Leveraging Urban Mobility Strategies to Improve Accessibility and Productivity of Cities

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GPSC African Regional Workshop
May 15, 2018

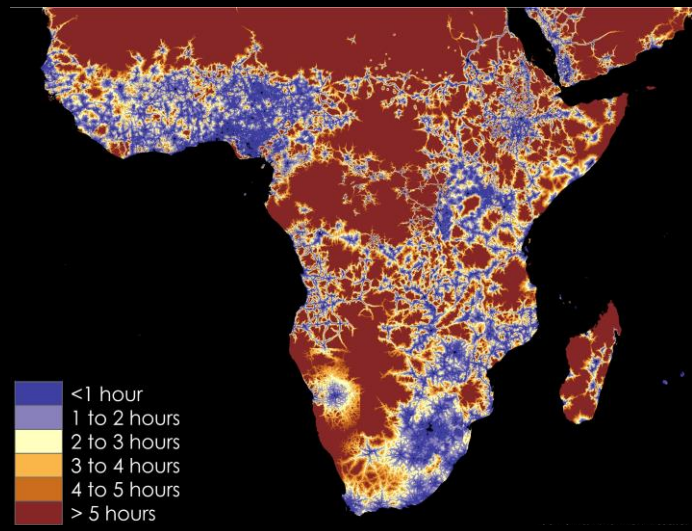
Roadmap

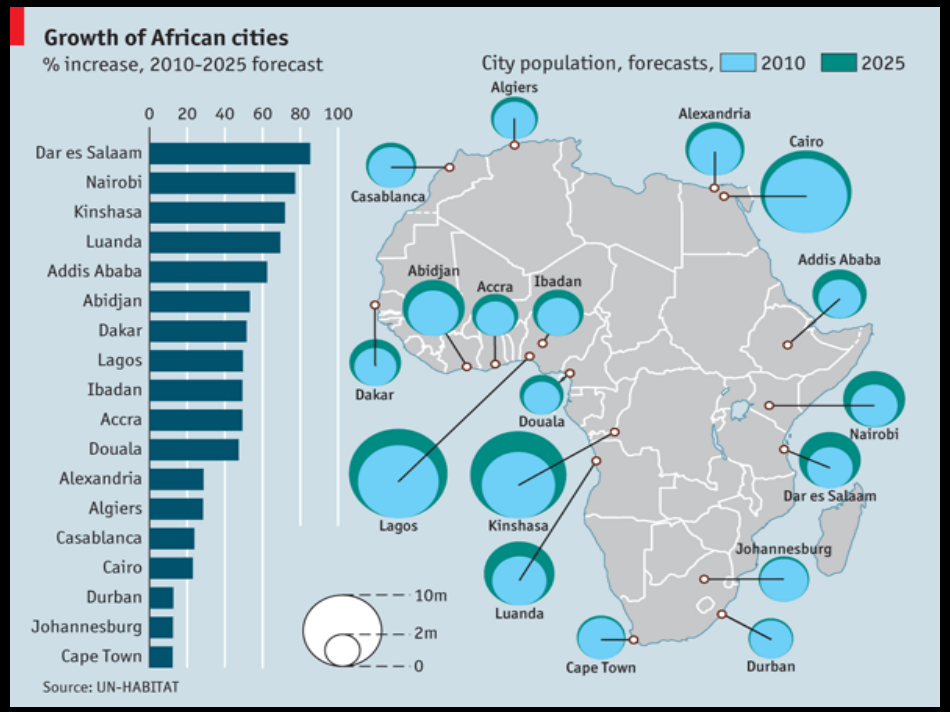
1. Africa's urbanization and its promise (and challenge)
2. Urban transport investment as a poverty reduction strategy
    - Direct pathway
    - Indirect pathways
3. Leveraging transport systems to improve mobility and accessibility: the evidence
4. Integrated transport and land use planning to further improve accessibility and productivity

1. Africa’s urbanization and its promise (and challenge)

AFRICA'S URBANIZATION AND ITS PROMISE (AND CHALLENGE)

- Travel time to the nearest city in many parts of SSA continue to exceed 5 hours.
- Densities in many countries remain very low, with a few urban centers concentrating increasingly large populations.
- Urbanization as a pathway out of poverty and to access to opportunities.
- Most viable opportunities for economic diversification will be found in cities, but their success will require that cities function efficiently.





Urban areas in Africa comprise **472 million** people.

The largest cities grow at **4%** annually.

160 million additional jobs need to be created in African cities by 2030.

2/3 of urbanization is yet to happen – need to ensure it is productive.

AFRICA'S URBANIZATION AND ITS PROMISE (AND CHALLENGE)

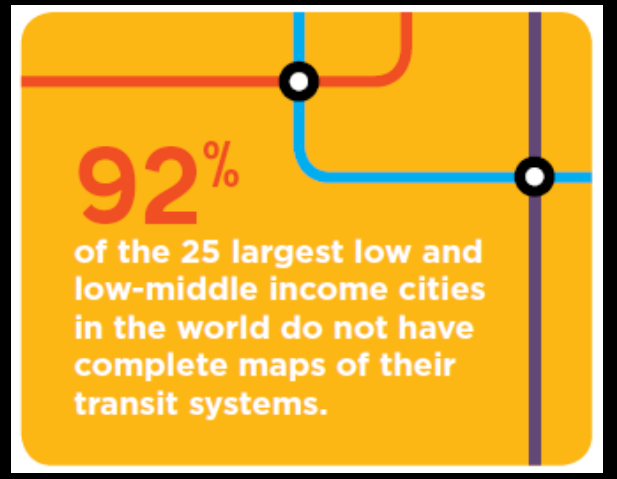
Congestion and lack of efficient transport options have a very direct impact on city productivity: time and money are wasted that could be spent on productive activities. Impacts of congestion worse in developing mega-cities, as they represent a major share of national output.

In many cities it takes **1–2 h** to reach the CBD from the surrounding suburbs by means of motorized transport

Waiting times at minibus terminals reach at **15-30 min**

Transport costs take a large share - **10–40%** - of household income.

Source: Mzee & Demzee, 2012.



Many cities lack data on the mobility patterns and transport demands of their residents, efficient planning tools, and data on their transport systems – this is the starting point for improving accessibility.

AFRICA'S URBANIZATION AND ITS PROMISE (AND CHALLENGE)

Productivity in African cities constrained by 3 features:

Crowded — the costs of congestion overwhelm the benefits of urban concentration.

Disconnected —preventing firms from reaping scale and agglomeration benefits.

In 2000–2010, between **46** and **77%** of new development in African cities occurred as outward *expansion*.

A **1%** increase in spatial fragmentation → **12%** increase in urban costs.

Costly — deter investors, reduce expected returns on investment.

City dwellers pay around **42%** more for transport in Africa than in low-income and middle-income countries elsewhere.

Lack of affordable, mass transit options limits residents' access to jobs.

African cities are **20% more spatially fragmented** than Asian and Latin American ones, limiting economies of scale and agglomeration economies.

Source: Africa's Cities: Opening Door to the World (2017)

AFRICA'S URBANIZATION AND ITS PROMISE (AND CHALLENGE)

% of jobs accessible in 1 h

7%

32%

94%

Accra, Ghana

Tro-tro informal bus system mapped using smart phone technology

Source: Cheng et al. 2017

Source: AFD

How can African cities become economically dense?

How can they attract firms and skilled workers?

Economic density	Support clusters of firms and increase connectivity among workers
Livability	Make cities more livable for poor and middle class residents, by providing affordable services.

Theory of Change?

Source: Africa's Cities: Opening Door to the World (2017)

AFRICA'S URBANIZATION AND ITS PROMISE (AND CHALLENGE)

Transport investment as a strong signal to investors/developers to overcome coordination failures…

… increasing the city's 'effective density' (firms, workers economically closer)

Productivity gain

But, while tradable sectors benefit from agglomeration economies, non-tradable sectors are limited by the size of local markets.

Transport cannot do it alone – well functioning land markets key

2. Urban transport investment as a poverty reduction strategy

Direct pathway: improved accessibility

Indirect pathways: economic growth, reduced externalities

URBAN TRANSPORT INVESTMENT AS A POVERTY REDUCTION STRATEGY

Causal relationships between transport improvements and poverty and income inequality outcomes are complex and still understudied.

<u>What we DO know</u>:

Urban poor generally live on city peripheries

Difficult to access public services and economic opportunities located in city center

May be particularly damaging for women's employment potential and wages

May affect the decision to participate in the formal employment market in the first place.

URBAN TRANSPORT INVESTMENT AS A POVERTY REDUCTION STRATEGY:

DIRECT PATHWAY

1. Jobs and income: generated through the planning and construction of transport projects
2. Improved ability to access employment opportunities and services as a result of better connectivity and personal mobility

Economic

Broadening the access of employers to a pool of qualified labor

Improved accessibility to jobs for employment seekers

Social

Improved access to jobs and services for disadvantaged population groups

Improved UT can address key <u>market failures</u>:

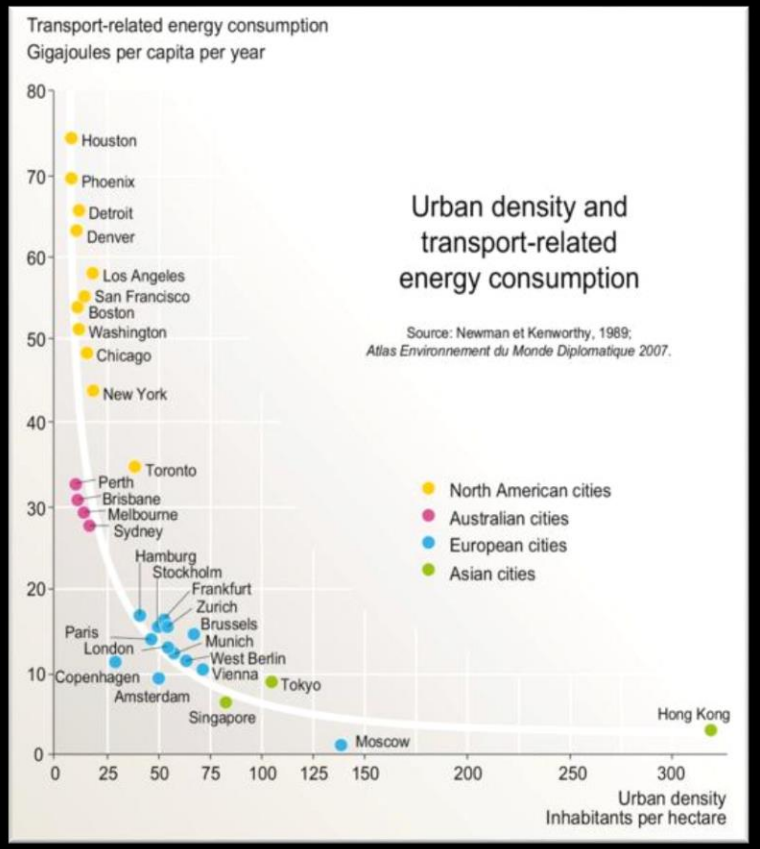
- Lack of access to **information about job openings** due to poor transportation access
- Even if information flows are not impeded, **inability to take jobs** due to transportation barriers

URBAN TRANSPORT INVESTMENT AS A POVERTY REDUCTION STRATEGY:
INDIRECT PATHWAYS

1. Economic growth and land use change stimulated by improved accessibility: attraction of investment; increased markets; local economic development; reduced prices of final goods and services

2. Productivity improvements due to reduced air pollution:
   - Ill health due to pollution found to translate into negative effects on labor, as caregivers, usually women, devote more time caring for sick relatives.
   - Reduction in income due to pollution-related health impacts can spell disaster for those with little savings or insecure jobs.

3. Reduced expenditures on energy: freed up public and private resources to make productive investments; high-quality urban transport systems play a key role in preserving urban densities.

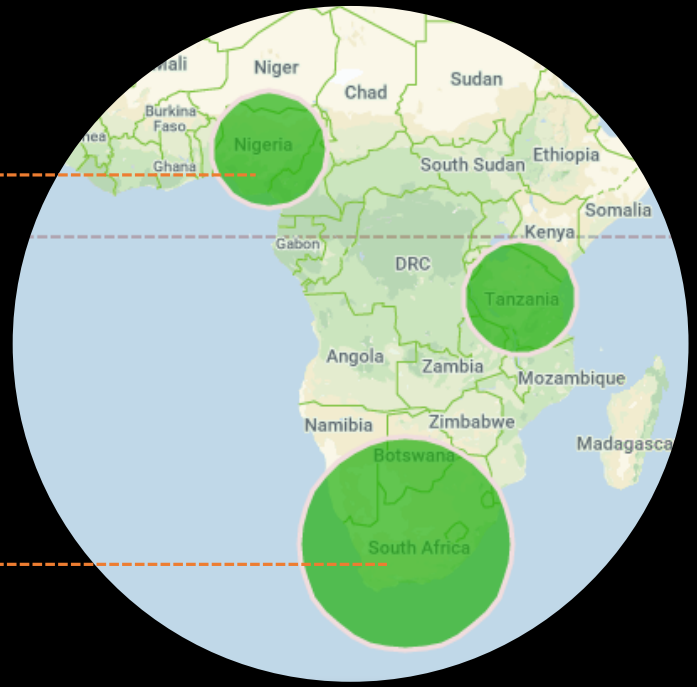


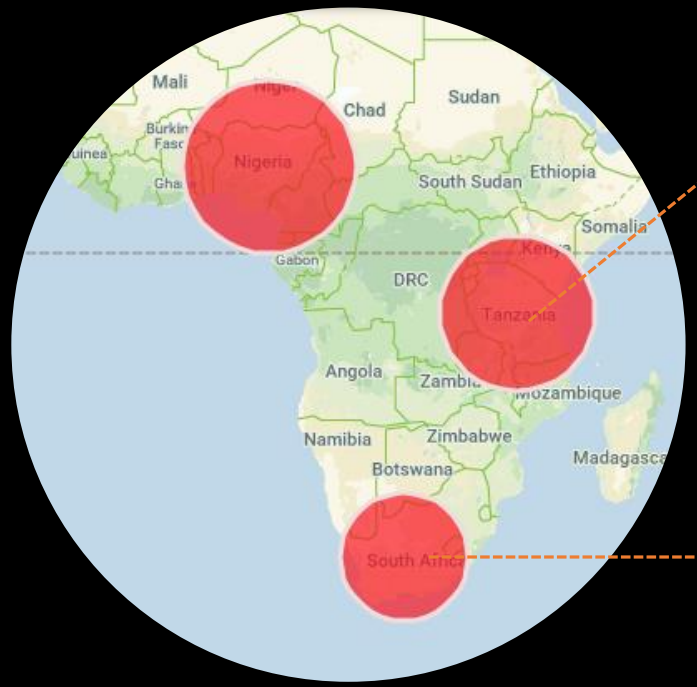
3. Leveraging transport systems to improve mobility and accessibility: the evidence


Bus Rapid Transit in
Dar es Salaam, Tanzania

LEVERAGING TRANSPORT SYSTEMS TO IMPROVE MOBILITY AND ACCESSIBILITY: *THE EVIDENCE*

Existing BRT systems in Africa: Cape Town, Johannesburg, Dar es Salaam, Lagos

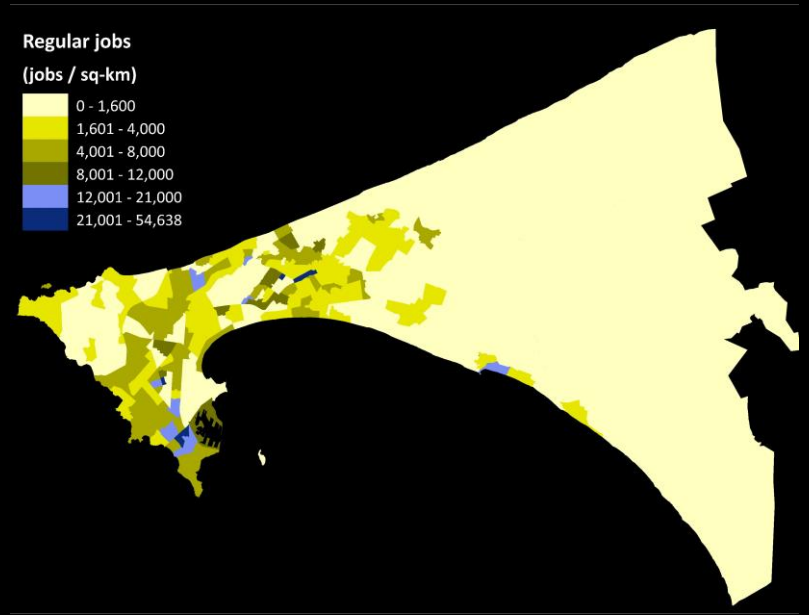


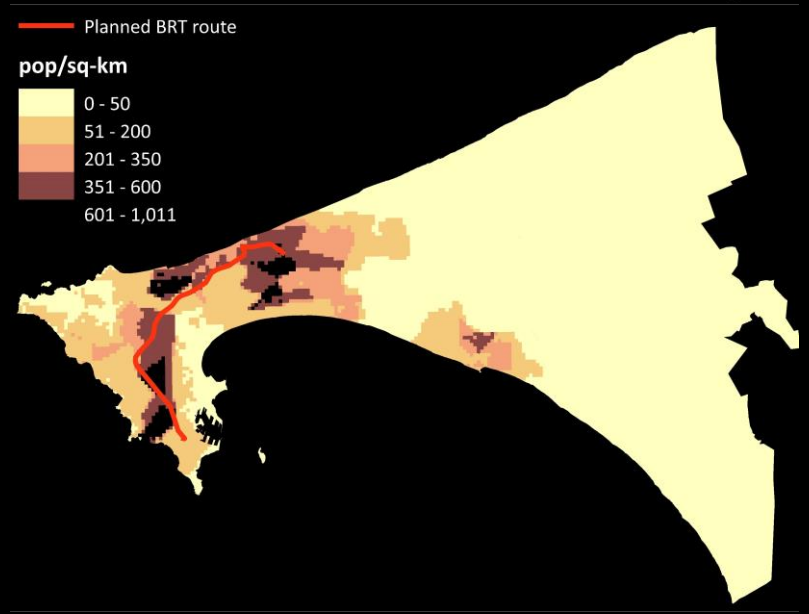


117 km
TOTAL LENGTH

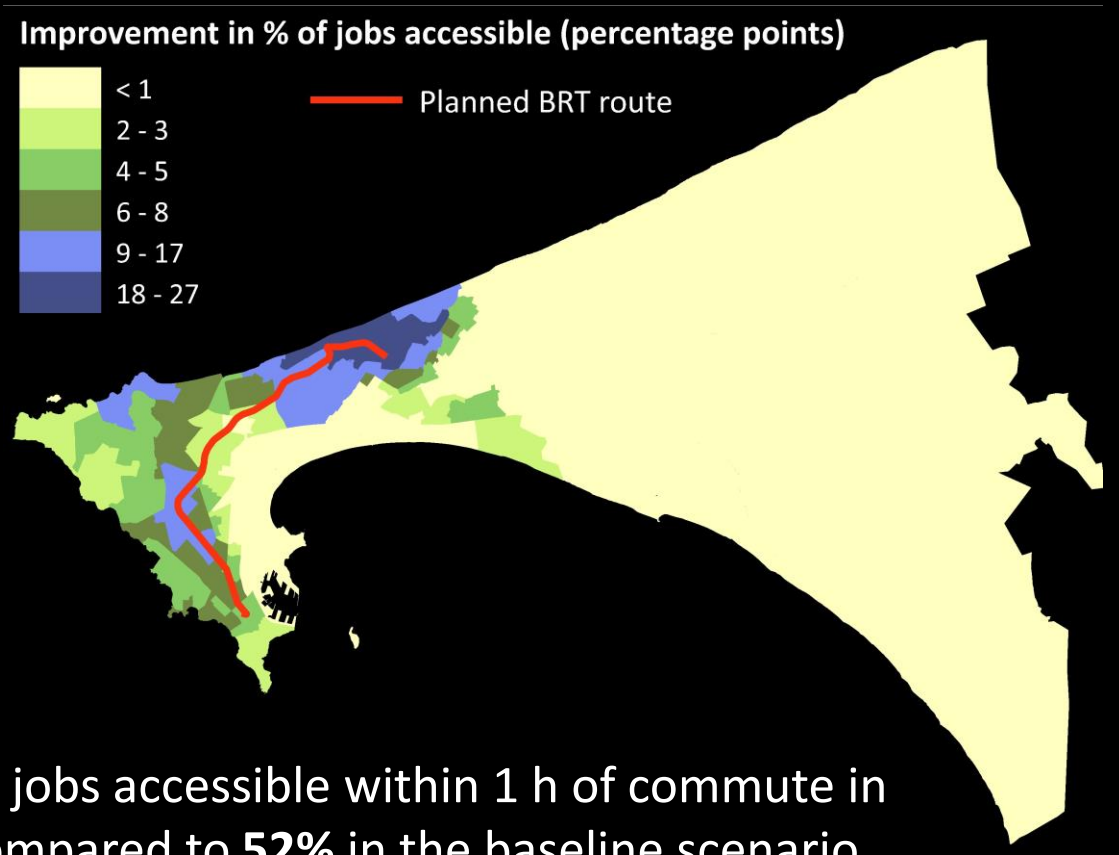
468,178
PASSENGERS PER DAY

LEVERAGING TRANSPORT SYSTEMS TO IMPROVE MOBILITY AND ACCESSIBILITY: *THE EVIDENCE*





Estimated impact of the planned Dakar BRT on employment accessibility



59% of the city's jobs accessible within 1 h of commute in public transit, compared to **52%** in the baseline scenario.

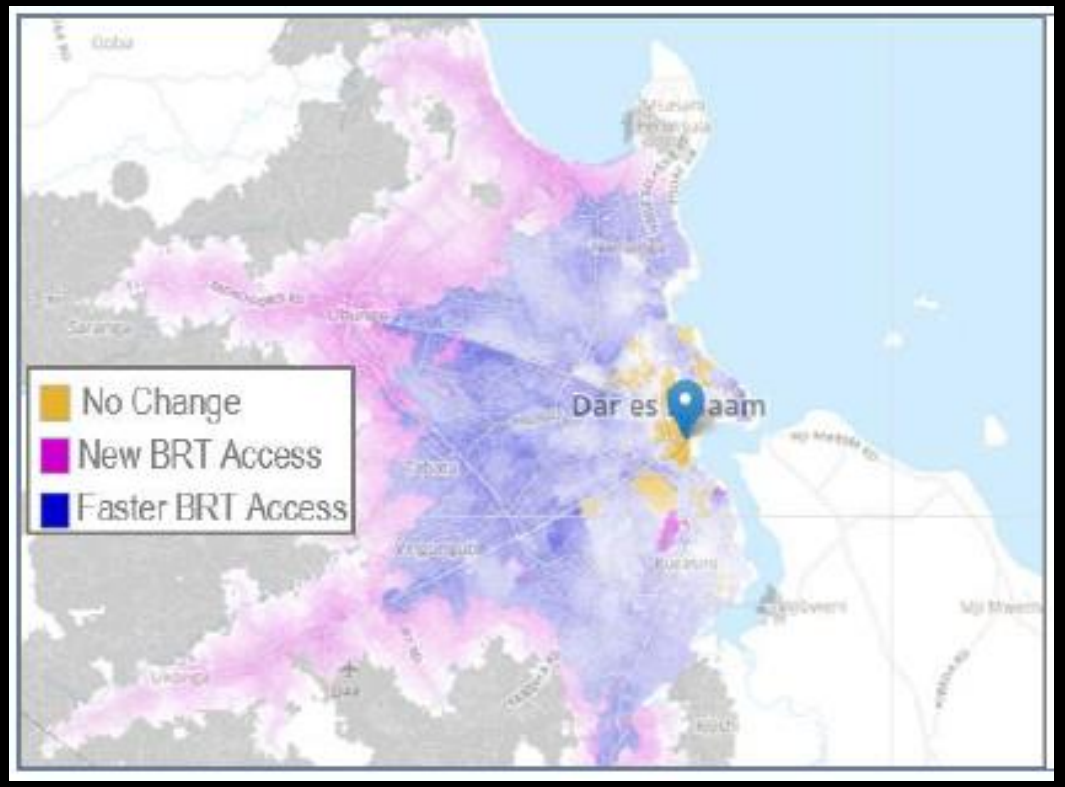
For the poor, the increase will be from **46%** to **51%**.

The share of people able to access the CBD in 1 hour will increase from **57%** to **69%**.

LEVERAGING TRANSPORT SYSTEMS TO IMPROVE MOBILITY AND ACCESSIBILITY: *THE EVIDENCE*

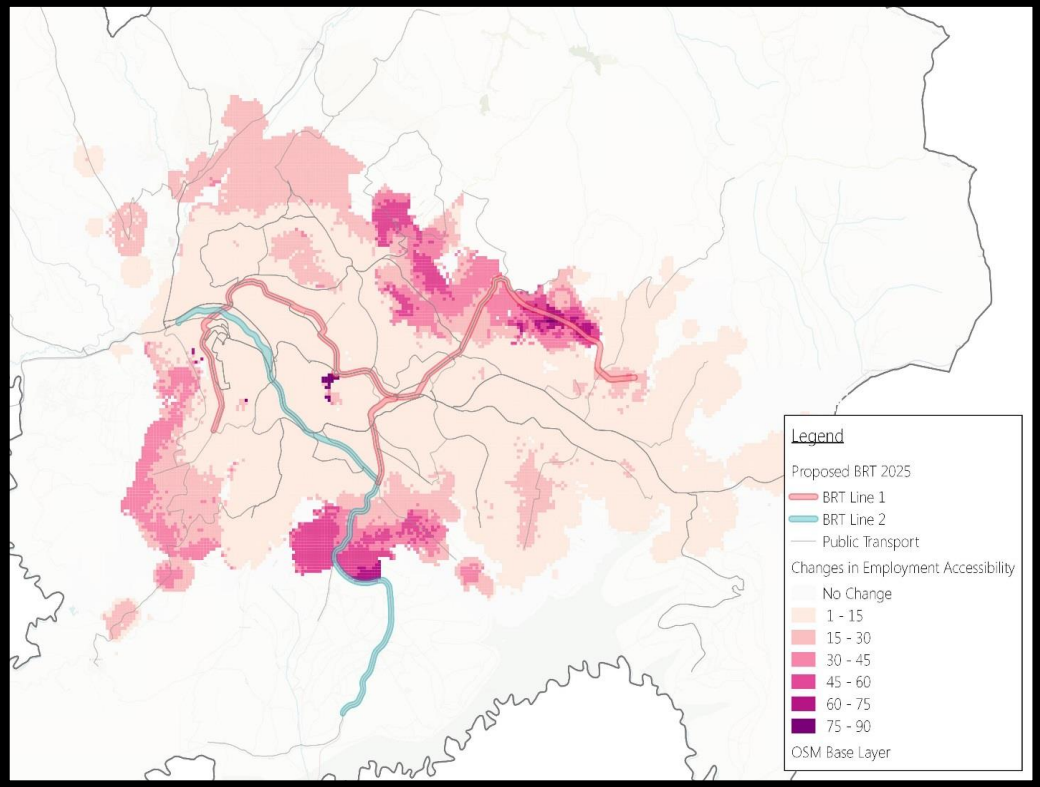
With the entire investment in the BRT network, the number of people who will be able to access the center of the city in 1 h using PT to increase from **42% to 73%.**

Estimated impact of the Dar es Salaam BRT on Accessibility to CBD



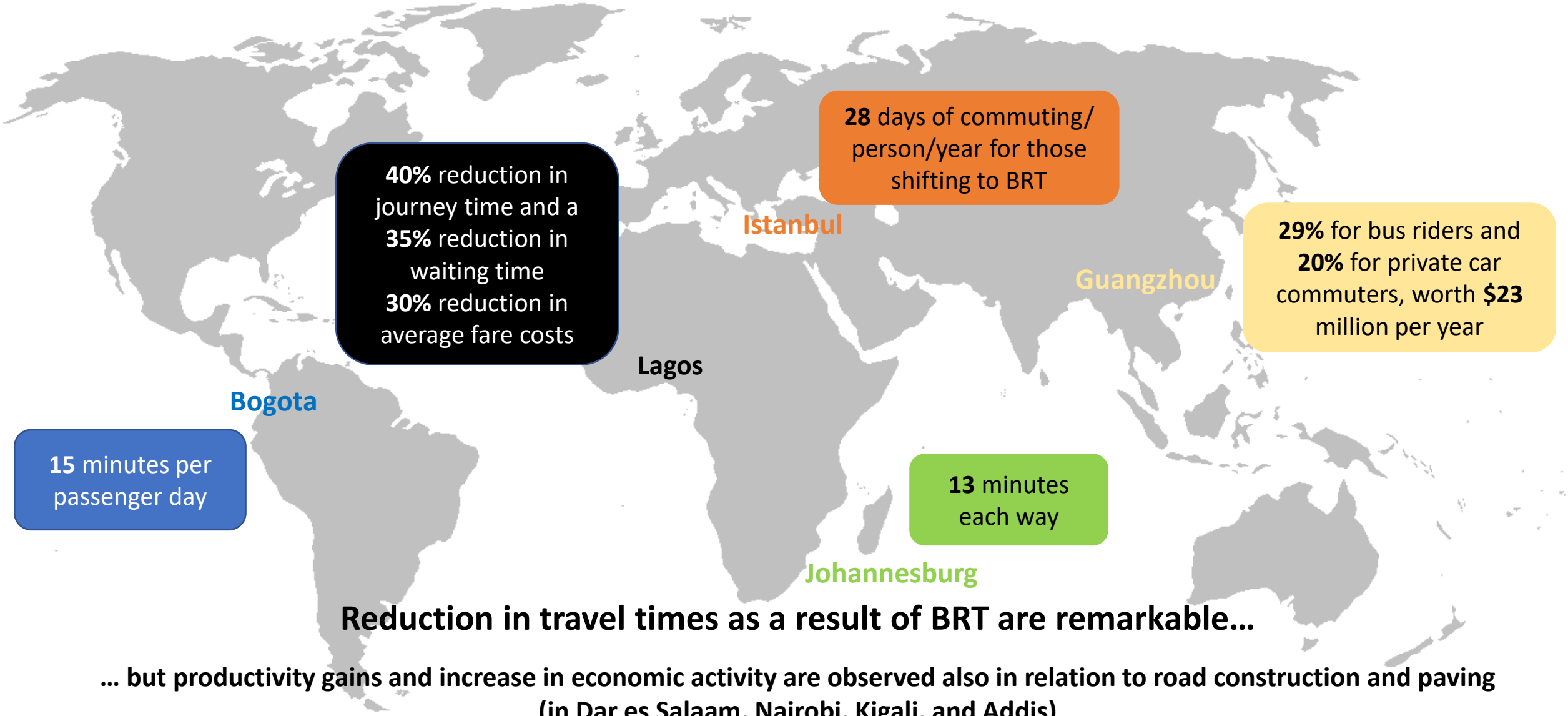
Implementation of a BRT in Kigali could increase accessibility to employment opportunities by as much as **75%** in some areas.

Estimated impact of a hypothetical BRT in Kigali on employment accessibility



Source: World Bank staff simulation through the OTPA tool developed by the World Bank.

LEVERAGING TRANSPORT SYSTEMS TO IMPROVE MOBILITY AND ACCESSIBILITY: *THE EVIDENCE*



Reduction in travel times as a result of BRT are remarkable…

… but productivity gains and increase in economic activity are observed also in relation to road construction and paving (in Dar es Salaam, Nairobi, Kigali, and Addis)

4. Integrated transport and land use planning to further improve accessibility and productivity

INTEGRATING TRANSPORT AND LAND USE PLANNING TO FURTHER IMPROVE ACCESSIBILITY AND PRODUCTIVITY

A significant increase in average job accessibility can be achieved when *complementary* policies are combined:

- Densification at high levels around transit stations ("TOD")
- Multimodality that includes non-motorized transport ("last mile")

Accessibility to Jobs in Zhengzhou in 45 minutes

a. Metro lines 1, 2, 3 and walking
12% of jobs accessible

b. Scenario a. + buses
28% of jobs accessible

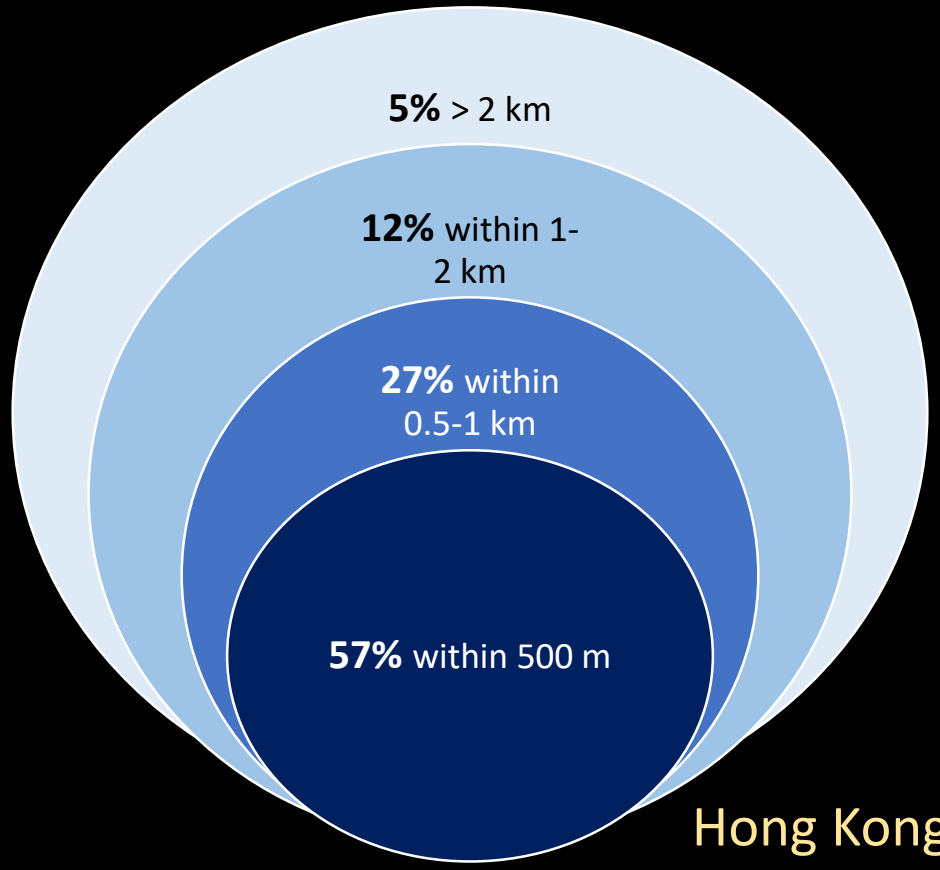
c. Scenario b. + TOD
39% of jobs accessible

d. Scenario c. + bicycle access
46% of jobs accessible

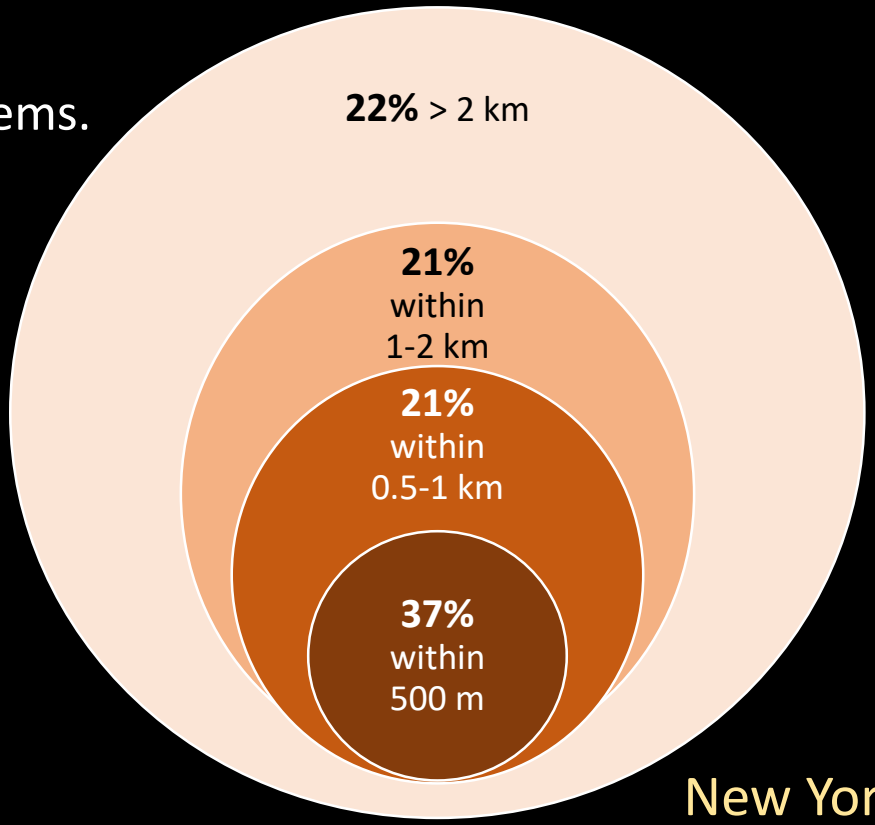
Source of Zhengzhou results: Li et al (2016)

INTEGRATING TRANSPORT AND LAND USE PLANNING TO FURTHER IMPROVE ACCESSIBILITY AND PRODUCTIVITY

In developed cities with high-quality transit, **> 1/3** of all jobs are within 500 m of a transit stop….
…. ensuring a high and predictable ridership base for their PT systems.



Hong Kong



New York

Source: WRI/ World Bank

INTEGRATING TRANSPORT AND LAND USE PLANNING TO FURTHER IMPROVE ACCESSIBILITY AND PRODUCTIVITY

TOD channels growth and market activity to areas well connected by transit.

When commercial and retail businesses are clustered around transit stations, they can benefit from **agglomeration economies**.

Local economic development:

TOD maximizes access to transit and reduces transport costs for residents, who can spend the money on local goods and services instead; this creates a positive cycle of reinvestment in the local economy.

Source: WRI/ World Bank

INTEGRATING TRANSPORT AND LAND USE PLANNING TO FURTHER IMPROVE ACCESSIBILITY AND PRODUCTIVITY

Area around the Gangding station, in Guangzhou, before and after construction of the BRT system

Source: Suzuki Cervero, and Luchi 2013

Affordability needs to be part of the equation.

Creation of transit corridors can connect low-income populations to employment and public services…

… but if affordable housing is not preserved or created, low-income populations may be displaced away from opportunities

Sequencing is also key: consider the relation of new transport systems and industrial zones.


Thank you