Designing Streets for safety, accessibility, and comfort in African cities

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You need to be brave...
How Nairobians Travel…

- Car & 2W: 18%
- Walk: 36%
- Matatu & bus: 45%
- Cycle: 4%
Nairobi is a Walking City – but pedestrians are the “forgotten species”
Nairobi’s Pedestrians at risk

Road accident fatalities in Nairobi, 2014

Source: Transportation Unit, Nairobi City County, 2014 (- In: Nairobi NMT Policy, 2015)
Prevent accidents through speed control

Keeping vehicle speed low is crucial for pedestrian/cycling safety

Source: ITDP
Slower Speed saves lives

Motor vehicle speeds above 30 km/h significantly increase the risk of fatalities

Source: ITDP

Chance of pedestrian death if hit by a motor vehicle

- 32 km/h: 5%
- 48 km/h: 45%
- 64 km/h: 85%

Motor vehicle speeds above 30 km/h significantly increase the risk of fatalities

Source: ITDP
All streets need slow zones

For narrow ROWs, the entire width should be designed as a slow zone.

On wider streets, a separate slow zone is necessary.
A guide for improved street design for African Cities

Streets for walking & cycling
Designing for safety, accessibility, and comfort in African cities
Footpaths
Footpath design: A zoning system

Clear demarcation of 3 zones:

1. **Pedestrian zone**: continuous space for walking (minimum 2 m)

2. **Frontage zone**: buffer between street-side activities and the pedestrian zone

3. **Furniture zone**: space for landscaping, furniture, lights, bus stops, signs and private property access ramps
Pedestrian zone
Furniture zone
Frontage zone
A zoning system

The absence of a pedestrian zone forces people to walk in the carriageway. Light poles, trees, and other elements should be placed in the furniture zone.

Footpaths designed per the zoning system provide uninterrupted walking space for pedestrians. The pedestrian zone should have at least 2 m of clear space.
Footpaths should be elevated above the carriageway, with a kerb height of no more than 15 cm.
Flat walking surfaces & guide tiles contribute to accessibility for people with disability

An uneven surface can make a footpath difficult to use.

Footpaths with proper surfacing can be used by pedestrians.

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Space for Street Vending can be provided outside the pedestrian zone.
Property entrances

- Ending the footpath with abrupt curbs renders the footpath inaccessible for many pedestrians.

- Lowering the entire footpath to the level of the carriageway is unacceptable as property entrances may become waterlogged.

- Where required to provide the access to private properties, vehicle ramps should be provided in the furniture zone.
Footpath should maintain a constant level, while vehicles should use ramps to reduce speed.
Crossings
Design Example: Crossing

Ramps to reduce vehicle speeds

Pedestrians remain at the level of the footpath

Safe At-Grade Crossings

Pedestrians remain at level of footpath
Ramps
At-Grade Crossings slow down vehicles and provide pedestrian safety

The absence of raised traffic-calmed crossings allows for vehicles to drive at high speeds, making it dangerous for the girls to cross the road.

Raised crossings compel vehicles to reduce their speed, thereby increasing pedestrian safety.
If possible, avoid: Foot overbridges & subways

• In an attempt to increase motor vehicle speeds, at-grade pedestrian crossings are frequently replaced by foot overbridges or subways

• But these facilities are often inaccessible and have drawbacks, such as:
  • Increase in travel time
  • Lack of universal access
  • Obstructions on footpaths
  • Prohibitive cost
  • Harassment and other crimes
  • Increased vehicle speeds
Preferred choice by pedestrians: At grade crossing

Foot overbridges often obstruct footpaths and cycle tracks, making them completely inaccessible.

Footbridges often represent a wasted investment. When presented with a choice, pedestrians prefer to cross at street level.
Crash data analysis for Nairobi

• Foot overbridges are not always preventing pedestrian deaths at crossing locations

Source: ITDP
Intersections
Safe Intersection Design

- direct, intuitive pedestrian crossings
- reflect pedestrian desire lines, avoid detours
- crossing distances should be minimised
- pedestrian refuges large enough to handle observed pedestrian volume

An intersection should be sized to minimize crossing distances for pedestrians and cyclists while accommodating left turns of a design vehicle (e.g., a 12 m bus).
Sharp corner forces cars to slow down

Source: ITDP
Turning Radius determines Vehicle Speed

Large turning radii, poorly aligned crossings, and the lack of a crossing on the slip lane make it difficult for pedestrians and cyclists to navigate the intersection.

Refuge islands offer a safe place for pedestrians to wait for a green signal and reduce the crossing distance. The placement of crossings should reflect pedestrian desire lines.
Transition Experiments: Open Streets/ Placemaking Events

• Transition experiments ... are short-term actions through which alternative street designs, mobility cultures, and practices are explored

• To activate streets as public spaces through low cost interventions (pop up activities)
UN-Habitat Project Example: Bucaramanga
Kampala – linkage to NMT plans of City
Thank you!