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URBAN GROWTH IN SUB-SAHARAN AFRICA BETWEEN 1995 AND 2015

YANN FORGET ^{1,3}, MICHAL SHIMONI ³, MARIUS GILBERT ¹,
AND CATHERINE LINARD ^{1,2}

¹ SPATIAL EPIDEMIOLOGY LAB, UNIVERSITÉ LIBRE DE BRUXELLES, BELGIUM

² DEPARTMENT OF GEOGRAPHY, UNIVERSITY OF NAMUR, BELGIUM

³ SIGNAL IMAGE CENTRE, ROYAL MILITARY ACADEMY, BELGIUM



INTRODUCTION



Objectives

- Multi-temporal analysis of urban growth in the 44 urban areas of the MAUPP dataset
- Built-up areas growth rates
- Relationship with population growth

INTRODUCTION



Data

- Maps of **built-up areas** in 1995, 2000, 2005, 2010 and 2015
- WorldPop **population** maps for 2000, 2005, 2010 and 2015

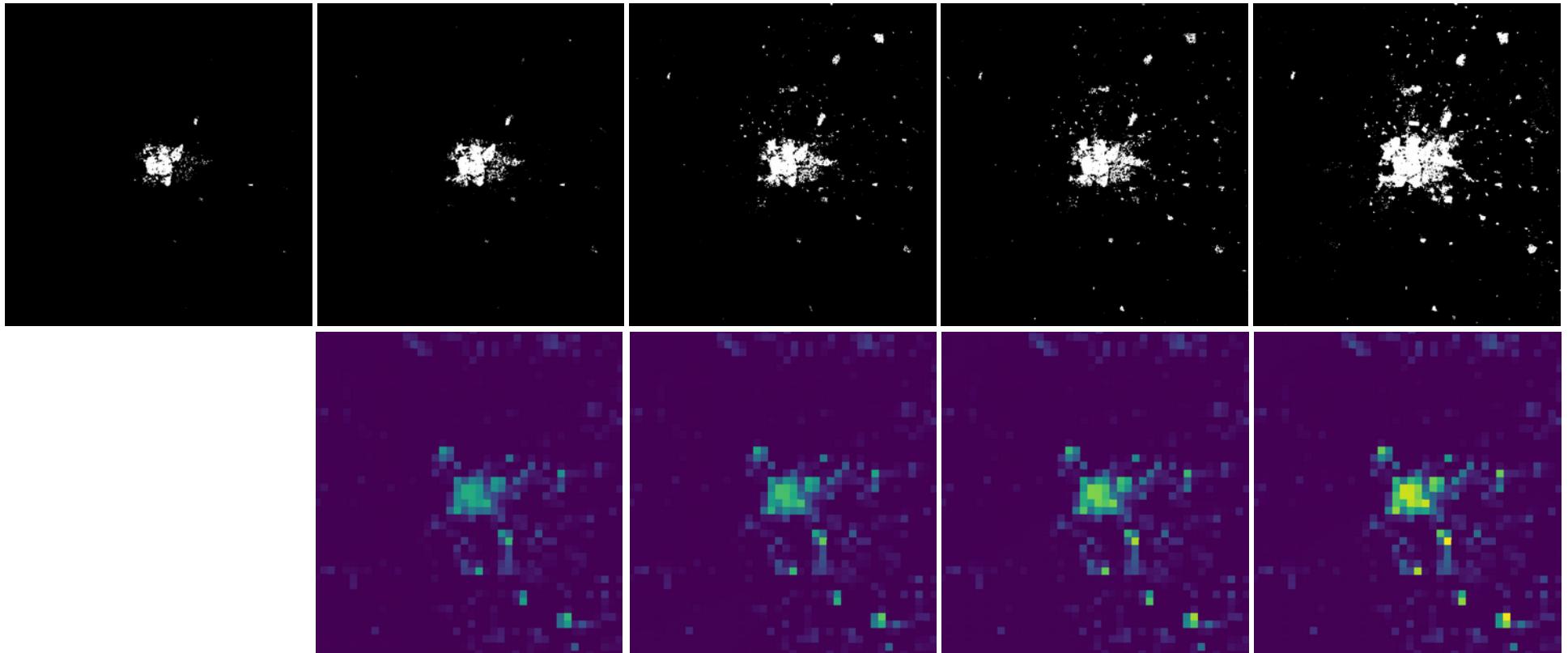
1995

2000

2005

2010

2015



MAUPP

WORLDPOP

BUILT-UP AREAS



Growth rates of built-up areas

- Average compound annual growth rate (CAGR) of **4.8%** between 2000 and 2015 across the case studies.
- Higher than the urban population CAGR of Sub-Saharan Africa (~4.1%, UN)
- Not so far from the CAGR of built-up areas in the US between 1990 and 2000 (~5%, Atlas of Urban Expansion)
- High variability across the case studies

BUILT-UP AREAS

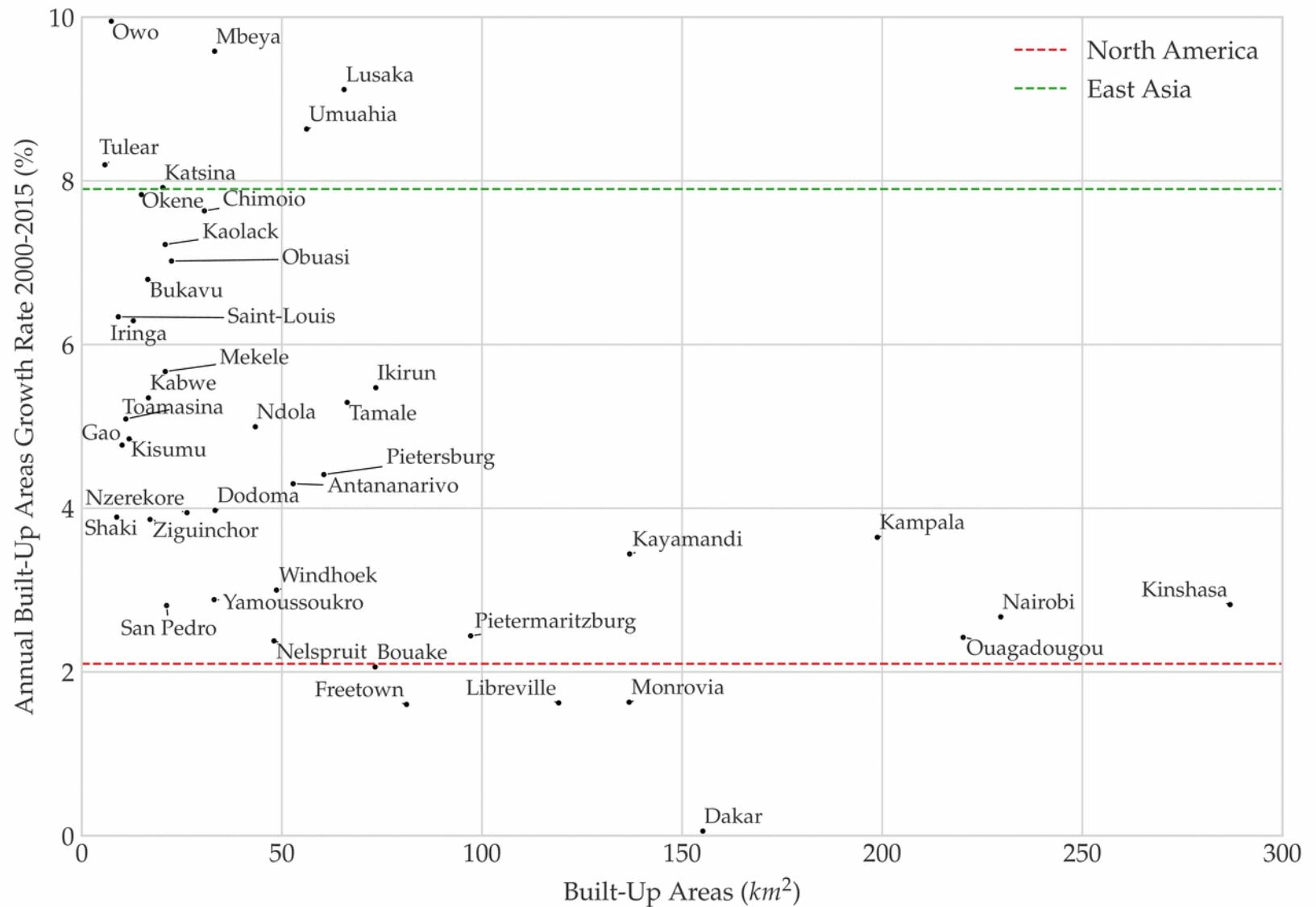


Figure 2. Annual built-up areas CAGR between 2000 and 2015 depending on the total surface occupied by built-up areas.

BUILT-UP AREAS



Growth rates of built-up areas

→ **Large** urban areas (more than 1,000,000 inh. in 2000)

e.g. Antananarivo, Nairobi, Kampala, Kinshasa...

CAGR = 3.2%

→ **Medium**-sized urban areas (between 500,000 and 1,000,000 inh.)

e.g. Bukavu, Libreville, Kisumu, Katsina, Monrovia...

CAGR = 4.6%

→ **Small** urban areas (less than 500,000 inh.)

e.g. Windhoek, Yamoussoukro, Mekele, Chimoio, Dodoma...

CAGR = 5.4%

DENSITIES



Population densities in built-up areas

- In average, **~16,100** people per sq. km of built-up area in 2000
- **~11,000** people per sq. km in 2015 (35% decrease)

DENSITIES

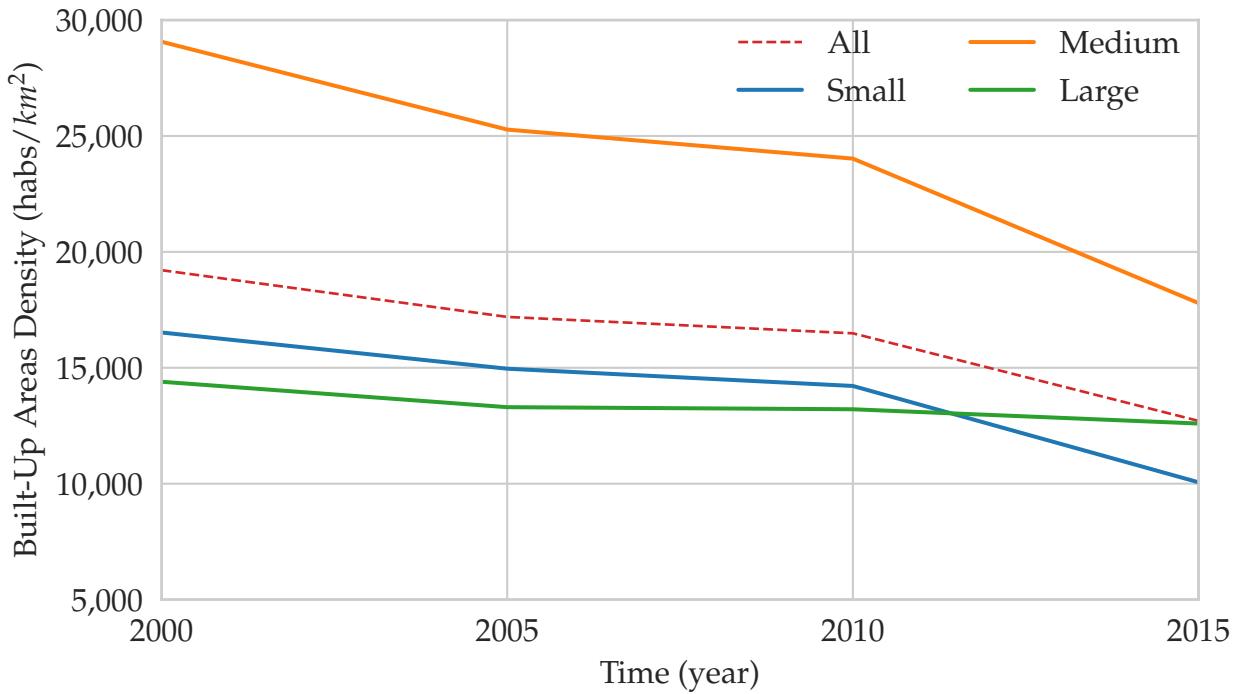


Figure 3. Evolution of the average population density in built-up areas depending on the size of the urban area.

DENSITIES

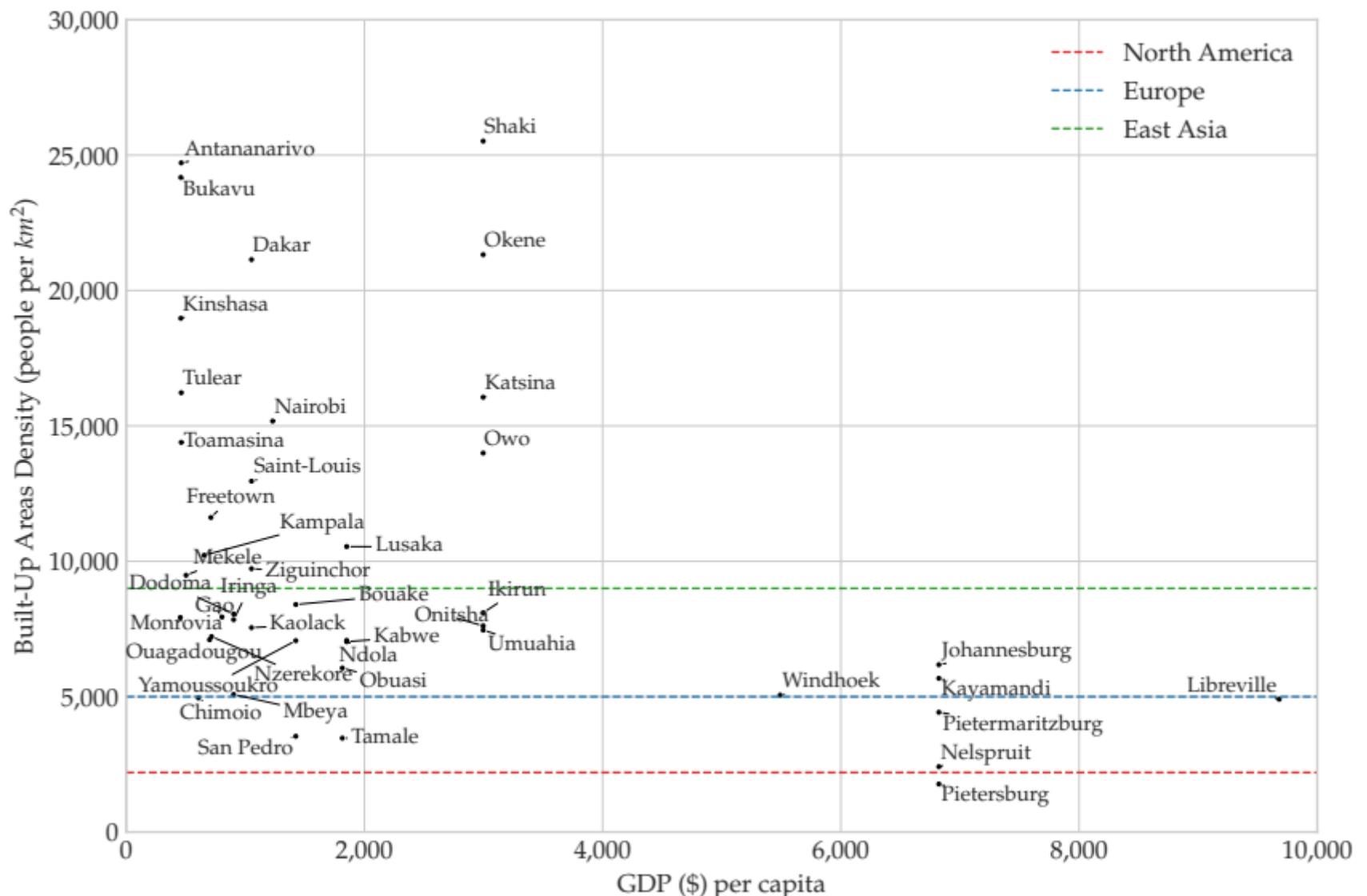


Figure 4. Population densities in built-up areas (people per sq. km) depending on the GDP per capita of the country.

DENSITIES



Population densities in built-up areas

→ Urban areas in **low and lower-middle income** countries

e.g. Dakar, Freetown, Ouagadougou, Kampala...

~**12,300** people per sq. km in 2015

→ Urban areas in **upper-middle income** countries

e.g. Windhoek, Johannesburg, Libreville, Pietersburg...

~**4,400** people per sq. km in 2015

URBAN SPRawl



Three categories of newly built-up areas

→ “**Infill**”: areas already included in an existing urban cluster

→ “**Extension**”: areas extending an existing cluster

→ “**Leapfrog**”: areas unattached to any existing cluster

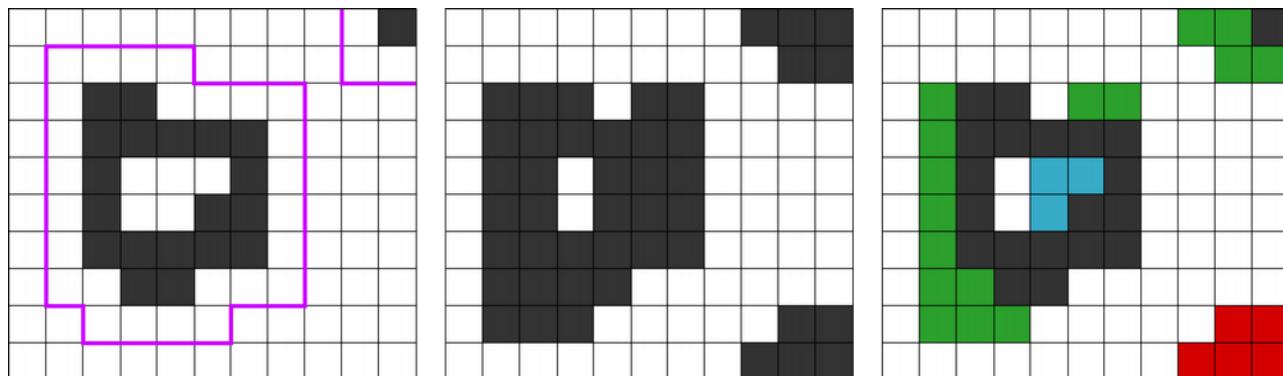


Figure 5. Schematic example of characterizing newly built-up areas in 200m grid cells.
a) initial built-up areas and **urban clusters**, **b)** final built-up areas, and **c)** characterized newly built-up areas (**existing**, **infill**, **extension**, **leapfrog**).

URBAN SPRAWL

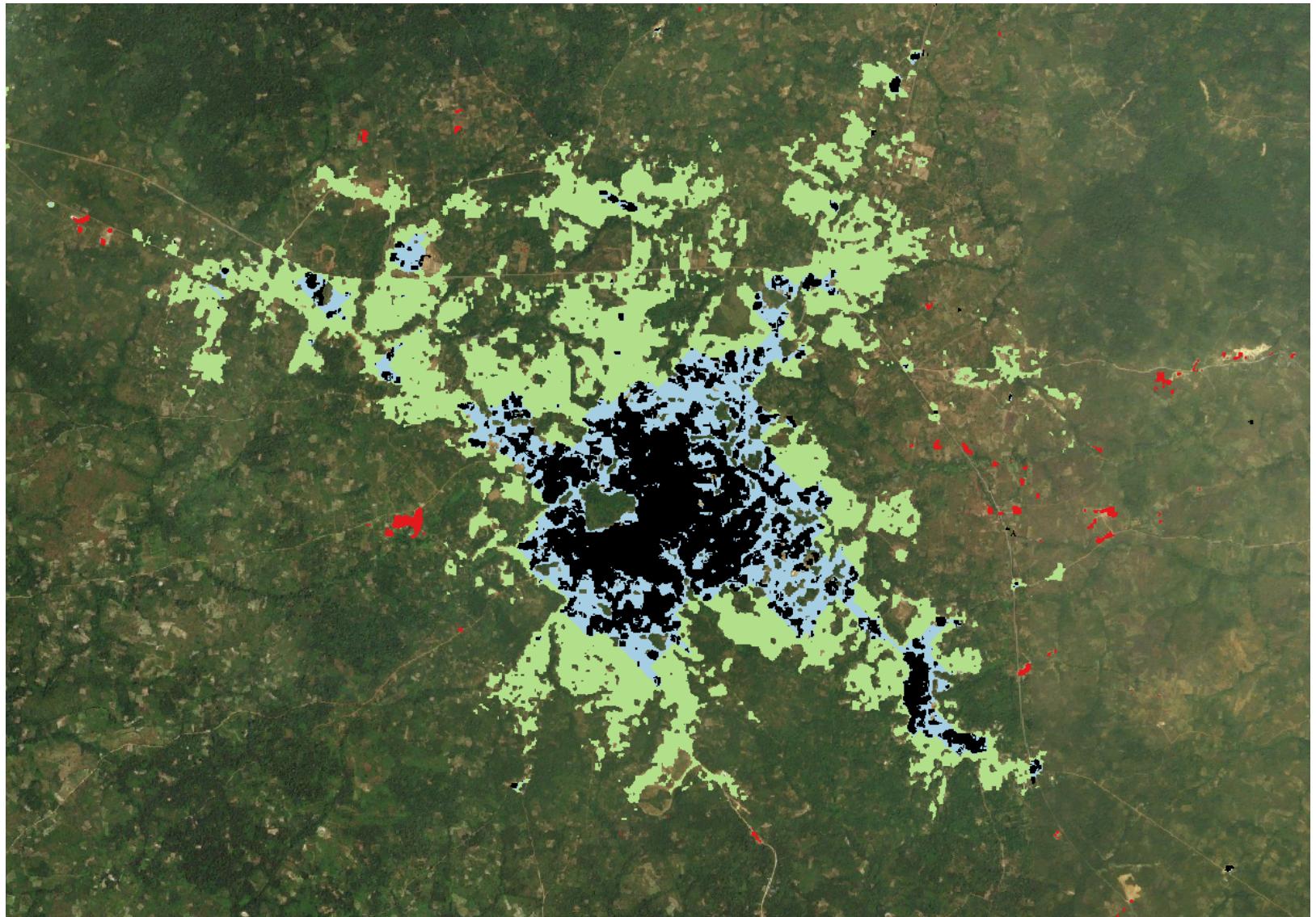


Figure 6. Characterized urban expansion between 2000 and 2015 in Owo, Nigeria
Legend: **initial built-up areas**, **infill**, **extension**, **leapfrog**

URBAN SPRAWL

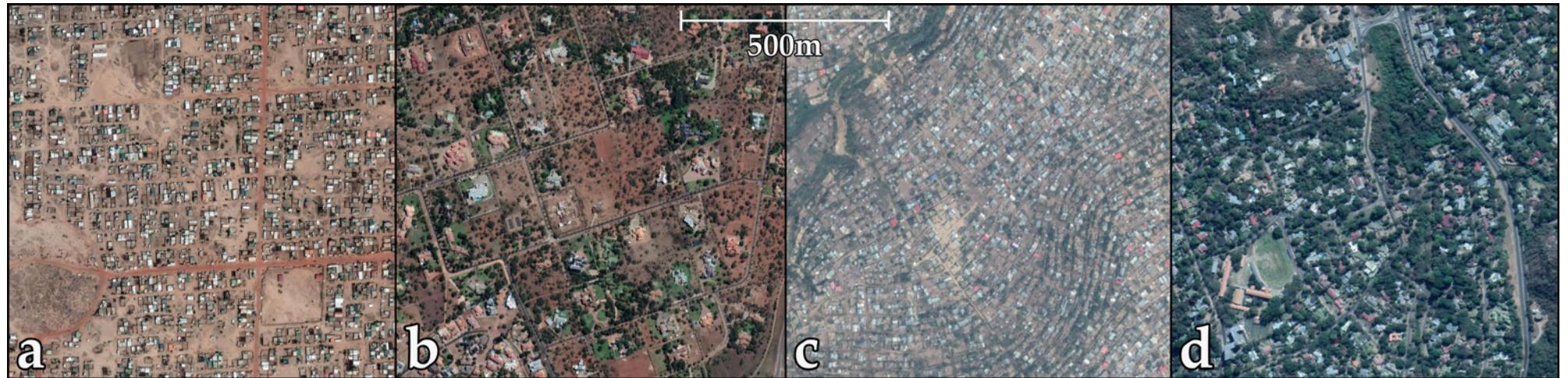


Figure 7. Various sprawl areas at the same scale: **a)** Ouagadougou, Burkina Faso, **b)** Pietersburg, South Africa, **c)** Kinshasa, D.R. Congo, and **d)** Nelspruit, South Africa.

URBAN SPRawl



Sprawl per new dweller

	Small	Medium	Large	
Low Income	141.62 (12)	33.62 (3)	37.04 (5)	99.28 (20)
Lower-Middle Income	157.70 (8)	92.80 (6)	89.04 (2)	124.78 (16)
Upper-Middle Income	522.90 (3)	153.03 (2)	107.19 (2)	298.45 (7)
	196.95 (23)	87.61 (11)	64.19 (9)	

Table I. Sprawl (in sq. meters) per new dweller between 2000 and 2015 depending on income class and population size.

CONCLUSIONS



Population densities in built-up areas

- Urban growth in SSA is highly **heterogeneous**.
- Built-up areas are growing at higher rates in small and medium-sized urban areas.
- Urban areas in upper-middle income countries are characterized by a lower population density in built-up areas.
- The surface of sprawl per new dweller is highly variable across the case studies: from **~37 sq. m** per new dweller in large low-income urban areas, to **~523 sq. m** in small upper-middle income urban areas.