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APPLIED RESEARCH

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Institute for Transportation & Development Policy

INCLUSIVE TOD IN EASTERN AFRICA

A Guide to Local Development Planning

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Abstract	
The following report contains guidance for the development of inclusive TOD as part of local area planning in eastern Africa. The guidance is based on the results of a baseline report and Case Studies Report developed as earlier parts of the research.	
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ABBREVIATIONS/ACRONYMS

BRT	Bus rapid transit
CBO	Community-based organisation
DART	Dar Rapid Transit Agency
DMDP	Dar es Salaam Metropolitan Development Project
FAR	Floor area ratio
FCDO	Foreign, Commonwealth & Development Office
GFA	Gross floor area
GIS	Geographic Information System
HVT	High Volume Transport
IMC	IMC Worldwide Ltd
ITDP	Institute for Transportation and Development Policy
JICA	Japan International Cooperation Agency
LDP	Local development plan
LIS	Land information system
LRT	Light rail transit
NGO	Non-governmental organisation
NMT	Non-motorised transport
TOD	Transit-oriented development
TOR	Terms of reference

GLOSSARY

Land assembly - process of preparing land plots for development by acquiring the plots necessary for a larger development. This process may include “pooling” the plots by an entity such as the municipality, private developer or a group of landowners that form a cooperative. It may also include readjustment of plot boundaries, and tenure formalisation when addressing informally held land.

Displacement - (unwanted) process of displacing residents during major infrastructure and area upgrades. Displacement without resettlement and compensation should be avoided.

In situ redevelopment - the process of upgrading existing informal or low-income communities through gradual rehabilitation of existing structures or utilities. It may involve partial removal of existing buildings in built-up areas, but it does not involve their complete removal.

In situ rehabilitation - the process of upgrading existing informal or low-income communities through gradual rehabilitation of existing structures or utilities. It may involve partial removal of existing buildings in built-up areas, but it does not involve their complete removal.

Public transport - synonymous to transit including high-capacity rapid transport, intermediate public transport and informal public transport.

Station area planning - planning and design of areas in the immediate vicinity of the main transport station to create TOD.

Transit - synonymous to public transport including high-capacity rapid transport, intermediate public transport and informal public transport.

1. Introduction

Inclusive transit-oriented development (TOD) can enable city residents to live closer to jobs and services, reducing the money and time burden of transport. This helps optimise the use of public funds, so less money is needed for transport, which can instead be directed to schools, services, and other areas that support economic growth and improve the quality of life for residents. TOD combines compact development, a mix of uses, fine-grained street networks, and excellent facilities for active mobility. TOD has been shown to facilitate strong social networks and communities that provide additional support to lower-income residents.

This tool is specifically designed to assist governments (and the planners who work for them) in eastern Africa develop local development plans (LDPs) that are in line with inclusive TOD principles. LDPs are detailed plans for urban buildings, transportation, infrastructure and other development in a neighbourhood or other subset of a city. In eastern Africa, we observed rapid and sprawling growth, often in areas not supported by public transport. We also saw a pattern of development that is often low-rise, fragmented, and informal, often with inadequate space allocated to streets, urban transport, and public spaces. This often results in poor access to opportunities and unsanitary conditions. Finally, we observed limited governmental capacity for intervention to improve conditions. While TOD generally offers a framework for rethinking urban planning regulations and conditions towards enhanced access for all, existing TOD-based guidance tools are largely designed for high-income countries and are not very helpful for the conditions in eastern Africa. While this tool is specifically designed to address the specific issues that were observed in eastern Africa, similar conditions may be common across the African region and in other low- and middle-income countries, so it is likely that it will be useful in those places as well.

This guide focuses on LDP planning around public transport[1] stations, complimenting existing guidance for large-scale and local-area planning.[2] LDPs are of particular interest for two reasons. First, it is the scale of planning at which the characteristics of the "building blocks" of the city—the individual development sites and buildings—can be regulated and shaped. LDPs must address the tension between public interest policy, on the one hand, as well as the particular interests of local landowners, developers, and stakeholders on the other. Second, the local area is the scale of people's everyday life in the neighbourhoods where they live, learn, work, and socialise. Urban life is shaped by the texture of streets, passages, buildings, frontages, local businesses, and public and semi-public spaces. This urban texture in turn influences the mobility and transport options that residents and visitors will have and the choices they will make.

The tool may be used for brownfield (former industrial) and greenfield (former agricultural or natural areas) development. However, this tool is specifically targeted at LDPs for informal residential urban areas, which can be some of the most challenging sites in the African region to plan for, given the poverty and fragility of communities there. The tool can be used in small, medium or large cities, but it has been specifically targeted at large, fast-growing cities which can be some of the most challenging places to plan, given the high levels of poverty and rapid urban growth.

The tool comprises the following sections:

- Overview of Inclusive TOD Planning: Discusses inclusive TOD, the benefits of inclusive TOD.
- Planning Steps for Local Development Plans: Outlines the main activities in the process for planners and decision makers to develop local development plans.
- Developing shared visions and goals, including recommendations for the three most important goals needed for developing inclusive TOD in the eastern Africa region.

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[1] In this tool, we use "transit" and "public transport" interchangeably

[2] See examples: Localising the 2030 Agenda through Integrated Urban Development: Five successful examples from the German Development Cooperation(1), Guidelines for developing and implementing a Sustainable Urban Mobility Plan (2nd edition)(2), and Transit Oriented Development: Traveler Response to Transportation System Changes (3).

- Data analysis for Local Development Plans describing the type of data needed for developing LDPs specifically in the context of inclusive TOD.
- Planning scenarios and tools describing implementation strategies and regulatory tools specific to local area plans.
- Implementation planning for transforming the plan into action and measuring results

1.1 How the tool was developed

This tool is based on research conducted by ITDP in Tanzania, Ethiopia, and India, as part of the High-Volume Transport programme, funded by the United Kingdom's Foreign Commonwealth Development Office. The goal of this project was to better understand strategies to link transport and land-use planning in places with rapid economic growth, and retrofit informal settlements, while supporting the needs of disadvantaged groups. To do this, the research aimed to understand what inclusive TOD might look like in lower income countries and how it could be achieved, specifically examining retrofitting existing urbanised areas. This tool was informed by the background research on urban development in Ethiopia and Tanzania, case study research in Mumbai, Pune, Ahmedabad, Addis Ababa, and Dar es Salaam, and roundtable discussions with local stakeholders in Addis Ababa and Dar es Salaam.

The baseline research consisted of policy analysis, stakeholder interviews, and literature review on urban development in Ethiopia and Tanzania. Researchers found that the main obstacles to creating TOD include a lack of government capacity and complicated institutional structures, in addition to other prevailing problems such as a rapid pace of urban growth and high levels of informality. This research is summarized in the High Volume Transport: City Retrofit for All Baseline Report (forthcoming). To help overcome these barriers, the tool aims to focus efforts on the most critical aspects of the planning process for creating inclusive TOD.

The case study research on three TOD intervention locations in Addis Ababa and Dar es Salaam consisted of TOD assessment using TOD Standard scoring tool supplemented by household surveys. This research is documented in the Transit-Oriented Development Case Studies Report: An Assessment of Six Settlements and Interventions in East Africa and India (forthcoming). The study revealed that there are many TOD attributes that are already present in the local context, such as presence of high residential and non-residential densities, mixed use and permeable frontage. However, all study areas appeared to require direct government intervention to create complete walking or cycling infrastructure, and street conditions that can sustain multiple modes of transport. Other issues included lack of adequate provision of open spaces and basic infrastructure such as sewage, drainage and running water.

The roundtable discussions brought together local decision makers and practitioners to discuss findings from the baseline and the case study research and share initial feedback on TOD needs and priorities. The Addis Ababa workshop had 23 external attendees including senior staff from the Addis Ababa City Plan and Development Commission, Addis Ababa City Road Authority, Japan International Cooperation Agency (JICA), the World Bank, and WRI Africa. The workshop in Dar es Salaam had 13 participants, including senior staff from Dar Rapid Transit Agency (DART), Dar es Salaam Metropolitan Development Project (DMDP), JICA, and the World Bank.

2. Overview of inclusive TOD planning

2.1 What is inclusive TOD?

This tool is based on the definition of inclusive TOD in the TOD Standard, an assessment framework for measuring TOD (4). According to the TOD Standard:

> TOD is an approach to urban development designed to bring people, services, and activities together with quality public transport supported by walking and cycling conditions to facilitate shorter trips, better lifestyles, and more efficient use of city resources.

At its core, TOD promotes compact city growth by integrating land development and transport service. Compact development counters sprawl, which leads to less dependence on motor vehicles, shorter commutes, and reduced exposure to noxious fumes and dangerous traffic. TOD makes living and moving without a car not only possible, but enjoyable.

TOD centres urban planning and design around outcomes that directly benefit people, the environment, and cities themselves. It means inclusive access for all to local and citywide opportunities and resources by the most efficient and healthful combination of mobility modes, at the lowest financial and environmental cost, and with the highest resilience to disruptive events. Inclusive TOD is a necessary foundation for long-term sustainability, equity, and shared prosperity in cities.

The TOD Standard framework consists of eight core principles supported by performance objectives and twenty-five metrics which can be used to assess neighbourhoods and developments on a 100 point scale (4). More detail on the objectives and metrics is provided in Appendix A: TOD Standard Framework. The TOD principles are detailed below:

- **WALK | Develop neighbourhoods that promote walking.** Walking is a fundamental feature of inclusive TOD. It results from a human-centric approach to designing complete streets for all forms of sustainable transport modes. It supports walkability through universal access and design features that bring activity, safety, and comfort to the pedestrian realm.
- **CYCLE | Prioritise non-motorised transport networks.** Cycling and other forms of micro-mobility create safe environments for the second-most-healthful and flexible form of transportation: bicycles and non-motorised vehicles. Secure cycling infrastructure is a fundamental feature of TOD, as it helps to activate streets and increase public transport ridership by serving as the first- and last-mile connections.
- **CONNECT | Create dense networks of streets and paths.** Connect prioritises pedestrians and cyclists through pedestrian and cycle networks, enabling flexible journeys and detours.
- **TRANSIT | Locate development near high-quality public transport.** Public transport is the anchor for TOD. High-capacity, reliable, frequent, and affordable mass rapid transit connecting the neighbourhood to the rest of the city serves as a civic node for the neighbourhood and its activities.
- **MIX | Plan for mixed use and mixed incomes.** Mix is at the heart of inclusivity, where a mix of activities, people in all income ranges, and diverse activities allows for all to prosper in liveable places.
- **DENSIFY | Optimise density and transit capacity.** Densify ensures enough activities to support transport service and make neighbourhoods self-sustaining. Densify also supports all other principles because it promotes access to destinations within walking distance. Density is not overcrowding: It means optimal concentration of people, opportunities, and quality housing near sustainable transport options.
- **COMPACT | Create regions with short commutes.** TOD encourages development that is integrated within or contiguous with the existing built-up area and discourages leapfrog development that is poorly connected to public transport.
- **SHIFT | Increase mobility by regulating parking and road use.** Shift looks to reduce the impact of private vehicle traffic on safety and health by reclaiming space from cars and reducing noxious fumes and noise.

2.2 Benefits of inclusive TOD

There are a variety of benefits associated with TOD. The benefits of shifting towards more compact urban forms are often interrelated. Table 1 below details them.

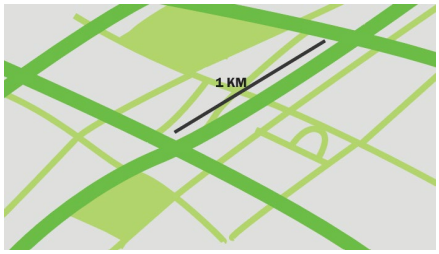
Table 1. Benefits of Inclusive TOD. Source: ITDP

Economic	Environmental	Social
Increases productivity by reducing commuting times (5)	Reduces greenhouse gas emissions by decreasing the number and length of motor vehicle trips (6)	Improves quality of life and social equity by increasing access to destinations by lower cost modes
Reduces infrastructure costs by requiring less infrastructure for motor-vehicles (7)	Preserves natural and agricultural areas by reducing urban sprawl (3)	Provides health benefits by promoting physically active ways of travel and access to leisure and reduced noxious emissions from motor vehicles (8)
Increases land and property value (3)	Preserves energy and natural resources (3)	

2.3 Urban improvement and urban expansion

Informal development, and haphazard growth in urban expansion areas are prevalent characteristics of rapidly growing cities in the Global South. TOD needs to be planned carefully considering current growth trends, existing urban centres and informally developed areas that should be integrated into the rest of the city through inclusive measures. Without careful consideration of the needs of existing communities and low and middle-income residents, TOD can exacerbate existing social inequities in cities. Cities should regulate development to prevent unplanned growth, but they should also employ measures that prepare expansion areas for future development. Below special considerations address approaches for mitigating impacts of unplanned development in existing settlements and in the urban expansion area.

Table 2. Urban improvement and urban expansion. Source: ITDP

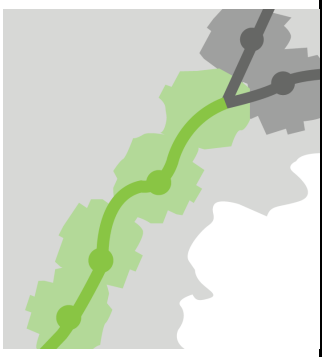
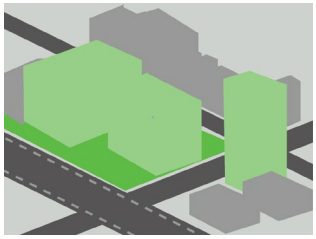
Urban improvement	Urban expansion
	
Timeline for implementation: Mid-term	Timeline for implementation: Mid-term
Planning tools: • Special area plan • Local Development Plan	Planning tools: • City masterplan • Local Development Plan
Special area plans and Local Development Plans for informal areas take into consideration approaches that help improve living conditions of existing communities, foster local activity and add key services without disrupting the existing social networks or causing displacement if rising housing costs cause low-income residents to leave an area. The upgrading practises should consider expansion of basic infrastructure, roadway networks and system of footpaths for improved connectivity and access for pedestrians, cyclists and public transport. As informal areas provide low-income housing options, retaining affordable housing through in-situ rehabilitation is crucial. The plan should promote mixed land uses through flexible building standards. See more information about fostering inclusion in TOD under Section 6.1 Priority actions for inclusive TOD.	Generally, TOD encourages development in areas accessible by public transport, cycling and walking, and discourages development in the periphery of cities. However, as cities continue to grow, sometimes more rapidly in the expansion area, cities should prepare ahead of time for the probable development. City masterplans address expansion areas in a broader sense, for example by identifying areas that should be protected from urban encroachment, and areas that should be prepared for new development in a short term. LDPs specify new infrastructure and expanded street networks including arterials and major streets as well as major open spaces. They also indicate areas reserved for open space and ecologically sensitive areas that should be protected and refrained from being built out. See more information about basic services and infrastructure under Section 6.1 Priority actions for inclusive TOD.

2.4 Importance of local area planning (also known as local development plans or neighbourhood level plans)

While TOD can be fostered at different scales, local area planning is a scale at which specific interventions can be deployed to encourage TOD. Local development plans are prepared within the framework of a bigger master plan, and in some instances local development plans can provide guidance to master plans. Table 3 shows how LDPs relate to other scales of planning interventions, based on several ITDP publications on the

topic, including the Implementation Guide for Transit-Oriented Development Project and Policies (9) and the Guia de Implementação de Políticas e Projetos de DOTS (10).

Table 3. Scales of planning interventions. Source: ITDP

City/metropolitan area	Transport corridor	Local area	Building/street level
			
Mid- to long-term	Mid- to long-term	Mid- to long term	Short-term
• City-wide TOD policy • City master plan • Urban mobility plan • City-level zoning regulations	• Corridor development strategy • Corridor zoning regulations	• Local development plan	• Building control regulations
City-level strategic planning guides the implementation of public transport networks and facilitates land use intensification close to existing or planned mass rapid transit corridors. Citywide plans also guide urban expansion, ensuring that development of streets and other infrastructure precedes conversion of land from agricultural to urban uses.	Corridor planning helps channel urban growth into public transport corridors. Corridor planning may include a diagnostic covering housing, employment, local services, and infrastructure availability. A corridor plan may identify station area typologies, offering a differentiated approach to TOD along the corridor and setting the stage for further planning at the station level.	Local area plans can be specific to mass rapid transit station areas (e.g., a 500 m walking radius). These plans can guide infrastructure investments that are needed to support intensification of land uses. Local area plans also can identify the alignment of new streets, pedestrian cut-throughs, and open spaces.	Street and building frontage improvements are essential in creating walkable and bicycle-friendly conditions. Building frontage treatments include shade features and visually active frontage.

They are useful tools that shape the direction of urban development of specific locations. They help with more targeted planning for the area based on intended outcomes such as densification or creating more mixed use. The locations can vary in size. Local area plans can include entire areas (for example, 500 or 1,000 metres) around the public transport station, known as station areas, or entire neighbourhoods. They can also

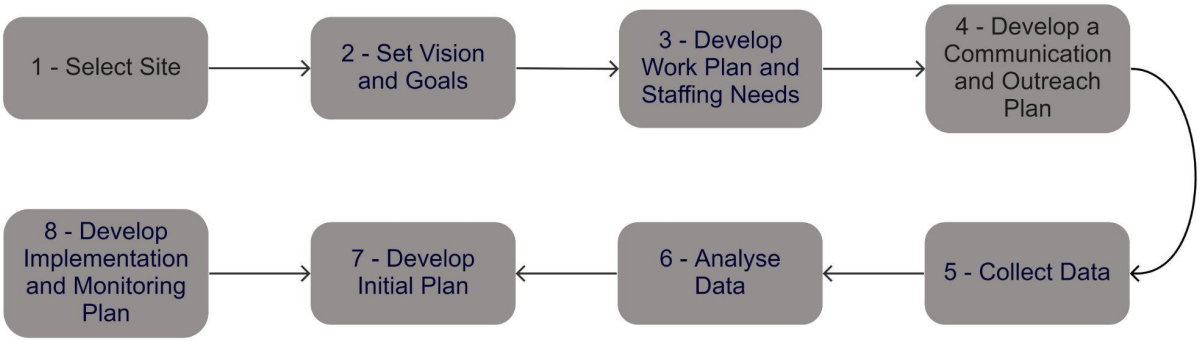
be smaller and include several blocks. Local area plans typically map out the intended land use for the area, open spaces, public services, and institutions, as well as typologies of streets and buildings. Considering future growth trends, existing conditions, and the growth potential because of TOD investments, local area plans can help shape the character of an area.

Several institutions and government entities can be involved in the preparation of a local area plan. Different entities institute regulation, and different ones approve plans and proposals, while other ones lead public improvements projects such as building public transport and infrastructure systems. Finally, different institutions and sectors operate and maintain public transport service and road systems. It is important that these stakeholders work together on TOD to avoid silos and streamline TOD implementation.

3. Planning steps for local development plans

The planning process for a TOD study area contains multiple steps and requires coordination among various stakeholders to streamline TOD implementation. The following provides an overall guide to the planning steps, as illustrated in Figure 1.

Figure 1. LDP Planning Process Steps. Source: ITDP



Step 1. Select a Study Area: The first step in developing an LDP is to select a study area. Many citywide master plans identify locations for planned change or citywide goals. For example, a master plan might identify a zone of influence along a mass rapid transit corridor. Other good candidates for LDPs include areas that are experiencing rapid changes, including new investments, rapid population growth, new connections to other parts of the city, or changing land uses, such as the closing of manufacturing areas or the expansions of the urban area into non-urban land. Since the goal is inclusive TOD, public transport service should be the foundation of any area that is selected.

Step 2. Set Vision and Goals: Once a study area has been chosen, the next step is to create a vision for what you want to achieve with the plan. This should be based on the city's stated vision for TOD or urban development, other citywide plans and policies relevant to urban planning, and the basic conditions of the study area. Defining goals for the LDP will help align all the other steps after this. The public agency in charge of developing the local area plan should be clear about the vision and goals of the plan and then develop a project plan for how to deliver that. The goals should be derived from the vision and should be grounded in preliminarily identified needs of the specific LDP area. A useful tool to help do preliminary TOD assessment is based on the TOD Standard (See section 5.1)

Different agencies have different capacities and staffing levels, so some may need to hire staff or outsource some of the work of this assessment, but no matter who is tasked with different activities, the public agency must lead this effort. Ultimately, this process should also result in strengthening the capacity of the public agency, which will support better implementation of the plan as well.

Step 3. Develop work plan and staffing needs: Once the goals are defined and a management work plan is established, the next step for the public agency is to develop a work plan and determine staffing needs for the remaining planning process. The planning agency may develop the plan internally or hire an external

consultant. The terms of reference (TOR) for the consultant should provide detailed guidance on the data collection, analysis, and planning activities.

The lead agency may consider forming a working group or task force to coordinate action on the planning process across multiple stakeholders who will play a role in implementing the plan.

Common LDP task force members include:

- Planning authority,
- Transport agency,
- Water agency,
- Electric utility,
- Public transport agency and/or operators,
- Residents' association(s), and
- Business association(s).

Step 4. Develop a communication and outreach plan: A strong communications campaign can help build support and engagement among local stakeholders. Campaign activities can include local media outreach, meetings with local community groups, and online engagement.

This should also include the mapping of stakeholders that are involved in the planning process. Potential stakeholders might include the following: institutions, local community leaders, and grassroot organisations, and residents. These groups should be invited to public forums in early stages of the process to partake in visioning activities, and throughout when they can provide feedback on the initial and final plans.

Step 5. Collect data: Preliminary data collection of built up and vacant land area, housing stock, land use, infrastructure condition is needed to adequately understand the issues and opportunities of the area. Qualitative data from interviews, focus groups, or public meetings with residents and other stakeholders can provide valuable insights into the needs of the local community as well as build support for TOD planning and implementation. Acquiring data may require specific technical capacity and cross-agency and cross-sectoral collaboration as data might be insufficient or privately owned. In Section 5 we discuss specific types of data pertaining to local area planning.

Step 6. Analyse data: Once the area is analysed, priority issues can be identified. They should be shared for a preliminary review with city agencies and major stakeholders as well as with the community. Identifying priority issues to address should be aligned with city vision and the specific needs and opportunities for the area. For example, several vacant plots of publicly owned land can be consolidated and prioritised for affordable housing development, or a new open space.

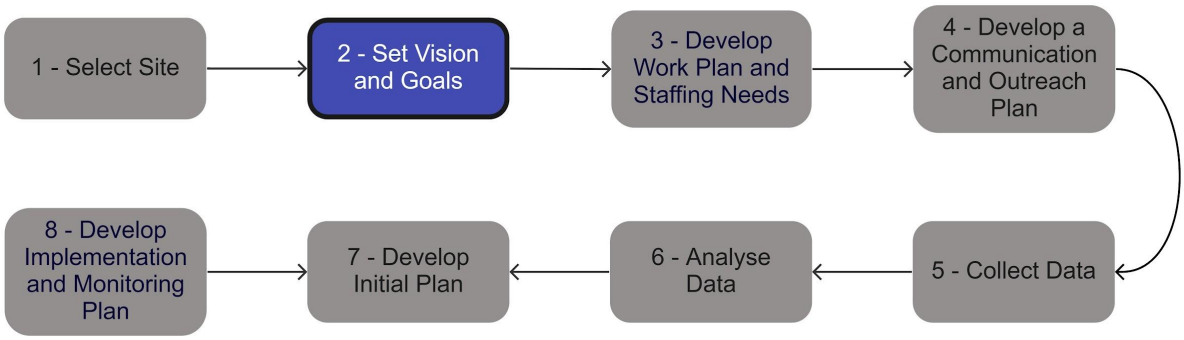
Step 7. Develop initial plan: After consultation with various agencies and the community, a detailed development plan can be created and reviewed again with the relevant implementing and approving agencies for final approval. The initial plan would be based on the goals and metrics that the plan further elaborates into priority actions. Section 6.1 contains specific recommendations, based on research to help determine which actions to prioritise, based on their impact on inclusive TOD, and the time and capacity required to implement them. In this review the planning and implementing agencies should work closely together to understand and address barriers and ensure that the goals and visions are realised, and the TOD principles are being followed.

Step 8. Develop Implementation and Monitoring Plan: Once the plan is completed, you will need to identify concrete actions to implement the plan. These should include who is responsible, what they need to do, and by when the actions should be completed. In addition, the implementation plan should include a monitoring plan to measure the success of the plan in achieving the goals of the LDP.

4. Develop shared vision and goals for inclusive TOD in the LDP area

Visioning is a process by which a community defines the future it wants through public involvement, communities identify their purpose, core values and vision of the future. The goals establish targets set in pursuit of that vision. This is the second step in the planning process, as shown in Figure 2.

Figure 2. Setting Vision and Goals as part of the planning process. Source: ITDP



The vision serves to lay out what the community should look like physically, socially and environmentally in 5, 10 or 20 years (11). The visions are typically broader, and they may link to other city-wide visions such as improved access to goods and services, equity, or climate mitigation.

Visioning:

- emphasises community assets and needs;
- assesses community options and opportunities on the basis of shared purposes and values;
- stresses early and continuous public involvement in the process; and
- acts as a stand-alone process or part of a comprehensive planning process.

Local development plan visioning should be done with strong stakeholder participation. A TOD planning process is usually started at the mayoral (or equivalent) level. This is sometimes linked to a comprehensive urban development plan, or equivalent city-wide land use plan. Realising TOD is a long-term undertaking, so it is important that the vision is seen to be owned more widely by the city and its residents (and not by the political party in power when it is established). This requires widespread cross-party support and long-term investment in public transport and urban development (12).

While the vision may be broader, the goals that support the vision may be more specific. Goal setting should include revisions based on community input and data analysis. Goals are supported by measurable metrics that the stakeholders identify further in the process (see Section 6.2).

Goal setting for TOD projects depends on the location of the study area. TOD can be implemented in mixed use areas, business districts, industrial areas, or purely residential areas. The problems and opportunities identified through assessment will help as a cornerstone for developing LDP goals. In addition to these, major development directions provided in the master plan/structure plan can serve to refine the goals. The inclusion of TOD principles as an overall goal for an LDP should be given from the city government, then planners translate these general directions into specific, workable goals.

4.1 Priority goals for inclusive TOD in the context of African countries

Based on the research described in Section 1.1, the following high-level goals were identified as being the most relevant to creating inclusive TOD in the African context. These were selected as the research showed they lead to the highest impact and are the least likely to happen without specific intervention. They also form the foundation for the success of other elements of inclusive TOD. The research also showed that these elements did not appear to arise without specific government intervention. These recommended goals should be considered and incorporated into visioning and goal setting for the LDP. Of course, these goals should be

weighed against the specific conditions of the study area in question, where these may or may not be applicable.

GOAL RECOMMENDATION #1: Increase access to basic infrastructure and services

Access to basic infrastructure and services is critical to liveable environments that can fully sustain urban development and core functions of the city. Basic infrastructure and services lay a foundation for the success of other elements and goals of inclusive TOD. For example, without proper sewage systems and trash removal, street drains may fill with trash, leading to flooded streets and footpaths during rains. More sanitary conditions are directly tied to improved health outcomes and reduced healthcare costs. Indoor water access and plumbing, reduces the need to travel to access water and toilets. This investment is crucial to improving equity, especially among the poorest, who often have the least access to such infrastructure and services. Setting up basic infrastructure prior to (or during) as the development takes place is efficient and reduces the need of retrofitting already developed areas to the basic infrastructure standards. It is less costly and time consuming to build basic infrastructure at the beginning.

GOAL RECOMMENDATION #2: Ensure safe and convenient non-motorised transport access

Access by non-motorised transport is critical to the ability of people to reach destinations in their daily lives and is critical to inclusive TOD. Since walking is the means of transport open to the greatest number of people, when walking is easier, more people can get where they need to go in the city. Barrier-free walking paths and street crossings further expand access to people with disabilities, older people, or people with difficulty walking, improving equity. The development of quality walking and cycling infrastructure requires levels of coordination typically only found in government.

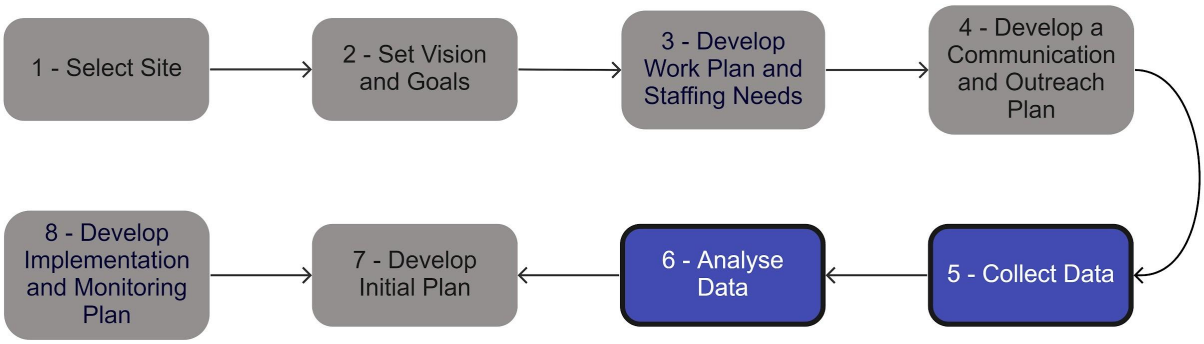
GOAL RECOMMENDATION #3: Foster inclusion

An inclusive urban fabric has a healthy mix of people and uses. When a variety of people live close to a variety of uses, it is much easier for people to reach destinations efficiently. A mixture of residential and non-residential (jobs, retail, etc.) uses supports the financial viability of public transport service. Residents of informal areas, especially those with lower incomes, are particularly vulnerable to displacement, and the disruption of community support mechanisms. Inclusive TOD through upgrading and rehabilitation of informal settlements helps maintain existing community ties and provides opportunities for all income groups to enjoy urban amenities and quality housing in the public transport station area.

5. Collect and analyse data for local development plans

Farther along in the planning process (Steps 5 and 6 in Figure 3, below), LDP development involves intensive data collection, followed by data analysis.

Figure 3. Data Collection and Analysis as part of the planning process. Source: ITDP



These follow the work plan and outreach plan developed in steps 3 and 4, as described in Section 3. In this process, planners apply systematic qualitative and quantitative data gathering measures to understand the area in terms of its existing conditions and TOD attributes. To ensure that the plan effectively meets the vision and goals set forth in Step 2, it is essential to understand effectively what the existing conditions are in the

study area. This then provides a strong foundation for developing an effective plan to build on the strengths of the area in a way that best meets the LDP goals. The data required to do so can be grouped into the following categories, which will each be explored in the subsections below:

- Spatial/physical data
- Socio-economic data
- Institutional frameworks
- Financial frameworks

For each of these subsections, we provide an example of this analysis for a site in Addis Ababa, Ethiopia. This helps to show what this analysis can look like. This analysis is derived from the HVT programme City Retrofit for All: Baseline Report (13) and the Transit-Oriented Development Case Studies Report (14), which together form the research foundation for this tool.

5.1 Analyse built environment

The spatial data needed to develop LDPs are largely based on the TOD Standard framework which defines inclusive TOD (see Appendix A: TOD Standard Framework for more detail). As described above, the *TOD Standard* assessment framework uses eight core principles and 25 metrics as a means of measuring inclusive TOD (4). It can help diagnose the strengths and weaknesses of TOD in a built-up area and detect gaps in the built environment that need to be addressed by the LDP, especially by using maps which can show gaps more clearly. Each metric of the assessment tool has a measurement formula with a corresponding point system. Planners can use these metrics to assess the current performance of the LDP area and then again to monitor progress of policy interventions and implementation of the LDP. Because of the flexibility of the tool, planners can run a quick preliminary assessment of the LDP area through a sampling method which does not require comprehensive data gathering. It can also be used for a comprehensive assessment that uses more advanced data obtained through surveys and GIS.

Using the sampling method for preliminary TOD evaluation

The sampling method allows a quicker way to evaluate the LDP area which requires less vetting in terms of data and the study area itself. The sampling method utilises scoring “samples” from each zone in the LDP area that are characterised by a distinct homogeneity of land use, urban development fabric and housing typology. This means that if the LPD area has several such distinct zones, each zone would be represented by a sample score. The calculation uses a weighted average of scores to deliver a cumulative score for the entire LDP area. Steps of the sampling method include:

1. Delineate zones of homogeneous character and building typologies in the LDP area
2. Select block samples from each zone that represent its urban character
3. Score the block area following the TOD Standard measurement methods for the metrics (note, you can run the assessment with all the 25 metrics, or you can focus on specific metrics that might be especially useful)
4. Calculate the weighted average for all the zones and block samples. The weighted average calculation incorporates the area of each zone, the total area of the LDP, and the value of the given metric. For example, to calculate residential density in the LDP based on samples the weighted average calculation for two zones distinguished in the LDP would look like this:

$$\text{Weighted average of residential density of the LDP} = \frac{\text{Land area of Zone 1}}{\text{Total LDP area}} * \text{residential density value of Zone 1} + \frac{\text{Land area of Zone 2}}{\text{Total LDP area}} * \text{residential density value of Zone 2}$$

5.1.1 Block sizes and underutilised or vacant blocks

One of the most important foundations of TOD is a dense network of streets and paths. This is because small blocks and short street segments make it more practical and comfortable to travel by walking and cycling.

Mapping pedestrian blocks and quantifying their sizes and lengths can flag issues such as: large, gated developments or other large blocks that make walking trips longer than they otherwise would be.

Planners can use two methods to analyse blocks. One way is to measure the length of each side of the blocks within the study area (TOD Standard recommends walkable block lengths of 100 m or below). This is simple to do using basic maps and online tools, such as Google Maps. A second method is to measure the block area to see if the blocks exceed the recommended size (TOD Standard recommends walkable block sizes of less than 12,000m^2). This requires slightly more sophisticated tools, such as GIS software or Google Earth. Where blocks are larger than recommended, planners may consider formalising informal paths through large blocks or opening public access through gated streets (see Priority Actions in Section 6.1). More intensive actions could include acquiring land to establish new streets and paths among existing buildings or redeveloping larger blocks to establish a new grid of streets and paths.

ITDP conducted a survey at the Jemo study area in Addis Ababa on 151 pedestrian walkway segments. The results of the survey indicated the mean length of pedestrian blocks of 100.3 metres. While this is an ideal block length, there were several outliers with longer block lengths, as shown in Figure 4.

Figure 4. Example of longer block sizes that are hard to navigate for the pedestrians in Jemo, Addis Ababa. Source: ITDP

5.1.2 Walking and cycling infrastructure

Safe and convenient walking and cycling are the foundation of inclusive TOD. Mapping the non-motorised transport (NMT) facilities in a project area helps planners understand the walking and cycling environment of the project area. Data collection on the NMT infrastructure, such as sidewalks/footpaths and bicycle paths, is done together with the street inventory. Data should be collected for each block of each street within the study area, to understand conditions throughout the area.

The following data should be collected on each block:

- presence of footpath on each side of the street,
- footpath total width,
- footpath clear width,
- percentage of the block length with footpaths present,
- level of pedestrian activity - five-minute counts of female and male pedestrians,
- types of pedestrian safety measures

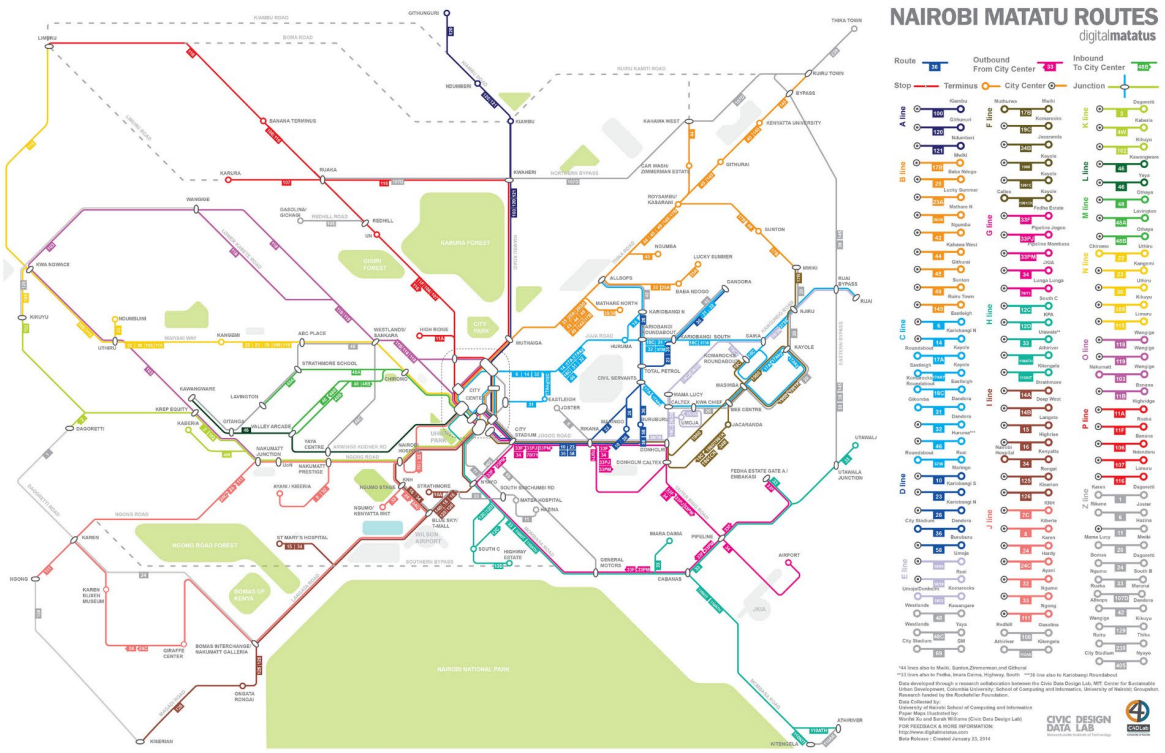
- types of pedestrian crossings present,
- number of painted and raised crossings,
- number of footbridge and underpasses,
- number of accessible pedestrian refuge islands,
- footpath surface condition,
- shade along the streets,
- street activities,
- vendor presence,
- types of obstruction blocking footpath,
- protected bike lanes,
- width of the protected bike lanes,
- unprotected bike lanes on streets with vehicular speed <30km/h, and
- level of cyclist presence - five-minute counts of female and male cyclists.

Additional Resources: ITDP TOD Standard (4) and ITDP Pedestrians First (15)

5.1.3 Public transport services

Public transport services connect the TOD study area to the rest of the city in an inclusive way. Mapping public transport services helps to understand the entire range of transport services that are available to the public and that are operating on the project study area including demand responsive transport modes such as minibuses (formal and informal), regular buses, bus rapid transit (BRT), trams, light rail systems, and metros. An examples of data on public transport services in the region is shown in Figure 5 below.

Figure 5. Matatu Informal Public Transport Routes. Source: Digital Matatus (17)



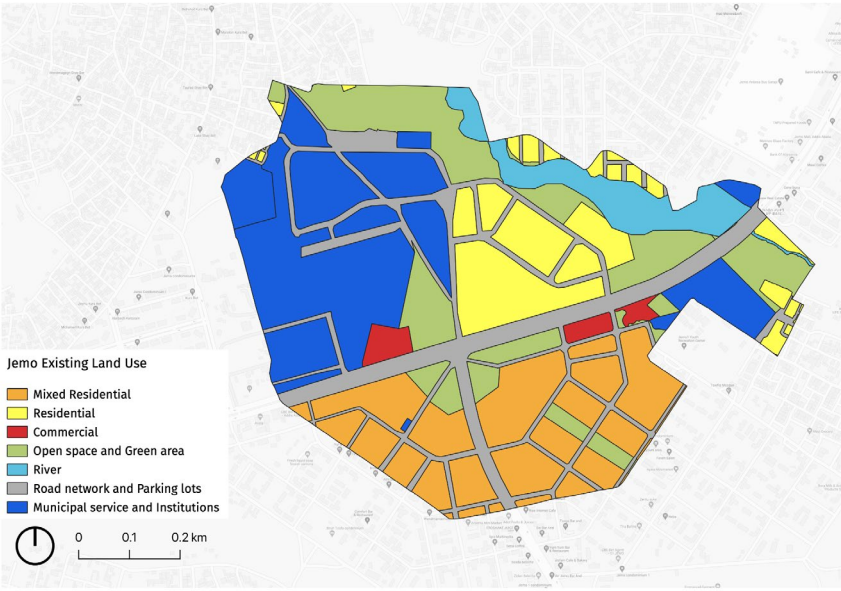
5.1.4 Existing land use and development typologies

Mapping the land use of the project area helps planners know which parts of the study areas are used for what purpose and what type of housing development is present in the area. It can also help identify gaps in land uses types, such as gaps in housing, open spaces, and/or commercial activities. Mapping development typologies can help identify vulnerable areas with low quality housing that requires investment, or gated higher-income development that reduces walkability on the street, both of which would require specific inclusive TOD interventions.

Land use maps can be created from data obtained from government sources. If this is not available, blocks can be visually surveyed to understand the land uses on each block. For mapping land use, city planners use different land use categories and different codes that will represent different functions of a building or an area. The major land use elements and the colour codes are presented below. Additionally, planners can assess whether the LDP study area is characterised by complementary land uses. When land uses are complementary, it means that there is enough balance of residential and non-residential uses. Balanced land use means that the residential and non-residential land use composition is between 40-60%.

According to ITDP's survey of the Jemo study area in Addis Ababa, the major land use in the area is industrial, occupying 21.4% of the land, as shown in Figure 6. Mixed-use development including the condominium buildings cover only 20% of the land, and single residential uses account for 16.6% of the land. This means that the Jemo study area itself performs relatively well in terms of overall complementary uses, but the large single use areas in the entire station area are not supportive to enabling walkability or vibrant city activities.

Figure 6. Land use map in Jemo study area (Addis Ababa). Source: ITDP



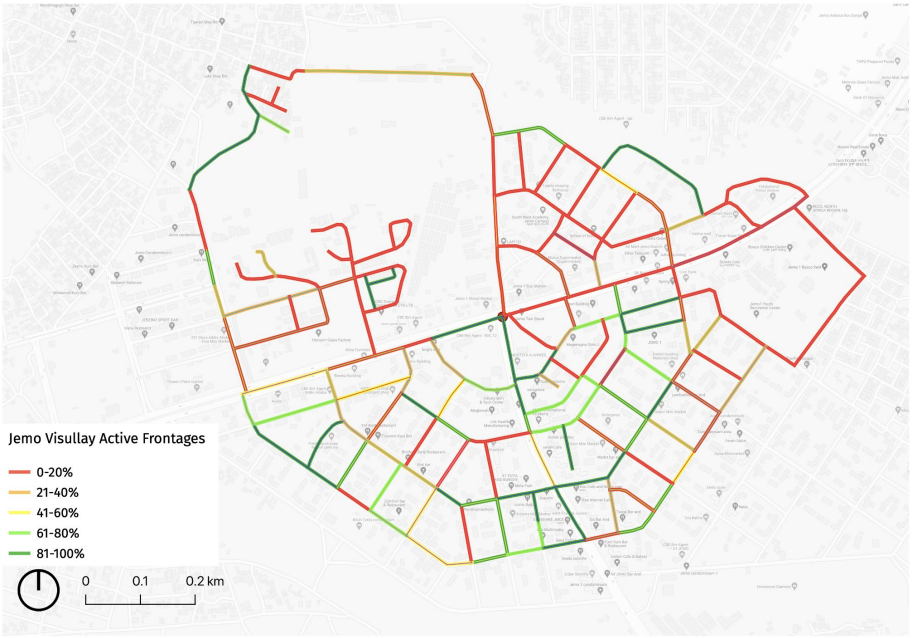
5.1.5 Active street frontage

Business or retail building uses that open directly to the footpath provide active, people-oriented street frontages, known as visually active frontage. This enhances public security and passive surveillance and improves the public domain by encouraging pedestrian activity, which supports an area's economic viability Conversely, streets without active frontages are not watched by the people inside buildings. Pedestrians on these streets are more likely to feel isolated and potentially at risk off hours.

Mapping the street frontage helps to analyse the walkability of a corridor, to plan for a better security of an area. This mapping is typically done through a visual survey of each block. Surveyors travel through each street in the study area and note the percentage of each block that has visual active frontages characterised by the percentage of the block with visual connection to the interiors of buildings through see through windows, doors, gates and glazing. The *TOD Standard* provides a method and point system for measuring visually active frontage (see page 38 of the TOD Standard) (4).

ITDP conducted a visual survey of visually active frontages as part of the TOD assessment at the Jemo study area in Addis Ababa, Ethiopia (see Figure 7). The results show that the majority of the streets on the project study area lack visually active frontages and do not support the overall walkability of the study area.

Figure 7. Survey map of visually active frontage at Jemo. Source: ITDP



Additional Resources: ITDP TOD Standard (4).

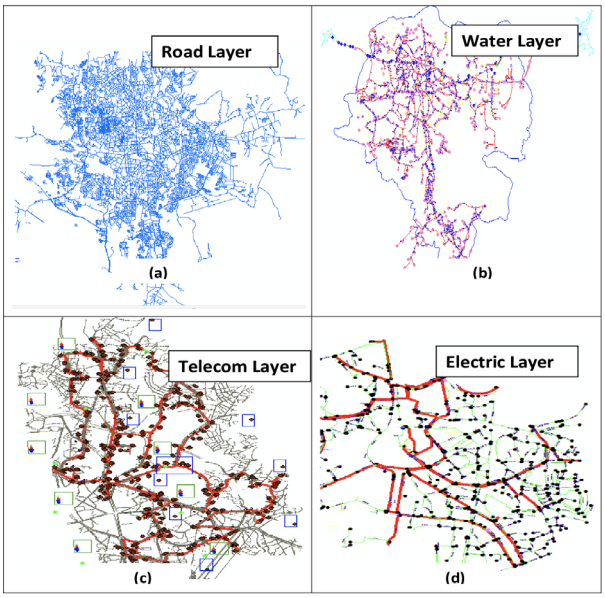
5.1.6 Availability of utilities (water, sewage, drainage, electricity)

The availability of basic utilities (water, sewage, drainage, electricity, and internet) is a prerequisite for densification, the important TOD principle that allows for more people to live in decent conditions on the limited land within a short distance of efficient public transport services. Without these utilities, basic tasks, such as obtaining drinking water or using a toilet become more time consuming, unhealthy, and sometimes dangerous tasks.

Mapping the location and carrying capacity of basic utilities is important to understanding the potential of development and identifying any gaps that need to be filled to facilitate development. This directly informs TOD strategies and plans discussed in Section 6. Designing utility lines should be done by allocating sufficient spacing, and depth of cover in accordance with municipality and utility requirements. The distribution of the utility lines should consider existing and potential densities, and it should pay special attention to informal areas which are typically poorly equipped with municipal utilities.

ITDP assessed basic services in the Jemo site in Addis Ababa, largely through resident surveys and interviews. More than 83% of the surveyed households obtain water from a home tap with a piped connection and 15% get water jugs delivered. 23% of residents, however, said that they have access to water supply less than 24 hours per week. While 92% of households surveyed have both a toilet and a bathroom, 3% reported that they have no sanitary facilities at all. The residents indicated that there are clusters of eight to 10 buildings, each of which has an administrative office in charge of the solid waste management system, security issues, and other socioeconomic activities for the cluster. Electricity service is available every day, but occasionally residents lose electricity for two or three days. Residents said the telecommunication and internet services work in most parts of the area and that the network for phone calls is relatively good. Figure 8 shows more general maps of different utilities in Addis Ababa.

Figure 8. Utility lines in Addis Ababa. Source: Addis Ababa University School Of Graduate Studies (18)



Additional Resources: Footpath Fix: A guide to implementing footpaths in Indian cities (19), Transit-Oriented development Implementation Resources & Tools, 2nd edition (20).

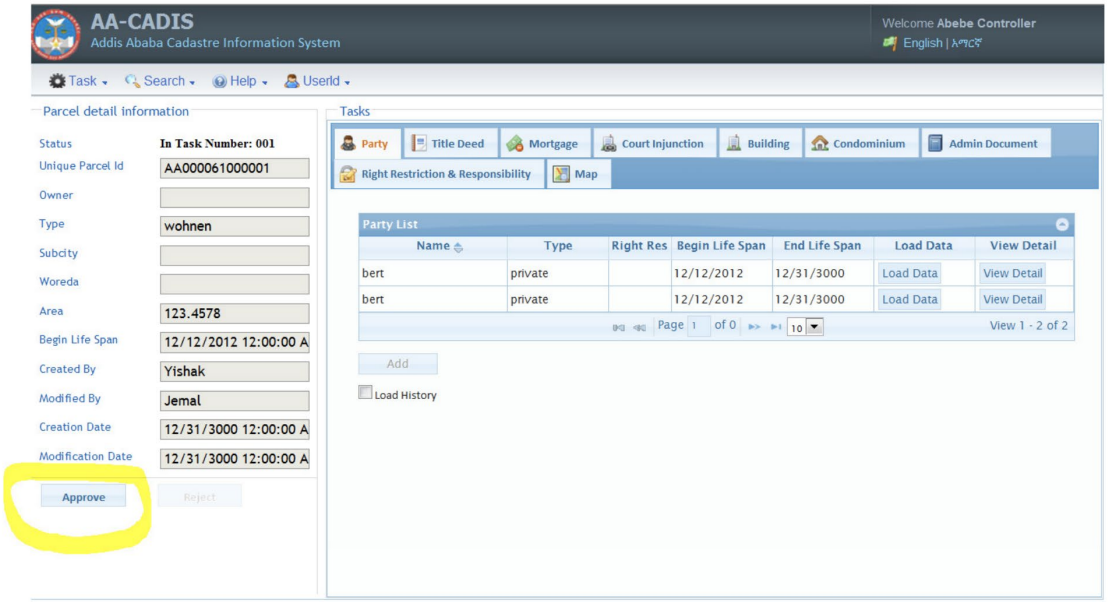
5.2 Analyse socio-economic fabric

Socio-economic data should be gathered to understand the characteristics of urban populations living in the subject area and deploy adequate inclusive TOD measures. The measures should aim to stimulate urban development and economic activities while improving livelihoods of the pre-existing low-income residents, especially those living in informal areas. As such, income, age and employment data help show which different population groups, including vulnerable people, may live in the area. In addition, property data such as land ownership and tenure should be collected to help cities to understand the status of land in the study area, propose new land use and services, and decide on different intervention types. Land ownership maps are also important to understanding the structure of parcel divisions in a block, the type of private development possible, and potential land assembly. The socio-economic data will also help identify measures aiming to improve conditions in the informal areas that can include in situ improvements, retrofitting areas with infrastructure and amenities, as well as compensation and resettlement. Mapping existing businesses and economic activities in the area, formal and informal, is also needed, because individual businesses can be equally affected by interventions. Strengthening local activity by building on existing commerce can help retain community economic resilience.

Qualitative data from housing and business surveys, interviews and focus groups can help gain a better understanding of the composition and needs of existing local communities. Land ownership maps could be prepared using Geographic Information Systems (GIS) tools.

At the Jemo site, ITDP researchers conducted surveys and interviews with residents to better understand the socio-economic fabric there. At the site, more than 36% of the survey respondents own private, four-wheeled vehicles, a sign of wealth in the area. In Addis Ababa, the Land Information System (LIS) through the database was created in GIS (see Figure 9). Its contents are administrative, compartmentalised geographic data, and descriptive data, buildings are given geographical and associated data.[3]

Figure 9. Land registration using cadastral information system, Addis Ababa. Source: Hansa Luftbild Consulting International GmbH (21)



Additional Resources: GIS based Land Information System using Cadastral model (22)

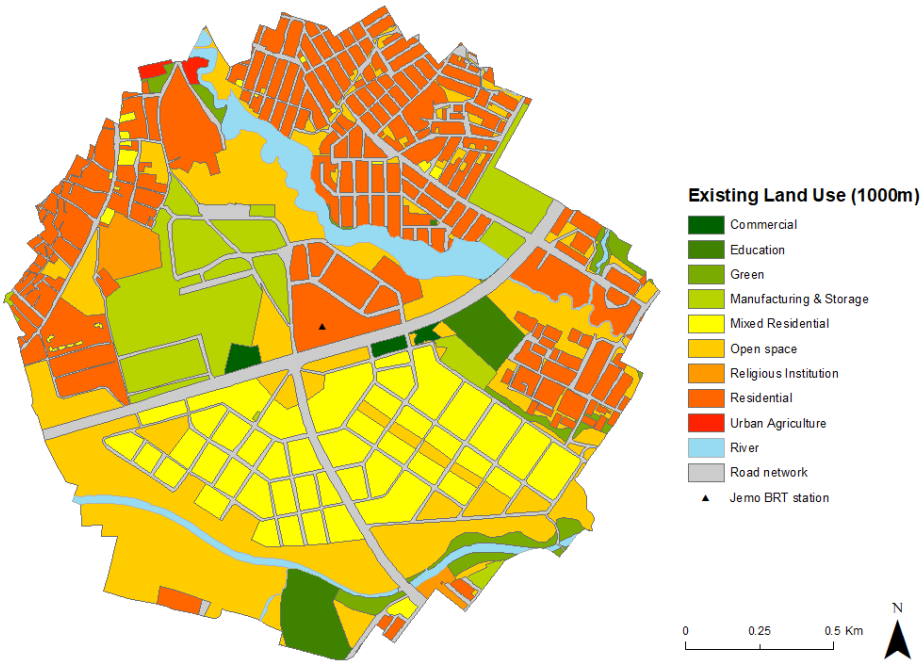
5.2.1 Residential and non-residential densities

Mapping and quantifying the residential and non-residential densities help understand gaps in density of the LDP area, compared to other well-developed LDPs and TOD areas in the same city. The TOD Standard scoring method for metrics Residential and Non-residential Density calls for a comparison of the station area density to a "baseline area" density or density of the local best-practice case of higher land use density that is also regarded as desirable as a living environment. This local best practice is used as the baseline for comparison. The measurement method also looks at whether the area in the immediate surroundings to the main public transport station (0-500 m) is denser than the whole station area (0-1,000 m) to understand whether there should be more densification closer to public transport to maximise the development potential. These metrics are critical for inclusive access, health, efficient use of resources, and minimising environmental impact. High residential and job densities support high-quality public transport, local services, and public space activity.

[3] Property identification under land information system in Addis Ababa, Desta Jula.

In Addis Ababa, ITDP analysed the land uses and densities around the Jemo site as part of the HVT programme Transit-Oriented Development Case Studies Report (14). The land use at the Jemo site is mainly residential and service areas. The service types are hospitals, market areas, and smaller shops on the ground floor of the condominium buildings. The dominant land use is residential, with 14 hectares of land (see Figure 10). The site met the TOD Standard criteria for both residential and nonresidential densities.

Figure 10: Land use around Jemo site. Source: ITDP (14)



5.2.1.1 Calculate residential densities

Residential density is the gross household density which is calculated as the total number of housing units divided by gross land area. View more details on the residential density point system on page 80 of the TOD Standard (4). To calculate residential densities:

- Calculate the gross dwelling unit density in the project area,
- Calculate the gross dwelling unit density for the baseline project identified,
- Compare the development with the baseline, and
- Determine if the project is located within or outside a 500-meter walking distance of the public transport station.

5.2.1.2 Calculate Non-Residential Densities

Non-residential density can be calculated in comparison with a reference value and expressed in jobs and visitors per hectare or non-residential floor area ratio (FAR) per hectare. It is calculated by identifying and measuring the non-residential gross floor area (GFA) of the buildings in the development and dividing this figure by the area of the land. It can also be expressed as a ratio of the total number of resident workers to the total built up area of non-residential uses at different levels to evaluate the jobs per hectare. Higher non-

residential density scores indicate more jobs and services are in the area. View more details on the non-residential density point system on page 82 of the TOD Standard (4). To calculate non-residential densities:

- Calculate the development's non-residential density by the number of jobs and average daily visitors or by the FAR,
- Identify the best practice baseline project and calculate its non-residential density,
- Compare the development with the baseline, and
- Determine if the project is located within or outside a 500-metre (m) walking distance of the primary station.

Additional Resources: ITDP TOD Standard (4).

5.3 Analyse existing institutional frameworks

Evaluating the existing Institutional framework will help to understand the role of different agencies, their primary responsibility as well as the authority of an agency to plan, design, construct and manage projects. It also includes arrangements or procedures to facilitate data sharing and coordination between implementing agencies. An understanding of these structures will help to develop a plan that can be implemented by the existing institutions or that includes modifications and additions to those institutions as part of the plan.

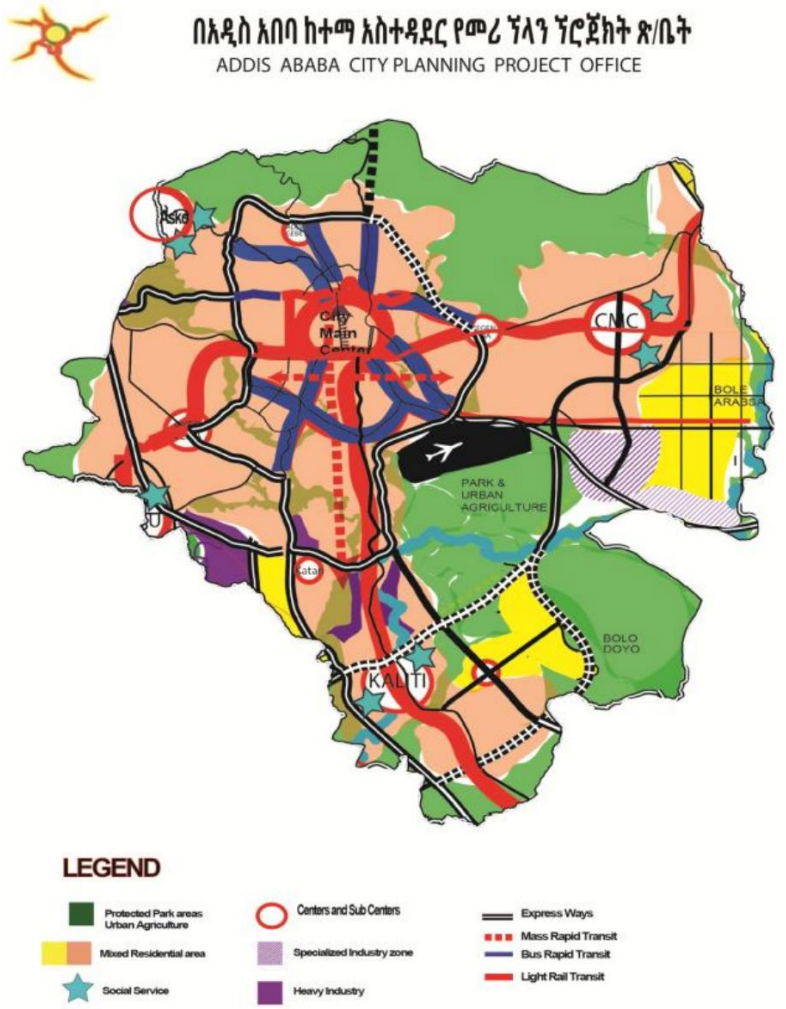
Specifically, local development planning may include proposing modifications to existing institutions and/or the creation of new institutions for the planning, implementation, monitoring and evaluation of the Local Development Plans. This may include:

- assigning institutions for the activities proposed in the LDPs;
- developing proposals towards incorporating LDP implementation in mandates of assigned institutions, and work out detail duties & responsibilities to be assumed;
- developing appropriate public private partnership scenario for the LDP implementation;
- conducting an internal jury on the plan and making the necessary modifications to it accordingly; and
- analysing the capacity of the existing institutions to plan, design and implement TOD projects.

In Addis Ababa, ITDP analysed the urban planning context in Addis Ababa as part of the HVT programme Transit-Oriented Development Case Studies Report (14). The researcher found that much of the urban development stems from Ethiopia's 2004 Integrated Housing Development Program (IHDP), which provides government financing for housing for low- and middle-income residents. The program clears slum areas, particularly in the city centre and rehousing residents in multi-storey condominium houses. The Development program is administered by the Ethiopian Housing Development Agency, which builds the housing units and transfers them to residents.

The Addis Ababa City Development Plan 2017-2027 was approved in 2015, providing an overall framework for the spatial development of the city, particularly for siting new condominium housing and connecting it to transport services, such as BRT. The concept of the plan is shown in Figure 11.

Figure 11. Addis Ababa concept plan 2017–2027. Source: Addis Ababa (23)



ITDP identified earlier development plans, which were not effectively implemented. Major shortcomings of those plans include a failure to sufficiently describe implementation mechanisms (including institutional structure and funding sources) to encourage and guide proposed strategic investments. For example, some of the interventions proposed in the Local Development Plans (LDPs) lacked critical understanding and interpretation of land use and transportation integration. The new City Development Plan gives these issues more consideration and proposes transit-oriented development along key corridors.

Additional Resources: Transit-Oriented Development Implementation Resources and Tools, 2nd Edition (20)

5.4 Analyse existing financial resources and frameworks

Local development plans and the city government budget should be linked. The absence of viable financial strategies for implementing projects is a key challenge to financing different projects under local developments. Planning efforts need to Identify the source of funding and finance for the projects, and indicate possible sources from private sources, public sources, community-based organisations (CBOs), development banks, loans, and non-governmental organisations (NGOs) as needed. As such, all financial planning stages should consider maintenance.

The World Bank recommends that as part of the resource assessment process, planners should ask the following questions (20):

- Do they have financial capacity to hire the required resources?
- Do they have local/municipal financing means to fund TOD capital investments?
- Do they have budget allocated to conduct road safety studies and implement safe system infrastructure?
- Do they have access to external sources of funding for TOD and road safety?
- How well do current policy and regulatory tools foster and incentivise TOD?
- Are there any incentives for developing non-motorised infrastructures and ensuring road safety?
- What funding sources can be unlocked over the course of the investment?

In Addis Ababa, ITDP analysed the financial resources in Addis Ababa as part of the HVT programme City Retrofit for All: Baseline Report (13). The researchers found that the government of Addis Ababa possesses substantial powers to tax the incomes of employees, profits of enterprises and various other revenue sources usually collected at the national level. The Addis Ababa City Administration has powers to mobilise substantial revenue of its own from income (including rental income), business profits and VAT on certain products and services.

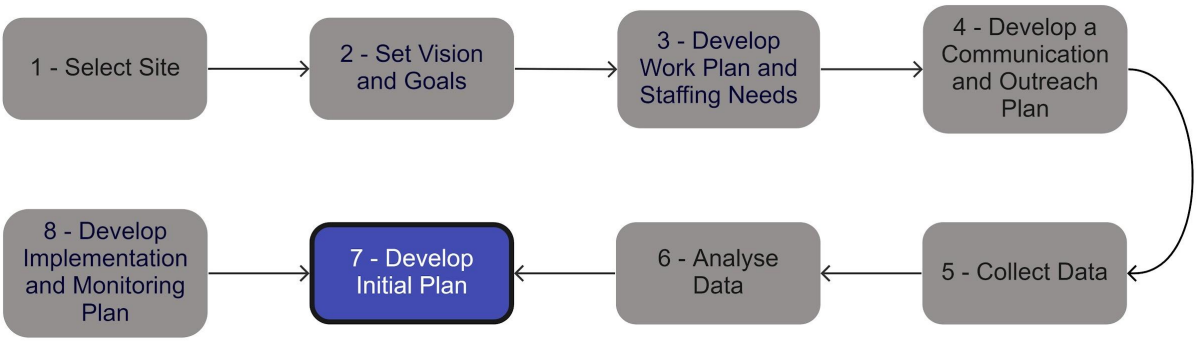
Researcher found that a census of properties (including informal structures) in Addis Ababa was undertaken in 1996 using a computerised system and a team of 3,000 enumerators to calculate new property tax rates. However, there has been no revision since. Even for those houses that the city authority does have on its register, severe undervaluation is the norm—sometimes varying from 300% to 7,685% below the actual value. Addis Ababa has experimented with land value capture tools such as roof tax, permit holding fee, lease holding system and capital gains tax. Roof tax, rent on houses and rent on plots of land constitute around 3% of total city revenue including state revenue and municipal revenue.

Additional Resources: Transit-Oriented Development Implementation Resources and Tools, 2nd Edition (20)

6. Develop initial plan

The section below provides a set of priority actions that you should consider as part of an LDP, as well as more detailed guidance and resources for a select number of those actions. Figure 12 shows where this step is in the overall planning process.

Figure 12. Plan Development as Part of the Planning Process. Source: ITDP



The priority actions stem from the three priority goals described in Section 4, and are based on the research into TOD in East Africa and India. Plans should provide more detail on the kinds of actions and planning and design treatments the LDP study area should receive based on the goals defined in the visioning step and the detailed assessment.

6.1 Priority actions for inclusive TOD

As the next step, the task force or the lead agency should work on narrowing down the priority actions for the LDP study area. For each goal, several actions are listed based on the results from the study area assessments and feedback from the stakeholder roundtables in Addis Ababa and Dar es Salaam. Each action includes an estimate of impact (low, medium, high), time to implement (short, medium, long), and cost associated with implementation (low, medium, high). These are actions recommended for consideration, based on common needs identified in the region. When selecting actions, the actions must be compared to the specific needs of the study area in order to select the most appropriate set of actions.

6.1.1 GOAL #1: Increase access to basic infrastructure and services

Action 1.1: Invest in water, electricity, sanitation/sewers, and drainage

Impact: high | **Time**: long | **Cost**: high

Investments in basic infrastructure and services help everything else work better and are the building blocks for all other improvements. As part of the LDP, gradually expand infrastructure for new development and coordinate with laying out a new street grid. Retrofit existing areas with basic infrastructure services through upgrade efforts. More detailed guidance and additional resources for utility improvements can be found in Section 6.3.1 below.

Action 1.2: Lay out a street grid ahead of greenfield development (formal or informal) and reserve land for open space

Impact: high | Time: medium | Cost: low

Allocate space for main arterial roads and protect it from informal encroachment. Coordinate with investments in water, electricity, sanitation and drainage. Allocate land for neighbourhood parks and greenways.

Additional Guidance: World Bank Sites and Services Projects (24)

Action 1.3: Allocate funds and staff for operations & maintenance

Impact: high | Time: medium | Cost: medium

New infrastructure and services require funding to continue to serve their functions, otherwise they deteriorate or cease to function. Secure continuous sources of revenue to ensure continuity.

6.1.2 GOAL #2: Ensure safe and convenient non-motorised transport access

Action 2.1: Build walking infrastructure

Impact: high | Time: short | Cost: low

Create well-designed walking paths to enable basic transportation on foot. Walking infrastructure should be protected from motor vehicles and should be accessible to people using walking aids.

Additional Guidance: ITDP and UN Habitat Streets for Walking and Cycling (25)

Action 2.2: Plant trees

Impact: high | Time: short | Cost: low

Trees dramatically improve shade and attractiveness of streets but require intervention to establish space and infrastructure. Trees also counter the impact of extreme weather events, from heavy rains to extreme heat. Plant trees directly and work with local partners to water and maintain them.

Additional Guidance: US Forest Service Urban Forestry Toolkit (26)

Action 2.3: Upgrade streets and walkways in existing development

Impact: high | Time: medium | Cost: medium

Streets and walkways in informal development may form a dense network, but they often lack proper treatment for safe travel. Upgrade narrow streets and paths (walk and cycle only), but also create some wider streets that enable fire, ambulance, waste removal vehicles and other services to access the study area. Ensure that walkways and streets are continuous and unobstructed, and block lengths do not exceed 110 metres. More detailed guidance on local street network improvements can be found in Section 6.3.2 below. Guidance on arterial street design improvements can be found in Section 6.3.3 below.

Additional Guidance: ITDP and UN Habitat Streets for Walking and Cycling (25)

Action 2.4: Formalise existing walking paths

Impact: medium | Time: short | Cost: low

Informal walking paths provide crucial, and often the only ways to access activities and services on foot. Map existing walk pathways and establish protection to keep them from being closed off. Upgrade informal walkways by adding smooth surface, drainage and shade.

Additional Guidance: ITDP and UN Habitat Streets for Walking and Cycling (25)

Action 2.5: Open privatised walking paths

Impact: medium | Time: short | Cost: low

Create new and open existing walkways and paths to the public that have been privatised or closed. This can be done by acquiring the paths or creating agreements with the private or institutional property owners. Private pedestrian thoroughfares should be publicly accessible for pedestrians for at least 15 hours a day.

Action 2.6: Encourage shade

Impact: medium | Time: medium | Cost: low

Encourage shade at residential and commercial structures by removing regulations that prohibit shade structures and highlighting existing private solutions.

Action 2.7: Increase activity and permeability in the street frontage to enliven the street

Impact: medium | Time: medium | Cost: medium

Permeable and active street frontage encourage walkability, whereas compound walls or empty walls of buildings at the bottom floor alienate pedestrians and decrease personal security. Work on creating more activity and permeability in the street frontage by disallowing empty walls and gates and requiring commercial development and public facilities to implement see through glazing at the bottom floor.

Action 2.8: Build cycling infrastructure

Impact: medium | Time: medium | Cost: medium

Create well-designed cycling paths to enable basic transportation. Cycling paths should be protected from traffic on streets with faster vehicle speeds (>30 km/h) or higher vehicle volumes (>1,500 vehicles per day), but on streets with both low speeds and low vehicle volumes, protection is not needed.

Additional Guidance: ITDP Grow Cycling Toolkit (27), ITDP and UN Habitat Streets for Walking and Cycling (25), SUTP Cycling-Inclusive Policy Development: A Handbook (28)

Action 2.9: Manage on-street parking and vending

Impact: medium | Time: medium | Cost: low

Without good curb management of the street curb where parking and often street vending occur, those activities can crowd into the spaces dedicated for walking and cycling. When that happens, walkways and bicycle paths become overcrowded and cease to function as proper infrastructure. Create properly enforceable enforced rules and regulations that prevent illegal parking and create space outside of walkways and cycle paths for street vending.

Additional Guidance: ITDP On-Street Parking Pricing (29), On-Street Parking Management by Paul Barter (30), SUTP On-Street Parking Management (31)

6.1.3 GOAL #3: Foster inclusion

Action 3.1: Reform off-street parking

Impact: high | Time: medium | Cost: medium

Parking requirements drive up development costs, induce additional car use, and detract from the walking and cycling environment. These are particularly harmful in low-income areas where few people can afford vehicles and are more sensitive to increased housing costs. While off-street parking is often seen as a means of addressing on-street parking issues, these are more effectively addressed through on-street parking management.

Additional Guidance: SUTP Module 2c – Parking Management (32)

Action 3.2: Formalise land tenure

Impact: medium | Time: medium-long | Cost: medium

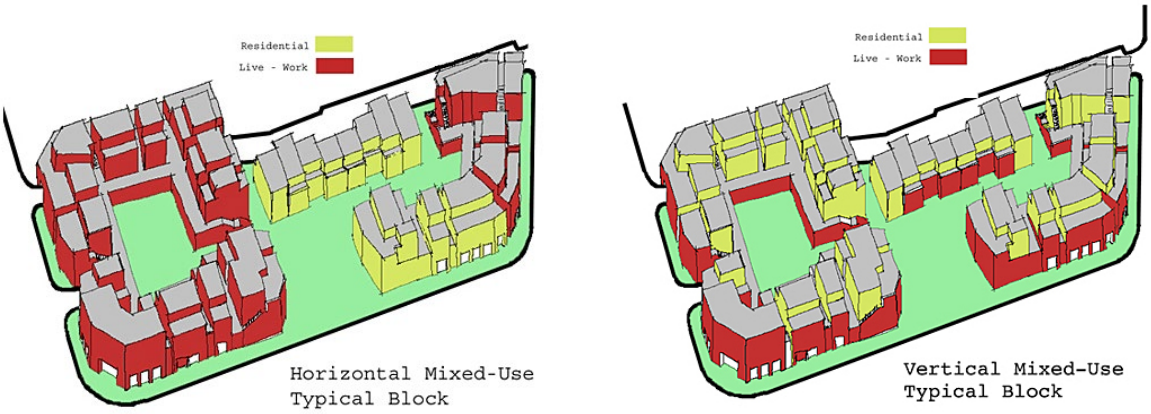
Formal land tenure can create incentives for residents to improve their homes and neighbourhoods. Tenure formalisation process is sometimes most effective when done in parallel with improvement efforts to the local community, and it should involve all community, grassroots and local leaders for the highest level of transparency.

Action 3.3: Establish simple building and zoning regulations to encourage mixed use

Impact: medium | Time: medium | Cost: medium

Create simple building and zoning regulations that support mixed-use local development patterns, such as home-based businesses and shops, as seen in many informal settlements. Mixed use is a key tool to reduce auto dependence, promote sustainable modes, create balanced residential and non-residential uses and preserve green space and natural resources. Mixed-use can be achieved in either a horizontal or vertical manner, as shown in Figure 13. Regulations should ensure building structural integrity and safety, and prohibit anti-pedestrian features, such as compound walls.

Figure 13. Vertical and horizontal mixed-use development. Source: Place Makers (33)



Action 3.4: Support local residents to improve existing settlements

Impact: high | Time: medium-long | Cost: medium-high

Improving existing settlements can be sometimes difficult, but it can benefit existing communities & minimise displacement when it is done in partnership with local communities. Improvements can take a form of in-situ upgrade or in-situ redevelopment. Informal housing is a form of affordable housing and maintaining

affordability should also be of equal priority. Most cities are facing a housing crisis, so it is imperative for cities to not destroy existing stock, especially if it is a form of affordable housing. While it may take a long time, supporting communities to improve their settlements can help create generational wealth and move people out of poverty.

Action 3.5: Create public open spaces

Impact: medium | Time: short-medium | Cost: low

Diverse and frequent open spaces create opportunities for recreation, improve neighbourhood activity and character and they also add safety measures to streets by buffering pedestrians and residences from street traffic. Create public open spaces by either closing parts of streets to cars or acquiring land and converting it to open space. Assist with the maintenance of these spaces.

Action 3.6: Provide temporary tenant protections

Impact: medium | Time: short | Cost: low

When tenure is contested, create temporary eviction bans to protect existing tenants. At times, long-term leases can be issued to residents or entire communities.

Action 3.7: Invest in subsidised housing

Impact: medium | Time: medium-long | Cost: medium-high

Invest in subsidised housing to help poorer residents afford rent fees. Subsidised housing within TOD enables direct access to public transport, reducing the cost of transport. By avoiding the need to build parking, the cost of housing can also be reduced.

Action 3.8: Remove setback requirements and density restrictions

Impact: medium | Time: medium | Cost: medium

Building to or near the property line increases street life and encourages walkability. Removing setback requirements enables this type of development and reduces housing costs by allowing development to occupy more of each lot. This, together with removing density restrictions, helps reduce development costs, increase affordability, and facilitates urban street life.

6.2 Establish measurable metrics

Metrics are needed to help measure progress towards the LDP goals. Metrics rely on data that can be updated periodically to monitor the progress toward the goals and priority actions. Metrics can vary for any city, but they should be generally chosen based on relevance to goals and ease of data sourcing and monitoring. Below are example metrics that can help track progress for each goal area from Section 6.1 above.

GOAL #1: Increase access to basic infrastructure and services

- Number of households serviced by running water, sewage and electricity / total number of households in the LDP area

GOAL #2: Ensure safe and convenient non-motorised transport access

- percent of streets upgraded
- Share for sustainable transport modes (percentage of daily trips done by walking, cycling and public transport)
- Km of new or upgraded walkways
- Km of protected bicycle lanes
- People Near Transport (number of people in a 500-metre walking distance to a transport stop out of the total population in the city.

GOAL #3: Foster inclusion

- Percent of informal housing units rehabilitated in the LDP area
- Number of basic services like schools and healthcare services per km^2 or per capita
- Percent of subsidised housing units in the LDP area

6.3 Detailed guidance for select planning actions

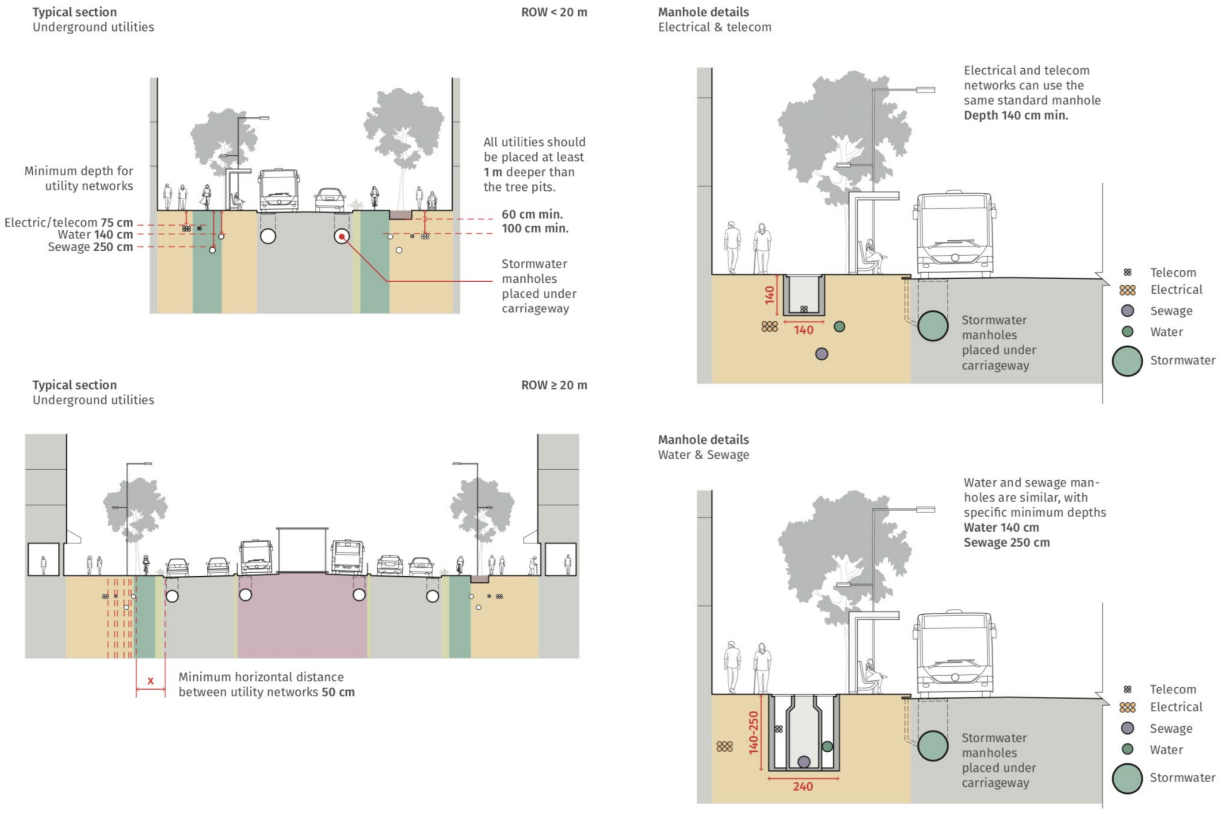
The following section provides more detailed guidance on a select number of priority actions related to inclusive TOD listed above. These actions were selected because they were identified as having a high importance to inclusive TOD in the region, and they include details that are more complicated and require further guidance.

6.3.1 Utility improvements

TOD is built on a foundation of appropriate infrastructure and basic services to ensure clean, healthy living conditions. TOD also requires sufficient density to create well-populated, lively, active, vibrant, and secure places, where people want to live and where local commerce can thrive (4). The challenge is to create urban density that is well served by basic infrastructure and services, but at an affordable cost. This may require reforming existing land use codes and other development policy frameworks.

The size and quality of utility lines should match with the planned density of a development, balancing desired densities with the high costs of upgrading infrastructure. Streets are the conduits for major services, including electricity, water, sewage, communication, and gas. The physical infrastructure may occur in the form of pipelines, telephone and fibre optic cables, ducts, and poles. Some utilities, such as telecommunications cables, require frequent access for expansion and maintenance. The spaces for the utility lines should be placed together with the street designs, as shown in Figure 14.

Figure 14. Utility line under streets. Source: National street design manual, Ethiopia 2022 (34)



Additional Resources: Street design manual for urban areas in Kenya (35).

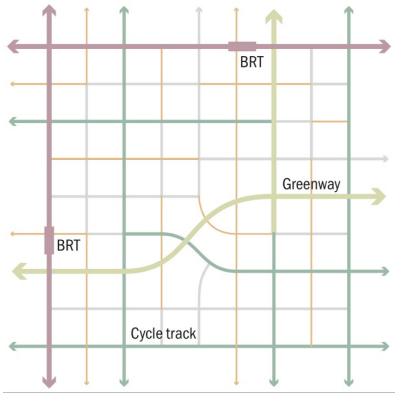
6.3.2 Local street network improvements: alignments for new streets to reduce block sizes

Sustainable street networks increase the number of people walking, bicycling, and taking public transport, which help reduce vehicle travel. Connectivity enables people to take shorter routes. It also enables them to travel on quieter streets. These shorter routes on quiet streets are more conducive to bicycling and walking.

At a local development planning scale, establishing or reinforcing the networks of pedestrian paths, streets, and arterial networks should bring the area closer to a 1,000m grid of arterial streets that prioritise goods movement and public transport and the 100m sub-grid of streets that prioritise walking, cycling, and local vehicle access. This is a fundamental but challenging task of TOD implementation. Once established, street networks are very difficult, costly, and time-consuming to change. Reshaping them is also very disruptive and damaging to the lives of the residents who may be displaced in the process.

A complete transit-oriented network can be formed, as shown in Figure 15 below. The starting point is public transport, in this case a surface-based system (purple) such as a light rail transit (LRT) or BRT passing through the district with a station at the centre. Everyone will be within a 5-minute walk of the station. Emanating out from the station is a principal walkway (blue) - a promenade for people accessing the station, and also likely the signature street of the district. Walking spurs connect to this walkway and provide access to all blocks and surrounding districts. A greenway (green) passes through the district, potentially along a waterway. Cycleways provide high speed and comfortable passage for cyclists. Cycling infrastructure also extends the reach of the public transport station. A network for drivers circumscribes the district but does not interrupt it. Access is provided to all blocks, but drivers are channelled to the surrounding arterials. Motor vehicles support the neighbourhood, but do not define it. This type of complete, transit-oriented district is reminiscent of many universities and other campuses (35).

Figure 15. Conceptual TOD Street Hierarchy. Source: ITDP (35)



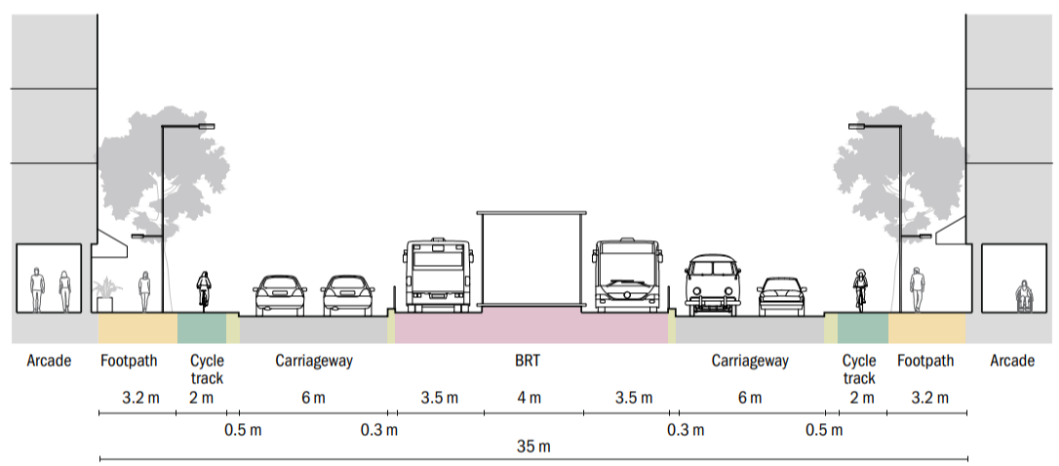
Additional Resources: Harmonized Ethiopia National Urban Street Design Tool (34), Street design manual for urban areas in Kenya (35)

6.3.3 Arterial street design improvements

In order to design a complete street incorporating an attractive and welcoming pedestrian environment, it is important to establish standard design criteria for all users. The major streets often define the areas for local development plans, since they serve as a route for mass transportation, station locations, main cycling corridors, walking, vending spaces, and interaction spaces for people.

Street design elements are the street components that accommodate or serve specific functions. A complete major street needs to incorporate enough space for all the street elements. An example of a major street with basic street elements is shown in Figure 16 below.

Figure 16. Arterial Street with major elements supporting walking and cycling. Source: Street design manual for urban areas in Kenya (35)

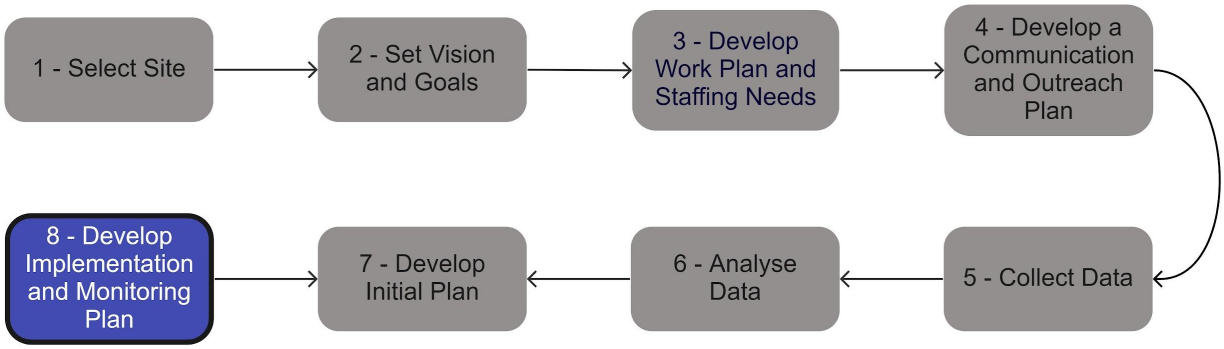


Additional Resources: Streets for Walking and Cycling (25), Harmonized Ethiopia National Urban Street Design Tool (34), Street design manual for urban areas in Kenya (35)

7. Develop an implementation and monitoring plan

For governments with limited resources, an implementation plan is crucial to ensuring that LDPs are turned into reality. Figure 17 illustrates where this fits into the broader planning process. The implementation plan details the who, what, when and how much of the projects should be implemented.

Figure 17. Implementation plan development as part of the planning process. Source: ITDP



The plan covers partner roles and responsibilities, activities, timeline, budget and management considerations. This step includes five tasks which illustrate how to develop an Implementation Plan.

Task 1: Determine agencies, partner roles and responsibilities.

This is the *who* task where you determine the roles and responsibilities of agencies and partners. The success of the plan implementation relies on the combined expertise of participating agencies and partners. Effective programs come from strong teams, and in turn, contribute to a sense of shared ownership.

Task 2: Outline activities

This is the task where plans for implementing the plans and achieving the project objectives are outlined.

- For this task, focus on major milestone activities.
  - What are the activities that need to be implemented?
  - What are the intermediate steps necessary for each activity?
  - What is the necessary sequence of activities?
- Using the potential partners identified in Task 1, assign responsibility for each activity.
  - Who will be responsible for the implementation of each activity?

Task 3: Establish a timeline

This is the task where the time schedule for the development, implementation, and evaluation of your activities is determined. The timeline is a flexible tool that will need periodic reviews and updates as changes occur. The timeline should show the critical path to completion of the plan. To create this path, planners must identify the activities that prevent other activities from occurring. For example, utility improvements that require digging up the streets must be completed before any road upgrading can be completed. Once complete, the timeline can be used as a monitoring tool to ensure the implementation of activities stays on schedule. Key questions to consider when making a timeline:

- When will each activity be implemented?
- What activities must be completed before this activity can be completed?
- What activities cannot proceed until this activity is completed?
- What resources and staff are required for this activity? Will these be needed for other activities at the same time?

Task 4: Determine a budget

This task determines the total cost of the implementation plan. In order to determine how much of the plan you can implement, you need to have a summarised cost of projects under the TOD plan. Based on the final implementation plan for the TOD project, the city will determine how much funding it must secure. Planners are not typically responsible for securing funding for LDP implementation.

Task 5: Identify monitoring strategy

Monitoring strategy would determine how and how often the progress toward the goals needs to be checked using the identified metrics and data sources. This process may also include qualitative monitoring methods such as interviews and surveys with the public. In this step, the lead agency would have to task a monitoring unit, or establish one, to manage this process. This might include working with any external stakeholders such as NGOs or the private sector to access data.

Task 6: Finalise the implementation plan.

Once the actors, activities, timeline, and budget has been determined, they should be combined into the full implementation plan. The plan should balance these four elements to create a practical plan of action, in consultation with the actors involved to ensure buy-in from everyone. This may require several iterations, as adjustments to one element may affect others. The plan should be finalised when all the actors involved signal that they are willing to commit to their part of the plan, even if they do not agree with every single detail of the plan. This ensures that the implementation plan will be completed.

8. Summary

This toolkit provides guidance for planners and implementing agencies on the planning process and steps for the preparation and implementation of the Local Development Plans through the lens of inclusive TOD. Through a focus on a few key areas, that research has shown to be most important to creating inclusive TOD, users of the tool should be better able to develop and implement LDPs that support inclusive TOD, particularly in the focus countries of Ethiopia and Tanzania. Both countries have recognised TOD as the main urban development strategy that can help curb sprawl, support city efficiency, and improve life standards of all residents. This tool helps to implement TOD at the local scale, where the details of TOD are very important to its success. Local Development Plans have been identified as effective tools to develop proper details of inclusive TOD. Based on feedback from the stakeholders in Addis Ababa and Dar es Salaam the tool recommends specific planning goals and actions that were identified as most crucial to creating inclusive TOD given local constraints and conditions. The guidance aims to help identify roles and responsibilities in the LDP process and streamline actions more effectively. It also aims to define needed actions that foster inclusive TOD. By following this tool, more cities should be able to plan and implement inclusive TOD.

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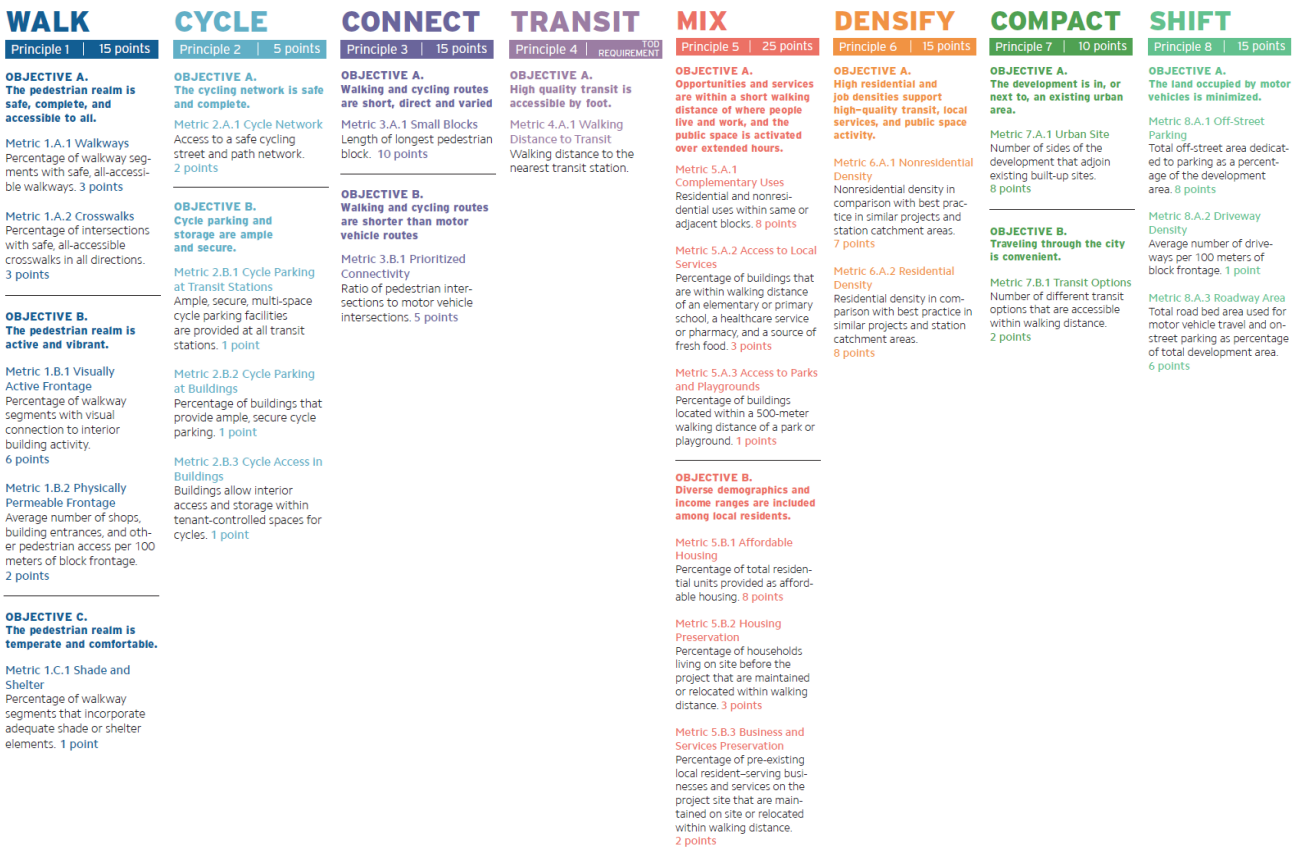
APPENDIX A: TOD STANDARD FRAMEWORK

The TOD Standard is a comprehensive framework of TOD principles, objectives, and metrics that define complete and inclusive urban environments for everyone. The 25 metrics together make a functional tool that can be used for assessing the TOD features of neighbourhoods and projects. Each metric includes criteria, a measurement method, and a point system that anyone can use to assess a neighbourhood or development on a 100-point scale. The principles, objectives, and metrics are described in detail below, as summarized in Figure 18.

Figure 18. TOD Standard Framework



10.1 Principle 1: Walk

Walking is the foundation for sustainable and equitable access and mobility in a city and fundamental to the success of inclusive TOD. High-quality, unobstructed, universally accessible pedestrian infrastructure provides basic mobility for all regardless of age, economic status, or physical ability. Inviting features and design which centers around user comfort makes walking more enjoyable and gives people opportunities for interaction and community.

10.1.1 Objective 1A: The pedestrian realm is safe, complete, and accessible for all

The key elements of pedestrian infrastructure are walkways and crosswalks, which are fundamental to safe walking. When designed well, they create a continuous pedestrian network that is safe from cars and accessible for all people including persons with disabilities, the elderly, and caregivers walking and strolling with young children.

10.1.1.1 METRIC 1.A.1: Walkways (3 points maximum)

Walkways should be:

- Accessible for all

- At least 2m wide
- Free of obstructions
- Well-lit
- Either separated from traffic by a curb or other devices like bollards, shared and well-marked streets with vehicles at a very slow speed, or pedestrian and cycling only paths

Figure 19. In Pune, India, the redesign of the Jangali Maharaj Road features a wide sidewalk buffered from traffic and a furniture zone for comfort of pedestrians. Source: IBI

10.1.1.2 METRIC 1.A.2: Crosswalks (3 points maximum)

Crosswalks should be:

- Safe and wheelchair- and stroller-accessible in all directions (via ramps or raised crossings)
- At all intersections with traffic exceeding 15 km/h
- Well-marked, well-lit, and visible
- At least 2m wide
- No more than two traffic lanes before a pedestrian refuge

Figure 20. At grade demarcated crosswalks and refuge island help caregivers cross the street safely, like at the intersection in Prague, Czech Republic. Source: Jose Kubes via Shutterstock.

10.1.2 Objective B: The pedestrian realm is active and vibrant

Activity and permeability of the street frontage create vibrancy in the pedestrian realm. Sidewalks that are populated, animated, and lined with useful ground-floor activities and services make walking more attractive and secure.

10.1.2.1 METRIC 1.B.1: Visually active frontages (6 points maximum)

Active frontages include:

- See-through glazing such as windows and openings at eye level
- Open spaces such as parks, plazas, and playgrounds visible from the walkways

Figure 21. Incorporating elements of play are creative ways to activate the pedestrian realm and make walking more inviting for caregivers and their toddlers in Boa Vista, Brazil. Source: ITDP.

10.1.2.2 METRIC 1.B.2: Physically permeable frontage (2 points maximum)

Physically permeable frontages include:

- Public entrances to establishments, public parks and plazas along the walkway

Figure 22. Frequent shop windows and entrances to establishments create a more comfortable experience for a caregiver navigating the pedestrian realm with her baby in Bacolod City, the Philippines. Brian Evans via Flickr.

10.1.3 Objective C: The pedestrian realm is temperate and comfortable

The comfort of walking is as important to pedestrians as the basic infrastructure enabling it. Shade and shelter create comfortable walking conditions important to anyone in the pedestrian realm, but especially caregivers with young children sensitive to harsh weather elements.

10.1.3.1 METRIC 1.C.1: Shade and Shelter (1 point maximum)

Shade and Shelter are created by:

- Trees, arcades, awnings, and shelters at transport stops that protect people from exposure to weather elements

Figure 23. Shade provides comfort in a journey. Caregivers rest under the shade in a public space in Harare, Zimbabwe. Source: ITDP.

10.2 Principle 2: Cycle

If street conditions are safe, cycling provides another easy, affordable, and sustainable option for efficient travel within the neighbourhood and beyond. It combines walking's door-to-door travel convenience and schedules flexibility with ranges and speeds similar to local public transport services. It also offers many health benefits from increased physical activity. Cycling is highly efficient and consumes little space and few resources.

10.2.1 Objective A: The cycling network is safe and complete

An adequately developed cycle network is essential to promoting cycling to people, including caregivers who can cycle locally with their babies and toddlers or to transit for longer distance trips.

10.2.1.1 METRIC 2.A.1: Cycle network (2 points maximum)

A Safe Cycle Network can include:

- Protected bike lanes on streets exceeding traffic speeds 30 km/h (20 mph)

- Slow streets (speeds below 30km/h)
- Shared streets (< 15km/h speed limit)
- Pedestrian and cycle-only paths

Figure 24. A caregiver cycles with her toddler in a demarcated cycle lane near the Transjakarta BRT, Jakarta, Indonesia. Source: ITDP.

10.2.2 Objective B: Cycle parking and storage are ample and secure

Adequate cycle parking included in the cycling infrastructure makes cycling convenient for everyone.

10.2.2.1 METRIC 2.B.1: Cycle parking at transit stations (1 point maximum)

Cycle Parking at Transit Stations should include:

- Facilities for locking bicycles and other nonmotorized modes, such as outdoor racks or weather-protected storage within 100 m of a transit station entrance
- Bike parking does not block pedestrian path

Figure 25. Cycle parking is ample near transit stations in Tokyo, Japan, enabling first and last mile trips for caregivers traveling to farther destinations. Source: Scott Kouchi - Flickr.

10.2.2.2 METRIC 2.B.2: Cycle parking at buildings (1 point maximum)

Cycle Parking at Buildings can include:

- Ample racks or other fixed facilities within 100 m of larger buildings and facilities

Figure 26. A children's hospital in Washington DC, USA provides convenient parking for bicycles for visitors and employees. Source: ITDP.

10.2.2.3 METRIC 2.B.3: Cycle access in buildings (1 point maximum)

Cycle Access in Buildings means:

- Buildings allow interior access and storage for cycles within residential and nonresidential tenant-controlled spaces

Figure 27. Residential buildings that allow storing bicycles in one's own apartment make cycling convenient especially for those using bicycles for transporting children and goods. Rio de Janeiro, Brazil. Source: ITDP.

10.3 Principle 3: Connect

Walking should be more convenient at shorter distances, regardless of age or physical ability, and especially when caring for young children. Laying out neighbourhoods based on the fine grain of pedestrian and cycling paths and networks in all directions prioritizes people walking and cycling. This also gives people the option to take the most convenient and direct routes.

10.3.1 Objective A: Walking and cycling routes are short, direct, and varied

The simplest proxy for connectivity is the size of city blocks. Smaller blocks slow down traffic, provide a direct network, and offer more choices of walking paths to suit individual needs. Long blocks form obstacles and detours that can discourage, or make unpleasant, pedestrian movement, especially for caregivers with children.

10.3.1.1 METRIC 3.A.1. Small Blocks (10 points maximum)

Small Blocks should:

- Not exceed 110 m in length on each block side
- Be publicly accessible for pedestrians for at least 15 hours a day
- Can include publicly accessible passageways through blocks

Figure 28. Short, pedestrian-prioritized blocks in Sunter Jaya, Jakarta, Indonesia make walking more convenient and playing safer. Source: ITDP.

10.3.2 Objective B: Walking and cycling routes are shorter than motor vehicle routes

When the pedestrian and cycle network prioritises pedestrians and cyclists, not cars, the routes can be flexible and much shorter for them. This means that the network of pedestrian and cycle paths, shared streets, and crosswalks are denser than the network of streets and intersections for motor vehicles.

10.3.2.1 METRIC 3.B.1: Prioritized Connectivity (5 points maximum)

Prioritized Connectivity is enabled by:

- Pedestrian and cycle crosswalks at all intersections
- Prioritized connectivity occurs at intersections of pedestrian-priority (shared) streets and pedestrian-cycle streets and paths

Figure 29. Internal pedestrian and cycle-only streets with frequent intersections and small blocks enable diverse routes for residents through the Liuyun Xiaoqu neighbourhood, Guangzhou, China. Source: Karl Fjellstrom.

10.4 Principle 4: Transit

Public transport is the most efficient, sustainable, and often the most affordable mode for medium to long-distance trips. Frequent, safe, reliable public transport that is affordable and accessible within a short walking distance is essential for daily commutes to work and to essential and specialized destinations across the whole city (e.g., retail, healthcare facilities, and child-oriented services). Caregivers responsible for the well-being of their babies and toddlers and the rest of their families rely on the nearby transit. When transit is within walking distance, this reduces strain for caregivers and stress for young children while moving around the city.

10.4.1 Objective 4A: High-quality transit is accessible by foot

When public transit including frequent and rapid transit service is within a walking distance from where people live, it promotes social inclusion and well-being and increases equity by linking people to opportunities, services, and leisure.

10.4.1.1 METRIC 4.A.1: Walking Distance to Transit

Walking Distance to Transit is satisfied when:

- Rapid transit station is accessible within 1,000 m walking distance
- Frequent transit stop is accessible within 500 m walking distance and connects to rapid transit service within 5 km
- Service design provides access to strollers and people with disabilities
- Service frequency is at least every 15 minutes from 7 a.m. - 10 p.m.

Figure 30. Dar es Salaam opened its first bus-rapid service in 2016, creating crucial connections between dense residential areas and activity centres. Travel time became much shorter, and trips more convenient and safer. Source: ITDP.

10.5 Principle 5: Mix

A mix of activities and a mix of people creates healthier, more robust, and more inclusive communities for people of all backgrounds and allows many daily trips to remain short and walkable. Diverse uses keep local streets animated and safe over the course of the day. A mix of housing options makes it more feasible for workers and families of all income levels to live near jobs and transit.

10.5.1 Objective A: Opportunities and services are within a short walking distance of where people live and work, and the public space is activated over extended hours

Mix of uses ensures a balance of activities that enliven the public realm all through the day and night and allow for daily destinations for human care and well-being to be close.

10.5.1.1 METRIC 5.A.1: Complementary Uses (8 points maximum)

Complementary Uses encourage neighbourhood mix when:

- 40% to 60% of the total floor area in the neighbourhood consists of residential uses
- Buildings include residential and nonresidential uses
- Neighbourhoods have balanced residential and nonresidential uses (complete, mixed-use neighbourhoods)

Figure 31. Space for nonresidential uses such as for kindergartens and shops was allocated in the design of a housing development in the Shinonome area of Tokyo, Japan. Source: ITDP.

10.5.1.2 METRIC 5.A.2: Access to Local Services (3 points maximum)

Access to Local Services is enabled when:

- Fresh food sources are accessible within 500m walking distance
- Daycares, elementary or primary schools are accessible within 1,000m walking distance
- Healthcare facilities or pharmacies are accessible within 1,000m walking distance

Figure 32. Fresh markets provide affordable nutrition to families locally, like this street market in Fez, Morocco. Source: Just Another Photographer via Shutterstock.

10.5.1.3 METRIC 5.A.3: Access to Parks and Playgrounds (1 point maximum)

Access to Parks and Playgrounds is enabled when

- Parks, playgrounds and other open spaces of at least 300m² are accessible within 500m walking distance
- There is a public access at least 15 hours a day
- Public facilities provide shared-use open space such as school yards

Figure 33. In Tirana, Albania, 33 playgrounds have been built around the city to make public space denser while also creating space for children to play. Source: Qendra Marrëdhënie.

10.5.2 Objective B: Diverse demographics and income ranges are included among local residents

Social inclusion creates stronger support systems for neighbourhood residents. This means that people and families of all incomes and demographics have opportunities to live within the same area and enjoy the neighbourhood facilities and services.

10.5.2.1 METRIC 5.B.1: Affordable Housing (8 points maximum)

Affordable Housing helps create inclusive neighbourhoods when:

- Between 30% and 69% of housing units in the area priced 30% below the metropolitan median price

The Melrose community in New York City, United Stated integrates residents of low and middle incomes thanks to a special development plan with low-income housing provisions and incentives. Source: NYC Parks.

10.5.2.2 METRIC 5.B.2: Housing Preservation (3 points maximum)

Housing Preservation promotes neighbourhood inclusion when

- Households are maintained in the initial housing units, brought up to local building standards
- Households are rehoused on site or within 500 m walking distance of the former unit

Figure 34. Yerawada community in Pune, India, was upgraded in situ with a careful consideration of pre-existing residents, helping local families maintain their social ties. Source: Shreesha Arondekar.

10.5.2.3 METRIC 5.B.3: Business and Services Preservation (2 points maximum)

Business and Services Preservation promotes neighbourhood inclusion when:

- Space offered for relocation or upgrade for businesses is similar or of a better standard or better standard and at the same or lower cost
- Interim relocation is within 500m during construction or compensation is given for loss of business

Figure 35. A neighbourhood in San Diego, USA incorporates new development with the pre-existing neighbourhood fabric while providing more housing options and local activity for families. Source: Nelly Patlán.

10.6 Principle 6: Densify

Complete neighbourhoods where all needed destinations are walkable within 15 minutes require sufficient densities of residents, workers, and visitors to make public and commercial services viable (e.g., public transport, health and education, local retail, and child-oriented services). The density of people and activities is also critical to public space activation and security. Density does not mean overcrowding. It means sufficient space for activities, for living, for sunlight, for air circulation, all the while supported by public utilities with sufficient capacities, such as sewage, water, electricity, and transit.

When there is a good balance of residential and nonresidential densities, this enables an adequate supply of economic and social opportunities, as well as goods and services for all residents.

10.6.1 Objective A: High residential and job densities support high-quality transit, local services, and public space activity

Concentrations of people, activities, and services are good for inclusive access for all residents in the neighbourhood. Both nonresidential and residential densities are needed to achieve this.

10.6.1.1 METRIC 6.A.1: Nonresidential Density (7 points maximum)

Nonresidential Density is supported by:

- Higher concentration of nonresidential uses in closer proximity to the main transit station (about a 10- to 15-minute walk)
- Balancing of nonresidential uses with residential uses
- Nonresidential uses should not be charming to health of residents and visitors

Figure 36. A dense residential area of Tirana, Albania is supported by ample open space and nonresidential land uses that encourage neighbourhood activity and local employment. Source: Cecilia Vaca Jones.

10.6.1.2

10.6.1.3 METRIC 6.A.2: Residential Density (8 points maximum)

Residential Density is supported by:

- A higher concentration or residential units in a closer proximity to the main transit station (about 10- to 15-minute walk)
- Balancing of residential uses with nonresidential uses

Figure 37. In this Shenzhen neighbourhood in China, residential density enables families to mingle and kids to play together. Pictured: Children enjoying activities during a car-free day. Source: ITDP.

10.7 Principle 7: Compact

Compact cities use fewer resources, reduce travel times, and help preserve rural land from development. TOD allows for spatial integration both in terms of the location of development and the coverage and integration of public transport services. As cities grow and expand, public policies, private investment, and individual choices must ensure that development happens where, and only where, the urban system allows lifestyles centred around short walks and abundant public transit options. Compact urban forms facilitate convenient travel to destinations not only within the neighbourhood but also throughout the whole city.

10.7.1 Objective A: The development is in, or next to, an existing urban area

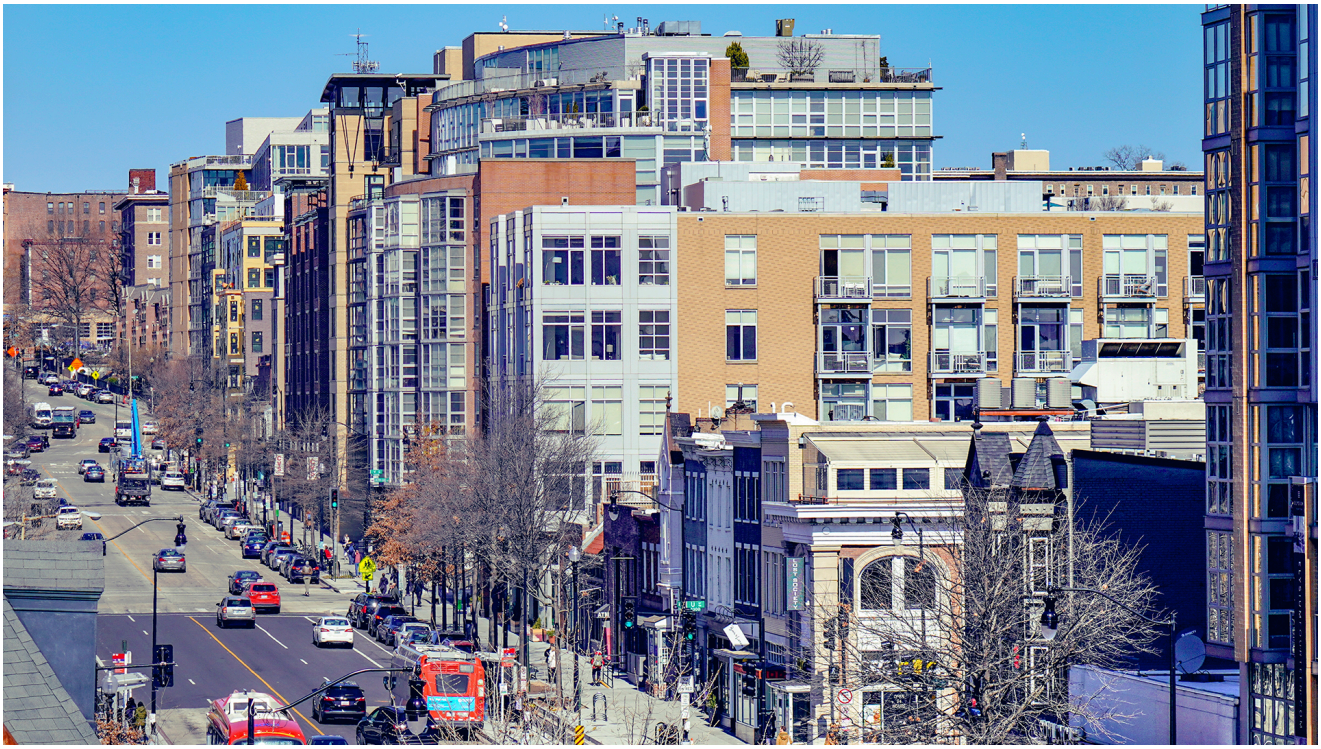
When cities prioritize growth in already urbanized areas, urban fabrics with density of people, infrastructure and services can facilitate short commutes via walking, cycling and public transport. Neighbourhoods retrofitted or developed on this objective ensure that everyone can access opportunities, leisure and services locally.

10.7.1.1 METRIC 7.A.1: Urban Site (8 points maximum)

Urban Site is supported when:

- Development is built on sites surrounded by other built-up areas such as on empty lots or development sites cleared up for new development

Figure 38. Mixed-use infill development brings more density to support transit service and local activity like in Washington DC by utilizing previously developed low-rise buildings, and parking areas. Source: Ted Eytan via Flickr.



10.7.2 Objective B: Traveling through the city is convenient

The convenience of travel by sustainable transport options (public transport or available bike-share service) is crucial to equitable mobility for all, including those commuting to work or school, traveling for leisure, or accessing essential or specialized services in the city.

10.7.2.1 METRIC: 7.B.1: Transit Options (2 points maximum)

Transit Options can include:

- Additional transit options including regular transit lines or routes, and frequent transit modes if the transit line regularly operates from 7 a.m. to 10 p.m., with a service frequency of 20 minutes or less
- A dense public bikesharing system

Figure 39. In Jakarta, Indonesia, the Transjakarta BRT system integrates frequent transport service with the same fare system for easy transfer and travel across the city. Source: ITDP.

10.8 Principle 8: Shift

When walking, cycling and transit are prioritized, less space is needed for personal motor vehicles. And conversely, the less space for motor vehicles, the more space there is to prioritize walking, cycling, and transit. Shifting space from cars and dedicating it to public spaces, activities, and sustainable modes of travel make neighbourhoods and traveling safer and healthier for people.

10.8.1 Objective A: The land occupied by motor vehicles is minimized

Minimizing off-street and on-street parking and driveways increases space for pedestrians and cyclists and boost cities with more vibrant, healthy, and enjoyable public spaces.

10.8.1.1 METRIC 8.A.1: Off-Street Parking (8 points maximum)

Off-Street Parking is reduced when:

- Parking structures or parking in buildings is less than 10% of the site area.

Figure 40. In Mexico City, Mexico, abolition of parking minimums for residential and commercial buildings is leading to reduction of overall car use, which together with traffic management tactics, is helping make the city more people-oriented. Source: Héctor Río

10.8.1.2 METRIC 8.A.2: Driveway Density (1 point maximum)

Driveway Density should include:

- 2 or fewer driveways per 100 m of block frontage

Figure 41. Consolidated driveways reduce dangerous interactions with cars especially for caregivers with their babies and toddlers. Safety features like bollards protect pedestrians from cars intersecting the walkways in Pune, India. Source: ITDP.

10.8.1.3 METRIC 8.A.3: Roadway Area (6 points maximum)

Roadway Area is minimized when:

- Motor vehicle area occupies 15% or less of the site area

Figure 42. Klyde Park was built over Woodall Rodgers Freeway in Dallas, USA providing new open space for recreation, play, and rest, catalysing activity and economic development in the area. Source: Trong Nguyen via Shutterstock.

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