

TRANSPORTATION CHALLENGES WITHIN CITIES IN DEVELOPING COUNTRIES

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PROBLEM STATEMENT

Despite increased expenditures on improvement of urban transport systems, the current transportation problems in cities within developing countries continue to worsen due to poor execution of present transportation planning models and ideas, lack of supportive governance structures and ultimately, corruption within institutions within the transport sector. This puts cities within developing countries at a significant disadvantage with the lack of efficient and safe public transportation being a major cause of social exclusion.

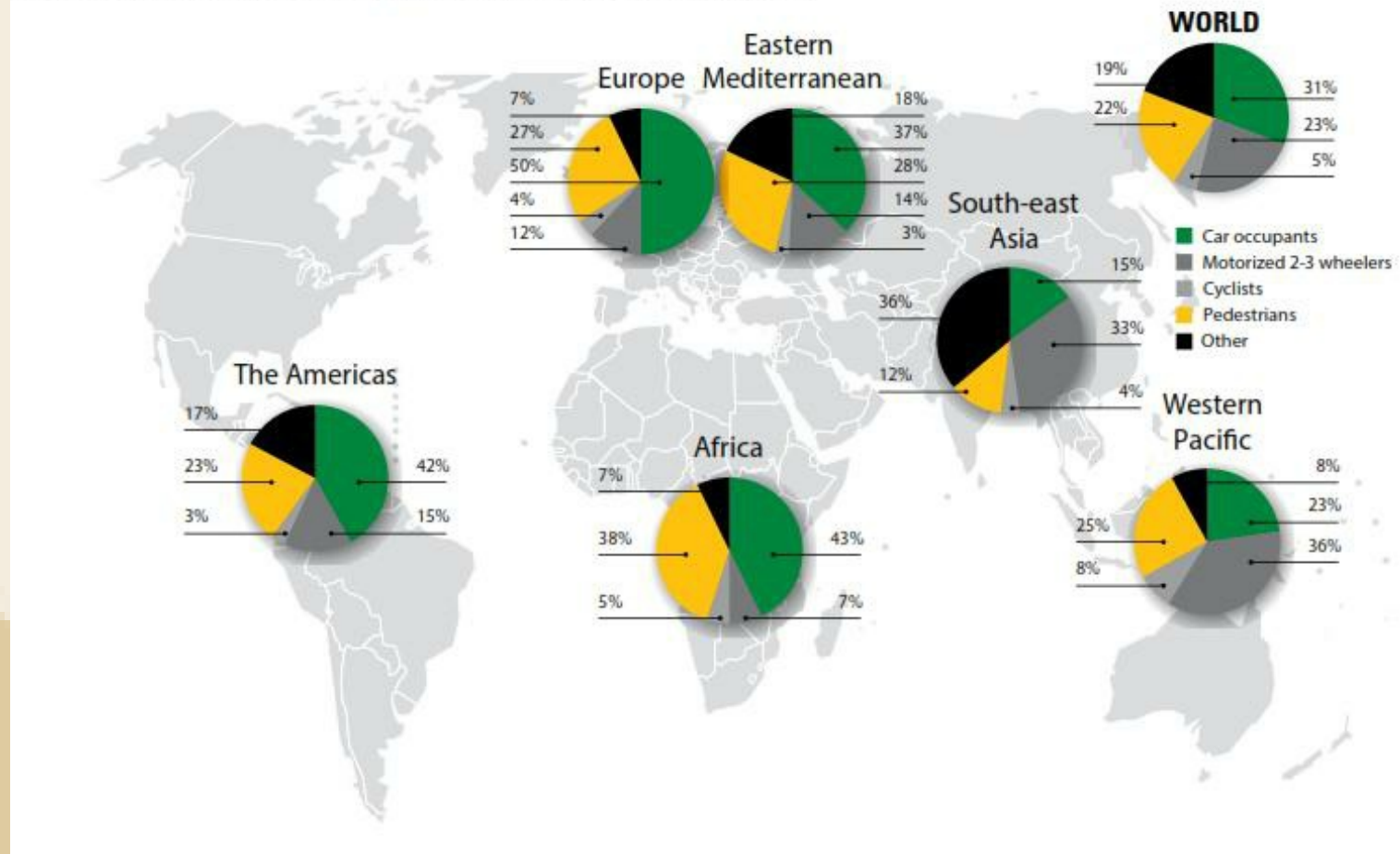
MAJOR CAUSES

- 1. POPULATION INCREASE, RAPID URBANIZATION.**
High dependence on Public Transportation in DC's
- 2. POOR TRANSPORTATION POLICIES & PLANNING.**
Negative socio-economic & environmental impacts.
- 3. UNREGULATED PARA-TRANSIT OPERATIONS**
Congestion, Pollution, Road Fatalities, Costly.
- 4. INSTITUTIONAL SECTOR-WIDE CHALLENGES**
Lack of participatory frameworks, Corruption.
- 5. LIMITED TECHNICAL CAPACITY & FINANCES**
Donor-Funded projects, Quick-Fix Solutions.

TRENDS & PROJECTIONS

Risk of Road Fatalities is highest in Developing Countries

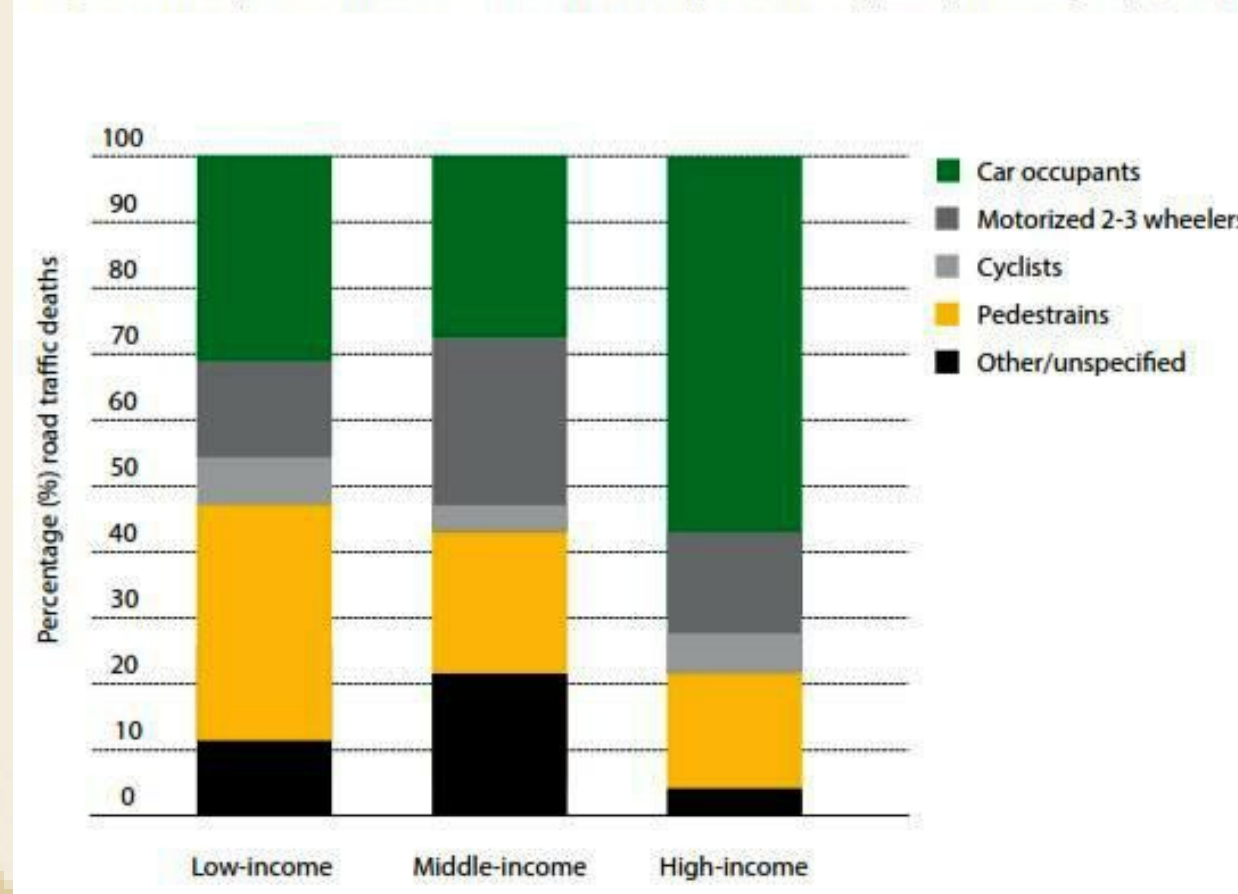
Figure 1: Road traffic deaths by type of road user, by WHO region (2010)



Source: World Health Organisation, Global Status Report on Road Safety 2013.

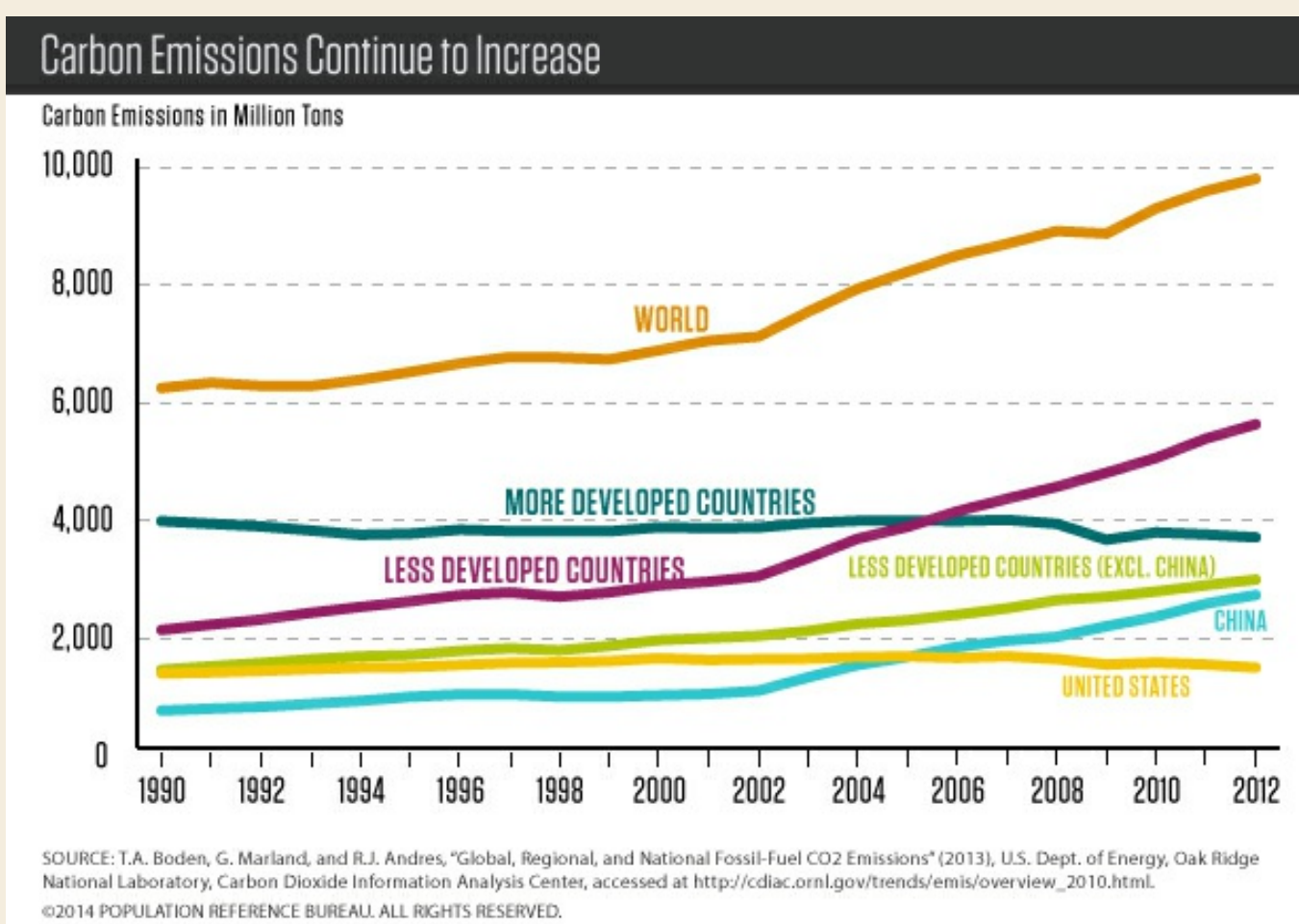
Proportion of pedestrians killed in relation to other road users is highest in Developing Countries

Figure 2: Proportion of road traffic deaths among road user types, by income group (2010)



Source: World Health Organisation, Global Status Report on Road Safety 2013.

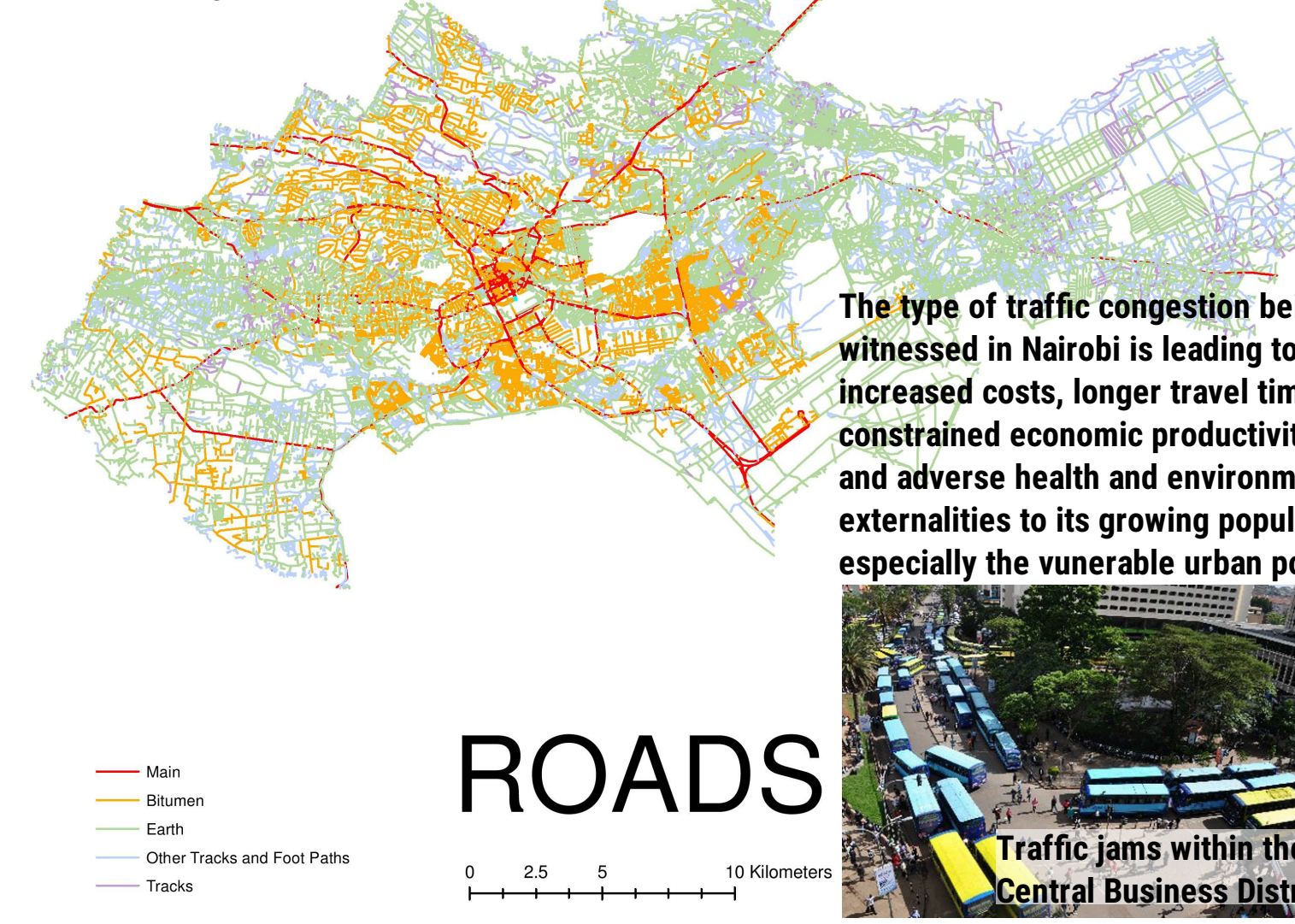
Traffic congestion contributing to climate change due to increase in GHG's emissions in Developing Countries



Source: T.A. Boden, G. Marland, and R.J. Andres, 'Global, Regional, and National Fossil Fuel CO2 Emissions' (2013), U.S. Dept. of Energy, Oak Ridge National Laboratory, Carbon Dioxide Information Analysis Center, accessed at http://cdiac.ornl.gov/trends/news/overview_2010.html.

CASE STUDY: NAIROBI, KENYA

Road network within Nairobi region



The type of traffic congestion being witnessed in Nairobi is leading to increased costs, longer travel times, constrained economic productivity, and adverse health and environmental externalities to its growing population especially the vulnerable urban poor.

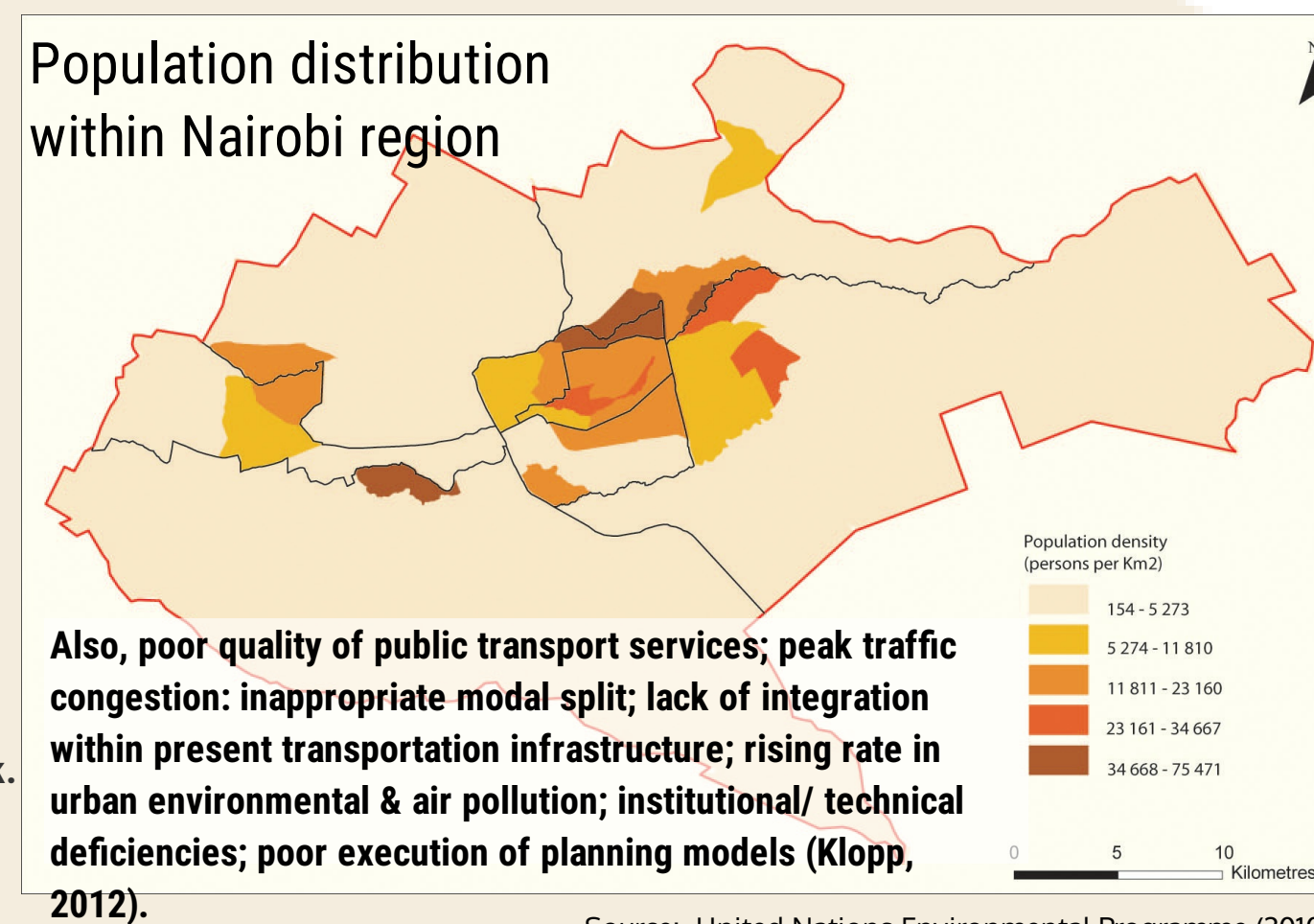


URBAN CHARACTERISTICS

- RAPID URBANIZATION RATE AT 4.3% : THIS IS DOUBLE THE GLOBAL AVERAGE OF 2%.
- POPULATION AT 4.2 MILLION PROJECTED TO REACH 14M BY 2030 (KIPPPA, 2015).
- REGIONAL ECONOMIC HUB: ACCOUNTS FOR 2/3 KENYA'S ECONOMIC OUTPUT.
- RISING POPULATION GROWTH DUE TO RURAL TO URBAN MIGRATION.
- 60% URBAN POPULATION LIVES ON LESS THAN 1 \$/DAY IN INFORMAL SETTLEMENTS.

FACTORS AFFECTING NAIROBI'S TRANSPORTATION PLANNING.

- i. The large and distorted role of external actors e.g. donors, development agencies.
- ii. High expenditure in infrastructure projects that lead to accumulation in foreign debt.
- iii. The fragmentation in planning institutions and policy with lack of a participatory framework.
- iv. The closed and top-down planning processes that neglect role of public participation.
- v. The absence of projects and policies serving the urban poor e.g. NMT infrastructure in slums.



Source: United Nations Environmental Programme (2010).

PLANNING ACTIVISM & SOCIAL JUSTICE IN NAIROBI

- 1. PUSH FOR MASS TRANSIT SYSTEMS**
Calls for installation of BRT and LRT systems in Nairobi.
- 2. LEVERAGING ROAD SAFETY CAMPAIGNS**
Increased calls for road safety compliance by PSV operators.
- 3. PROMOTING NMT INFRASTRUCTURE**
Highlighting need for provision of NMT needs of urban poor.
- 4. COMMUNITY-LED TRANSIT SOLUTIONS**
Urban communities linking up to address their accessibility.
- 5. USE OF OPEN-SOURCE DATA FOR MAPPING**
Nairobi Para-transit routes have been mapped for city commuters.
- 6. ACCIDENT REPORTING THROUGH SOCIAL MEDIA**
Triangulating accident hot-spots from social media reports.
- 7. INCORPORATING UNIVERSAL ACCESS**
Para-Transit Operators assisting persons with disability.
- 8. AFFORDABILITY IN COST FOR THE URBAN POOR**
Fare regulation by para-transit operators within routes.
- 9. PROVISION OF TOOLS FOR CITY PLANNING**
Para-Transit map and data provided for city planning.
- 10. TRANSIT APPLICATION DEVELOPMENT**
Mobile applications developed to provide route information to public.

Within Nairobi, these projects introduce planning activism as an informal role outside planning power structure are giving back citizens a right to the city and social justice.

SUCCESS STORY : DIGITAL MATATUS



'Matatus' are Kenya's primary means of public transportation. These 14-29 seater minivans are the para-transit option serving many Nairobi residents. However, they lack route schedules, change stops, have unregulated fares and challenge the planning of the city.

Digital Matatus, is a project that captured transit data off matatus within Nairobi, developed mobile routing applications and designed a new transit map for Nairobi.

HOW THEY DID IT



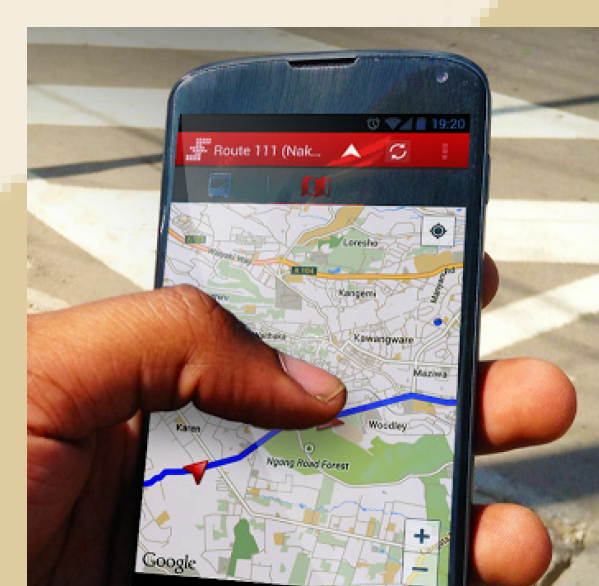
Students got transit data from riding matatus and recording stops, interviewing commuters and operators on fares & stops.



With the GPS collected data, workshops were held with the transit community to gain a better insight of the routes.



Using GTFS, a standard format for presenting transit information, a paper map was first released and adopted as the City's Matatu Map.

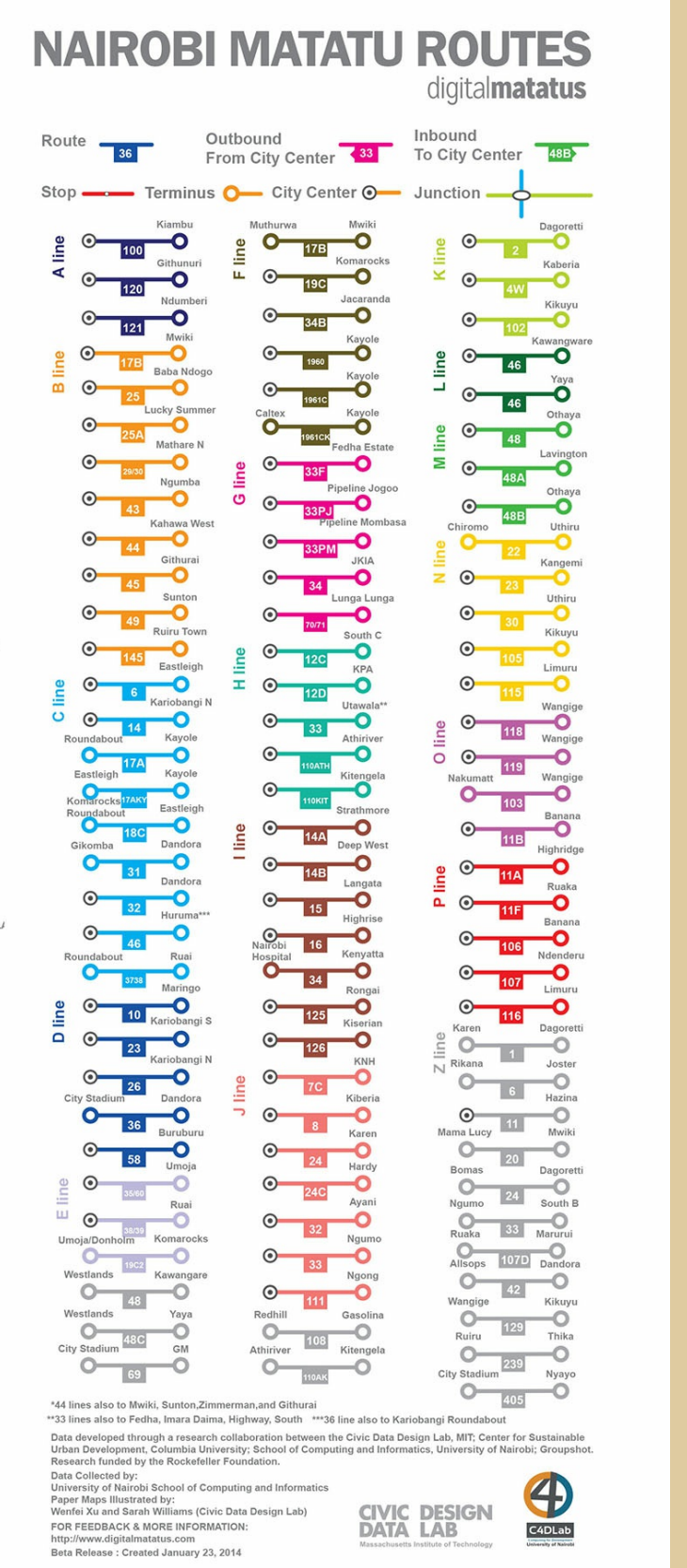
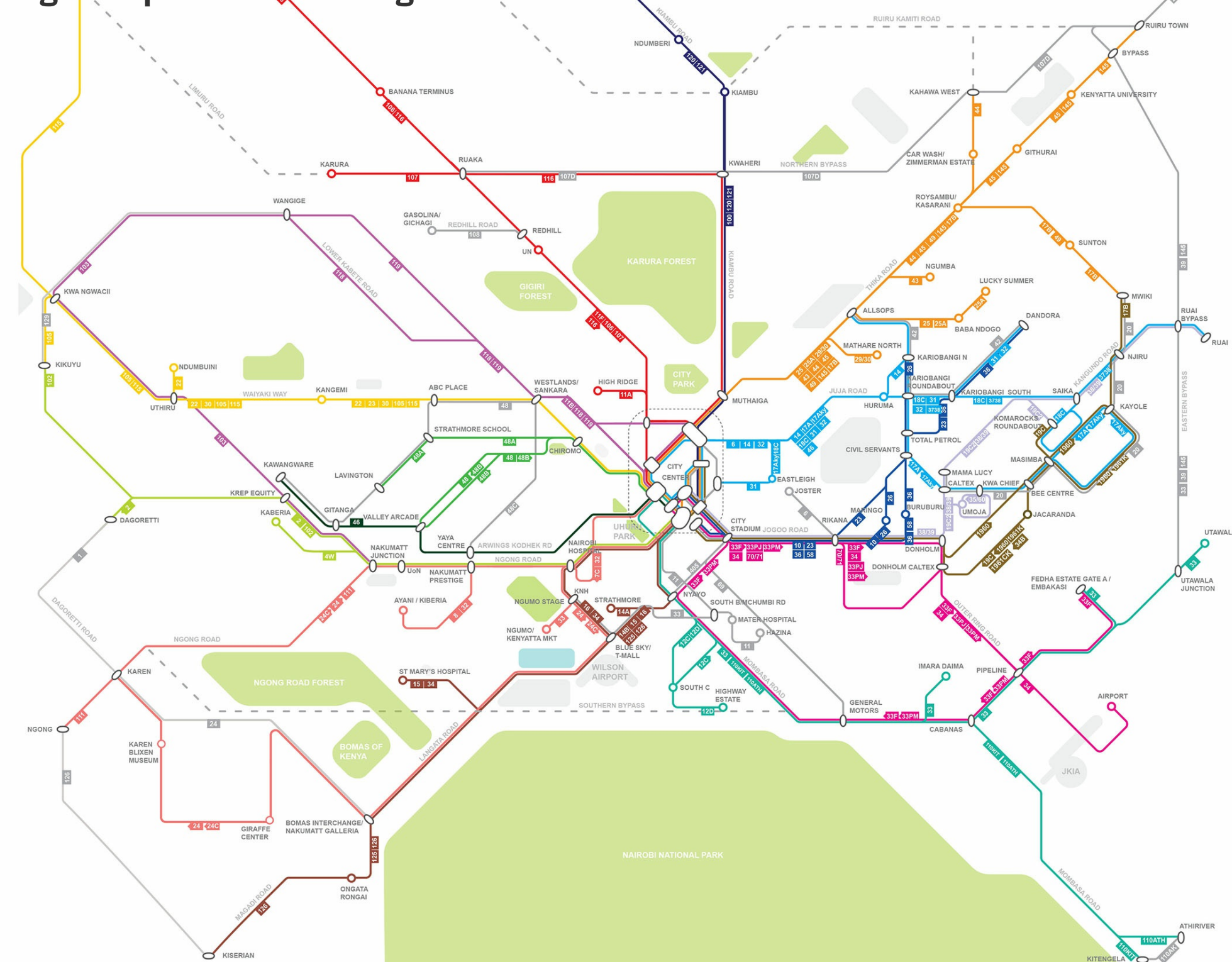


Technology community in Nairobi developed routing applications. Google Maps now shows Matatus in Nairobi!

USING LOCAL INNOVATION TO GIVE COMMUTERS ON NAIROBI'S PARA-TRANSITS A RIGHT TO THE CITY

Digital Matatus, provided data and first ever visualizations of Nairobi's informal para-transit system thus creating a new planning tool for the city. It will be used to guide the proposed BRT system for Nairobi, based on existing routes.

Rationalizing The Informal Para Transit Modes through mapping their informal transit networks as a proposal to solving transportation challenges in cities within DC's.



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CONCLUSION : THE CITIES WE NEED...

Recommendations for developing policies incorporating Sustainable Transport within cities in Developing Countries

- 1. PUSH AND PULL APPROACH IN TRANSPORTATION POLICY**
Encourage Public Transport & Discourage Private Car-Usage.
- 2. NON-MOTORIZED & PUBLIC TRANSPORT SYSTEM**
Enhance Public Transportation and NMT for ease of mobility
- 3. TRANSPORT DEMAND MANAGEMENT**
Reduce demand for travel & re-evaluate need for infrastructure.
- 4. TRANSIT ORIENTED DEVELOPMENT MEASURES**
Promote HD urban development along mass transit corridors.
- 5. AVOID, SHIFT, IMPROVE BANGKOK 2020 DECLARATION**
Improve road safety, deliver health benefits & reduce climate change
- 6. MOBILITY FOR URBAN POOR & DISADVANTAGED SOCIAL GROUPS**
Incorporating Universal Access, Affordability, Cross-Subsidisation.
- 7. NETWORKS & ORG. PROMOTING SUSTAINABLE URB. TRANSPORT**
E.g. The Partnership for Clean Fuels and Vehicles (PCFV)
- 8. CAPACITY BUILDING IN INSTITUTIONS & GOVERNANCE**
Analysis of infrastructure investments, transparency & equity in decision making.
- 9. INFRASTRUCTURE OPERATION & TRAFFIC MANAGEMENT**
E.g. Highway capacity analysis with long term forecasting
- 10. PUBLIC-PRIVATE PARTNERSHIPS**
B.O.T (Build Operate Transfer), or B.L.T (Build Lease Transfer) options



City Shuttle, a private transit operator recently carried out test drives within Nairobi's Central Business District with high capacity buses as the model above. The operator mentioned that this was an effort to initiate the de-congestion processes in the city. Source: The Business Daily - Nation Newspaper, August 2016

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