

Promoting synergy between **airports** and **cities** to achieve sustainable development



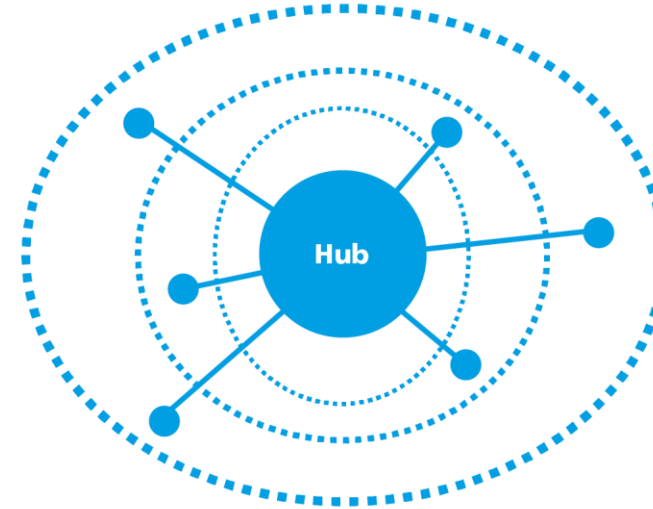
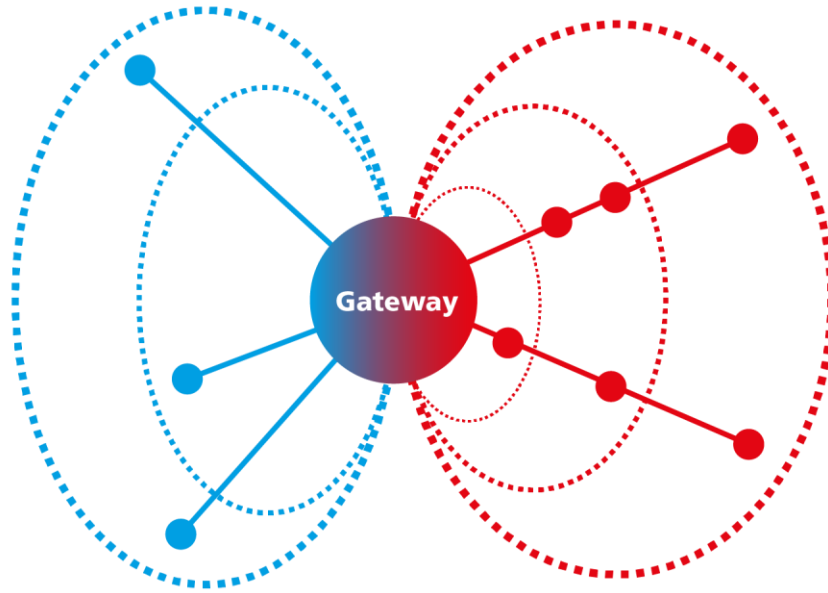
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Airports / Aviation

Airport - Growing Importance

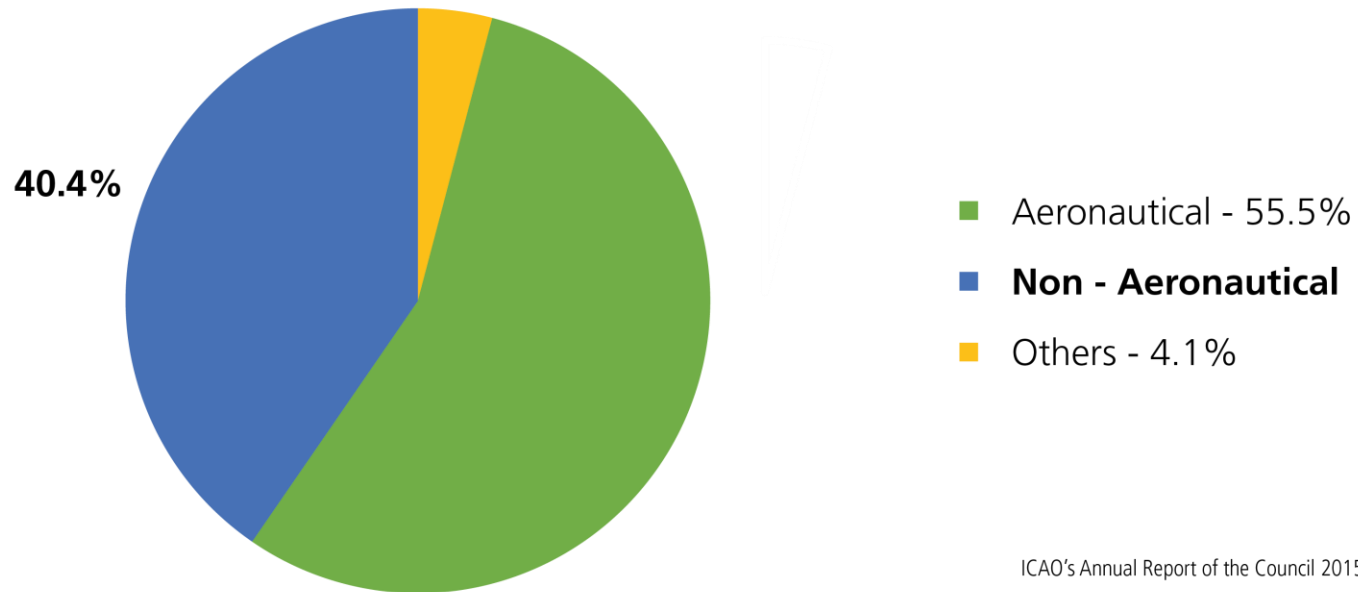


“**Airports** will shape business location and urban development in the 21st century as much as **highways** did in the 20th century, **railways** in the 19th and **seaports** in the 18th “

- Dr. John D. Kasarda

Airport – Shifting Focus

Distribution of Airport Revenues, 2014
(\$142.5 billion in Total)



ICAO's Annual Report of the Council 2015

Aviation – Insufficient Support

3.5%

World's GDP

34.6%

World Trade
Value

58M

Employment

1.1B

Int'l Tourists

VERSUS

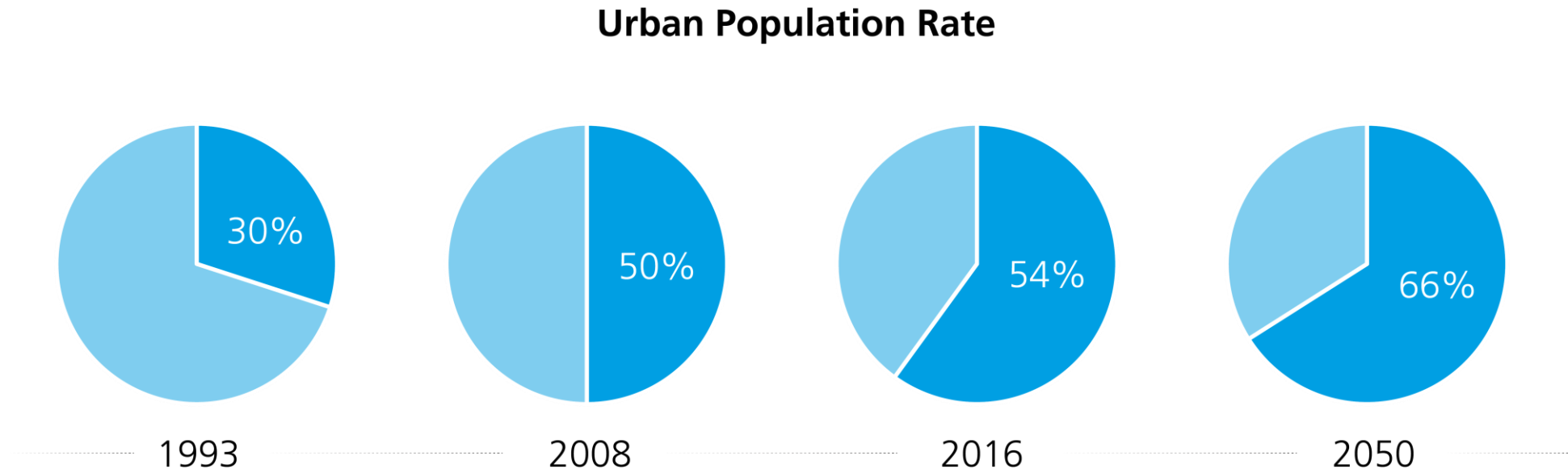
2.6%

Funding of Infrastructure and Service support

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Urbanization

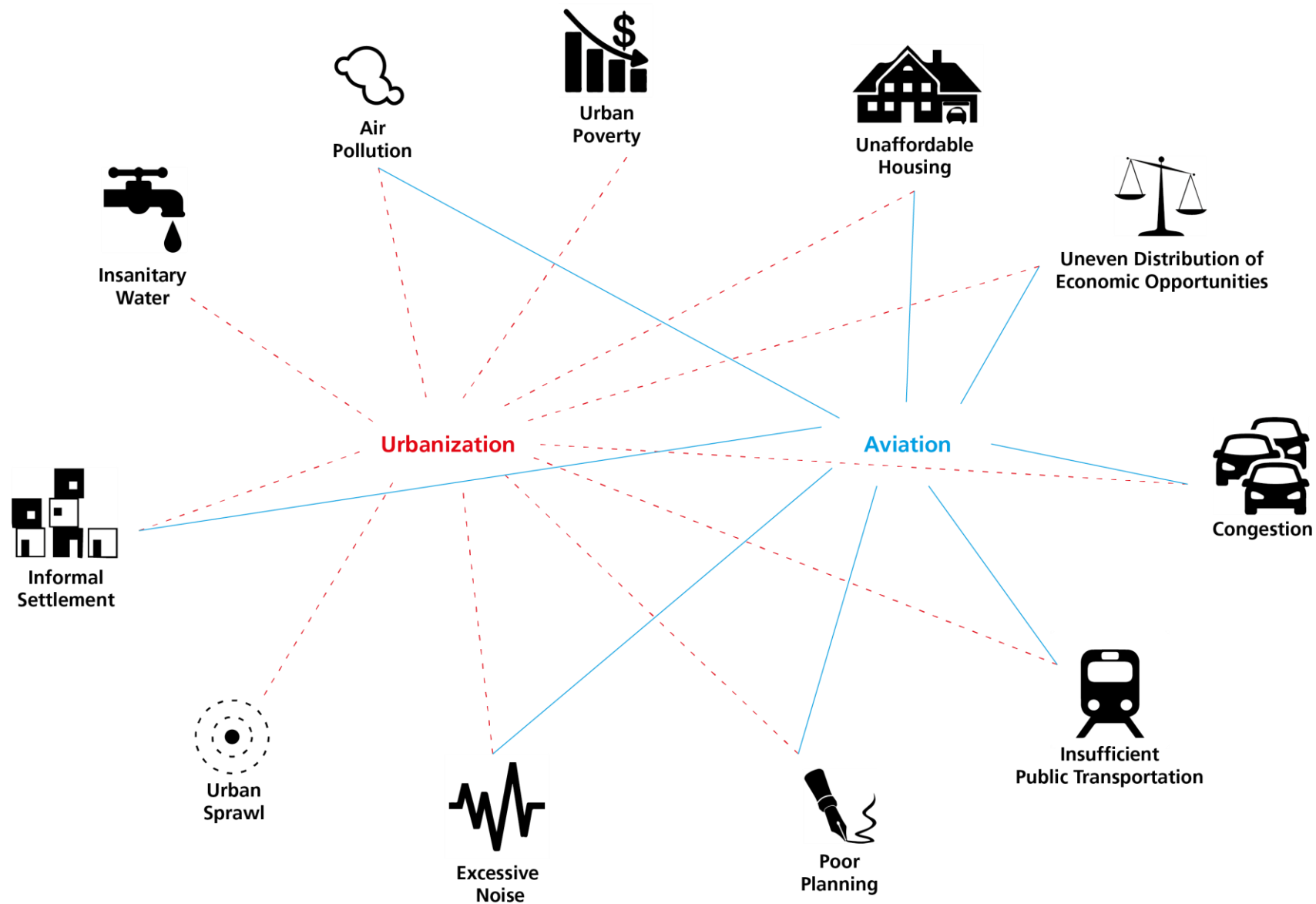
Rapid Urbanization



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Shared Threads & Opportunities

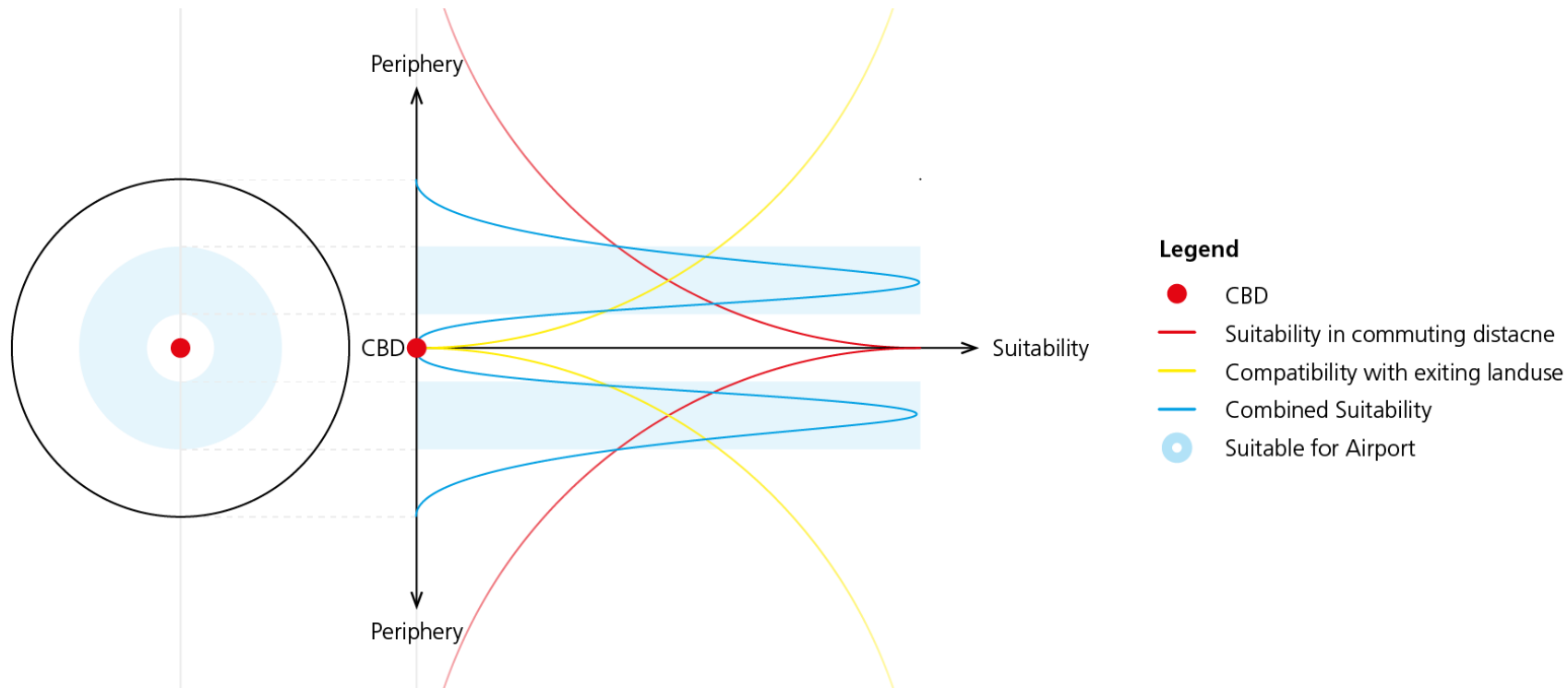
Shared Threads - Opportunities



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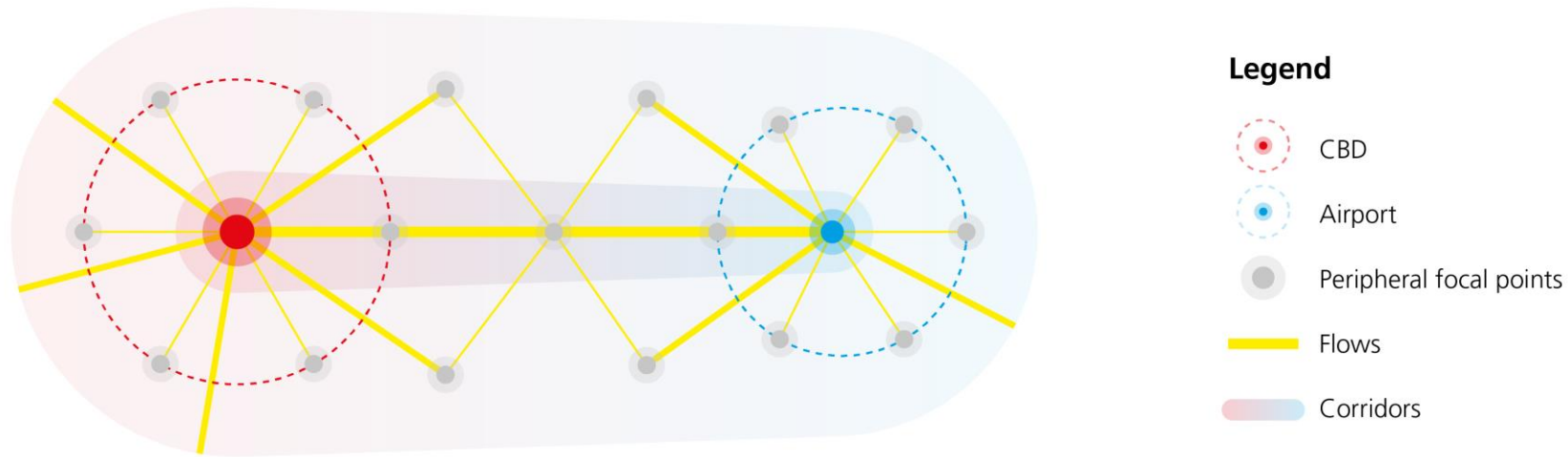
Synergistic Development for Sustainability

Suitable Airport Location- close to the City



- Airports close to the CBD benefits of **short commuting distances**, however face **land use incompatibilities** and **excessive noise**
- Locations further from the city center enjoys **less restrictive land use**, however create **commuting inefficiencies**
- The combined suitability curve illustrate the most adequate locations **balancing different urban factors**

Transport Corridors in Regional Development



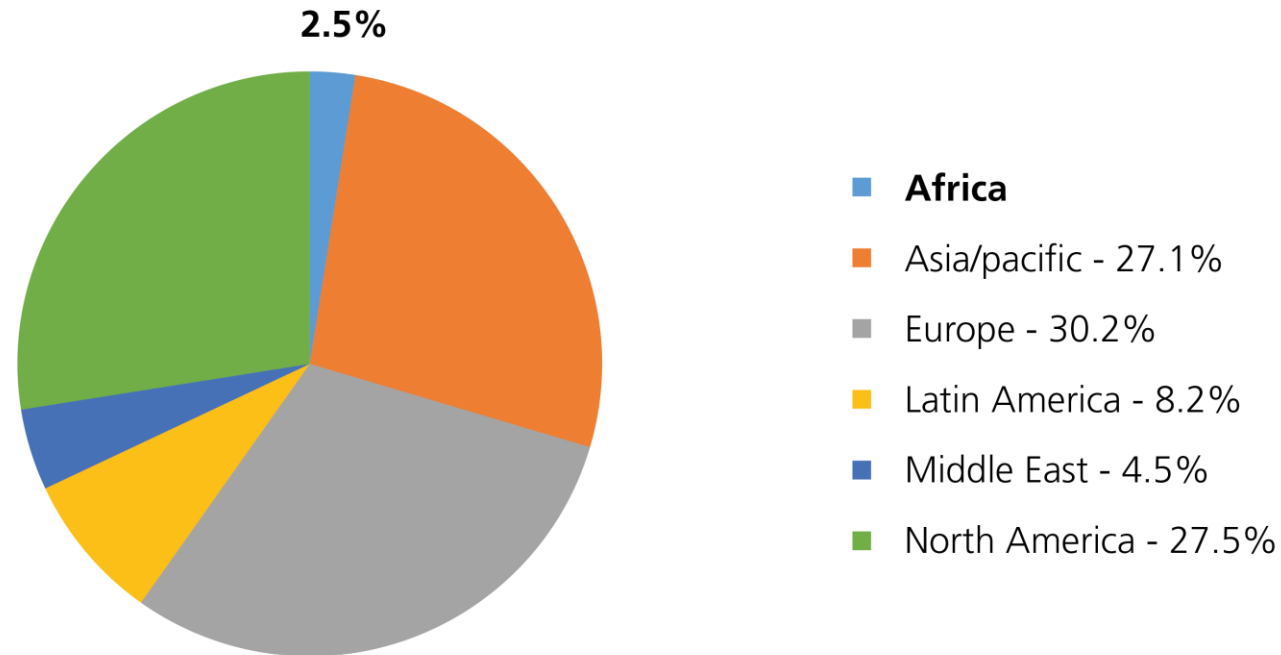
- Airports hubs create **nodal points** in a city region
- Connected to city and rural areas via **transport corridors**
- Circulation of people, goods and services **boost economic growth** along the corridors and on the neighboring urban area
- As crucial link in **integrating resources**

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Aviation & Urbanization in Africa

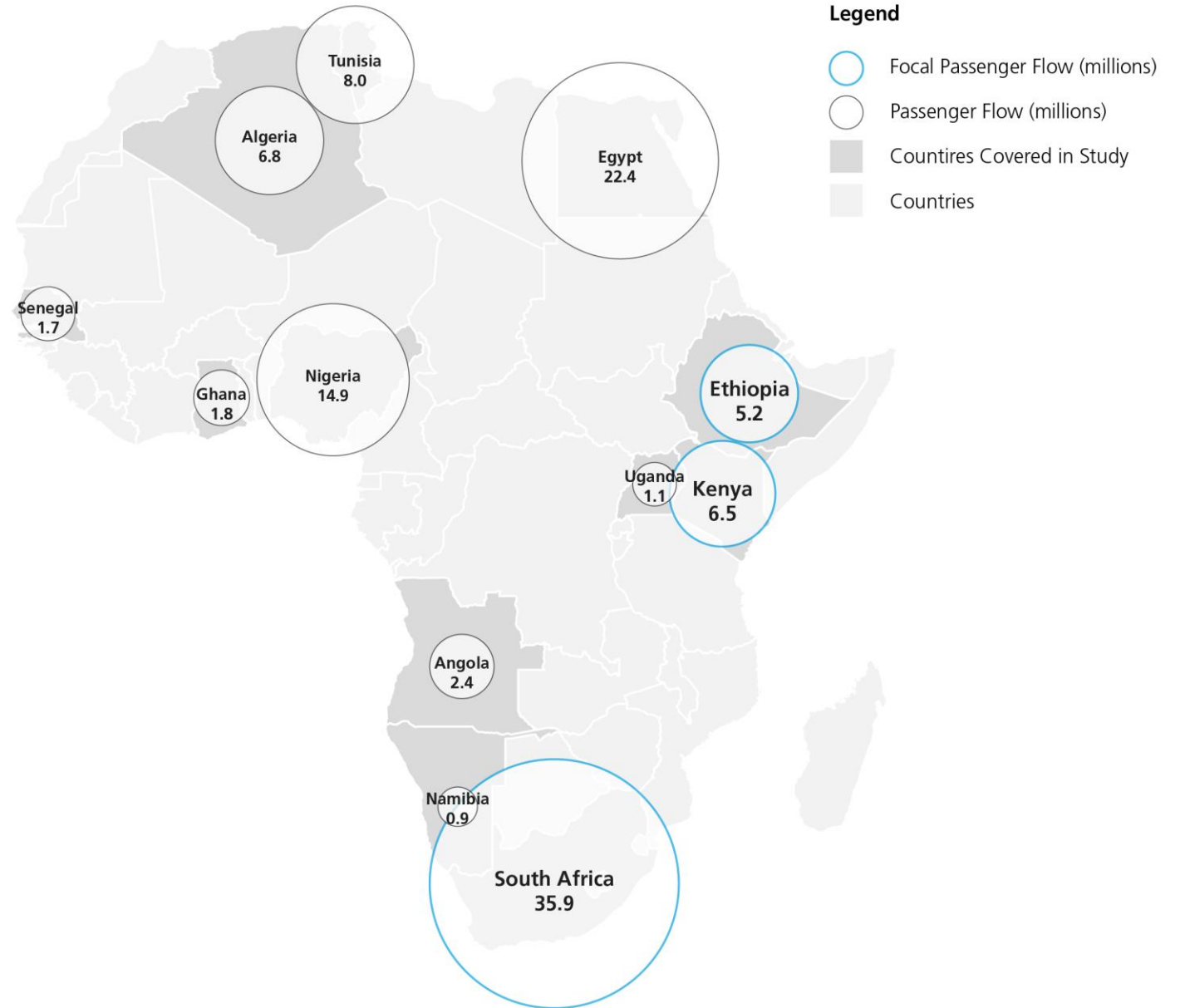
Aviation in Africa

Share in Air Passengers (%) in 2015



Source: ACI (<http://www.aci.aero/Data-Centre/Monthly-Traffic-Data/Worldwide-Airport-Traffic-Summary>)

Aviation in Africa

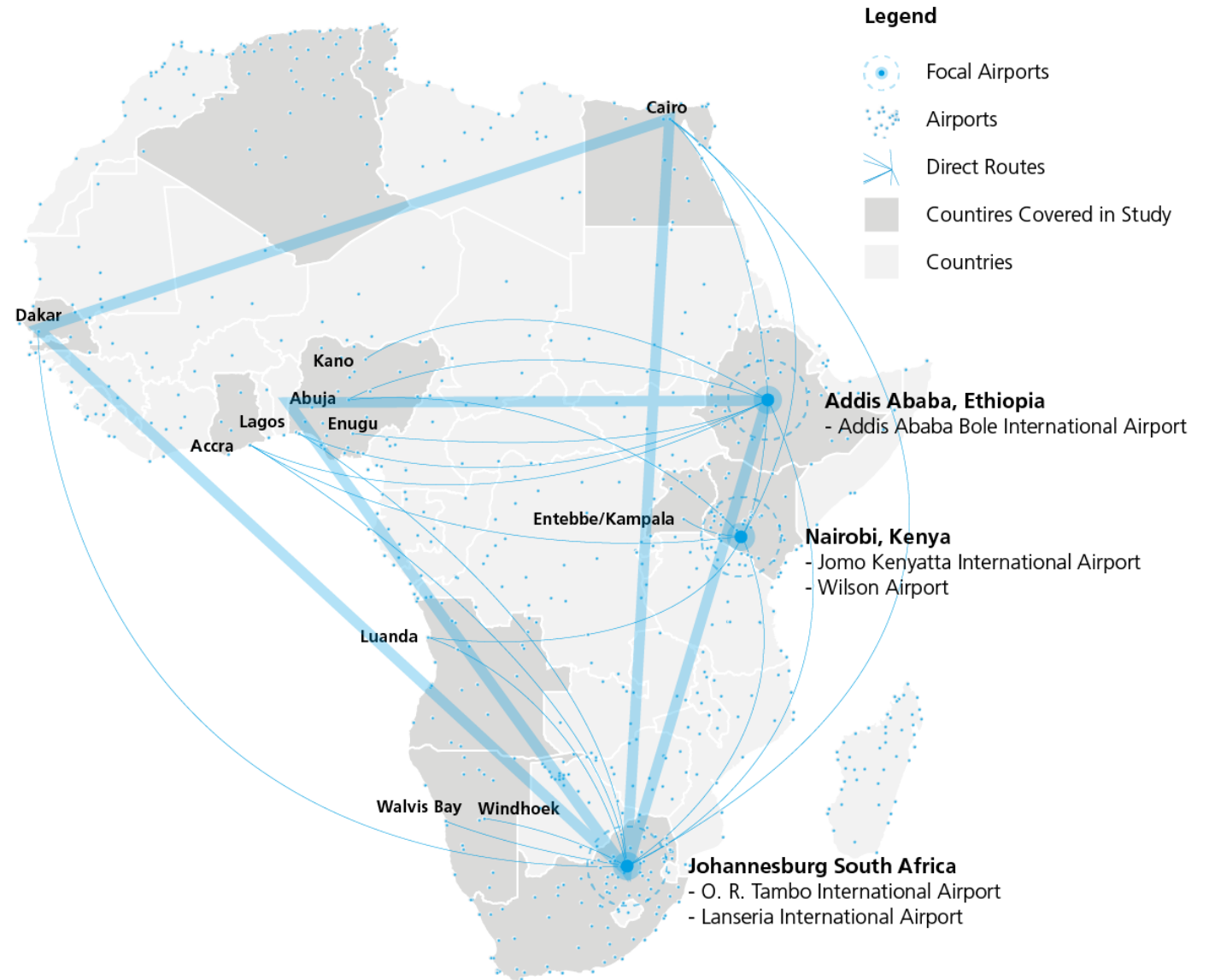


* Data extracted from "2011 World Airport Traffic Report" by Airports Council International, 2012.

Aviation in Africa

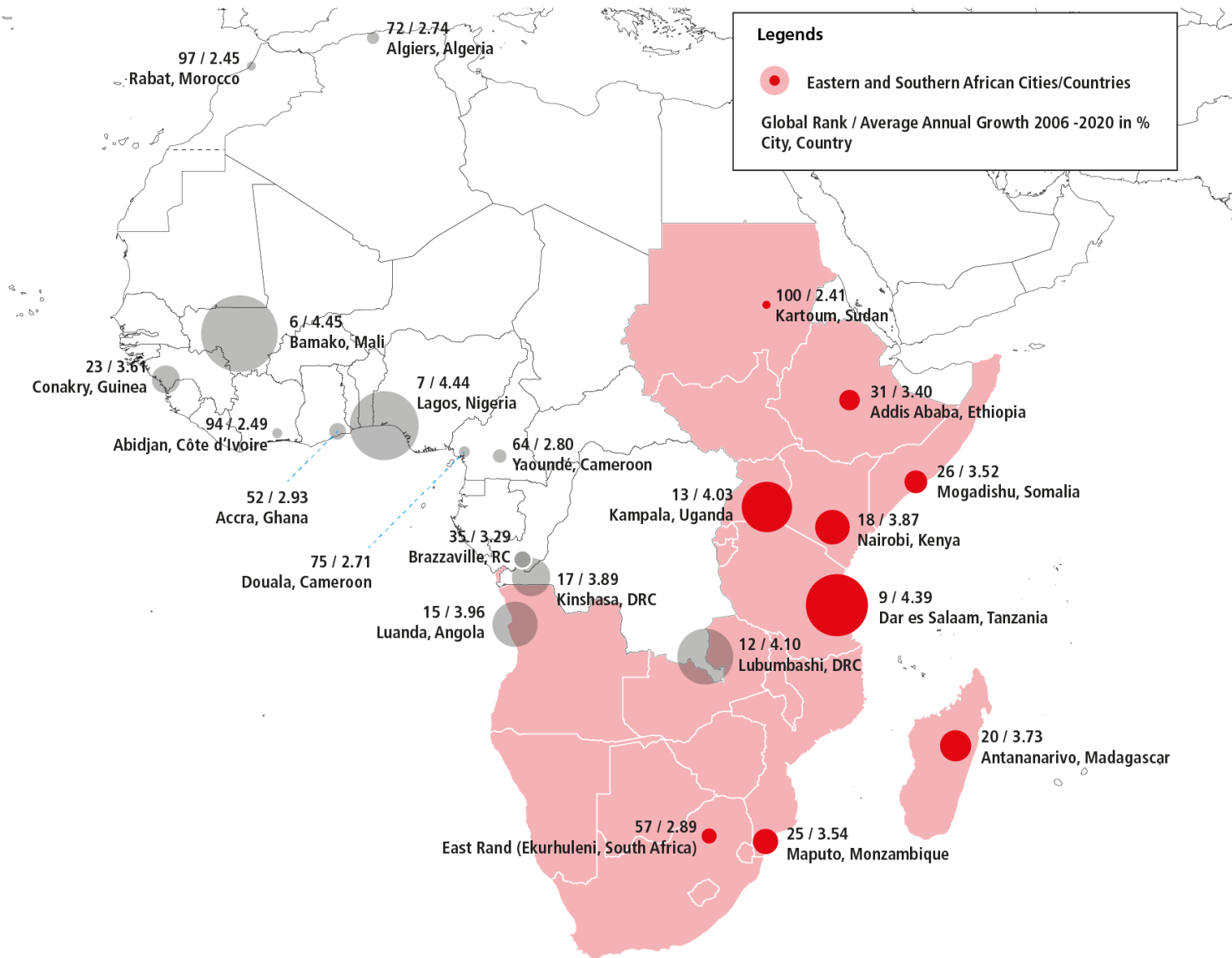
AIRPORT DISTRIBUTION & AIR TRAFFIC FLOW

- Focal **5 Airports** in 3 cities
- Coverage and **distribution of airports**
- **Intercontinental flight routes** between 12 countries
- **Emphasized routes / active triangles**

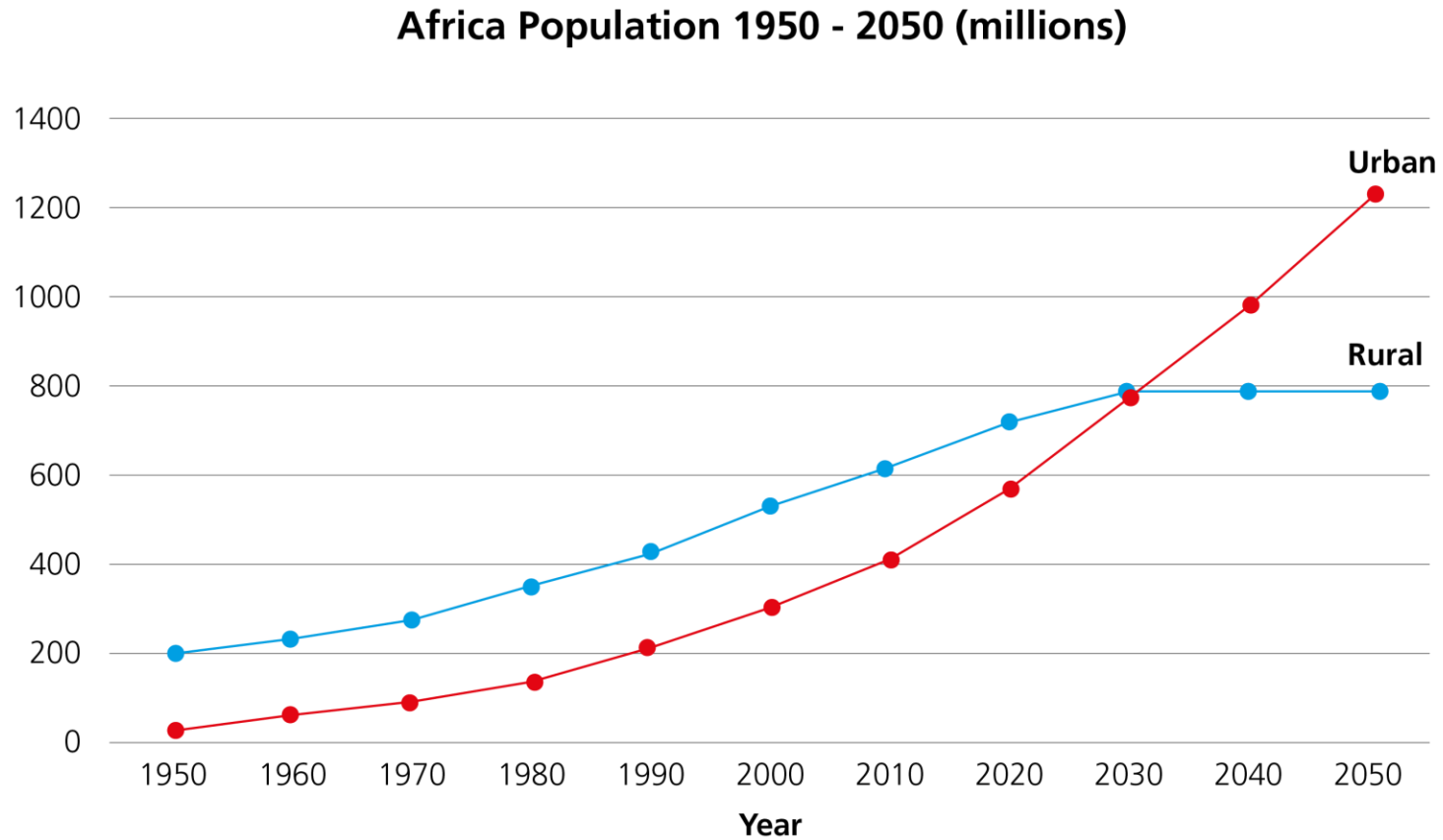


Urbanization in Africa

Fastest Growing Cities in Africa

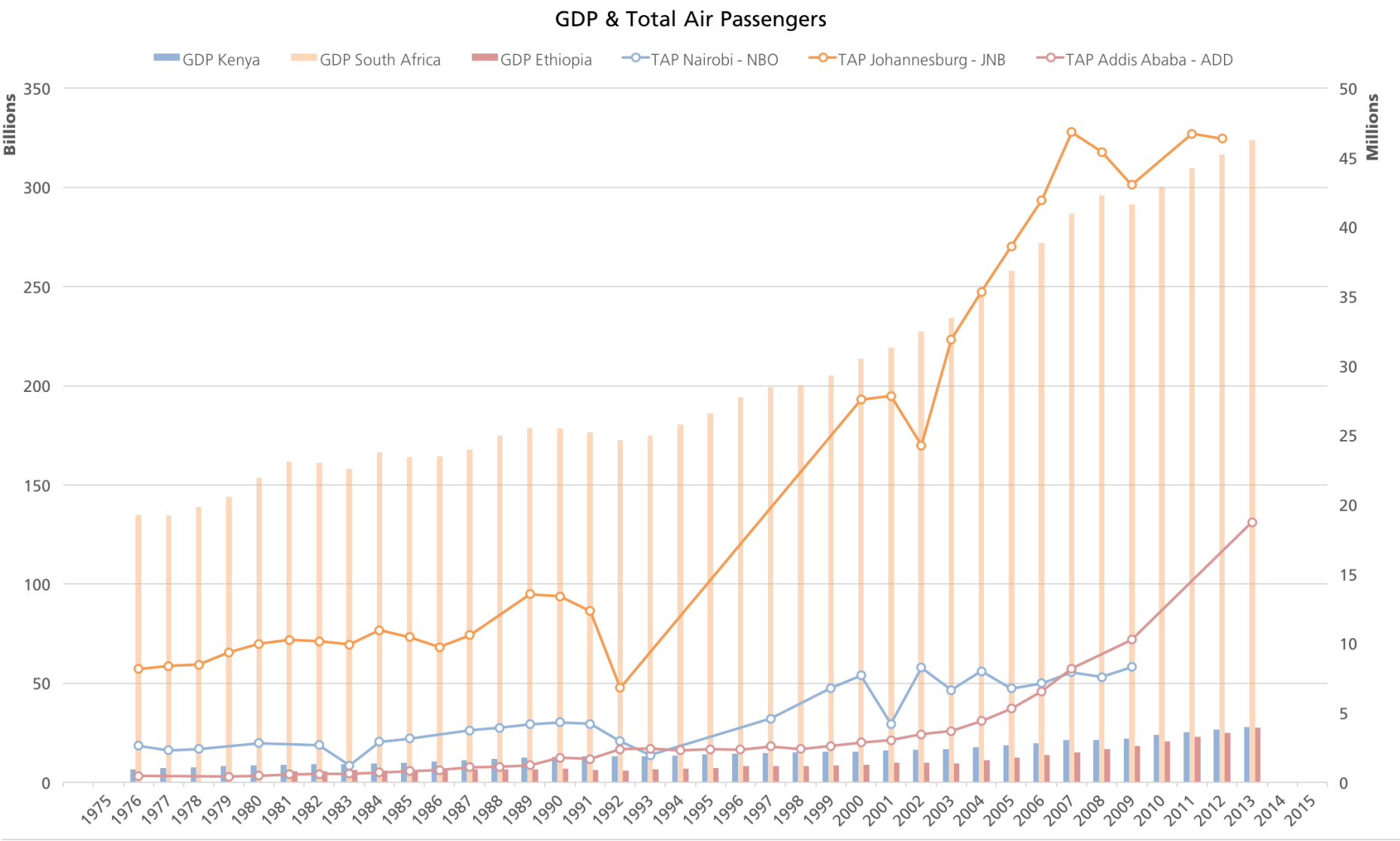


Urbanization in Africa



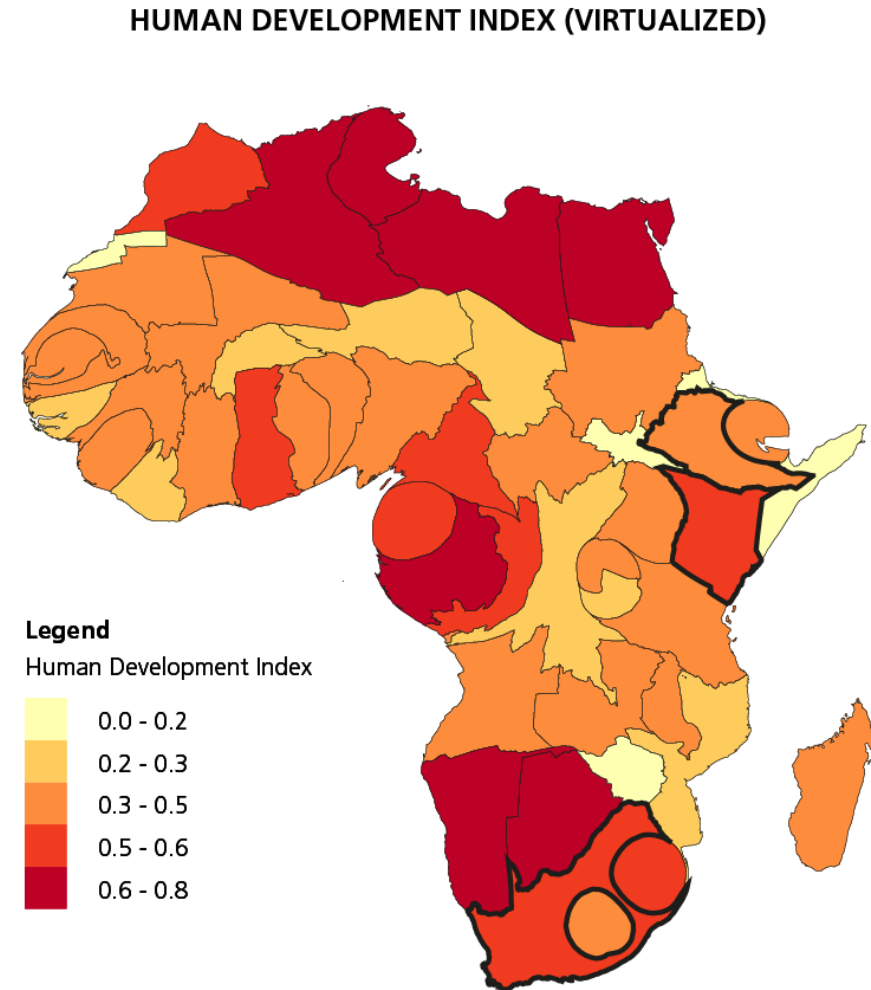
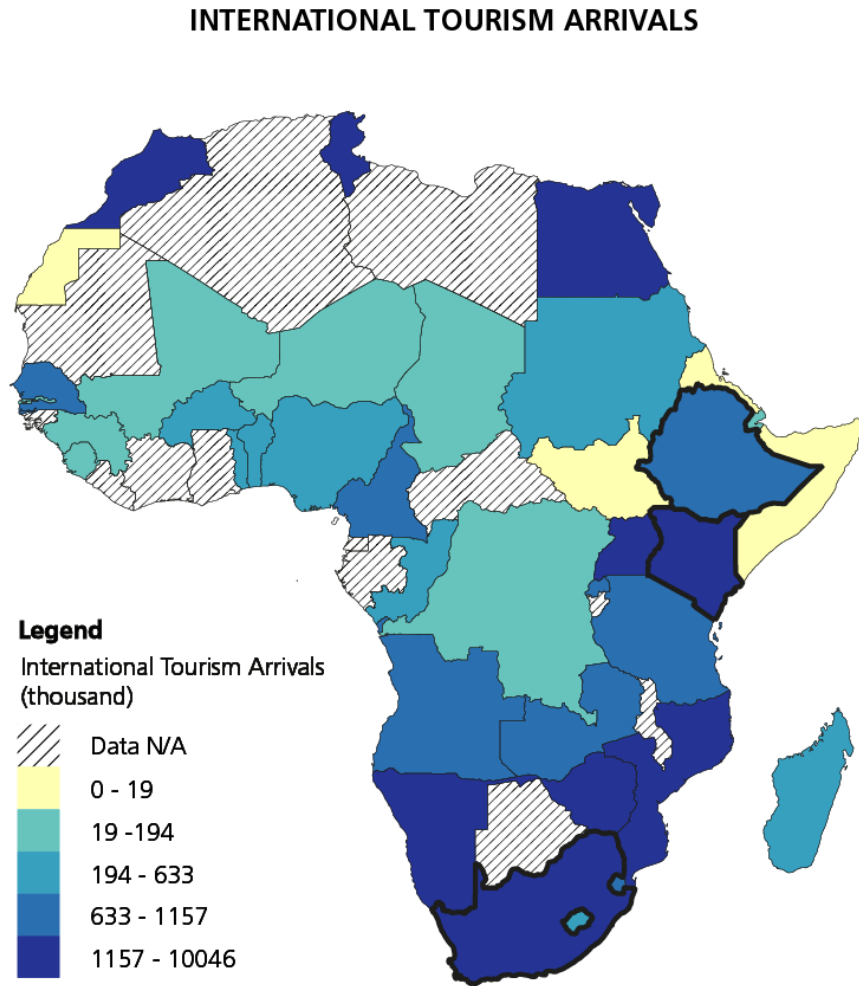
GDP & Total Air Passengers

- Close alignment between GDP and TAP



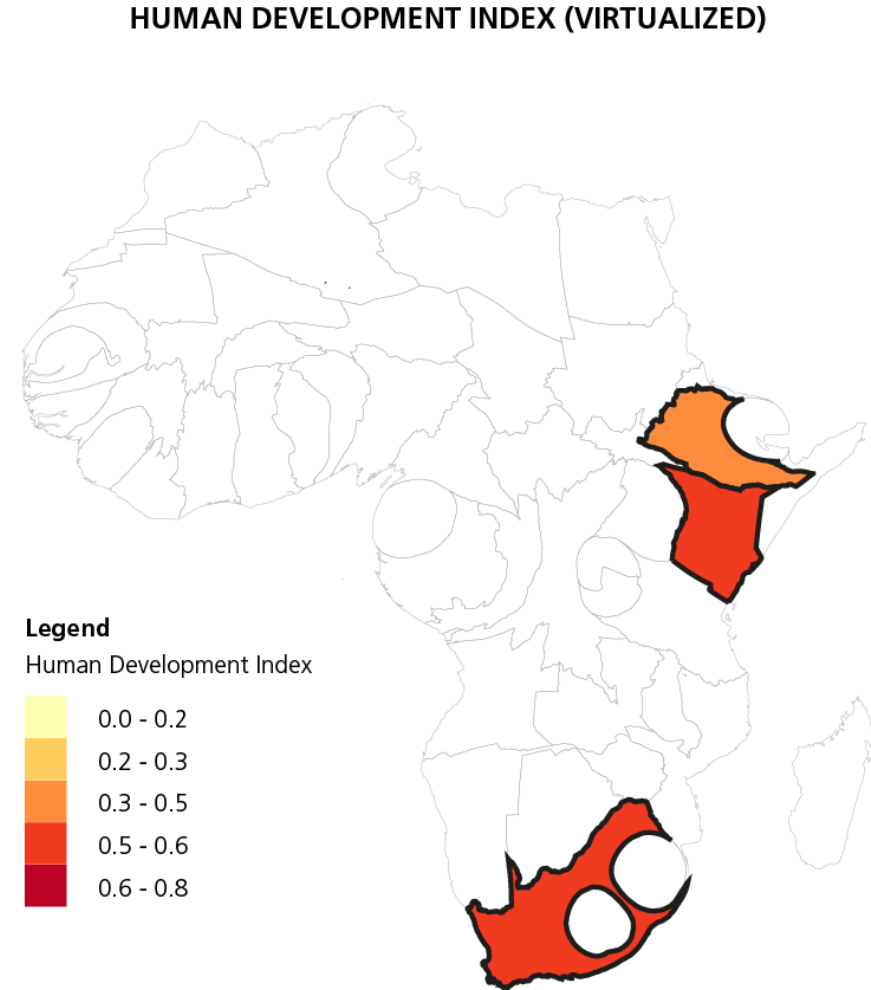
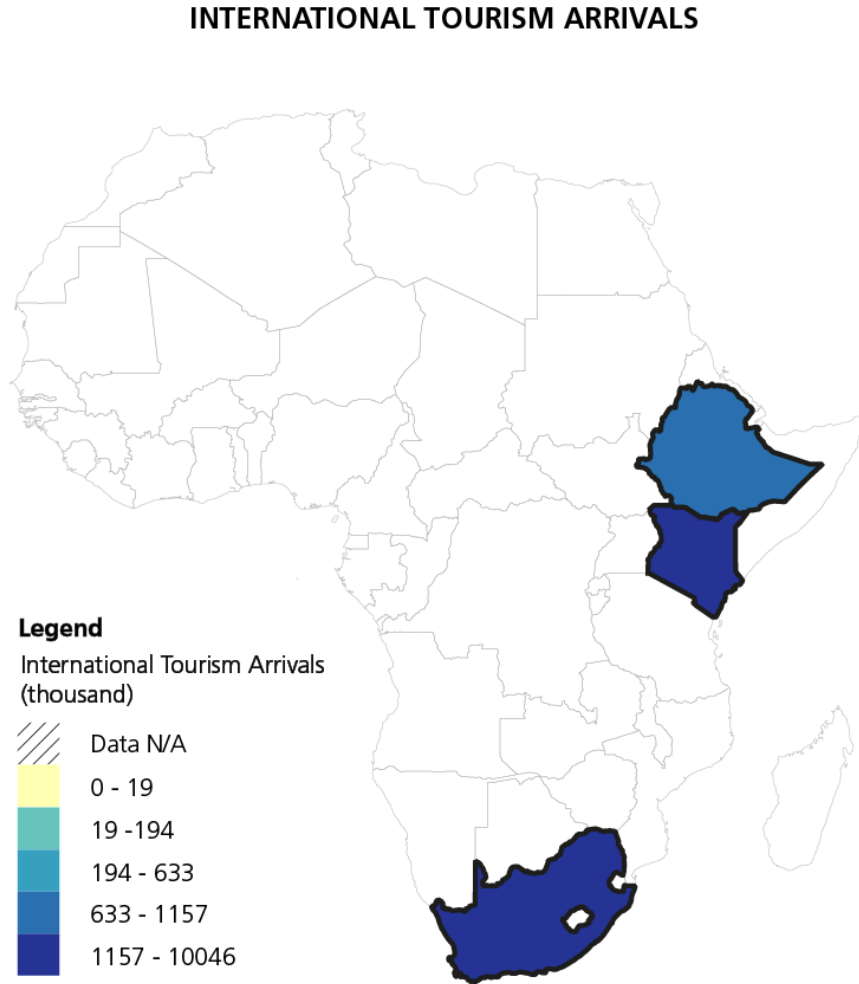
*GDP data extracted from United Nations Environment Programme. Global Environment Outlook, GEO Data Portal, Human Development Index (HDI)2010
TAP data provided by ICAO

Correlation between ITAs & HDI



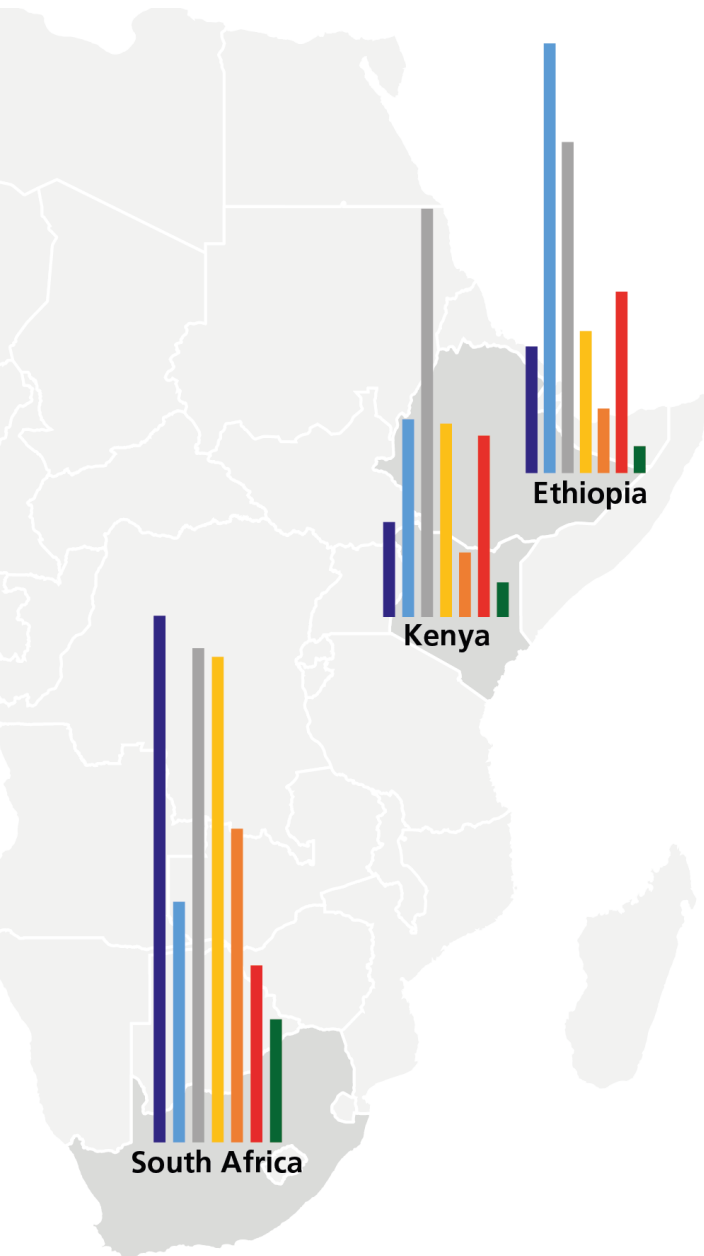
- Countries with less arrivals (yellow & green) tend to have lower HDI (yellow & light red, shrinkage in area)
- Countries with more arrivals (dark blue) tend to have higher HDI (dark red, expansion in area) e.g. Swaziland & Lesotho

Correlation between ITAs & HDI



- Ethiopia with less arrivals – reduced size due to lower HDI
- Kenya & South Africa with more arrivals - exaggerated/enlarged due to high HDI
- Aviation as one of the indicators of development level

Project Location & Profile



Overview of Country Profile

Legend	Profile	Kenya	S. Africa	Ethiopia
—	Air Pasengers (m.)	8.3	43.0	10.3
—	Population (million)	45	55	99
—	HDI	0.548	0.666	0.442
—	Urbanization Rate	26%	65%	19%
—	GDP (billion)	143	725	144

- South Africa: **strongest** in Air Passengers, HDI, UR and GDP
- Kenya overtakes Ethiopia in HDI, UR and GDP
- Ethiopia with the **largest population**, and higher passengers than Kenya

Total Economic Impact Stimulated by Liberalisation

Legend	Profile	Kenya	S. Africa	Ethiopia
—	Jobs	14,800	14,500	14,800
—	GDP (million)	76.9	283.9	59.8
	% of national GDP	0.1%	0.06%	0.05%

Sources:

Overview of Country Profile

- International Monetary Fund
- Country Comparison: Population. The World Factbook
- Human Development Report. United Nations Development Programme
- ICAO, total air passengers in 2009

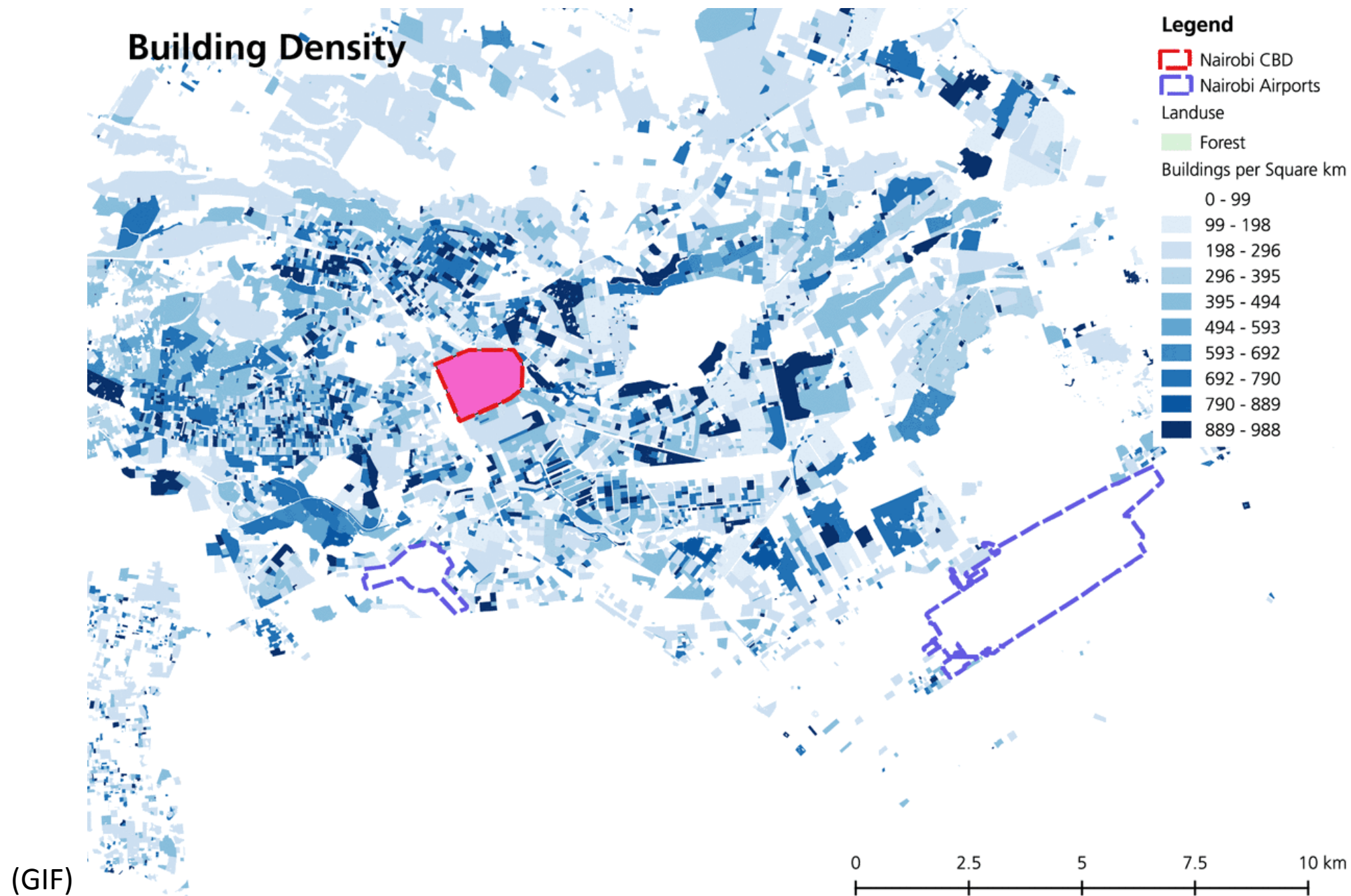
Total Economic Impact Stimulated by Liberalisation

- Figure in parenthesis is the GDP impact as a percentage of national GDP
- All financial figures are in 2013 prices
- Transforming African Air Connectivity Final Report InterVista 2014

Case Study - Nairobi, Kenya

**Raw data downloaded from @Openstreetmap*

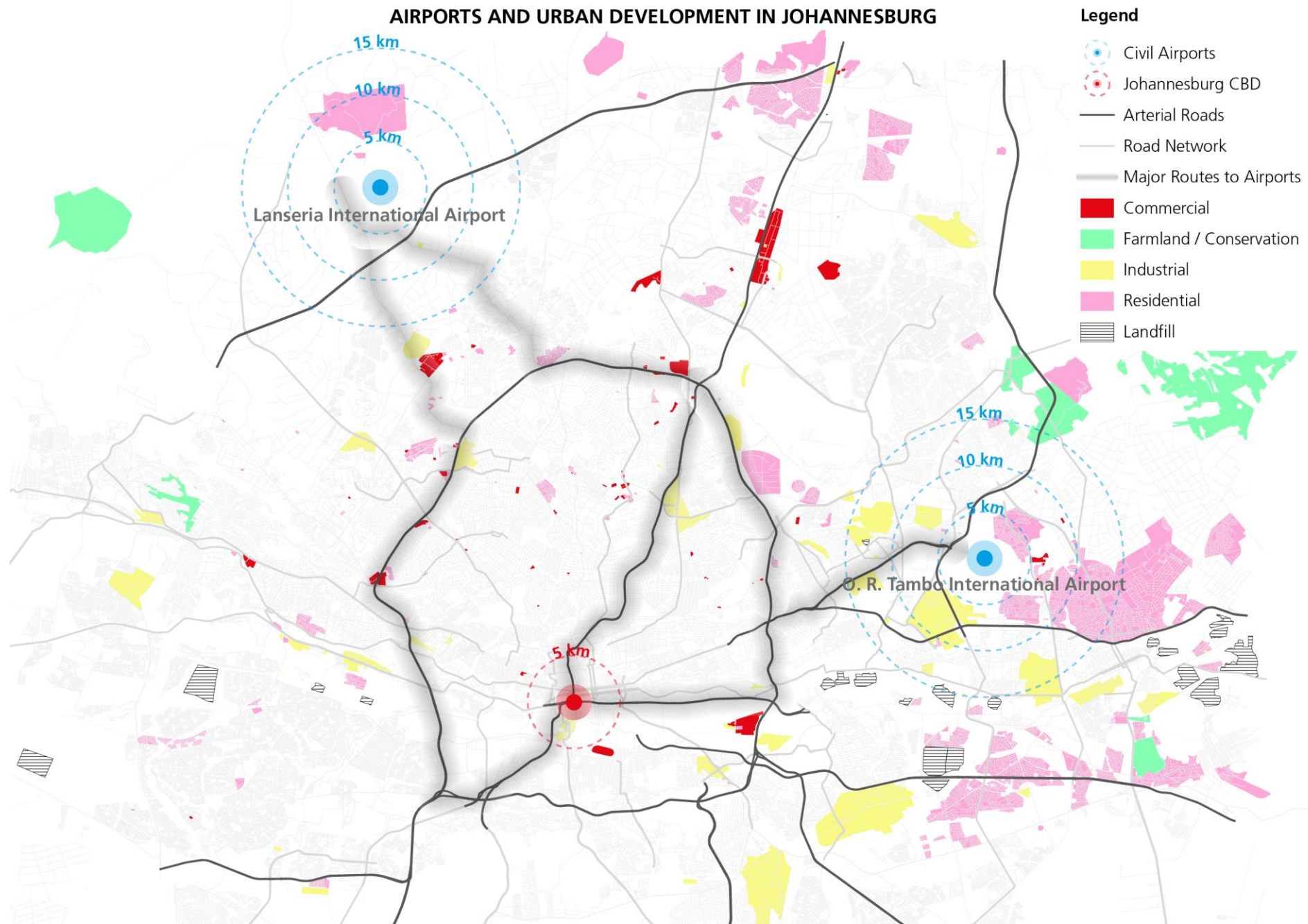
- Building Density
- Land Use
- Natural Setting
- Open Space
- Public Transportation
- Road Hierarchy
- Underdeveloped Area
- Waste & Recycling



Case Study - Ekurhuleni & Johannesburg, South Africa

*Raw data downloaded from ©Openstreetmap

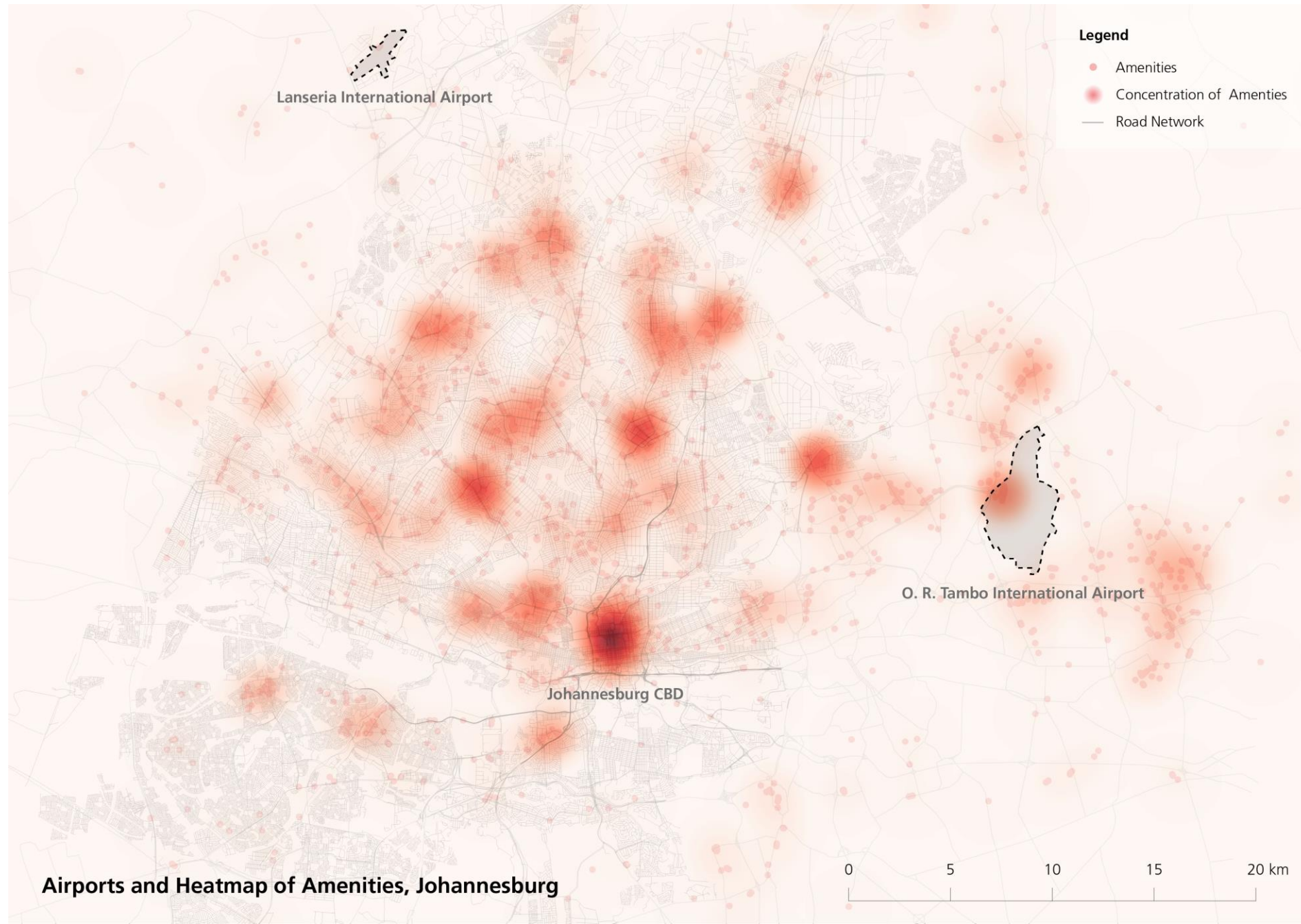
- Residential, commercial and industrial land uses feature close to the airports
- Higher density of land use development around OR Tambo, which is closer to the CBD
- Diffused development around Lanseria airport, which is privately owned



Case Study - Ekurhuleni & Johannesburg, South Africa

**Raw data downloaded from @Openstreetmap*

- Quantify: the **concentration** of amenities
- OR Tambo IA: apparent **concentration effect**
- Lanseria: private, **lack of transportation support**



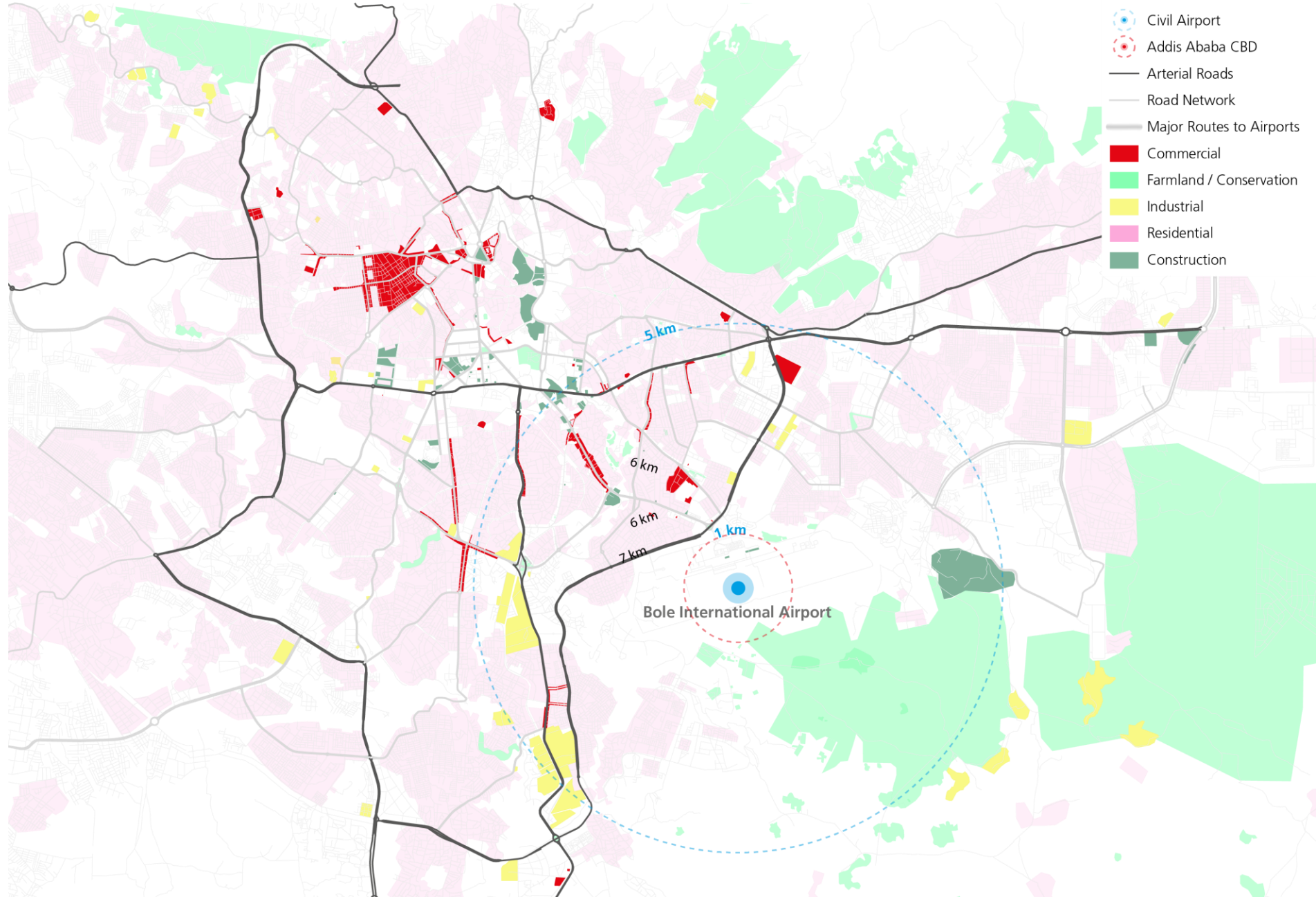
Case Study - Addis Ababa, Ethiopia

**Raw data downloaded from @Openstreetmap*

AIRPORT & URBAN DEVELOPMENT IN ADDIS ABABA

Legend

-  Civil Airport
-  Addis Ababa CBD
-  Arterial Roads
-  Road Network
-  Major Routes to Airports
-  Commercial
-  Farmland / Conservation
-  Industrial
-  Residential
-  Construction



- Proximity to the CBD – both **strength** and **constraint**
- Proposed **light rail** expansion plan to connect the airport for sustainability

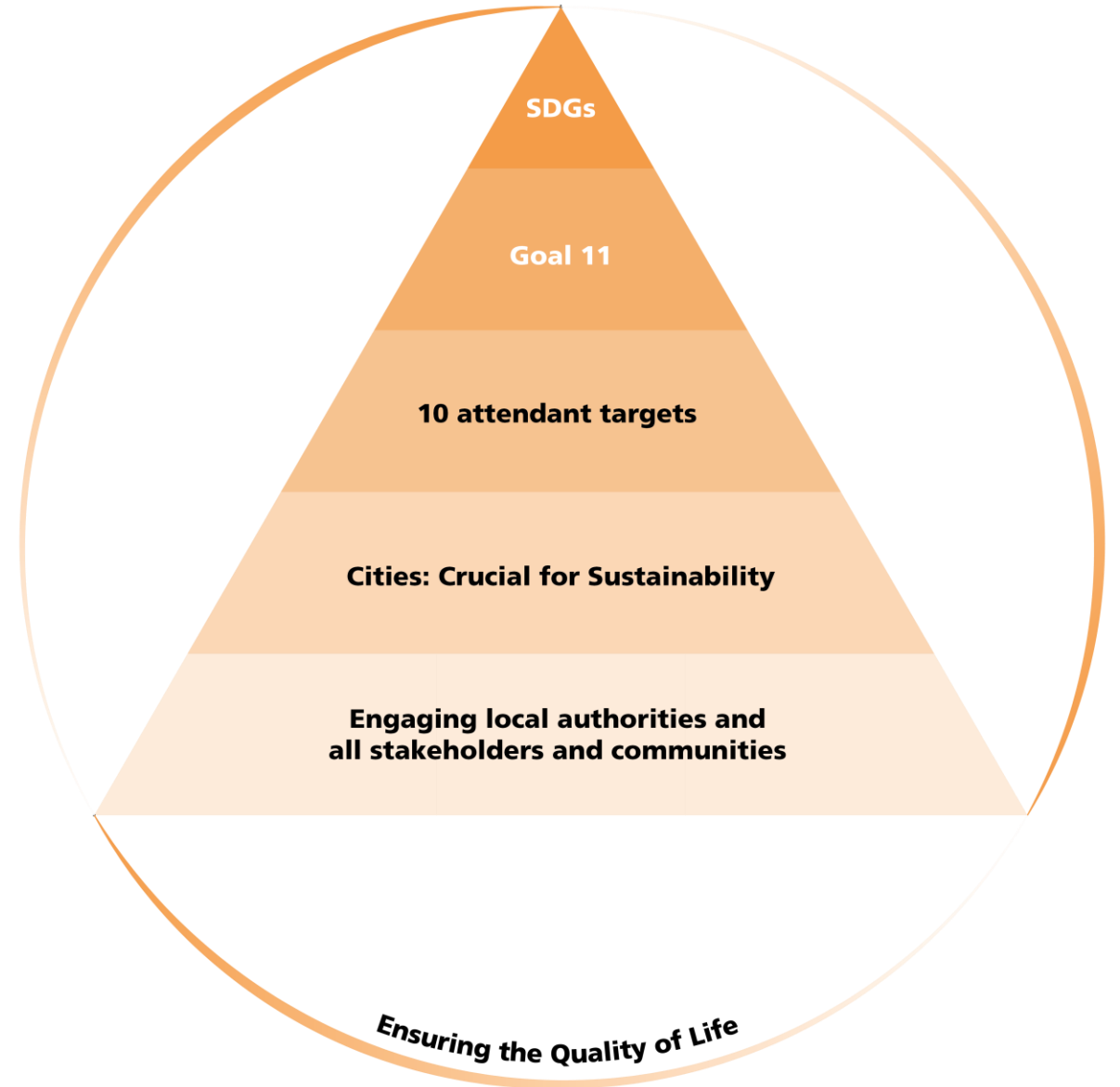
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SDG

Conclusion

“The **city** is a place where a lot of **problems** are concentrated; but the city also has the **resources** to overcome these problems and be the place of development.”

- Prof. Valentino Castellini, Italy, 1998



Future areas of interventions

- Joint **Planning**
- **Assessment** of air transport's contribution (GDP) to urban development
- Mobilise more cities/airport authorities for a **Network** of joint action
- **Analysis** of cities and their airports (e.g. impact of airport on the evolution of built up areas)
- Support the **implementation of SDG targets** in relation to cities and air transport

