Share the Road

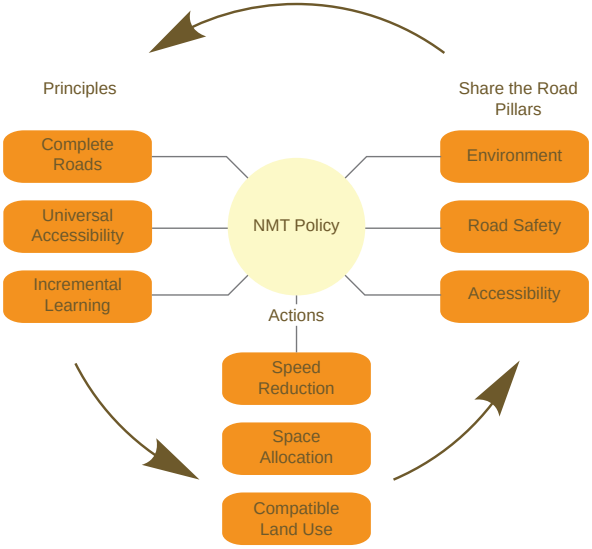
Design for walking and cycling

FIA Foundation
for the Automobile and Society

UNEP

1. Policy for Walking and Cycling

UNEP, through the Share the Road initiative, encourages interventions that ameliorate conditions for Non Motorised Transport (NMT) users. Improving the conditions for walking and cycling in African cities can be done through a comprehensive set of actions to allocate more space for pedestrian and cyclists, reduce vehicle speeds, and promote a compact and mixed land use.



The objectives of an NMT Policy can be:

- Improve safety, attractiveness and convenience of sustainable modes of transport;
- Promote cleaner, healthier and more inclusive mobility;
- Integrate NMT facilities as key elements of public transport; and
- Increase urban accessibility for all.

Share the Road programme supports the following key pillars:

Environment: Transport emissions are responsible for the majority of air pollution in urban areas. Health risks can be especially acute for pedestrians and cyclists.

Road Safety: Almost half of those who die in road traffic crashes are NMT vulnerable road users. Children are at particular risk.

Accessibility: Proximity, convenience and affordability facilitate urban mobility. Walking and cycling are the most accessible transport modes.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Share the Road first showcase project is in Nairobi

The Share the Road Design Guidelines will further enable UNEP to support and promote activities that integrate NMT facilities as essential elements of urban mobility; providing urban planners and transport engineers with design recommendations relevant to the African context. In this consolidated version, the main concepts discussed on the guidelines are highlighted.

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The Design Guidelines

- Supports policy makers and local authorities;
- Presents road engineers, designers and planners the use of NMT principles;
- Showcases similar case studies;
- Explains policies and objectives of implementing NMT;
- Suggests steps to promote, implement and advocate for NMT;
- Provides a variety of "Share the Road Key Recommendations".

The following principles of design aim at guiding new urban extensions, and retrofitting existing neighbourhoods. These are:

Universal Accessibility is the adaptability of urban infrastructure and facilities for the widest range users: small children, pregnant women, the visually impaired, people in wheelchairs, or carrying heavy loads.

A Complete Street is designed from edge to edge of the buildings, and includes all amenities for NMT, including benches, garbage bins, street lights and signage.

As the concept of non motorised infrastructure is fairly new in many cities, a process of Incremental Learning is inevitable. Particularly, when building new types of infrastructures. Pilot projects provide excellent opportunities to learn-by-doing and for testing on the ground, both for city builders and users.

Improvements on NMT facilities can reduce air pollution in urban areas

2. Pedestrian Facilities

Walking audits help identify which obstacles to eliminate for safer walking

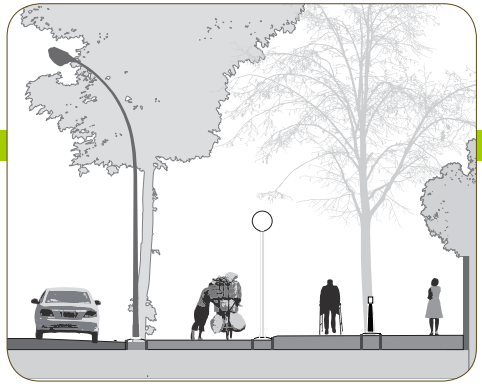
© Patricia Kim

Continuous sidewalks are required on all roads. A good sidewalk network can make walking trips direct, safe and comfortable. Sidewalks should be obstacle free at least 1.80m wide and 2.40m in height. No utility boxes, posts, trees or signage should be in this area.

Reducing obstacles is the most cost-effective measure to improve pedestrian accessibility. Obstacles include open drains, high kerbs, lack of ramps, piled-up garbage and street vendors. Urban barriers like highways or streams without footbridges can make walking trips impossible.

Provide pedestrian space and comfort

Climatic comfort and attractiveness will improve through the provision of the necessary space for moving; appealing urban landscape and vegetation; urban furniture- like benches and garbage bins. Protection from extreme weather includes incorporation of shade and shelter at bus stops. Drainage improves through the use of permeable materials, whereas foot path and bus stop surface should be made from matt and anti skid material.



Street illumination improves safety and increases economic activities

Improve crossing facilities

Proper crossing facilities reduce the risks of accidents. Good pedestrian crossings are well lit, have kerb ramps at every corner, and are present at intermittent distances (in urban settings, max. every 250m). Two-metres-wide medians provide enough space for a bicycle to stop, while traffic lights are recommended when crossing involves walking or cycling across more than two lanes.

Painted zebra crossings without speed reducing devices increase accident hazards, as they create a false sense of safety. On the contrary, raised zebra crossings reduce vehicles' speeds, allowing a continuous walking surface.

Small roundabouts with one lane approach and a median are more accessible for pedestrians.

Footbridges can be introduced when there is no feasible option for a crosswalk at the street level. When safety measures are provided, pedestrian tunnels offer more advantages in comparison to bridges, as they require a lower clearance height, and cyclists can make use of the impulse gained on the descent to move up the ascent.

Check list:

- Protect pedestrians and cyclists from fast moving vehicles, including motorcycles.
- Clear all obstacles from walkways.
- Build sidewalks on both sides of the street, preferably 3.0m wide.
- Link pedestrian facilities.
- Slow car speeds before approaching a crosswalk.
- Provide kerb ramps in every corner and crosswalk.
- Place crosswalks at least every 250m in urban areas.
- Consider the needs of the elderly, children and people in wheelchairs.
- Enforce laws, remove street vendors and parked cars from sidewalks.
- Preserve off-road footpaths by establishing land reserves.

3. Cycling Infrastructure

Make space to Share the Road with cyclists

Different types of cycleways exist. Whether it is a segregated track, a painted lane, a shared road or a green corridor, each of these typologies is suited for specific conditions like the availability of space, road condition, urban context, volume and speed of traffic.

Protection elements separate bicycle flows from traffic, increasing cycling safety. Special design details must be incorporated to prevent vehicles/motorcycles from encroaching these facilities, while providing a minimum of 1.20m of free area to allow bicycles to easily pass through.

Intersections are the most vulnerable, and consequently accident prone places. Special attention is needed to ensure that the cyclist remains visible to motorists, particularly when they are riding on a segregated track.

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Cycleway typologies:

	Cycle path	Cycle lane	Shared road	Green corridor
Characteristic	Segregated way Physical division from motor vehicles	Lane along existing road with pavement markings. Same direction as vehicles	Different modes sharing safely the same road space	Dedicated off-road cycleway
Types	One way (unidirectional) Two way (bidirectional)	Unprotected Semi-protected	Public transport and bicycles Vehicles and bicycles Bicycles and pedestrians	Recreational Connecting route
Vehicle flux	>20,000 cars/day	<20,000 cars/day	<3,000 cars/day	none
Car speed	>50km/h	30-50km/h	<30km/h	none
Special Needs	Special attention to intersections	Measures to pacify traffic	Pacified traffic, signage to inform drivers	Special attention to maintenance

Based on: Cycling typologies. Source: CITA (2008) Manual de Imagen Urbana del Municipio de Guadalajara

Start interventions based on prioritized criteria

Suggested criteria for establishing priorities:

- High speed roads;
- Arterial streets or boulevards;
- Crash data and hot spots with recurrent pedestrian and cyclist accidents;
- School walking zones;
- Main routes to transit stops;
- Neighbourhoods with low vehicle ownership;
- Urban and commercial centres;
- Pedestrian generators; and
- Missing links to complete the city-wide network.

A city-wide network vision is required to identify the most transited routes for retrofitting. Start with the routes already in use by urban cyclists, improve the connections to the transit hubs, and provide infrastructure to overcome urban barriers and to park safely at destinations.

Selection of the route should take into consideration the maximum allowed grade to remain attractive. Provision of shade and good drainage is will make it appealing.

Kerb radius and banking are part of the geometric design of a cycleway. The selection of adequate parameters according to the speed of design and surface conditions will facilitate and make cycling safer.

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Road Signage is the collection of displayed verbal, symbolic, tactical and pictorial itnformation, which clarifies the rights and roles of each user in the transport network. Road signage has an important function in traffic education and must be present in every road and cycling facility.

Check list:

- Design routes along topographic lines.
- Avoid grades above 6%.
- Provide adequate banking and kerb radii to design speed of cycleway.
- Separate cycle flux at difficult intersections and roundabouts.
- Remove all obstacles within the cycleway.
- Ensure space between bollards is at least 1.20m.
- Install cycling ramps at stairways.
- Include kerb ramps for cycleway continuity.
- Equip destinations with guarded parking places.
- Provide good drainage and sufficient shade on routes.
- Place horizontal and vertical signage.

4. Road Modification

Narrower lanes lower speeds and make space for walkways

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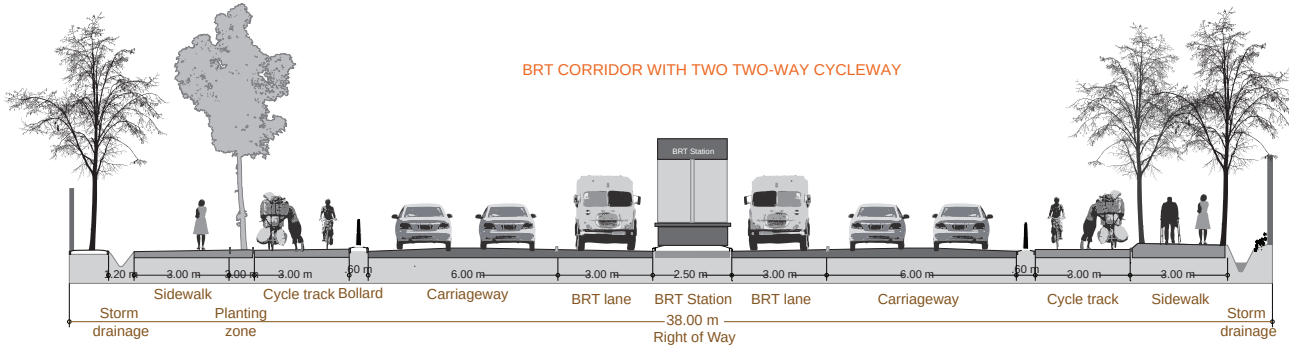
When available space is scarce within the road reserve, a better distribution and use of road space can help Share the Road more equitably. Bicycles can coexist with motor vehicles without additional investments in infrastructure, on streets with low volumes of traffic and speeds below 30km/h.

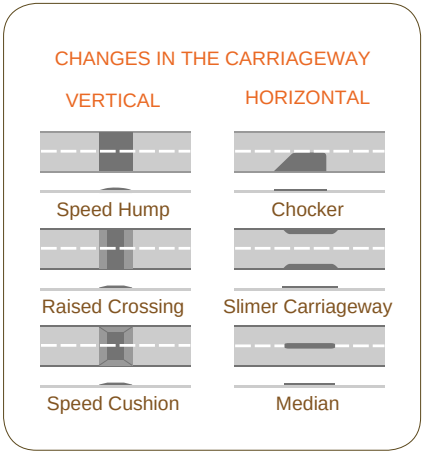
Reducing lane width can give space for building walkways. Moreover, savings from narrowing lanes can pay for non motorised facilities.

Complete streets are inclusive for all road users

A complete street is designed from edge to edge of the buildings, and incorporates infrastructure for walking and cycling, including urban furniture, vegetation, signage, street lighting and other facilities for the physically challenged.



Low speeds decreases the need for segregated facilities



Lower speeds can be achieved through traffic calming interventions that alter driver's behaviour and improve conditions for pedestrians and cyclists. Depending on the road typology, different traffic calming interventions can be applied.

Vertical modifications such as speed humps, raised zebra crossings or speed cushions reduce speeds; while horizontal modifications like the introduction of median islands, extension of kerbs or lane narrowing will result in gained space for non motorised transport modes.

Speed reduction can be achieved through the redesign of intersections to reduce kerb radii.

Safety assessments and cost-reduction strategies can guide interventions

Road Safety Assessments such as the iRap Star Rating, are based on road inspections and design risk factors for car occupants, pedestrians and cyclists. Inspected road features like intersection design, road cross-sections and markings, roadside hazards, footpaths and bicycle lanes helped develop star-rated maps and cost-effective, network-wide countermeasures to improve road safety in Kenya.

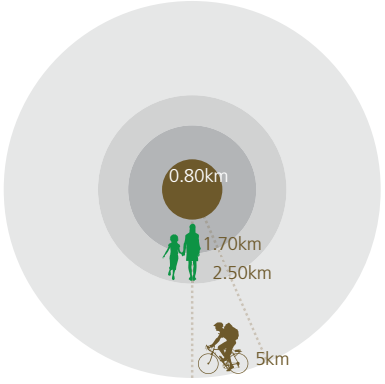
Combining projects into bigger packages is a cost-reduction strategy that eases implementation. Walkway and cycleway construction can be attached to projects such as road re-seals, water or sewer lines replacement, and placing of underground utilities.

5. Interface with Transit

People walk farther in attractive environments

The integration of different transport modes plays a significant role in improving urban mobility. Improving walking conditions can increase the catchment area of transit stops, by enabling pedestrians to walk farther and faster. Also, a cycleway network can be used as a feeder system, extending the catchment area up to ten kilometres.

Improve inter-modal connections by increasing the pedestrian facilities along transit nodes, where activity intensifies. The inclusion and regulation of bicycle taxis, rickshaws and handcarts as non motorised vehicles, can create a transport system suited to local needs.



Catchment area of transit stops within walking and cycling distances of 10, 20 and 30 minutes

Average Speed	Distance in 10min	Distance in 20min	Catchment Area (within 20min)
5km/h	0.80km	1.70km	8.70km^2
15km/h	2.50km	5 km	78.50km^2

Considerations for pedestrians and cyclists

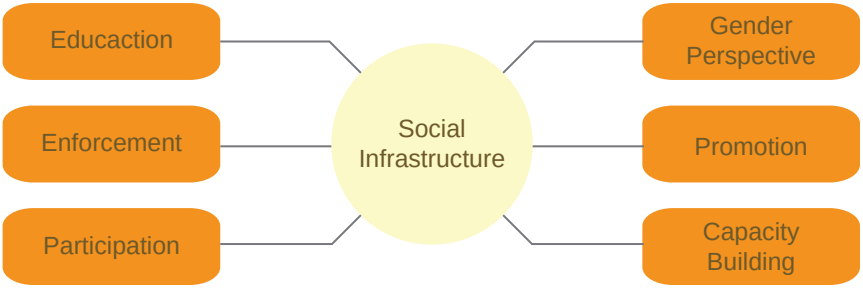
Transit stops with simple, direct and universal access, that do not interfere with the flows of non motorised modes improve intermodal travel. Combining bus bays with raised zebra crossings increase their usage and safety for users, ensuring buses stop at designated locations.

Bus shelters should have transparent sides, two-way access, increased visibility and safety. Benches should be placed outside pedestrian flows.

6. Social Infrastructure

What to consider?

Social infrastructure is the foundation that supports the functioning of public facilities, allowing them to become assets for society. Principles such as traffic education, law enforcement, participation, gender inclusion and capacity building have a profound effect on the development of infrastructure.



Consultation with stakeholders increases the chances of success

Encroachment of non motorised facilities may be a symptom of poor participation of certain users during the project definition. Effective enforcement of the traffic code and traffic education are interlinked.

Men and women choose transport modes differently. Transport planning and promotion campaigns with a gender perspective should address culturally appropriate mobility needs of women.

NMT promotion campaigns should focus on the physical, economic and cultural obstacles to walking and cycling. Advocacy through the civil society can change the mindset of users and decision makers.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