Urban Mobility, Urban Planning and ICT in Africa

Part I – Urban Mobility, Urbanization and Urban Planning

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Part I – Urbanization and urban mobility in Africa

Urbanization in Africa

Urbanization, land expansion and proliferation of slums

Urban Mobility; Current trends and future prospects

Urban Mobility Challenges: Poor urban planning et poor street connectivity,

Other Urban Mobility Challenges: Poor Drainage System & Poor Management of Solid waste

Part II Transforming the urban mobility through urban planning and ICT

The conceptual framework of Smart Mobility in Smart City/ The conceptual framework of Smart Mobility in Smart City
Foundation
Smart Streets as Public Spaces
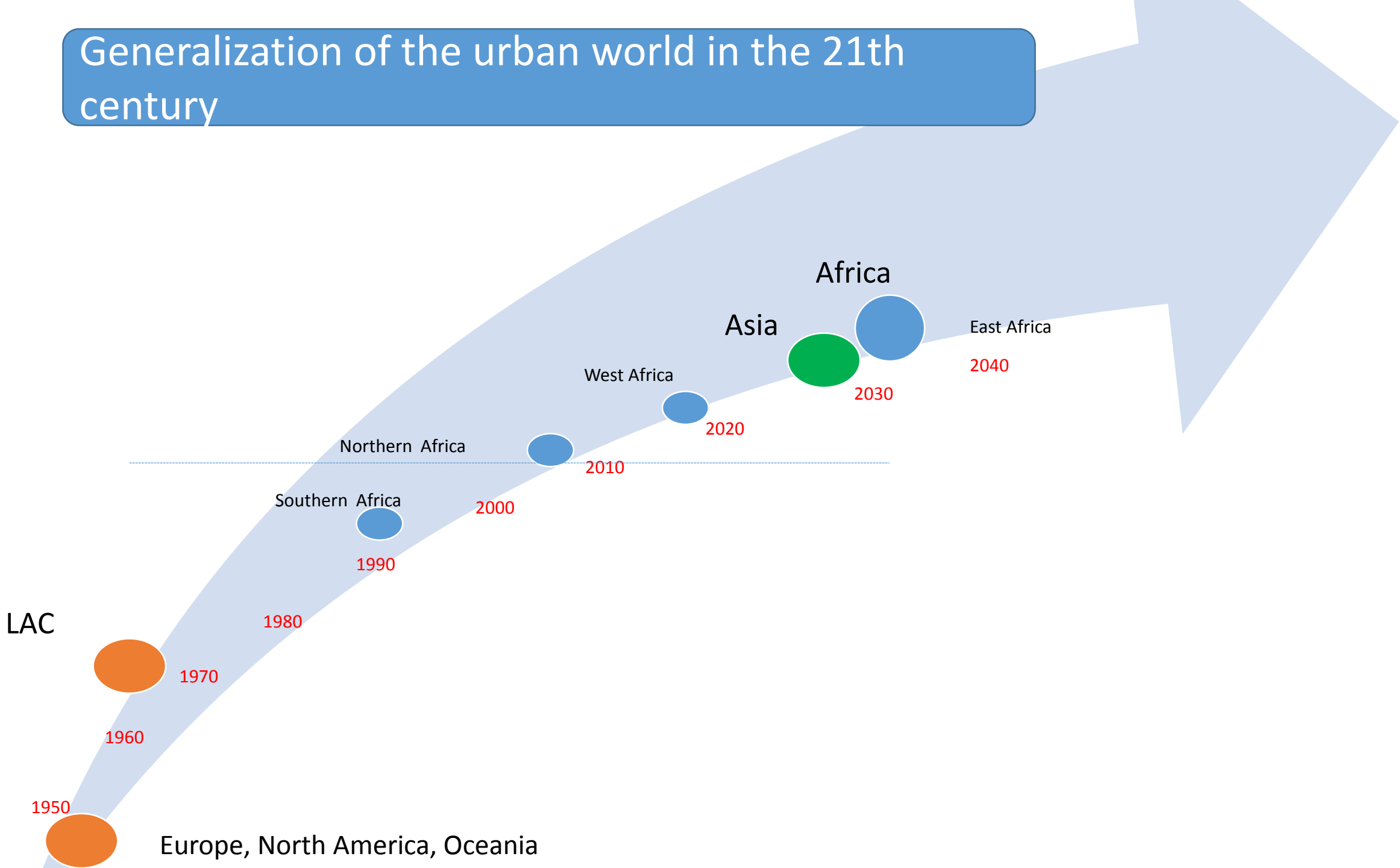Model of Multiple choices to access services/ Motorized, walking/cycling & ICT
Creation of the urban centers will mark the era of the digital urbanization of Metropolitan Regions
Example of Urban Pole of Diamniadio (Senegal)
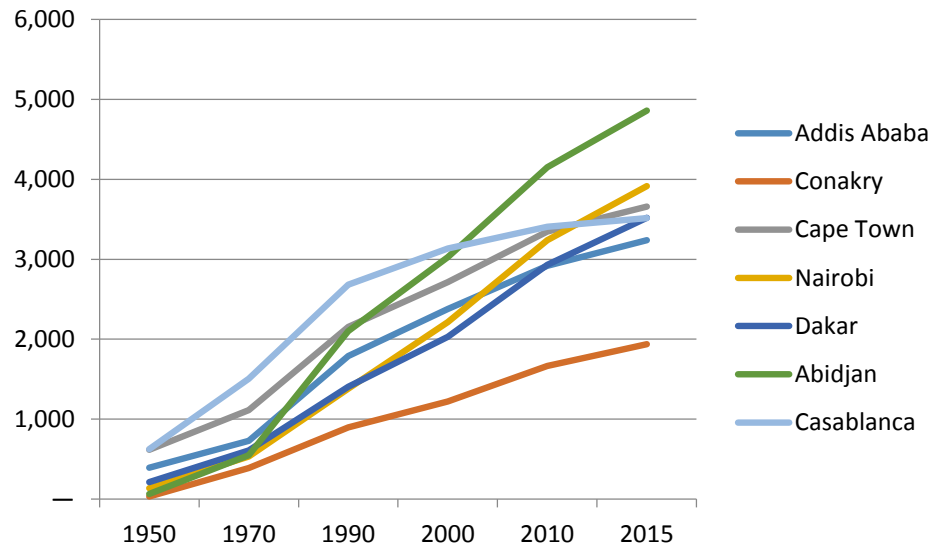
Mobility and sustainable urbanization

- **Mobility** is one of the most fundamental and important characteristics of economic and social activities
- **Multiple functions of mobility**

    - Movement of people, freight and information

- **Mobility and economies of scale/agglomeration of economies**:

    -Large scale production

    - Increased competition

    - Increased land value

    - Comparative advantages (location and transport)

- **Interdependences between Mobility and Urban Form/Structure – Streets and Public Spaces**
- **Mobility in Global Agendas (SDGs, Cop 21 & New Urban Agenda)**

    - Sustainable mobility: environmental protection, economic efficiency and social progress

- **Smart mobility to achieve sustainable mobility**

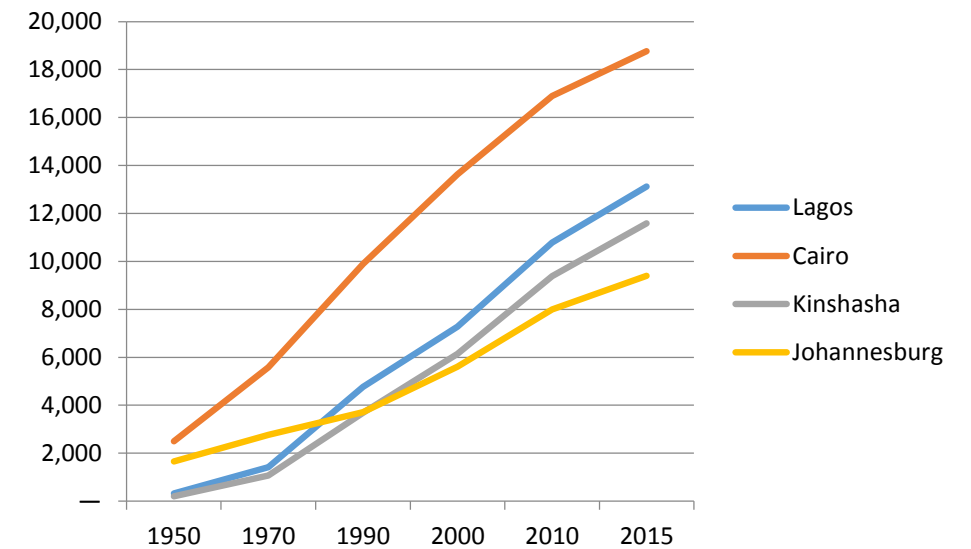Generalization of the urban world in the 21th century

Africa

Asia

East Africa

West Africa

2040

Northern Africa

2030

2020

2010

Southern Africa

2000

1990

LAC

1980

1970

1960

1950

Europe, North America, Oceania

City Population Growth, Africa (1950-2015)

Cities of 1-3 million

Legend: Addis Ababa, Conakry, Cape Town, Nairobi, Dakar, Abidjan, Casablanca

Megacities (10+ million)

Legend: Lagos, Cairo, Kinshasha, Johannesburg

The urban numbers that call for increased urban mobility means

- *Today nearly half a billion of African people live in cities and towns*

- *In 2040, one billion Africans will reside in cities and towns*

- 54 African cities have a population 1 million or more

- Megacities (10 million or +) have also emerged in Africa with four cities – Cairo, Lagos, Kinshasa and Johannesburg

- By 2030, Dar-es-Salam and Luanda will also join the group of megacities, and a significant number of African cities will have a population of more than 5 million

Africa has the urban numbers to create:

Economies of scale

Economies of agglomeration

IF transportation infrastructures are able to answer mobility needs with higher access to markets and resources

Efficient mobility allows localities of urban agglomerations to specialize in the production of goods and services for which they have comparative advantages and ease inter-localities cooperation

Considerable progress has been made in the public transit sector by

- **South African cities, example Johannesburg, Cape Town and others**

- **Northern African cities example of Tunis, Casablanca, Alger and Cairo**

- **However, due its large population as megacity, Cairo as Lagos are still suffering from traffic congestion and its negative externalities**

But urban mobility in most African cities is marked By

- **Very insufficient public transit (less than 5% of share of the total urban mobility in most sub-Saharan African cities**

- **Very high share of the informal sector with minibuses**

- **Very high share of pedestrians without space allocating to them**

- **Growing share of private and cars and taxis in the few existing streets**

- **Urban logistics – The forgotten economic drivers and urban polluters**

Urban Mobility pre-dominantly with minibuses and foot

Figure : Distribution of trips in selected African cities by modes of transport

Source: International Association of Public Transport 2010, from Lall, S.V. et al. 2017

Lack of streets and public spaces

Poor drainage systems

- < 10 % of land for streets
- No public spaces
- Few intersection
- Poor Connectivity

88   STREETS AS PUBLIC SPACES AND
DRIVERS OF URBAN PROSPERITY

© UNEP

Large urban agglomerations without adequate response from urban mobility in most African cities create

- Traffic congestion

- Pollution

- Impact on health and quality of life

- Reduce economic growth

- ------

Multiple Mobility deprivations manifest at three levels and must guide urban mobility in Africa

Place level: unplanned, informal settlements with lack of streets and public spaces, associated to monocentrism of African cities are sources of traffic congestion

People level: Unaffordability of transportation means force many urban poor to walk to their workplace

Policy level: without secure tenure and high exposure to eviction, no long term investments such as transport infrastructures can be expected

These three **Ps** must guide any transport and urban development programme and policy to create conditions for smart mobility

PEOPLE

PLACE

Multiple Mobility Deprivations

POLICIES
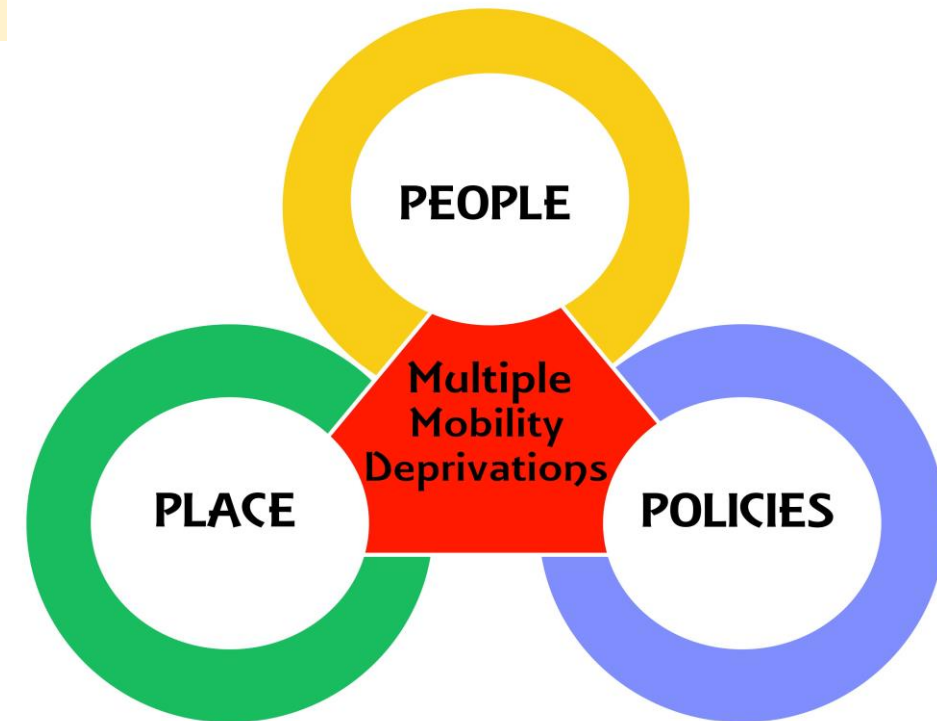
Africa Urbanization and Rapid Unplanned Land Expansion

- Endless growth of cities in the periphery -Low density settlements
- Reduction of public spaces
- Consumption of land: up to 3 times Population growth
- Motorized means of mobility
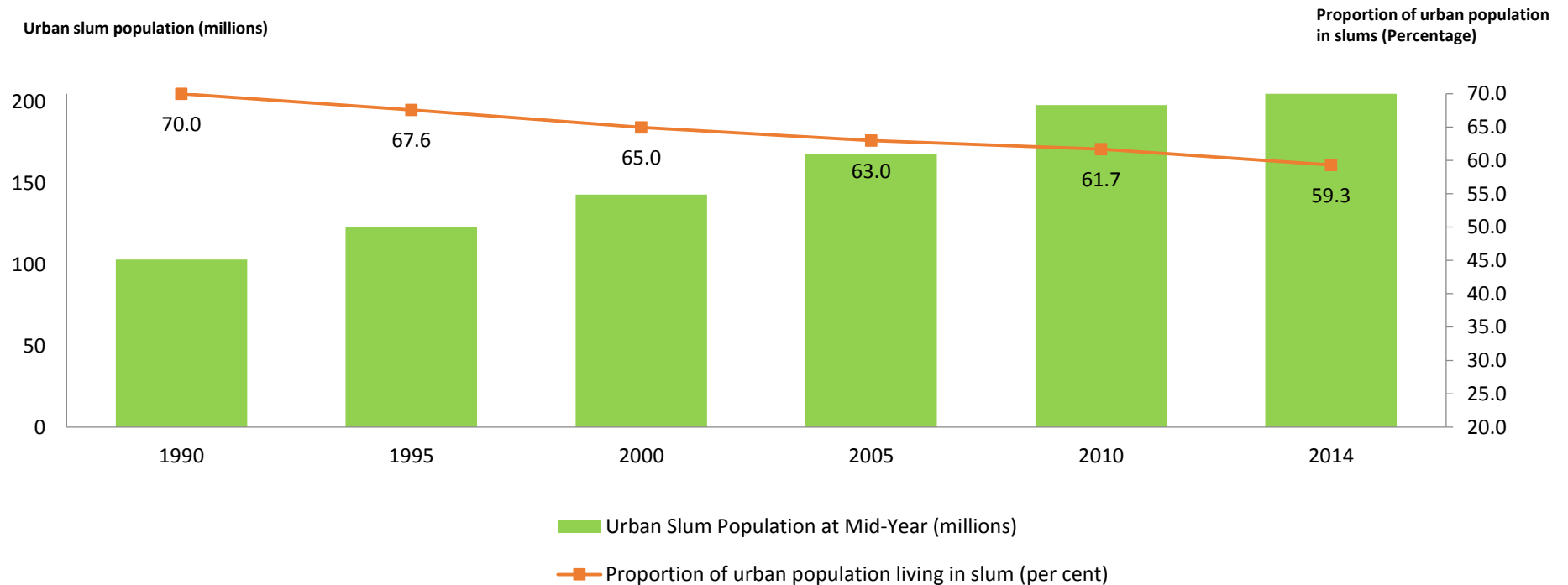
Africa Urbanization and Proliferation of slums

- Overcrowded settlements
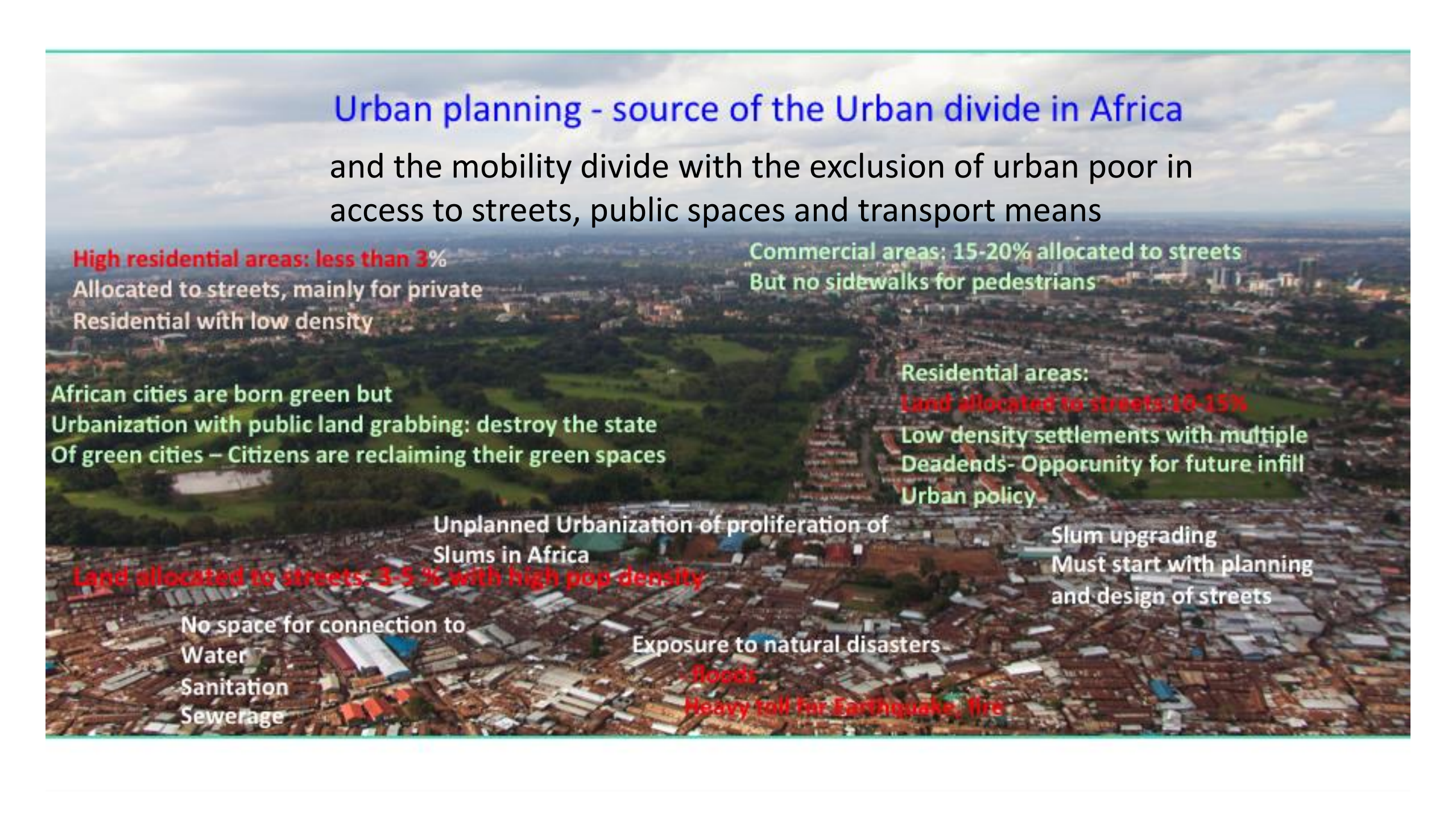- No public spaces
- No streets for mobility

60 % of people in the SSA in slum conditions

Proliferation on slums

In Sub-Saharan Africa, where 59% of urban dwellers live in slums with few streets and low provision of basic infrastructures,

Urban planning - source of the Urban divide in Africa

and the mobility divide with the exclusion of urban poor in access to streets, public spaces and transport means

High residential areas: less than 3% Allocated to streets, mainly for private Residential with low density

Commercial areas: 15-20% allocated to streets But no sidewalks for pedestrians

African cities are born green but Urbanization with public land grabbing: destroy the state Of green cities – Citizens are reclaiming their green spaces

Residential areas: Land allocated to streets:10-15% Low density settlements with multiple Deadends- Opporunity for future infill Urban policy

Unplanned Urbanization of proliferation of Slums in Africa Land allocated to streets: 3-5 % with high pop density
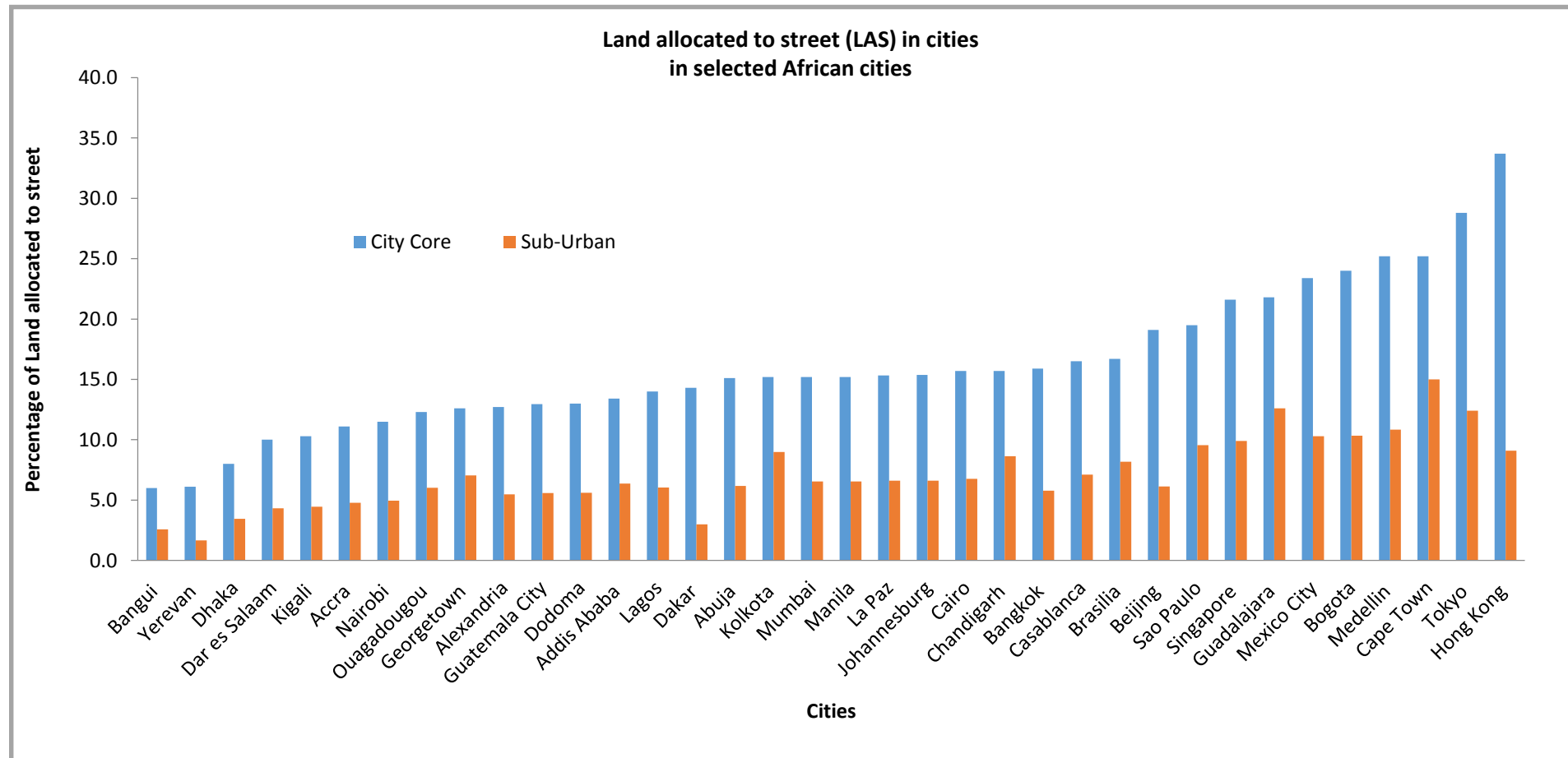
Slum upgrading Must start with planning and design of streets

No space for connection to Water Sanitation Sewerage

Exposure to natural disasters -floods Heavy toll for Earthquake, fire

Sufficient land allocated to streets is the basis for smart urban planning, but African cities are lagging far behind

Land allocated to street (LAS) in cities in selected African cities

Percentage of Land allocated to street

■ City Core   ■ Sub-Urban

Cities

PART II

Urban Mobility, Urban Planning and ICT in Africa

Part II – Transforming Urban Mobility in Africa

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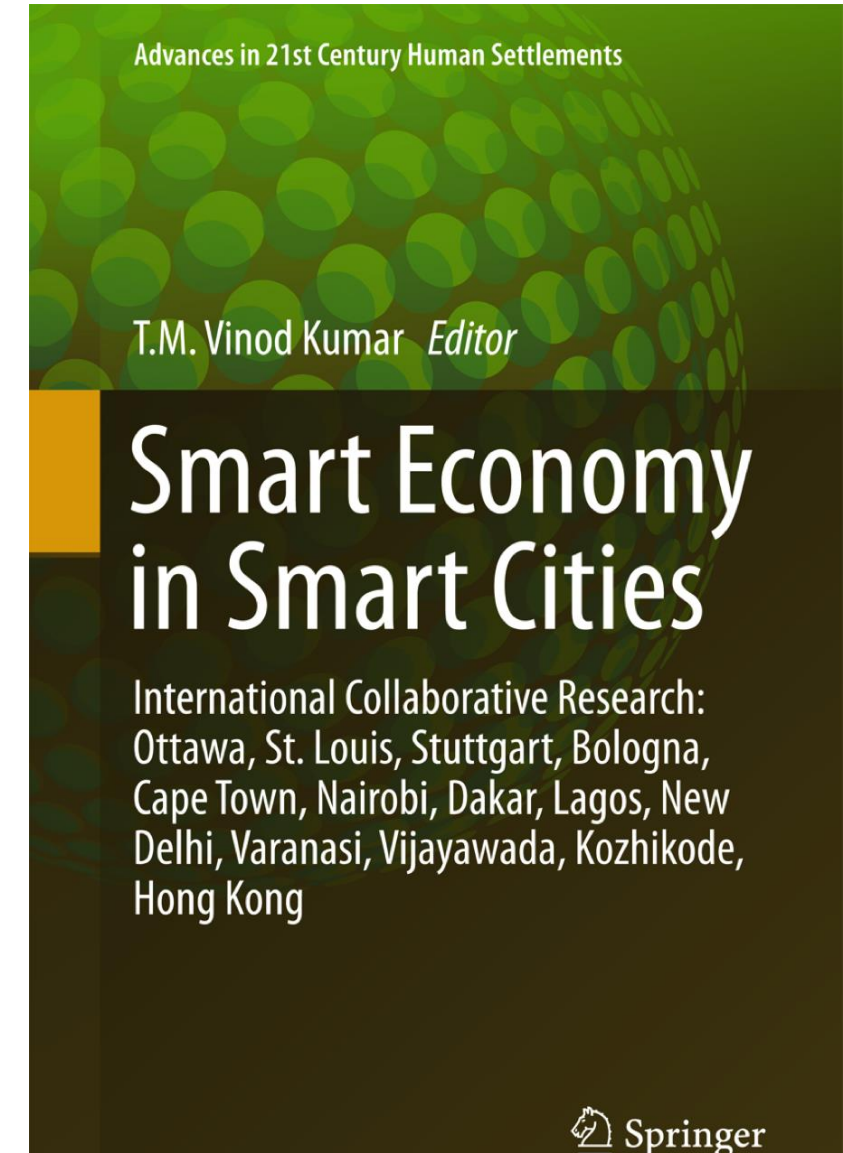**gmboup@gora4people.org, www. Gora4people.org**

Transforming the urban mobility in Afruca will require

- Higher Provision of Public Spaces
- More Compact Form
- Greater Heterogeneity and Functionality
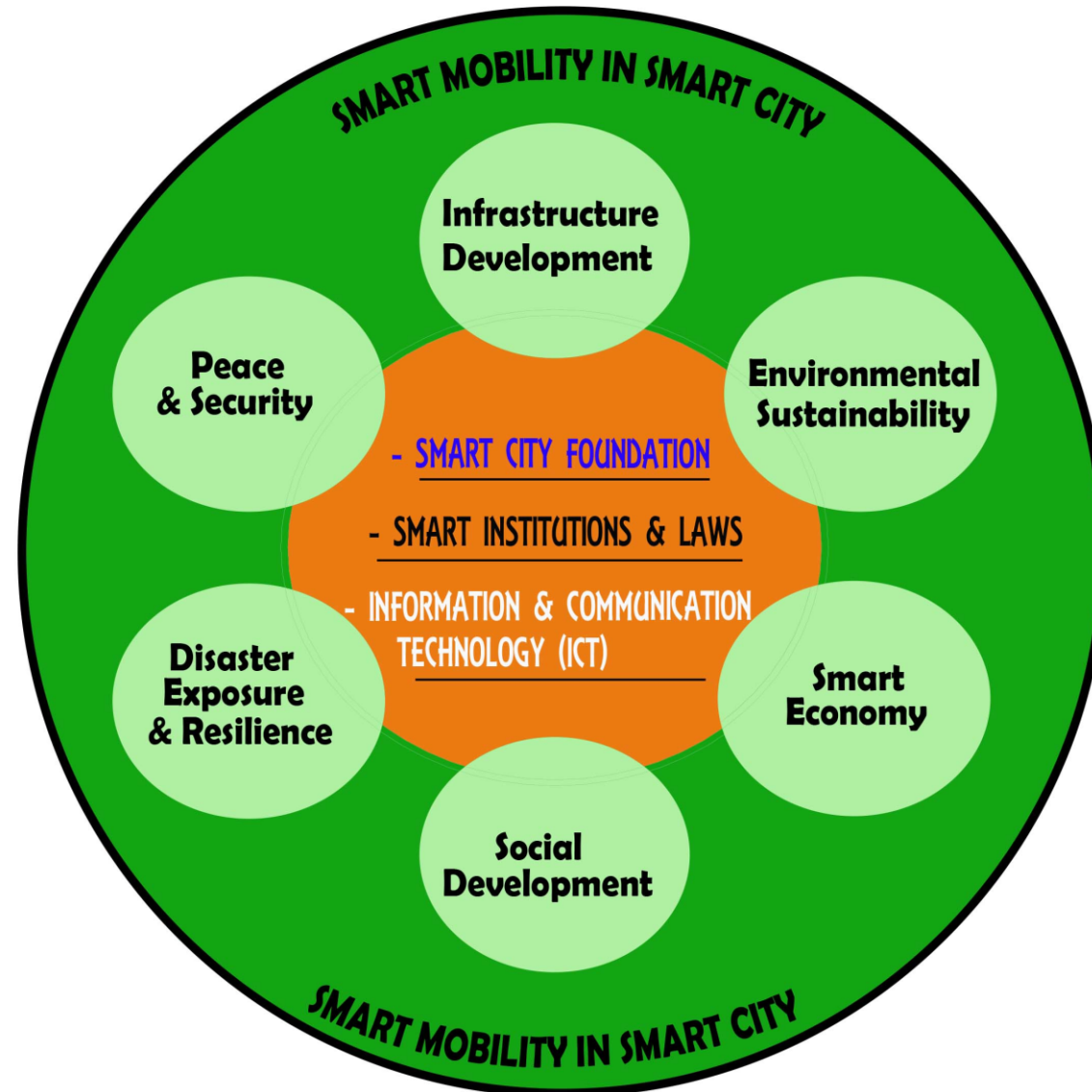- Safeguards against New Risks
- More 'Human Scale'

✓ Stimulates local job creation

✓ Reduces disaster risks and vulnerabilities

✓ Build resilience to adverse forces of nature

✓ Creates harmony between the different dimensions of cities

✓ Recognizes the importance of streets and other public spaces.

GQRA
For the People Agenda

Transforming of urban mobility to make is smart: lessons from two following publications

STREETS AS PUBLIC SPACES AND DRIVERS OF URBAN PROSPERITY

Advances in 21st Century Human Settlements

T.M. Vinod Kumar *Editor*

Smart Economy in Smart Cities

International Collaborative Research: Ottawa, St. Louis, Stuttgart, Bologna, Cape Town, Nairobi, Dakar, Lagos, New Delhi, Varanasi, Vijayawada, Kozhikode, Hong Kong

Springer

Making Smart Mobility in Smart City will be built on the Smart City Concept Framework

Smart Mobility in Smart Urban Planning

The way a city is planned is a salient force shaping transportation along with technological, social and economic performances.

The spatial form and structure of a city determines in large the demand for mobility

URBAN PLANNING

SMART CITY FOUNDATION

BASIC INFRASTRUCTURE

LAND POLICIES
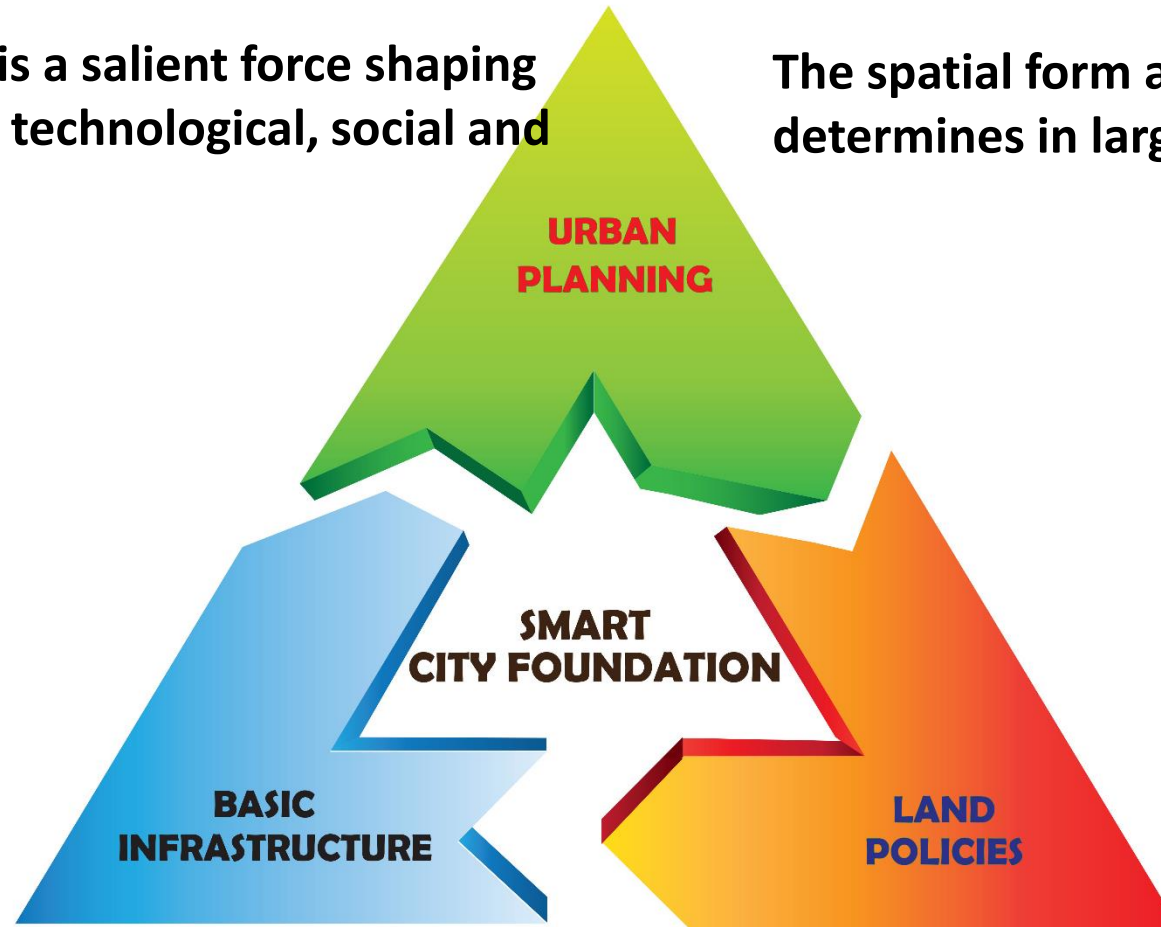
Urban form and structure along with transport infrastructure will determine the direction of economies of scale and agglomeration economies.

Contribution of urban planning in solving transport challenges in Africa

- When planning city growth, it is important to integrate the mixed land use approach that has proven efficient with high economic, social and environmental returns.

- ***Connected Streets are needed to transform urban mobility in Africa***

Smart street puts people first and eases provision of amenities

more spaces for walking, cycling

NO spaces for walking, cycling

Environmental costs
pollution, traffic congestion

Economic Costs

Social Costs

promote infrastructure development,
enhance environmental sustainability,
support high socio-economic development, and
promote social development, equity and social inclusion
peace and security

# Transforming the Urban Mobility in Africa through development and use of ICTs
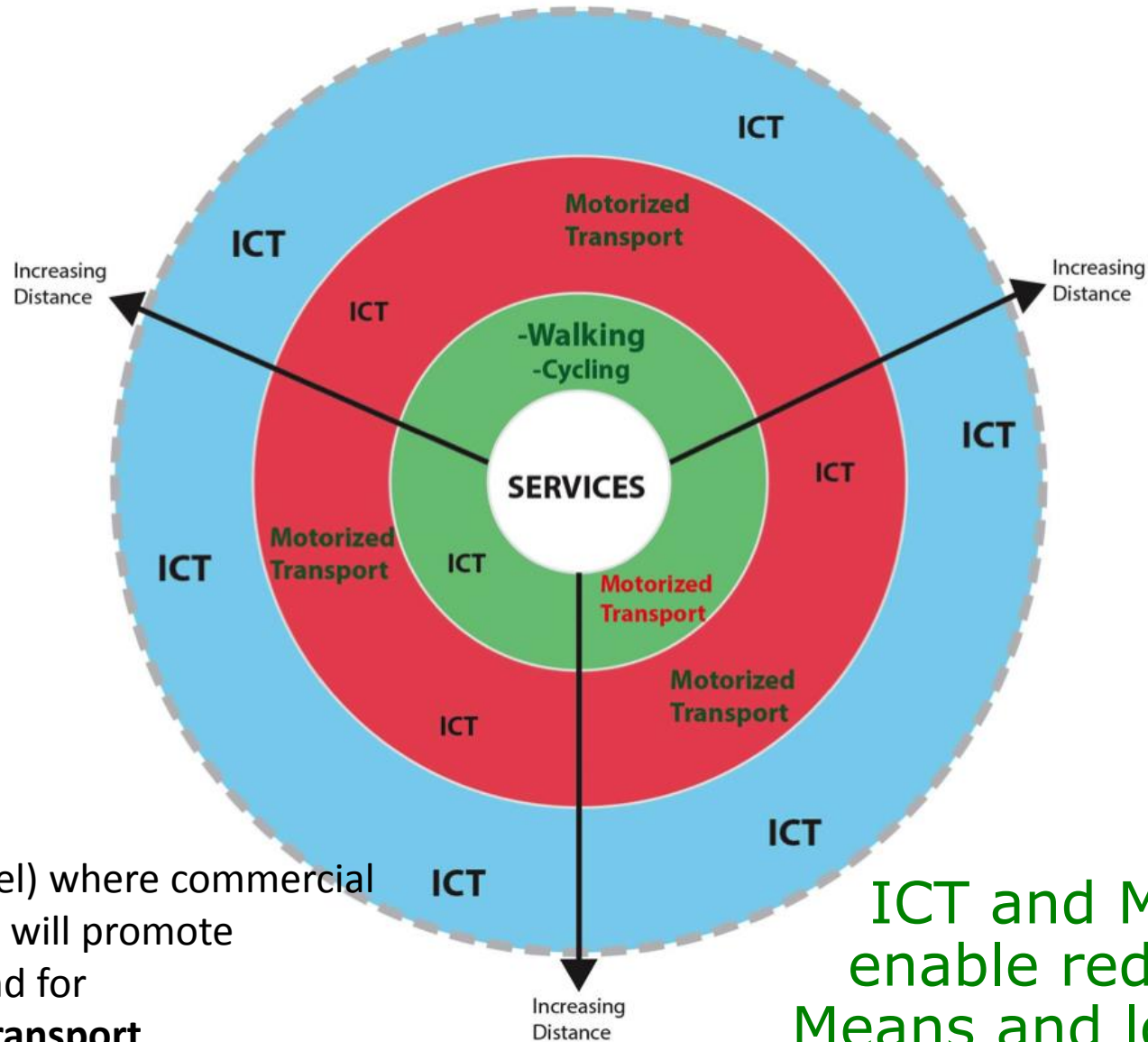
Mixed land uses (green panel) where commercial and residential are together will promote **high density**, reduce demand for **transport** and ease **public transport**

ICT and Mixed land uses will enable reduction of motorized Means and lower emission of CO_2

State of access and use of basic ICT infrastructures in Africa

Percentage of households with at least a mobile, a computer a connection to internet,

Legend: 2014, 2011, 2005

Categories: Mobile phone, Computer, Internet
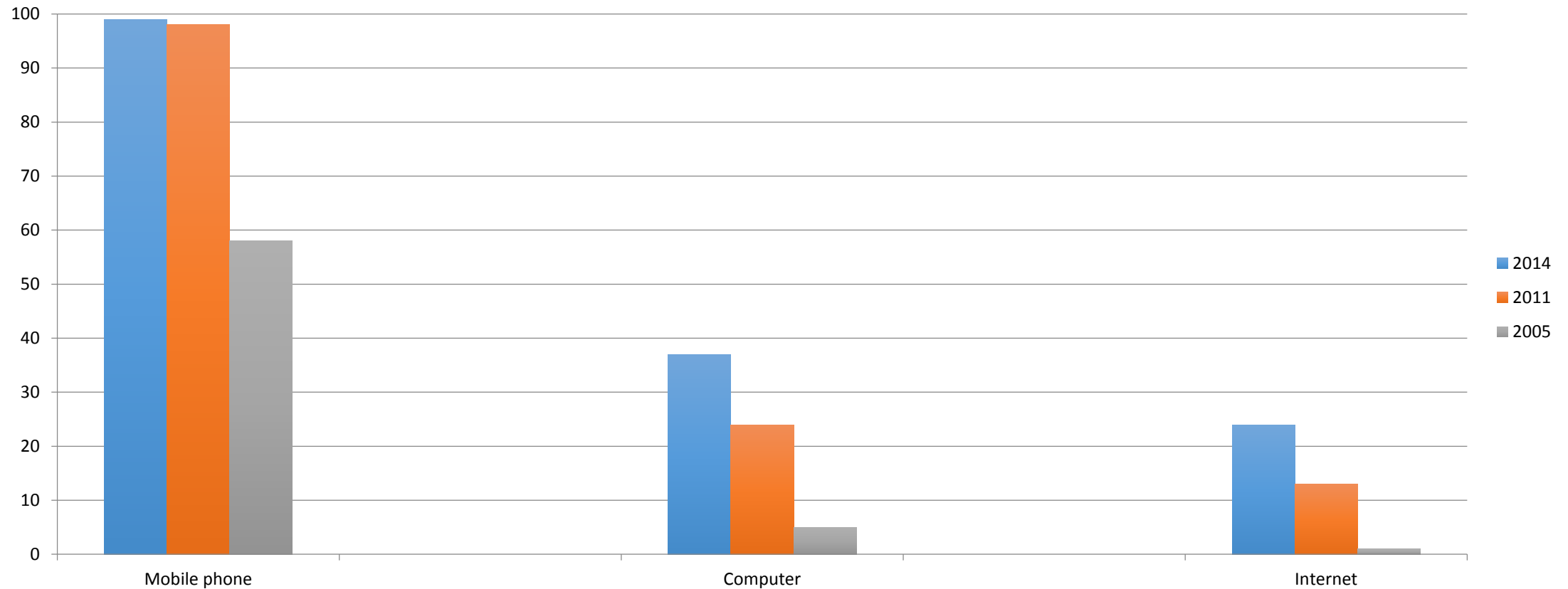
Decline in Transport demand
with increased use of ICT and Mixed land uses

Transportation demand with increased ICT use and mixed land uses
Theorical normal functions
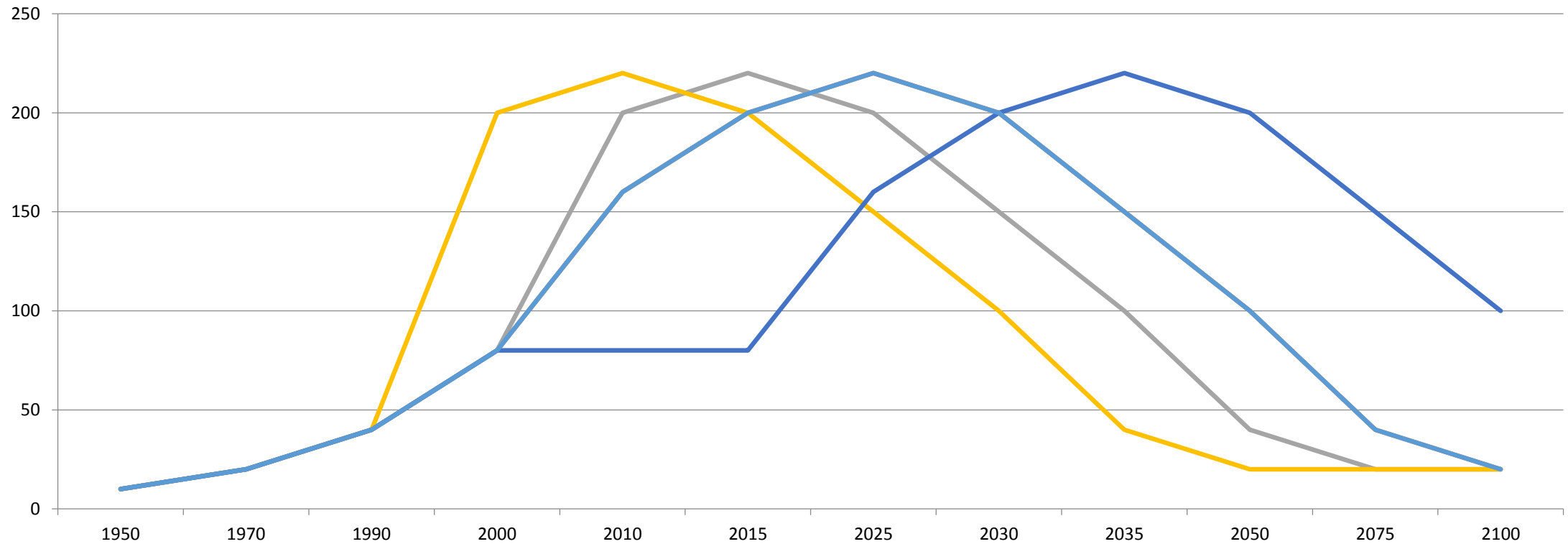
ICT is an important enabler of accessing to and using and must be integrated in the planning and management of all sectors of economy

The digital urbanization

Diffusion of ideas: data revolution

Innovation – knowledge sharing in open platform

Economy of Scale

Agglomeration of Economies

With the ICT revolution, more and more jobs are performed outside the usual workplace

- **E-Governance**
- **E-Commerce**
- **Online Banking**
- **Online courses**

- **Urban logistics (increased online demand of goods required increase means for freight, etc.)**

# Promoting digital transport through the integration of ICT infrastructure

- Use of ICT solutions to facilitate the greater provisioning of transport services

- Expansion of real time passenger information (RTPI) systems: RTPI provides accurate information on actual departure and arrival times and service disruptions, enabling passengers to plan more-efficient trips

- Use of Internet, digital mobile communication, and "big data" analysis enable to create a less costly and more powerful "intelligent transport systems" (ITS)

Mixed land uses Promote Public transport and create conditions for people friendly streets
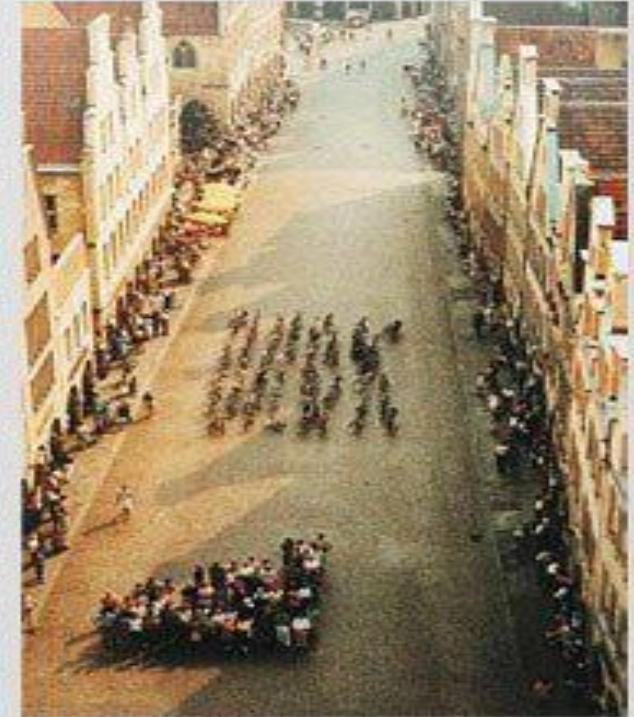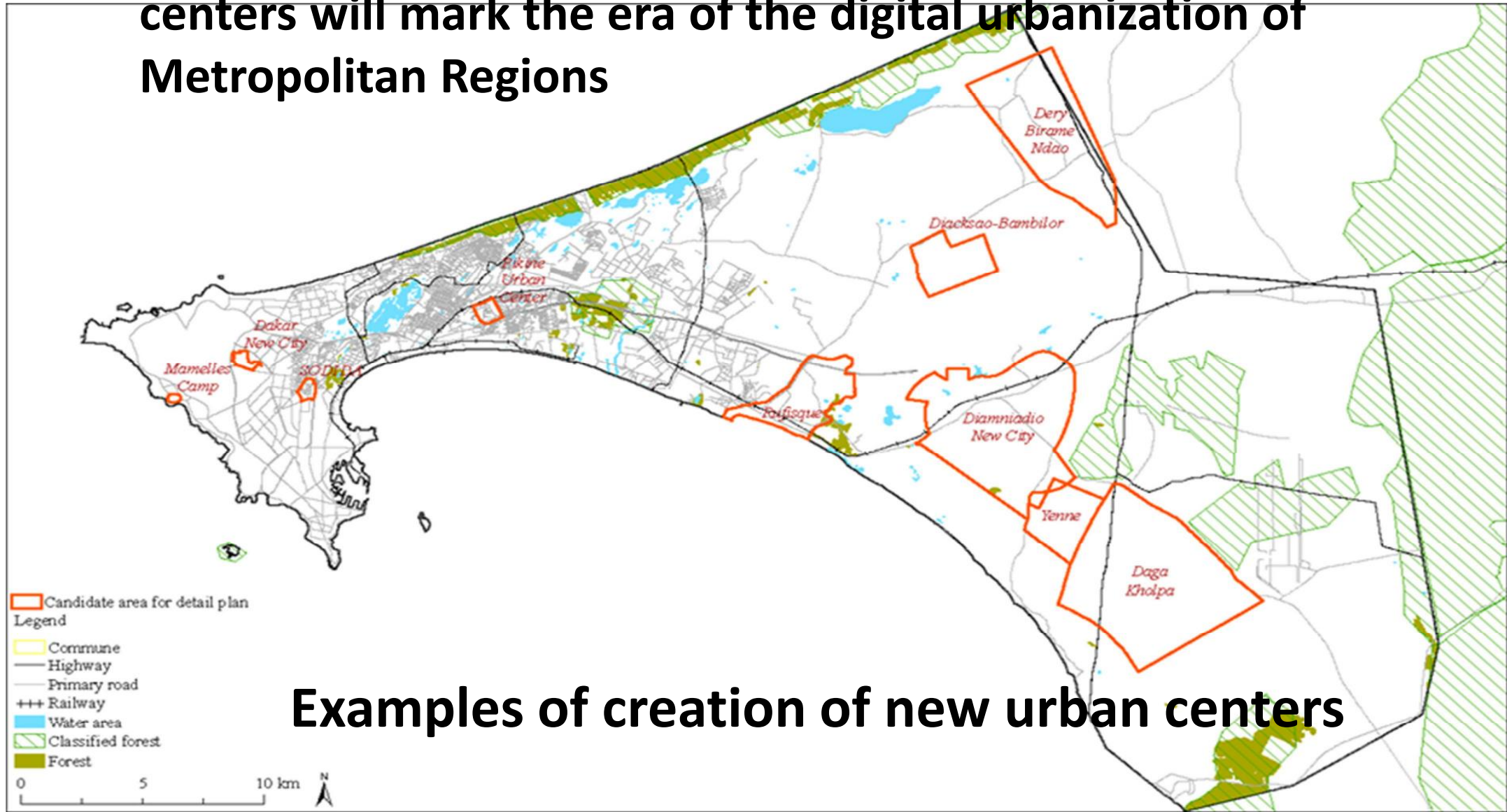

space required to transport **60 people**
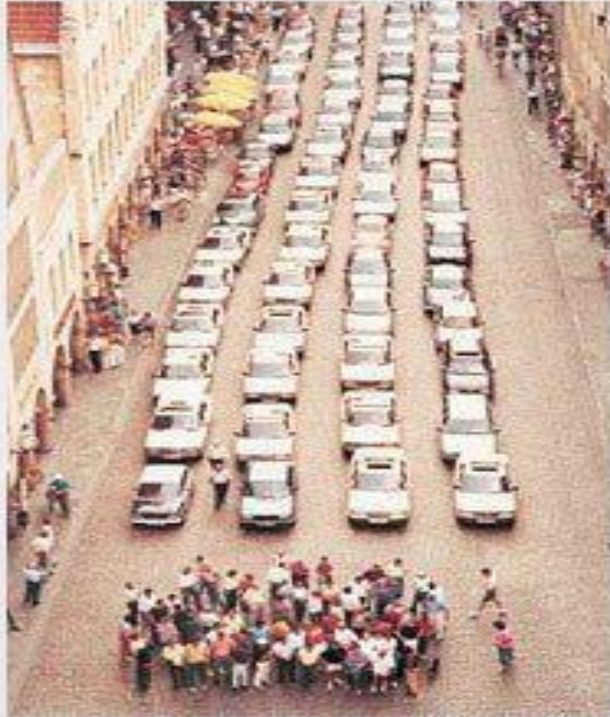
car
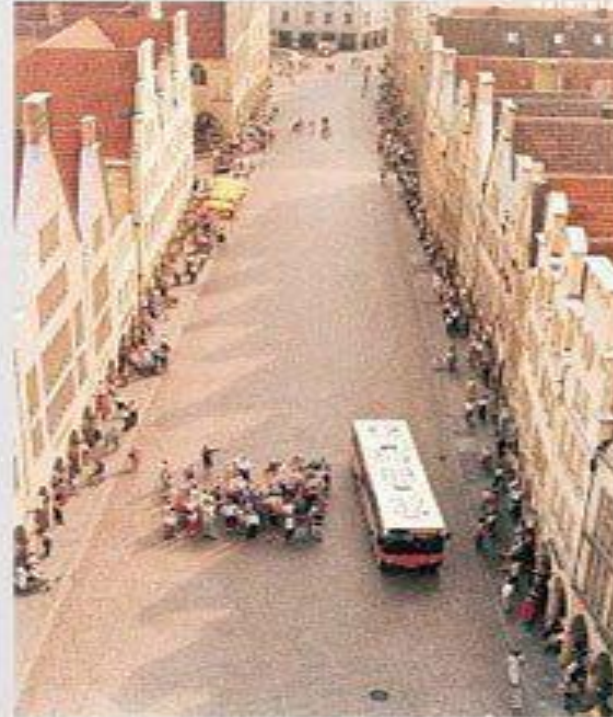
bus & 1000 + people walking

bicycle & 1000 + people walking

(Poster in city of Muenster Planning Office, August 2001) Credit: PressOffice City of Munster, Germany

Decongest large cities with the creation of digital urban centers will mark the era of the digital urbanization of Metropolitan Regions

Examples of creation of new urban centers

Legend:
- Candidate area for detail plan
- Commune
- Highway
- Primary road
- +++ Railway
- Water area
- Classified forest
- Forest

0   5   10 km

Map labels: Dery Birame Ndao, Diacksao-Bambilor, Pikine Urban Center, Dakar New City, Mamelles Camp, SODIDA, Rufisque, Diamniadio New City, Yenne, Daga Kholpa

Making Smart Mobility in Smart City in Africa will require

- Sustained liberalization of the ICT use and development in Africa. Policies that lower the barriers to competition and market entry

- Investments in infrastructure and skills

- Mixed land uses

- Integrated Public policy
- Transport is with the Line Ministry of Transport
- ICT is with the Line Ministry of Telecommunication
- Urban planning with the Line Ministry of Urban Development

How these ministries and others to work jointly?

Planning and Management of Urban Mobility in the Digital 21st Century

The planning of urban mobility in the 21st century must take into consideration the gain in knowledge on various conditions that make cities smart, green, ecological, livable and healthy; and the progressive emergence of the ICT infrastructures and their correlates such as social media and in general big data.

Jobs and services are becoming digital

Workplaces are becoming progressively spatially mobile.

Real time information
for Making Smart Urban Mobility in Africa– Observartory linking Research to Action (ORA)