Habitat on Housing and Sustainable Urban Development taking place in Quito, Ecuador, from 17th to 20th October, 2016. The bi-decennial cycle that began in 1976 will be convened to revamp commitments of stakeholders towards sustainable urbanization and a special focus on the implementation of the New Urban Agenda.

The New Urban Agenda forges for a new urban development model that integrates all aspects of sustainability in all levels of human settlements for sustainable growth. Systems will be instituted that align planning decisions that will spur economic growth and social development.

Aviation is a crucial aspect in urban and regional planning. It impacts on human activities and the form of development activities (including patterns of settlements and economic activity). Studying their role thereby in the development cycle will be crucial in learning the relationship between airport development and urban development; and how the resultant synergies can be harnessed for socio-economic development of cities and countries

Map 7: Building Density (Buildings per Square), Nairobi



Source: Raw data extracted from @Openstreetmap

SYNERGY BETWEEN AIRPORTS AND URBAN DEVELOPMENT FOR SUSTAINABLE DEVELOPMENT

This concept note is a joint initiative of ICAO and UN-Habitat to:

Identify global good practices and principles in urban and regional planning and management around air transport infrastructure that can be applied to help sustainably develop air transport infrastructure and services to achieve airport-city (ies) development axis (corridors).

Assess and document the trends in and impacts of airports and air traffic on land use around the airport and along the airport-city corridor in selected airports to track land use changes and compliance to urban planning regulations, its related socio-economic and ecological impacts to sustainable urban development.

Develop conceptual, methodological and operational spatial and visualization frameworks that will highlight the role of airport systems (infrastructure and services) to urban development beyond the city, along the airport-city axis and the airport-rural area trajectory; and study the synergistic relations to sustainable development.

Contact Us:

International Civil Aviation Organization

Eastern and Southern African Office
P.O. Box 46294, 00100 GPO, Nairobi, Kenya
ICAOESAF@icao.int

United Nations Human Settlements Programme (UN-Habitat)

Regional and Metropolitan Planning Unit, Urban Planning and Design Branch
P.O. Box 30030 | Nairobi 00100, Kenya
RMPU@unhabitat.org



ICAO

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SUSTAINABLE
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