

# ETHIOPIA NON-MOTORISED TRANSPORT STRATEGY 2020-2029





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## FOREWORD



As Ethiopia is experiencing rapid economic and population growth, an inclusive transport system is essential for the country's development. Although a majority of Ethiopians walk and cycle, motorised transport is still favoured over non-motorised transport, leading to increasing congestion, worsening air quality, and poor access to employment and educational opportunities. This government is committed to adopting a more equitable approach that addresses the mobility needs of all citizens.

I am pleased to launch the Ethiopia Non-Motorised Transport (NMT) Strategy 2020-29, which outlines measures that the country will implement over the next ten years to improve mobility and facilitate inclusive urbanisation. The Government of Ethiopia will invest in walking, cycling, and public transport and manage private vehicle use. The Strategy emphasises the necessity of considering all residents, including women, children, and persons with disabilities, in mobility plans and budgets.

The Ministry of Transport, through the Federal Transport Authority (FTA), will play a leadership role in disseminating the NMT Strategy and monitoring progress over

time. In addition, FTA will drive coordination among the different implementing agencies by forming a national NMT Committee. Implementation will be driven by respective government institutions at the national and regional levels. Each city will prepare a Sustainable Mobility Plan (SMP) that complements the city's Master Plan. All projects funded by the national government involving construction of streets will need to incorporate high-quality NMT facilities, as guided by an urban street design manual.

The Ministry will follow an inclusive planning process, and we call on all residents to play an active role in the transformation of our streets and our public spaces. Sustainable transport not only will improve mobility for all Ethiopians, but also will lead to a climate-friendly, healthy, active and prosperous future for our nation.

Dagmawit Moges  
Ministry of Transport, FDRE





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# 1. INTRODUCTION

Non-motorised transport (NMT) offers basic and affordable mobility, access to public transport, and health benefits. Improving the convenience, comfort, and safety of walking and cycling reduces the demand for travel by personal motor vehicles, helping to alleviate the critical traffic challenges facing many cities. Despite a high level of reliance on NMT in Ethiopian cities and rural centres, many streets are not designed for people to walk or cycle. Evidence around the world has shown that street designs focused on vehicle movement rather than mobility for people undermine quality of life and the character of public spaces. Greater emphasis on walking, cycling, and public transport in the planning, design, construction, and management of transport systems is needed to achieve a more equitable allocation of road space.

The Federal Democratic Republic of Ethiopia has an estimated population of 99 million, a number that is expected to grow to 122 million by 2030.<sup>1</sup> Ethiopia has 21 percent of its population living in urban areas and over 21 million urban residents.<sup>2</sup> As Ethiopia's cities and rural centres grow, they face the challenge of serving growing demand for mobility, along with rising levels of traffic congestion, deaths from traffic crashes, and local air pollution.

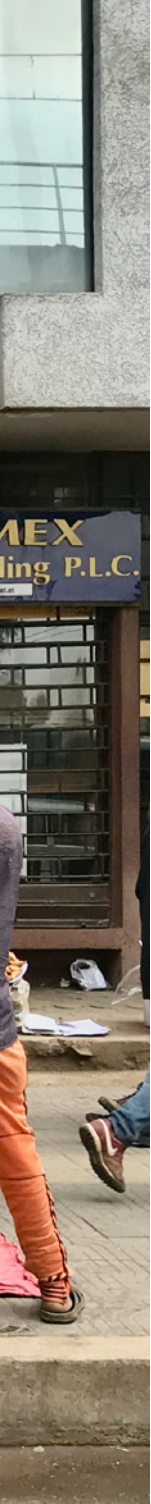
Non-motorised modes play a fundamental and unique role in the efficiency of transport systems, providing an affordable, low-carbon travel option. They also provide

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1 Central Statistical Agency. (2019, Apr). Population Projections for Ethiopia (2007-2037).

2 Ibid.

**Figure 1. Walking is a dominant mode of mobility in Ethiopian cities and rural centres: Addis Ababa.**





**Figure 2. Non-motorised transport provides affordable, low-carbon mobility and connectivity to public transport: Bahir Dar.**

essential connectivity to public transport. In Ethiopian cities and rural centres, the vast majority of residents rely on walking, cycling, and public transport. In order to improve the walking, and cycling environment, UN Environment and UN-Habitat appointed the Institute for Transportation and Development Policy (ITDP) to assist the Government of Ethiopia through the Ministry of Transport (MoT), Federal Transport Authority (FTA), Ethiopian Roads Authority (ERA), and Ministry of Urban Development and Construction (MUDC) in the preparation of the Non-Motorised Transport (NMT) Strategy 2020-2029 under the auspices of the Share the Road initiative.

This NMT Strategy has been developed following extensive consultations including stakeholder meetings and

capacity building workshops. Successful implementation of the NMT Strategy will require the joint efforts of concerned stakeholders to develop a transport system that provides safe, equitable access for all road users.



Figure 3. Many streets lack continuous walkways and safe facilities for cycling: Hawassa.





## 2. EMERGING MOBILITY CHALLENGES & OPPORTUNITIES

Ethiopian cities and rural centres vary greatly in terms of size, economy, and physical layout. Addis Ababa, Ethiopia's capital city, had a population of 2.7 million in 2007 according to the National Census and is expected to grow to 3.7 million by 2020.<sup>3</sup> In contrast, the second largest city in the country, Dire Dawa, is twelve times smaller than the capital city.<sup>4</sup> Although Ethiopia is one of the least urbanised countries in the Sub-Saharan African region, urbanisation is increasing rapidly.<sup>5</sup> Urban populations are expected to grow due to the transformation in the national economy, which is generating high levels of migration and growing demand for basic services in urban centres.<sup>6</sup>

Ethiopian cities and rural centres are characterised by widespread use of non-motorised modes. Walking is a dominant mode, particularly for low-income groups who travel mostly by foot.<sup>7</sup> In spite of a dramatic increase in motorisation in Addis Ababa, the largest share in the capital city among modes of transport is still walking (54

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3 World Bank. (2016, May 5). International Development Association Project Appraisal Document on a proposed credit in the amount of SDR 213 Million (US\$300 million equivalent) to the Federal Democratic Republic of Ethiopia for a Transport Systems Improvement Project.

4 World Bank. (2015). Implementation Completion and Results Report on a credit in the amount of SDR 188.5 million to the Federal Democratic Republic of Ethiopia for the Urban Local Government Development Project. Social, Urban, Rural and Resilience Global Practice (GSURR). Country Depart 3, AFCE3. Africa Region.

5 World Bank. (2016).

6 Kassahun M. and Bishu S. (No date). The governance of Addis Ababa City Turn Around Projects: Addis Ababa Light Rail Transit and Housing. Addis Ababa.

7 Ibid.

**Figure 4. Despite high reliance on NMT, many streets are not designed for walking or cycling: Addis Ababa.**

percent), followed by public transport (31 percent).

Private cars make up the smallest share at 15 percent.<sup>8</sup> In many small towns and secondary cities, such as Bahir Dar, Hawassa, Nazret and Dire Dawa, cycling makes up a large percentage of trips.<sup>9</sup> For instance, in Bahir Dar and Hawassa, cycling accounts for 90 percent and 88 percent of vehicle trips, respectively.<sup>10</sup>

In spite of the widespread use of non-motorised modes, transport planning and the provision of infrastructure in Ethiopian cities has been largely car-centred, underestimating the importance of NMT.<sup>11</sup> Many streets lack continuous walkways and safe facilities for cycling. The tendency to favour motorised modes stems from a number of factors. The educational curriculum in civil engineering and transport planning programs in the country has historically emphasised highway design and construction and has placed less emphasis on NMT. In addition, the design process typically involves civil engineering experts but not necessarily disciplines such as urban planning and architecture. At the same time, opportunities exist in the widespread availability of bicycles through local rental services. The following sections outline the key challenges and opportunities for NMT in Ethiopian cities.

## **2.1. LACK OF A COMPLETE PEDESTRIAN REALM**

Walking is the most efficient, inclusive, and affordable mode of travel. For walking to be enjoyable and appealing, cities must provide safe, accessible, and complete

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<sup>8</sup> World Bank. (2016, May 5).

<sup>9</sup> Nuriye G., et al. (2014). Trends and factors affecting the use of non-motorized modes of transportation in Hawassa City, Ethiopia. *Civil and Environmental Research*. Vol 6 (5), pp. 103-113.

<sup>10</sup> Dagneb B. (2012). The importance and challenges of low-cost mobility modes for sustained socioeconomic and environmental development in cities of Africa: Comparative analysis of bicycle transport in Bahir Dar and Hawassa cities in Ethiopia. Conference CODATU XV. The role of urban mobility in (re)shaping cities. Addis Ababa. Ethiopia.

<sup>11</sup> World Bank. (2016).



Figure 5. A street without footpaths: Hawassa.

infrastructure for all users in a vibrant and comfort urban space.<sup>12</sup> Main roads in many Ethiopian cities and some rural centres have basic footpaths. Yet streets in outer areas often have a lower-quality walking environment. On many streets, walkways are absent or inadequately sized. Universal access features such as kerb ramps and tactile paving have been introduced along some streets but are not yet widespread. Moreover, parking encroachments and poorly placed street furniture often push pedestrians to walk on the road.

Pedestrian crossings are critical to the safe mobility of pedestrians. In Ethiopian cities and rural centres, streets typically lack well-designed pedestrian crossings. Where crossings exist, they are usually indicated only with paint and lack signals or traffic calming measures to manage vehicle speeds. The distance between formal crossings

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<sup>12</sup> TOD Standard. (2018). Retrieved from [www.itdp.org](http://www.itdp.org).

is very long, contributing to the tendency of pedestrians to cross at any point along the road. Crossing points are poorly coordinated with points of attraction and pedestrian desire lines.

## **2.2. ABSENCE OF CYCLING FACILITIES**

Ethiopian cities such as Adama, Bahir Dar, and Dire Dawa have moderate climates and gentle topography, making cycling a popular mode of transport. Yet cyclists share travel lanes with motor vehicles and traffic safety challenges are widespread. The lack of designated infrastructure for cycling has created significant safety issues and concerns on the part of users, which have contributed to



Figure 6. A cyclist riding in mixed traffic: Hawassa.





Figure 7. A bicycle rental: Bahir Dar.

declining cycling rates in recent years. A clear example is Hawassa, where trips have shifted from cycling to motor-cycles and cars.

## 2.3. BICYCLE RENTALS

The widespread availability of bicycles through small-scale rental services found in cities across the country represents an opportunity to promote cycling. Bicycle rental operations are present in several cities in the country. Typical customers include young people who use the service for recreation, workers using the bikes for short errands, and tourists visiting historical places. Fare levels are determined through negotiation with the bike owner. Typical fares range from ETB 20 to 40 for one hour of use. Security is managed through personal rapport between the owners and users and sometimes through the deposit of identification documents.



Figure 8. The absence of effective parking management results in encroachments on footpaths: Addis Ababa.

## 2.4. POORLY MANAGED ON-STREET PARKING

The availability of parking is a key determinant in travel behaviour. Readily accessible free parking at origins and destinations influences the choice of mode of travel. In Ethiopian cities, on-street parking is typically cheap or free. In Addis Ababa, parking fees range from ETB 4-6 in most commercial districts to ETB 20-30 in areas with higher demand, such as Bole. Due to poor enforcement of on-street parking rules, vehicles are often found parking on pedestrian walkways, thereby forcing pedestrians to walk in the carriageway.

## 2.5. ROAD SAFETY

Despite having a very low car ownership level—a total of 1,138,365 vehicles in 2019—Ethiopia has a relatively high

rate of crashes. According to the World Health Organisation (WHO), road traffic deaths in Ethiopia are estimated at 27,326, amounting to a death rate of 27 per 100,000 population.<sup>13</sup> The main causes of crashes include poor road design, negligence of drivers, and technical faults of vehicles. Vulnerable road users, including pedestrian and cyclists, are the most affected and pay a heavy toll in terms of deaths and injuries. Pedestrians account for the highest proportion of road fatalities in Ethiopia or 37 percent of all deaths.<sup>14</sup>

13 World Health Organisation. (2018). Global Status Report on Road Safety 2018. Retrieved from [https://www.who.int/violence\\_injury\\_prevention/road\\_safety\\_status/2018/en/](https://www.who.int/violence_injury_prevention/road_safety_status/2018/en/)

14 Ibid.

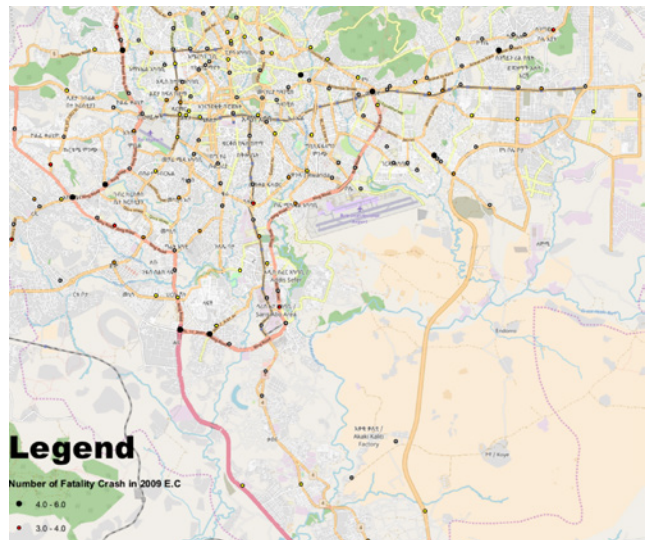


Figure 9. Locations of crashes in Addis Ababa.





## 3. GUIDING PRINCIPLES

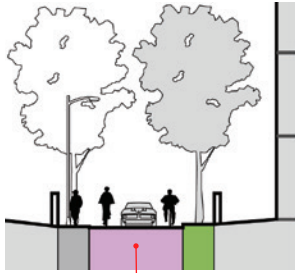
### 3.1. SAFETY

Making non-motorised modes of transport viable and convenient requires rebalancing street space so that it caters to all modes of transport. The physical design of streets and the provision of sidewalks, crossings, and other infrastructure is crucial to creating a high-quality NMT environment. Accommodating NMT involves two basic techniques:

- **Systematic traffic calming on smaller streets** to reduce motor vehicle speeds and provide safe places for the mixing of pedestrians and other modes (shared lanes).
- **Pedestrian and cycle infrastructure that is physically separated from motor vehicle traffic on larger streets**, paired with traffic calming or traffic control to facilitate safe crossings. Pedestrian footpaths should provide clear space for walking, with other elements positioned in a strategic manner. These elements include paving, landscape planting, street lighting, street furniture, public facilities, underground utility access points, and other sidewalk amenities. There are also features that make streets more accessible, including curb ramps, tactile paving, and traffic signs. Similarly, dedicated cycle tracks should be provided, separate from the mixed traffic carriageway. Large streets require signalisation or traffic calming at crossings and intersections to enable pedestrians and cyclists to cross the street safely.

Safe street design also aims to encourage moderate vehicle speeds. Street designs that reduce motor vehicle speeds can significantly improve pedestrian safety since the likelihood of pedestrian death in a traffic collision

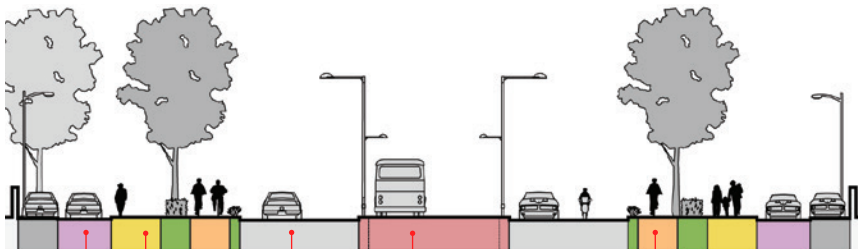
Figure 10. Major streets need dedicated space for walking and cycling to ensure safety: Hawassa.



Shared lane



Slow zone



Shared lane

Footpath

Carriageway

Bus rapid transit

Cycle track

Slower



Faster



Slower



Shared zone



Mobility zone



Shared zone

Figure 11. Smaller streets can function as shared spaces where pedestrians walk together with slow-moving vehicles (top). On larger streets with heavy vehicles and faster speeds, separate space for pedestrians and cycles is needed (bottom).

increases dramatically when motor vehicle speeds rise above 30 km/h. A pedestrian has a 90 percent chance of surviving being hit by a car travelling less than 30 km/h, but only a 50 percent chance of surviving impacts at 45 km/h.<sup>15</sup>

A high-quality NMT environment recognises city streets not just as spaces for the movement of vehicles but also as inter-connected spaces where people walk, talk, cycle, shop, and perform the multitude of functions that are critical to the health of cities. Streets are the most valuable assets in any city and maximising their potential requires a “complete” approach to street planning and design. This can be achieved by applying a set of well-defined principles and standards that target street design, building design, and network design.

15 WHO. (2013). Pedestrian Safety: A Road Safety Manual for Decision-Makers and Practitioners.

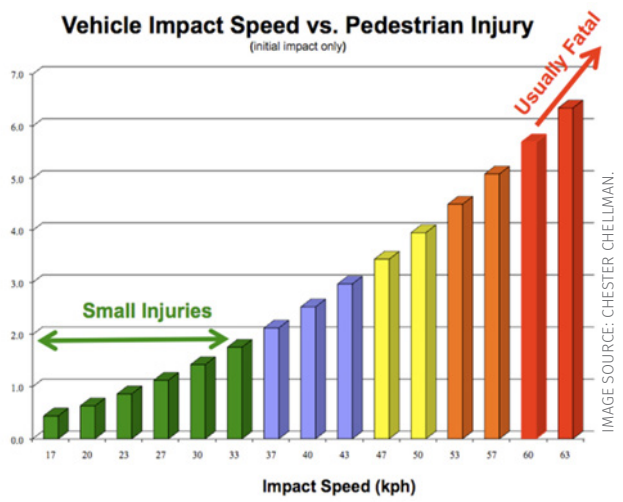


Figure 12. The chance of pedestrian death increases dramatically when motor vehicle speeds rise above 30 km/h.

## **3.2. UNIVERSAL ACCESS**

All Ethiopian citizens have the right to safe and efficient transport services and infrastructure. The NMT Strategy will ensure universal access in provision of transport infrastructure and services. Universal access is the concept of designing transport services and environments that as many people as possible can use, regardless of age or ability. Streets designed according to universal access principles accommodate assistive devices for particular groups of persons with disabilities.

An accessible environment has ample, well connected pedestrian facilities with unobstructed space for movement, consistent pavement surfaces, appropriately sloped ramps, and safe pedestrian crossings. Multiple elements of the streetscape must be designed in an integrated manner in order for the space to work. People with small children, people carrying heavy shopping or luggage, people with temporary accident injuries, and older people can all benefit from an inclusive transport environment.

## **3.3. EQUITABLE ALLOCATION OF RESOURCES**

The Government will ensure equitable allocation of resources to the various transport modes and equitable access to efficient and safe transport services. Transport investments will prioritise modes used by lower income groups, including walking, cycling, and public transport, and road space will be allocated equitably to facilitate safe access through these modes. The Strategy also seeks to ensure gender equity by supporting the development of an integrated and safe transport system that provides access to education, work, health care, cultural, and other important activities that are crucial to women's participation in the society. Of particular concern in the context of street design is the level of safety and security that female users experience. Inclusive designs help to improve



the experiences of women and girls, making it easy to walk, cycle, or use public transport.

### **3.4. ENVIRONMENTAL PROTECTION & ENERGY CONSERVATION**

Ethiopia's Climate Resilient Transport Sector Strategy calls for "an affordable, integrated, safe, responsive and sustainable transport system that enhances the environmental, economic, social and cultural well-being of Ethiopia's population."<sup>16</sup> The Government of Ethiopia aims to reduce greenhouse gas emissions by 255 Mt CO<sub>2</sub>e or 64 percent, compared to business-as-usual emissions by 2030.<sup>17</sup> The reduction includes 10 Mt CO<sub>2</sub>e from the transport sector. The promotion of NMT and efficient public transport are key means of mitigating greenhouse gas emissions and reducing energy use.

### **3.5. COLLABORATION AND PUBLIC PARTICIPATION**

Provision of transport services and infrastructure is complex task that calls for concerted efforts and participation of all relevant stakeholders. Development and implementation of the NMT Strategy will be achieved through close collaboration among government departments, civil society, the private sector, and other partners.

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<sup>16</sup> Ministry of Transport. (2017). Ethiopia's Climate Resilient Transport Sector Strategy.

<sup>17</sup> Federal Democratic Republic of Ethiopia. (2015). Intended Nationally Determined Contribution (INDC) of the Federal Democratic Republic of Ethiopia.





## 4. VISION AND GOALS

The Government of Ethiopia has adopted the following vision for the walking and cycling networks in the country:

Ethiopian cities and rural centres will provide safe, efficient, and accessible walking and cycling networks to improve mobility for all residents, enhance access to opportunities, and facilitate inclusive urbanisation.

Investment in high-quality NMT facilities is expected to yield numerous benefits, including improved convenience for pedestrians; a reduction in fatalities and injuries from traffic collisions; improved economic vitality; cost savings for the government; improved public health; greater social cohesion; enhanced security in the public realm; foreign exchange savings due to reduced fuel use and vehicle imports; and reduced emissions of local air pollution and greenhouse gases.

The table below summarises the key goals that the Government aims to achieve over the next ten years. To achieve these goals, the Government of Ethiopia will invest in walking, cycling, and public transport and manage private vehicle use. The implementation targets below will apply to the eleven secondary cities in the country. For Addis Ababa, the implementation targets are outlined in the Addis Ababa NMT Strategy 2020-2029.

**Figure 13. Investment in high-quality NMT facilities will improve convenience for pedestrians: Bahir Dar.**

**Table 1. Ten-year goals for an improved NMT environment in Ethiopian cities and rural centres.**

Goal	Contributing Actions	10-Year targets
Increased mode share of walking, cycling, and public transport	<ul style="list-style-type: none"> <li>Investments in high-quality walking and cycling facilities</li> <li>Improved last-mile connectivity to public transport</li> </ul>	<ul style="list-style-type: none"> <li>Public transport and paratransit constitute 80% of all motorised trips</li> <li>Modal share of NMT remains at or above 60% of trips</li> <li>Women constitute 50% of cyclists</li> </ul>
Reduction in the use of personal motor vehicles (PMV)	<ul style="list-style-type: none"> <li>Measures to manage/control private vehicle use</li> <li>Improved attractiveness of sustainable modes</li> </ul>	<ul style="list-style-type: none"> <li>Vehicle kilometres travelled (VKT) by PMVs are no more than 2020 levels</li> </ul>
Improved road safety	<ul style="list-style-type: none"> <li>Safe crossings, improved intersections, and dedicated facilities for NMT</li> </ul>	<ul style="list-style-type: none"> <li>Fatalities of pedestrians and cyclists are reduced by 80 percent below 2019 levels</li> </ul>
Improved air quality	<ul style="list-style-type: none"> <li>Increased investments in high-quality walking and cycling facilities</li> <li>Measures to control private vehicle use in place</li> </ul>	<ul style="list-style-type: none"> <li>WHO ambient air quality norms are met 350 days a year</li> <li>Greenhouse gas emissions follow the overall targets set in Ethiopia's Nationally Determined Contribution</li> </ul>

Table 2. Implementation targets for secondary cities.

City	Footpaths & crossings (km)	Cycle tracks: Two sides (km)	Cycle tracks: One side (km)	Traffic calming on streets without cycle tracks (km)	School zone treatments @ 10 per 100k population
Adama	70	29	26	15	32
Bahir Dar	85	59	19	8	24
Dessie	32	0	12	20	19
Dire Dawa	32	9	9	14	44
Gode	8	4	3	1	5
Gondar	28	4	7	17	32
Hawassa	55	27	28	1	30
Jimma	41	0	18	23	18
Mekele	46	19	13	15	32
Nekemet	21	0	16	5	11
Robe	10	0	6	4	7
Total	429	150	156	123	255

Table 3. Implementation targets for secondary cities.

City	Intersection retrofits @ 4 per km of major streets	Pedestrian zones	Street lighting (km) on major streets	Bicycle sharing cycles @ 200 per 100,000 population
Adama	70	1.0	70	648
Bahir Dar	85	1.0	85	487
Dessie	32	0.5	32	374
Dire Dawa	32	1.0	32	880
Gode	8	0.5	8	109
Gondar	28	1.0	28	648
Hawassa	55	1.0	55	600
Jimma	41	0.5	41	354
Mekele	46	1.0	46	647
Nekemet	21	0.5	21	221
Robe	10	0.5	10	131
Total	429	8.5	429	5,099

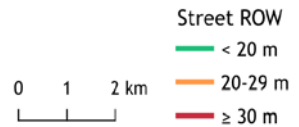
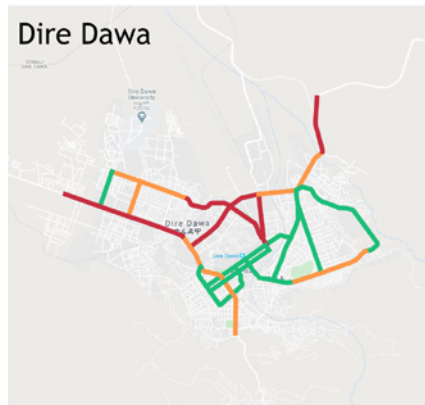
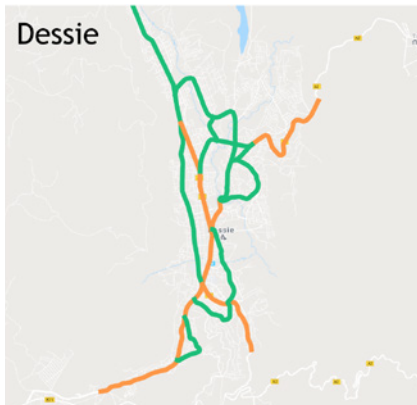
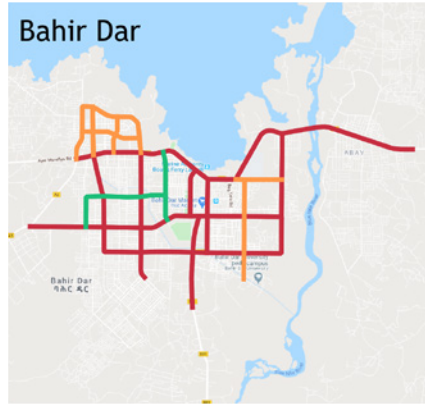
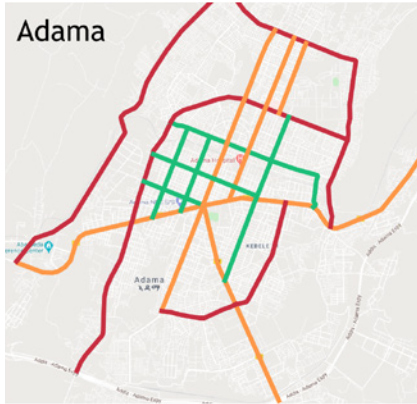


Figure 14. Corridors identified for NMT improvements in secondary cities.

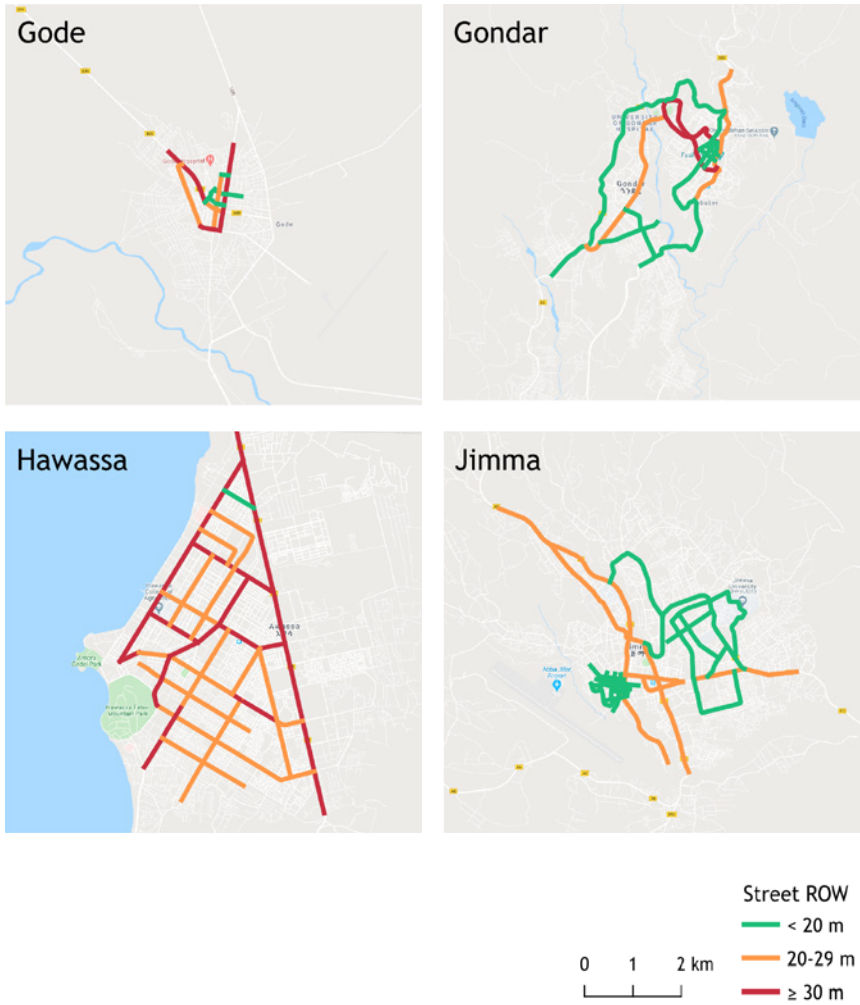


Figure 15. Corridors identified for NMT improvements in secondary cities.



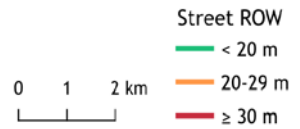
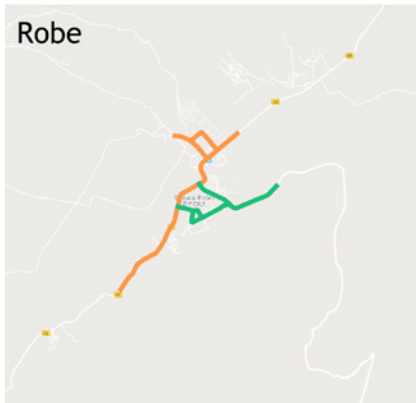
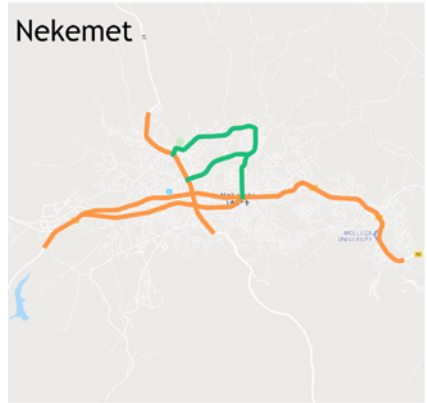
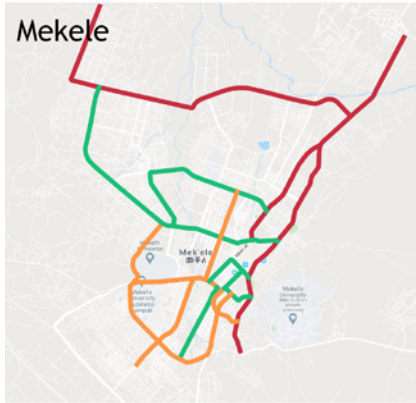


Figure 16. Corridors identified for NMT improvements in secondary cities.



Figure 17. Footpath in Addis Ababa.

Other than the primary and secondary cities listed above, there are 32 additional cities with a population larger than 50,000. Implementation targets for these cities are shown on the table below. Smaller towns and rural centres also require NMT improvements, particularly along regional roads that carry both NMT movement and motorised traffic.

**Table 4. Implementation targets for cities with a population of 50,000 and above.**

Initiative	5-year target	10-year target
Footpaths	50% of 10-year target	3 km per 10,000 population
Cycle tracks	50% of 10-year target	2 km per 10,000 population
Traffic calming	50% of 10-year target	Traffic calming measures on 100 percent of streets ≤ 12 m wide
Universal access	All new road project incorporates universal access provisions	All footpaths and road crossings accessible to persons with disabilities
Bicycle rental	50% of 10-year target	20 rental cycles per 10,000 population
Land use	The largest dimension of blocks in all new developments to be 150 m or less	-
Outreach & communications	Spend 1% of the city's transport budget on campaigns to create awareness among citizens and policy makers	Spend 1% of the city's transport budget on campaigns to create awareness among citizens and policy makers until at least 75% of the goals are achieved



## 5. NMT INITIATIVES

### 5.1. PEDESTRIAN NETWORK

Major streets in all cities and rural centres in Ethiopia need high-quality footpaths. Well-designed footpaths provide continuous space for walking. They also support other activities such as street vending and comfortable waiting spaces at bus stops without compromising pedestrian mobility. The success of a footpath depends on the integration of multiple elements in a coherent design. Footpaths need to be unobstructed, continuous, shaded, and well lit. Footpaths should consist of three zones:

- The **frontage zone** provides a buffer between street-side activities and the pedestrian zone and should be 0.5 to 1 m wide.
- The **pedestrian zone** offers continuous space for walking. The pedestrian zone should be clear of any obstructions, level differences, or other obstacles to pedestrian movement and should have a clear width of at least 2 m.
- The **furniture zone** provides space for landscaping, furniture, lights, bus stops, signs, and private property access ramps.

In addition, footpaths should be no higher than 150 mm above the carriageway level and should have a smooth surface. Footpaths should be designed without abrupt level differences, especially at property entrances and intersections.

Crossings and junctions are also essential components of a well-connected street network. When properly designed, crossings and junctions allow pedestrians, cyclists, and

**Figure 18.** Good footpaths have ample clear width, smooth surfaces, and organised spaces for vending.



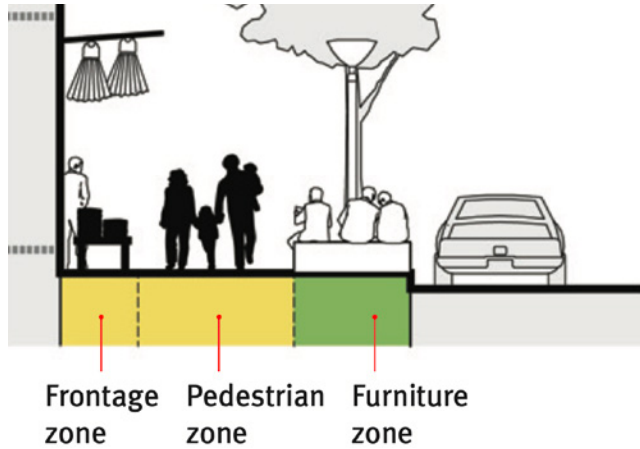


Figure 19. Well-design footpaths have three main zones: the frontage zone, pedestrian zone, and furniture zone.

other NMT users to cross busy streets safely and conveniently. At points where pedestrians need to cross multiple lanes of traffic, it is important to reduce vehicle speeds to safe levels (e.g., below 15 km/h) or incorporate signals to stop traffic. Refuge islands should be provided whenever pedestrians need to cross more than two traffic lanes at a time. Crossings also require proper signage and road markings.

Some cities have sought to increase vehicle speeds by providing grade-separated crossings. These facilities are often inaccessible to many people, including those with a disability, and increase pedestrian travel distances and times. While grade separation may be warranted along stretches with a highway typology, at-grade crossings are more appropriate when a highway enters with populated area with heavy pedestrian activity and other roadside activities. At crossing points where multiple vehicle users interact, it is important to reduce vehicle speeds to safe levels (e.g. below 15 km/h).

The provision of shade protects pedestrian from expo-



Figure 20. Table-top crossings reduce the speed of motor vehicles and ensure universal access for pedestrians.

sure to the sun and makes walking a more enjoyable experience. Shade can be provided with trees, awnings, or arcades built into the building line to maintain cooler temperatures for walking. The existing trees should be preserved during road expansion projects. Further, all road infrastructure projects should incorporate provisions for new street trees and landscaping throughout the corridor.

#### KEY ACTIONS

- ▶ Construct a continuous pedestrian realm with high-quality footpaths, safe at-grade crossings, street trees, and adequate street lighting along new and existing streets.
- ▶ Develop safe pedestrian access in school zones.



Figure 21. Protected cycle lane in Addis Ababa.

## 5.2. BICYCLE NETWORK

To enhance safety of cyclists and attract new users, Ethiopian cities and towns should plan for networks of dedicated cycle tracks with safe, user-friendly, and convenient infrastructure. Such a network should include cycle tracks along key corridors and major streets with two or more lanes of traffic in each direction.

Cycle tracks require physical separation from the carriageway—painted lanes and “sharrows” are not sufficient to provide a safe cycling environment. Cycle tracks track should have sufficient clear width for cycle movement (i.e., at least 2 m), a smooth surface material (concrete or asphalt, but not paver blocks), shade from trees, an elevation above the carriageway, smooth transitions where level differences are present, and a buffer between the track and carriageway. Wider cycle tracks are needed to accommodate two-way movement. Cycle tracks should incorporate proper signage and road markings.



On smaller streets, separate cycle tracks may not be needed. Instead, traffic calming in the form of speed bumps, chicanes, and other elements can help to reduce motor vehicle speeds, making it easier for cyclists and vehicles to travel together.

### KEY ACTIONS

- ▶ Develop dedicated cycle tracks along major streets.
- ▶ Create secure bicycle parking at public buildings, public transport terminals and stops, and educational institutions.

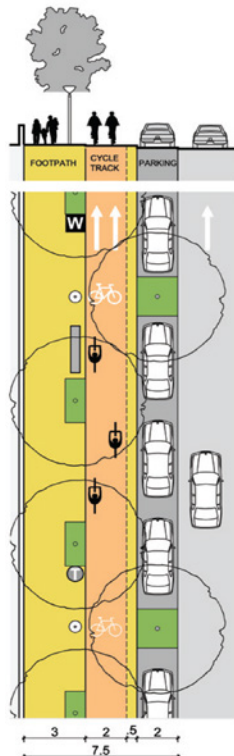


Figure 22. Cycle tracks should be physically separated from traffic lanes and elevated above the carriageway.



Figure 23. Greenways can offer pedestrian and cycling paths along clean waterways.

### 5.3. GREENWAY NETWORK

To supplement walking and cycling improvements on city streets, open spaces in the city can be developed as NMT corridors that support commuting as well as recreational uses. The term “greenway” is used to describe walkways and cycle paths that utilise an independent ROW, such as in a park or water body. In this way, greenways can provide safe, convenient connectivity to important destinations, such as schools, colleges, and markets.

Waterways can be cleaned through interception sewers and the removal of encroachments. Greenways should incorporate universally accessible walkways and dedicated cycle tracks, both of which should offer ample width for two-way movement and should be integrated into NMT networks along adjacent streets.

### KEY ACTIONS

- ▶ Develop greenways with continuous pedestrian and cycle facilities along water bodies and rivers

## 5.4. STREET LIGHTING

Adequate street lighting improves safety by enhancing visibility—both the NMT users' ability to survey the surroundings and drivers' ability to see pedestrians and cyclists. Street lighting also contributes to the perceived and actual threat of criminal activity. Designing streets with proper lighting therefore contributes to safety and security for NMT users at night and encourages NMT use.

### KEY ACTIONS

- ▶ Repair faulty street lights and expand street lighting into new streets.
- ▶ Prepare maintenance plans for street lighting

## 5.5. INTERSECTION IMPROVEMENTS

Improved intersection design can significantly reduce road crashes, injuries, and fatalities while at the same time improving motorised traffic flow. Dedicated and protected space should be provided for pedestrians to safely cross the street at intersections. Vehicle traffic should be controlled through traffic signals, to allow ample time for pedestrians to cross a street. Traffic calming measures such as speed bumps, tighter turns, restrictions on free turns, and narrower lanes are equally necessary to improve safety for all road users, particularly pedestrians

and cyclists. Bollards are also useful for defining refuge islands and protecting pedestrian spaces from encroachment by motorised traffic.

The following design strategies can be used:

- **Tightening corner radii:** Narrowing corner radii reduces vehicle turning speeds and pedestrian crossing distances. Reducing the size of a corner radius is key to creating safe and compact intersections.
- **Medians and refuge islands:** Centre pedestrian refuge islands that are raised and medians can be used to reduce lane width, forcing drivers to slow down and improving safety of pedestrians.



Figure 24. Intersection modifications in Addis Ababa have reduced lane widths and turning radii for motor vehicles in order to improve pedestrian safety.

- **Creating direct pedestrian crossings:** Pedestrian crossings should be aligned as closely as possible with the pedestrian clear path. Inconvenient deviations create an unfriendly pedestrian environment.
- **Narrowing and aligning travel lanes:** Compact intersections improve visibility for all users and encourage predictable vehicle movements. Narrowing travel lanes slows down vehicle traffic, while aligning lanes coming in and out of an intersection facilitates efficient movement of traffic.
- **Reclaiming underutilised space:** Implementing the above recommendations helps to reclaim underutilised space that can be improved to create public spaces, designate vendor locations, or include safe public transport stops.

#### KEY ACTIONS

- ▶ Develop electronic databases with geo-referenced road safety data to identify black spots where frequent crashes occur.
- ▶ Implement traffic calming improvements at dangerous intersections.

## 5.6. BICYCLE SHARING

Bicycle sharing can serve short trips in Ethiopian cities and improve last-mile connectivity to public transport through a healthy, safe, and environmentally friendly means of transport. Bicycle sharing can contribute to the roll-out of a truly integrated transport system, based on a network of high-capacity BRT, city bus, and paratransit corridors.

Bicycle sharing systems employ the following best practice features:

- A dense network of stations across the coverage area.



Figure 25. Bicycle sharing can improve last-mile connectivity for public transport systems.

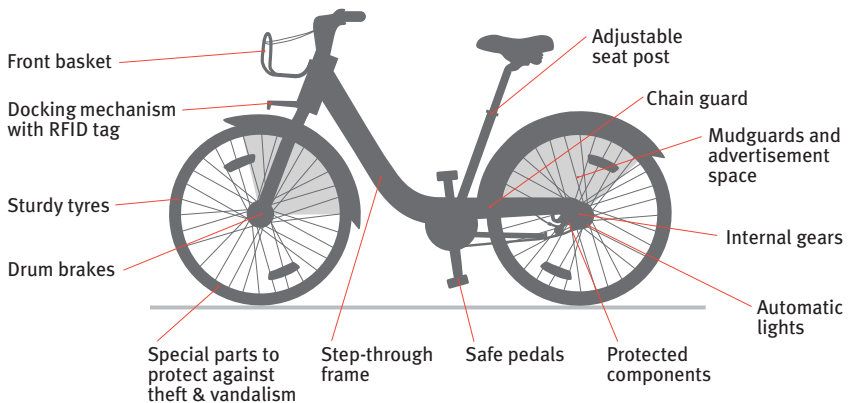
- Cycles with specially designed parts and sizes to discourage theft.
- An automated locking system that allows users to check cycles in or out without the need for staffing at stations.
- IT systems to track where a cycle is picked up, where it is returned, and the user's identity.
- Real-time monitoring of station occupancy rates through General Packet Radio Service (GPRS), used to guide the redistribution of cycles.
- Real-time user information provided through various platforms, including the web, mobile phones, and/or on-site terminals.
- Advertising space on cycles and at stations (provides revenue generation options for system operator or city).
- Pricing structures that incentivise short trips, helping to maximise the number of trips per cycle per day.

Stations should be placed at frequent intervals, serving

public transport hubs; offices and institutions; healthcare facilities; educational institutions; cultural hubs; and tourist destinations. Bicycle sharing can serve commuters who travel by public transport and need a “last mile” option to reach their final destinations; workers and students who need to make short-distance errands during the day; and tourists using the bicycles to explore the city centre. The registration system should incorporate safeguards to accommodate vulnerable users.

Through creative approaches to user registration, payment and system management, bikeshare projects can overcome implementation barriers related to purchasing power, credit card/debit card penetration, smartphone penetration, and security.

Following the completion of preparatory activities, local authorities can contract private operators to install bikeshare systems and handle day-to-day operations and maintenance. Bikeshare systems can be funded through a combination of revenue sources, including advertising, sponsorships, user fees, and the city budget. The launch of bikeshare systems should be accompanied by a num-



**Figure 26.** A unique, unisex, robust bicycle design is critical. Such a design increases brand awareness and allows the bicycle to be used by anyone.

ber of communications and outreach activities aimed at encouraging use of the system, particularly among women, and building a stronger cycling culture in the city.

#### **KEY ACTIONS**

- ▶ Implement bicycle sharing systems in dense, mixed-use areas of primary and secondary cities to serve short trips and improve last-mile connectivity to public transport

## **5.7. BICYCLE RENTALS**

Bicycle rental systems make cycles available to individuals on a short- to medium-term basis without the need for advanced technology and hardware. The systems rely on manual systems for check-out and personal rapport or deposit of ID documents to guarantee security. Bicycle rentals are already present in many cities across the country. In smaller cities, government support can help scale up cycle rental systems through measures to reduce cost of cycles or ongoing operational support. Local authorities can improve the visibility of cycle rentals by providing designated street space for cycle stands and user information such as rental facility maps and fare charts. Measures to expand cycle rental options are relevant in smaller cities that do not have IT-based bicycle sharing systems.

#### **KEY ACTIONS**

- ▶ Scale up and improve the visibility of cycle rental facilities.





Figure 27. Bicycle rental in Gondar.

## 5.8. TRADE POLICIES

Bicycles traditionally have been considered luxury goods and subjected to 20 percent import tariffs. To increase access to high-quality bicycles, tariffs on bicycles should be removed.

### KEY ACTIONS

- ▶ Remove tariffs on imports of bicycles and bicycle parts.

## 5.9. REVIEW OF STREET DESIGN STANDARDS

Existing street design standards include the ERA Geometric Design Manual, the Ministry of Urban Development and Housing Street Design Standards for Urban Ethiopia, the Addis Ababa City Roads Authority Design Manuals, and master plans adopted by city administrations. Given the presence of multiple manuals and standards, a major challenge is achieving consistent designs across projects implemented by different consultants and contractors. There is a need for a consolidated set of design standards for urban streets that reflect best practices in the NMT facility design. A uniform standard adopted by ERA, MUDC, and other relevant agencies can help achieve consistent, high-quality NMT designs.

### KEY ACTIONS

- Develop a harmonised urban street design manual for use by ERA, MUDC, regional road authorities, and local authorities to guide the design and development of urban streets.

## 5.10. PARKING MANAGEMENT

On-street parking should be provided only after adequate provisions have been made for higher priority transport modes, including walking, cycling, and public transport. Where on-street parking is provided, market-based parking fees can help manage demand. In addition, robust parking enforcement mechanisms are needed to ensure that walking and cycling facilities, once built, remain well maintained and free of encroachments. Over time, the rationalisation of on-street parking can help reclaim street space for sustainable modes and manage the use of personal motor vehicles.



**Figure 28. Bollards can help prevent parking encroachments on pedestrian spaces: Addis Ababa.**

The rapid influx of vehicles has resulted in growing demand for parking. Some local authorities have contracts with private operators to collect parking fees in city centres. Outside CBDs, on-street parking is largely unregulated and haphazard. Vehicles often park on pedestrian footpaths, forcing pedestrians to walk on the carriageway. Since parking rules are not defined, enforcement is arbitrary. Parking outside of CBDs is usually free of charge and cities do not receive any revenue for the use of valuable public space by private vehicles.

Clear and consistent customer information on parking rules and fee levels is necessary for efficient parking management. Parking fees should be based on demand. Parking charges for areas with higher demand should be higher than those where demand is lower. Income generated from parking fees can be used for street improvement including construction of new NMT and maintenance of existing NMT facilities and tree planting.

Efficient and effective parking management systems should have the following features:

- Handheld devices for use by parking field officers to administer and enforce parking fees.
- Management software that will serve as the interface between the field officers, system managers, and the local authority.
- On-street signage, consisting of static signs informing drivers of parking regulations on each street and live message boards alerting drivers concerning available parking spaces nearby.
- Customer service kiosks should be set up at strategic locations to provide any necessary assistance or information to vehicle owners.
- A telephone hotline is necessary to facilitate communication between vehicle owners and city management.
- Mobile apps should be set up to provide live information on available parking spaces and information on parking fees.

Parking enforcement should be improved by monitoring of enforcement officers using an IT-based system. Through this system, the local authority can receive regular parking enforcement updates including number of vehicles checked, payment status, and information on completed enforcement activities. A GPS based system can be used to track individual parking attendants against a minimum number of vehicles that should be checked per hour. Vehicles parked on NMT or any other non-parking zones should be clamped and heavy penalties imposed.

A parking management system can be introduced along busy commercial streets in most mid to large cities. A study for each city would be required prior to implementation to assess the current level of demand and inform the parking fee levels.

## KEY ACTIONS

- ▶ Introduce IT-based on-street parking management systems with demand-based fees.
- ▶ Install bollards to prevent parking encroachments on footpaths.

## 5.11. VENDOR MANAGEMENT

Street vending not only provides employment for many citizens in Ethiopia, but it is also an important function in street environments. Street vending makes streets vibrant



Figure 29. The use of parking lanes and furniture zones for street vending can help ensure that clear space remains for pedestrian movement.

and improves security while offering essential goods and services to pedestrians as they walk to their destinations.

Dedicated vending spaces on city streets should be clearly marked. Local authorities can issue licenses to street vendors, set standards for vending stands, and monitor the upkeep of vending areas. Local authorities should provide waste disposal bins and constant enforcement to ensure that vendors keep their spaces clean and do not encroach on pedestrian zone. Local authorities should encourage vendors to form associations to facilitate management.

### KEY ACTIONS

- ▶ Work with vendors to form vending associations.
- ▶ Launch street vending management programs in Ethiopian cities.

## 5.12. ANIMAL-DRAWN VEHICLES

Animal-drawn vehicles are a common form of mobility in many regions across the country, used both for freight transport and informal public transport service. Carts drawn by donkeys, mules, and horses are typically used to transfer material over short distances ranging from 1 to 3 km. They are also used to transfer goods from rural areas to market centres, with distances ranging from 10 to 20 km.

To improve safety, major roads passing through areas with high volumes of animal carts may incorporate slower speed service lanes that can be used by the carts. On corridors with lower speeds and volumes, animal carts can share the space with motor vehicles. Design guidelines that are prepared at the national level should consider animal carts as a form of mobility and incorporate adequate provisions for these vehicles.

### KEY ACTIONS

- ▶ Develop street designs that improve safety for animal-drawn vehicles.

## 5.13. COMMUNICATIONS AND OUTREACH

Communications and engagement activities will play a key role in building public support for the NMT Strategy. Effective messaging about NMT and public activities can build enthusiasm for NMT use and can begin to foster



Figure 30. Car-free day in Lideta.



Figure 31. Addis Ababa car-free day.

a changed culture that accepts walking and cycling as integral modes of transport. In addition, participation of local residents, businesses, and other stakeholders in the planning and design of streets can help improve transparency and foster the community's active use and sense of ownership of public spaces. Communications and outreach activities can include the following:

- **Open streets events** can help introduce the idea of streets as spaces that provide equitable access for all users. During such events, private motor vehicles are temporarily banned and streets are opened for exclusive access by pedestrians and cyclists. Programmed activities during open streets events can include health and fitness activities, dance classes, bicycle maintenance clinics, inclusive recreation, and arts activities. Addis Ababa has successfully launched car free days that have helped to demonstrate the benefits of active transport.



- **Marketing campaigns** can raise the profile of walking and cycling, encourage usage of the city's bicycle sharing system, and encourage safe driving among motor vehicle drivers. To reach a diverse audience, such campaigns should make use of multiple channels, including television, radio, print media, and social media.
- **Cycle trainings** can introduce safe cycling techniques and encourage ridership among new users, especially women and youth.
- **Sustainable commuting days** for government staff can expose city engineers and planners to issues faced by NMT and public transport users and will give an opportunity for staff to “lead by example.”
- **Use of bicycles by city officials**, including the police, can help change the image of cycling.
- **Participatory planning activities** will give community members a chance to offer input on plans and designs for NMT projects. The Government of Ethiopia will adopt an open data policy to improve access to information. Stakeholder engagement should call on even non-NMT users to contribute to and support the implementation of the Strategy because the social and environmental benefits of NMT go beyond the direct benefits to the users themselves.
- **NMT award for local authorities:** The Government of Ethiopia can organise an annual NMT Award for the best performing city or town with respect to the planning, implementation, and maintenance of NMT facilities.

### KEY ACTIONS

- ▶ Launch car-free days on at least one Sunday per month in Ethiopian cities and towns.
- ▶ Launch a monthly sustainable commuting (walking, cycling, or public transport) day for national government and local authority staff.



Figure 32. Active façades and a mix of uses can help ensure that the pedestrian environment remains active at all times of the day.

## 5.14. REVIEW OF BUILDING CONTROL & PLANNING REGULATIONS

The built environment surrounding pedestrian routes must be conducive to walking. Walking is safer and more enjoyable when sidewalks are populated, animated, and lined with useful ground-floor activities such as store fronts and restaurants. In turn, being closer to passing pedestrians and cyclists increases the exposure and vitality of local retail, bringing significant economic benefits.

Architectural design elements such as building setbacks, the ratio of building height to street width, and the articulation and permeability of building-street interface (i.e., the number of doors and windows) have a major impact on the quality and safety of pedestrian spaces. Blank

compound walls isolate the street from private uses and contribute to unsafe conditions for pedestrians. Similarly, parking setbacks diminish the connection between pedestrian activity on a footpath and activity inside adjacent buildings. They also increase the risk of parking encroachments on footpaths. Building control regulations should be updated to ensure that private developments contribute to the public realm rather than functioning as isolated islands of activity.

Besides active façades, another key to mobility for NMT users is a high ratio of intersection nodes to road links so that streets and pathways are well connected. The maximum recommended block size for people friendly streets is 100 m.<sup>18</sup> Prioritised connectivity creates finer grained networks for walking, including pedestrian-only streets. A fine-grained walking and cycling network helps to reduce trip distances and improves access to public transport.

18 Institute for Transportation and Development Policy. (2017). The TOD Standard. Retrieved from <https://www.itdp.org/tod-standard/>

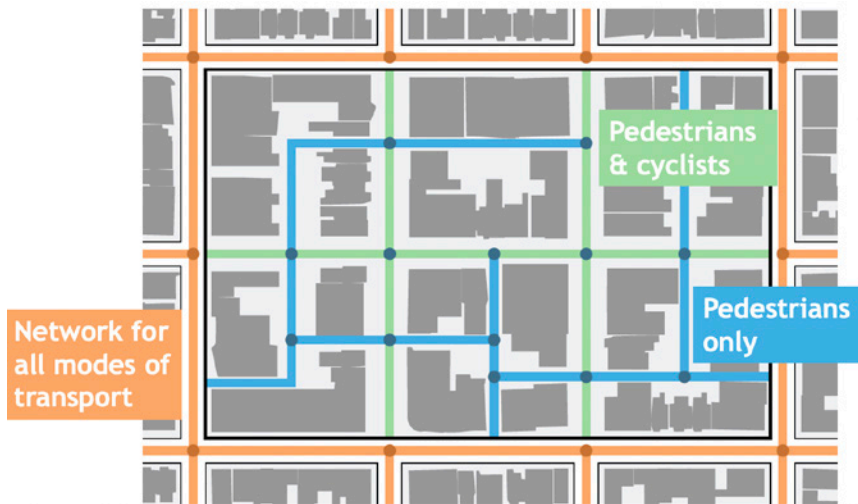


Figure 33. A fine-grained network of streets improves access for NMT users.

Land use policies should encourage transit-oriented development (TOD) within walking distance (i.e., 500 m) of mass rapid transit lines. TOD policies can include affordable housing mandates, incentives for mixed use, and restrictions on off-street parking. All of these principles should be taken into account when preparing layouts and designs for condominium projects.

### KEY ACTIONS

- ▶ **Building control policies and regulations:** Each local authority should review building control policies and regulations to promote active frontage; minimise setback requirements; open setback spaces for pedestrian access; include arcades along commercial streets; and limit block size to 100 m for all future development projects.
- ▶ **Land use policies:** Master plans should be revised to promote high density, compact developments within 500 m of existing and planned BRT corridors and high frequency Bus corridors. TOD elements will include affordable housing, higher densities, and maximum off-street parking limits.

## 5.15. GUIDELINES FOR MOBILITY PLANNING

Sustainable urban mobility plans (SUMP) are critical for establishing a coherent strategy for mobility improvements and prioritising investments at the local level. Guidelines should be prepared to set minimum standards for mobility plans and guide the work of consultants. The guidelines will include provisions related to data collection, data analysis, goal setting, scenario building, and public participation.



Figure 34. An active street in Bahir Dar.

#### KEY ACTIONS

- ▶ Develop guidelines for the preparation of sustainable urban mobility plans.
- ▶ Develop a model TOR for sustainable urban mobility plan preparation.



## 6. IMPLEMENTING THE NMT STRATEGY

Achieving the ambitious goals outlined in the Ethiopian NMT Strategy will require steady progress over time, strong political will, and public support. One way to build stakeholder buy-in is to implement demonstration projects to highlight the benefits of complete streets. Streets that experience high pedestrian volumes and serve as important access routes to public transport have potential for significant impact. By initially focusing on projects with a high probability of success, local authorities in the key cities and towns in Ethiopia can build public enthusiasm for more widespread transformations. While change may be difficult at the beginning, determined efforts can help Ethiopia to move toward making cycling and walking safe and enjoyable for all city residents.

### 6.1. IMPLEMENTATION PLAN

The national NMT Strategy 2020-2029 will be accompanied by a three-year implementation plan that will guide annual planning activities and NMT facility investments. For each activity, the implementation plan will indicate the responsible agency, timeline, and budget estimate.

### 6.2. INSTITUTIONAL FRAMEWORK

Successful implementation of street design projects will involve cooperation among multiple stakeholders. National, regional, and city-level agencies all have a role to play in the implementation of NMT facilities.

The Federal Transport Authority (FTA) under the Ministry of Transport will play a leadership role in disseminating

Figure 35. Footpath in Bahir Dar.



Table 5. Key agencies and responsibilities.

Agency	Responsibility
Ministry of Transport (MOT) & Federal Transport Authority (FTA)	<ul style="list-style-type: none"> <li>• Provide political leadership and general oversight toward dissemination and implementation of the NMT Strategy</li> <li>• Monitor progress over time</li> <li>• Plan, regulate, and monitor public transport services</li> <li>• Compile road safety data &amp; monitor trends</li> <li>• Partner with academic institutions and technical organisations to conduct training programs for engineers, planners, and other technical staff in the basics of street design</li> </ul>
Ministry of Urban Development and Construction (MUDC)	<ul style="list-style-type: none"> <li>• Develop model building control rules and planning regulations</li> </ul>
Federal Police with local traffic police	<ul style="list-style-type: none"> <li>• Control and manage traffic operations, enforce traffic rules, educate street users, and identify where improvements are required to improve safety</li> </ul>
Ministry of Finance and Economic Cooperation	<ul style="list-style-type: none"> <li>• Allocate funds for NMT initiatives</li> </ul>
Ethiopian Roads Authority	<ul style="list-style-type: none"> <li>• Design and implement high-quality walking and cycling facilities in the secondary cities and towns</li> <li>• Update national street design standards</li> </ul>
District offices of the Ethiopian Roads Authority	<ul style="list-style-type: none"> <li>• Design and implement high-quality walking and cycling facilities, in their administrative districts</li> </ul>
Ethiopian Road Fund Office	<ul style="list-style-type: none"> <li>• Ensure allocation of adequate budgets for NMT development and maintenance</li> </ul>
Regional administrations	<ul style="list-style-type: none"> <li>• Prepare city master plans that improve the NMT environment</li> </ul>
Regional road authorities	<ul style="list-style-type: none"> <li>• Design and implement high quality walking and cycling facilities</li> </ul>



Agency	Responsibility
Local city administrations	<ul style="list-style-type: none"> <li>• Design and implement high-quality walking and cycling facilities</li> <li>• Manage Local Transport Funds</li> <li>• Plan and implement bicycle sharing systems</li> <li>• Oversee operations of the on-street parking management system</li> <li>• Manage street vending</li> <li>• Prevent encroachments on NMT facilities</li> <li>• Conduct audits and surveys to monitor progress on implementation of the Strategy</li> </ul>



Figure 36. Footpath construction in Addis Ababa.



Figure 37. Well-shaded street in Aksum.

the NMT Strategy and monitoring progress over time. FTA will also help to coordinate actions among implementing agencies and serve as the secretariat for the NMT Committee. FTA will guide efforts to strengthen local institutions through appropriate staffing and budgetary allocations.

ERA, as the body responsible for constructing main roads in cities across the country, will play a major role in introducing high-quality NMT facilities in secondary and tertiary cities. The Ministry of Urban Development and Construction, together with regional and local administrations, will play a role in preparing building control rules and planning regulations that improve the NMT environment in the cities. Within city administrations, code enforcement agencies will need strengthening to ensure that new NMT facilities are maintained and protected from encroachment. Enforcement of traffic regulations is another critical element of implementing the NMT Strategy, with the Federal Police and city-level traffic

police playing a major role. The Government of Ethiopia, regional governments, and local authorities will develop appropriate frameworks to coordinate among key departments, both at the national and local levels. To improve inter-agency coordination, the FTA will set up and convene regular meetings of a national NMT Committee to review proposed designs, guide implementation, and monitor performance over time. The NMT Committee will prepare quarterly and annual NMT implementation and maintenance reports and submit the same to the PS MOT, listing any challenges experienced and recommendations.

The national NMT Committee will include representatives from the following agencies:

- Ministry of Transport (MOT) (State Minister)
- Ministry of Urban Development and Construction (MUDC)
- Ethiopian Roads Authority (ERA)
- Federal Transport Authority
- Ethiopian Environmental Protection Authority

The Committee will invite additional stakeholders to participate in committee deliberations:

- Non-government or community organisations
- Ethiopian Urban Planners Association
- Ethiopian Civil Engineers Association
- Ethiopian Architects Association
- Representatives from universities

Local residents' groups also have a role to play in facilitating appropriate use of walkways and other NMT facilities. Associations at the neighbourhood level, such as the local equb and edir, can help with awareness creation at the local level. These associations also can contribute to the planning process by reviewing project plans and designs. Government agencies should conduct adequate outreach to local groups at all stages of the planning process.

## 6.3. PLANNING

Each city with a population of 300,000 and above is expected to develop a Sustainable Mobility Plan (SMP) that complements the city's Master plan. An SMP will:

- Set a vision and quantitative goals for transport system improvements. SMPs should have a goal of a mode share of 80 per cent or more for walking, cycling, public transport, and intermediate public transport and less than 20 per cent for personal motor vehicles.
- Outline a comprehensive time-bound programme for expanding and improving NMT facilities, public transport, and travel demand management.
- Include explicit measures to reduce the absolute number of trips by personal motor vehicles and encourage a shift from personal motor vehicles to public modes and NMT.
- Describe land use reforms to complement the proposed transport improvements.
- Be consistent with this NMT Strategy.

Cities with a population below 300,000 will be encouraged to create NMT Plans with the following elements:

- Outline a comprehensive time-bound programme for expanding and improving NMT facilities.
- Be consistent with this NMT Strategy.

The Government of Ethiopia will ensure that all projects funded by the national government involving construction of new streets or retrofitting of existing streets improve safety and convenience for NMT users. All designs will comply with the updated the urban street design manual.

The Government will ensure that all transport-related planning, plans, and studies (including surveys, plans, forecasts and models, and implementation plans undertaken by professional staff, consultants and / or international agencies), even those without a specific focus on NMT, consider the impact of proposed interventions on

NMT users. The Government will require, where possible, that NMT user participation is included in transport-related planning processes.

## 6.4. FUNDING

The Government will prioritise implementation transport projects, including footpaths, cycle tracks, cycle sharing, and greenways, in order to meet the goals of this Strategy. National funding for transport in populated areas, whether provided by the Ethiopian Road Fund, the Government's budget, or other sources, will be devoted to funding projects that benefit sustainable modes of transport (i.e., walking, cycling, and public transport). National funding for transport projects will be subject to consist-



Figure 38. Walkway in Bahir Dar.

**Table 6. NMT initiatives and cost estimates for secondary cities.**

	Total quantity	Cost per unit (m ETB)	Total cost (m ETB)
Footpaths & crossings (km)	429	8.6	3,706
Cycle tracks: Two sides (km)	150	8.6	1,293
Cycle tracks: One side (km)	156	4.3	677
Traffic calming on streets without cycle tracks (km)	123	0.3	35
School zone treatments @ 10 per 100k population	255	0.9	220
Intersection retrofits @ 4 per km of major streets	429	2.9	1,235
Pedestrian zones	8.5	14.4	122
Street lighting (km) on major streets	429	1.2	494
Bicycle sharing cycles @ 200 per 100,000 population	5,099	0.1	367
<b>Total</b>			<b>8,149</b>

ency of the project with provisions of this Policy as well as the following specific conditions:

- The Government will provide funding for urban road projects only if the roads are designed as complete streets with adequate facilities for pedestrians, cyclists, and public transport users.
- The Government will provide funding for grade separators only if such infrastructure gives priority to public transport and/or NMT.
- The Government will not fund projects that expand the supply of parking for personal motor vehicles.
- The Government will facilitate funding from external sources for projects promoting the use of sustainable



**Figure 39. Bollards can help prevent parking encroachments on pedestrian spaces: Addis Ababa.**

transport modes as well as restricting the use of personal motor vehicles.

To receive national funding for transport projects, local authorities will be required to meet the following conditions:

- A local authority's capital expenditure on infrastructure for NMT, from its own resources as well as loans from external sources, must constitute 33 per cent of total spending on transport initiatives. Examples of such projects are: footpaths, cycle tracks, cycle sharing systems, and cycle parking.
- A local authority's capital expenditure on infrastructure for personal motor vehicles, whether from its own resources or as loans from external sources, may not constitute more than 33 per cent of total spending. Examples of such projects are: structures like flyovers and grade separators designed for better movement for personal motor vehicles, road widening, parking lots, and mechanised parking.



Figure 40. Bollards installed to protect a footpath in Addis Ababa.

- The local authority must have an approved Sustainable Mobility Plan.

If a local authority does not meet one or more of these conditions, national funding for new projects will be withheld. If the local authority does not meet these conditions for two or more consecutive years, all national funding for new and existing projects will be withheld. The Government will assist local authorities in creating dedicated Local Transport Funds (LTF) to manage financial resources for the transport systems. The Government will provide funding support for feasibility studies and detailed project reports for street design, cycle sharing, parking management, BRT, and city bus improvements.

## 6.5. CAPACITY BUILDING

Implementation of the NMT Strategy will require a concerted effort to build institutional capacity and skill sets



of individual practitioners. The FTA, under the auspices of the Ministry of Transport, shall be responsible for organising continuous training for the local engineers, urban planners, and consultants at the national and city levels. Employees working in urban planning and transport sector initiatives should obtain, improve, and retain the skills and knowledge required to plan, design, construct, and manage NMT facilities. FTA will partner with regional and local authority urban planning and transport offices to organise training programs for government employees and consultants. FTA will also seek support from academic institutions, development banks, and other partner organisations with expertise in the NMT planning. These efforts will complement an existing initiative of the Addis Ababa Transport Bureau together with local universities to prepare material on urban transport to be included in the standard university curricula for engineers, planners, and architects.

## **6.6. MONITORING AND EVALUATION**

Monitoring will consist of two broad components:

- Tracking of progress toward implementation targets (e.g., km of footpath, km of cycle tracks, number of managed parking spaces, etc.)
- Measurement of NMT Strategy outcomes (e.g., mode share of walking and cycling, VKT by personal motor vehicles, local air pollution levels, etc.)

Table 7 lists the data sources for the tracking of these indicators. MOT will consolidate information gathered by local authorities, national agencies and other stakeholders. To inform measurement of these indicators, initial NMT facility audits should be conducted by all local authorities. The audit will document the current extent of footpaths, cycle tracks, and other NMT elements. In each city, the information should be stored in citywide asset management system built on a Geographic Information Systems (GIS)

Table 7. Data sources for performance indicators.

Indicator	Type of indicator	Data source(s)
Length of street with footpaths, cycle tracks, traffic calming, universal access, and rapid transit	Implementation target	Street audits and government records
Fraction of schools with school zone elements	Implementation target	Government records
Number of managed parking spaces	Implementation target	Government records
Number of bicycles available in bicycle sharing systems	Implementation target	Government records
Adoption of TOD policies	Implementation target	Government records
Spending on NMT-related communication campaigns	Implementation target	Government records
Removal of tariffs on bicycles	Implementation target	Government records
Fatalities of pedestrians and cyclists	Outcome	RTSA & Traffic Police records
Mode share of NMT and motorised trips	Outcome	Household surveys
Vehicle kilometres travelled (VKT) by PMVs	Outcome	Household surveys
Fraction of cyclists who are women	Outcome	Traffic counts
Ambient air pollution levels	Outcome	Pollution monitoring devices
Greenhouse gas emissions from transport	Outcome	Emissions inventory

platform. Cities should compile existing data and conduct baseline surveys to document existing conditions. Over time, this database can be updated when street improvement projects are implemented on particular corridors. Other implementation target indicators can be measured directly through government data and records.

For the outcome indicators, some new data collection efforts will be required. In particular, information on mode shares and travel patterns will be obtained from household surveys conducted on a regular basis (e.g., every 5 years). In addition, gender disaggregated counts will be required to document volumes of NMT users, including the fraction of users who are women. Air pollution monitoring devices will be needed to measure ambient concentrations of local pollutants. FTA will support local authorities in strengthening capacity to collect and analyse transport data.



## 7. DEFINITIONS

- **Accessibility:** Facilities offered to people to reach social and economic opportunities, measured in terms of the time, money, comfort, and safety that is associated with reaching such opportunities.
- **Bus rapid transit (BRT):** High quality bus-based mass transit system that delivers fast, comfortable, reliable, and cost-effective urban mobility through the provision of segregated right-of-way infrastructure, rapid and frequent operations, and excellence in marketing and customer service.
- **Complete streets:** Streets that are designed for all users, including pedestrians, cyclists, public transport passengers, and personal motor vehicles, including all modes of mobility as well as street vending, trees, street furniture, and other elements.
- **Greenway:** A waterway or strip of land with exclusive facilities for cycling and walking.
- **Mobility:** Conditions under which an individual is capable to move in the urban environment.
- **Mode share:** The share of total trips carried out by a particular mode of urban transport, including walking, cycling, bus, paratransit, rail, two-wheeler, or car.
- **Non-motorised transport (NMT):** Human-powered transport such as walking and cycling.
- **Nationally Determined Contribution (NDC):** National pledges to reduce greenhouse gas emissions per the provisions of the 2015 United Nations Framework Convention on Climate Change Conference of the Parties in Paris.
- **On-street parking:** The space occupied by vehicles to park along the edge of the street.

Figure 41. Footpath in Aksum.



- **Paratransit:** Service operated by the private sector on a shared or per seat basis along informally organised routes with intermediate stops. The service may or may not have a predefined fare structure.
- **Public transport (PT):** Shared passenger vehicles that are publicly available for multiple users. In this document, the term “public transport” is used to refer to paratransit and formal road-based public transport services.
- **Parking management:** Pricing, enforcement, and other mechanisms used to guide parking operations to ensure the efficient use of street space.
- **Right-of-way (ROW):** The width of the road, taken from the compound wall/property edge on one side of the road to the compound wall/property edge on the other side of the road.
- **School zone:** All streets and greenways within a 200 m radius of a school.
- **Sustainable transport modes:** The following modes are categorized as “sustainable modes” of urban transport because when compared with personal motor vehicles, they consume the least amount of road space and fuel per person-km and also entail lower infrastructure costs: walking, cycling, and public transport (including a regular bus service as well as BRT systems).
- **Traffic calming:** Traffic calming measures ensure pedestrian safety by reducing speed and potentially also the volume of motor vehicles. Traffic calming slows vehicles through vertical displacement, horizontal displacement, and real or perceived narrowing of carriageway, material/colour changes that signal conflict points, or the complete closure of a street.
- **Vehicle kilometres travelled (VKT):** Vehicle kilometres travelled by all the personal motor vehicles (in a city) in one day.

## 8. ABBREVIATIONS

BRT	Bus rapid transit
ECS	Equivalent car space
FTA	Federal Transport Authority
MoLG	Ministry of Local Government
MUDC	Ministry of Urban Development and Construction
MOT	Ministry of Transport
MRT	Mass rapid transit
NDC	Nationally Determined Contribution
NMT	Non-motorised transport
SPV	Special purpose vehicle
TDM	Travel demand management
TOD	Transit-oriented development
VKT	Vehicle kilometres travelled

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