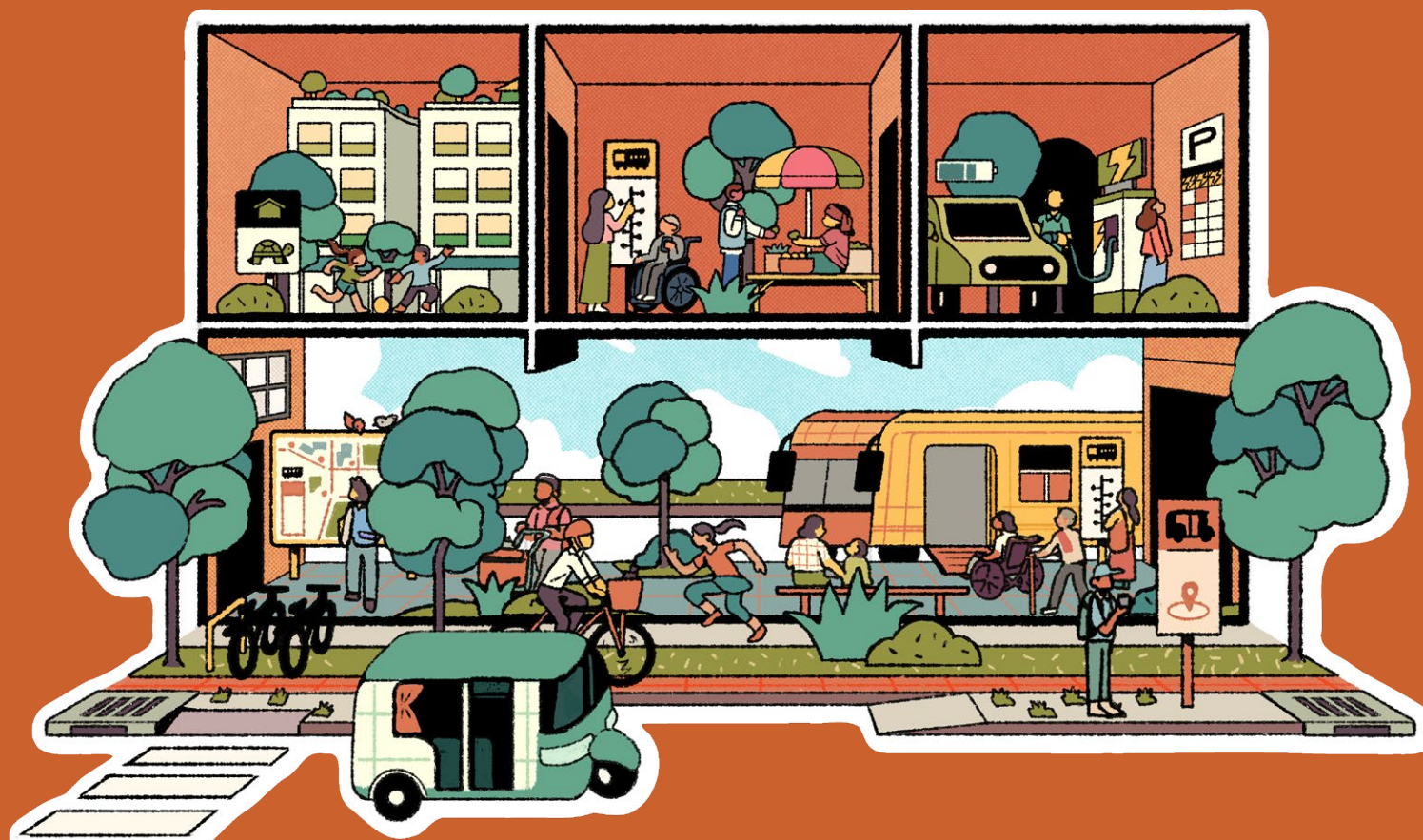
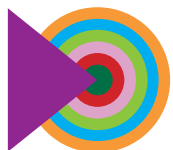




B4P TRANSFORMATION TOOLBOX

SUSTAINABLE URBAN MOBILITY

02.3

GUIDELINE



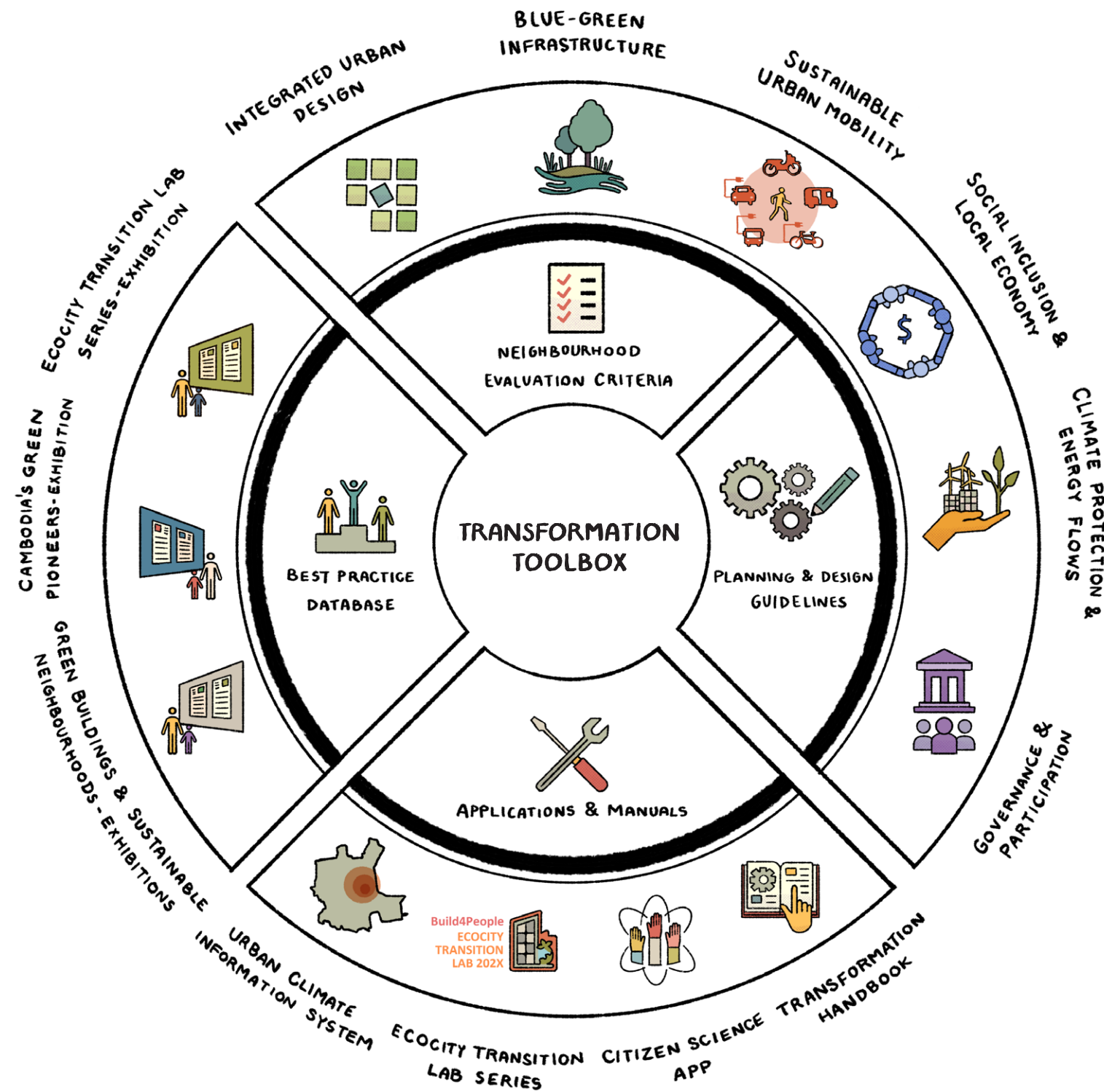


Figure 1. This guideline publication is part of the B4P Transformation Toolbox, a comprehensive learning platform developed by the Build4People project in cooperation with Phnom Penh City Hall to foster sustainable neighbourhood development in urban Cambodia.

02.3

SUM



SUSTAINABLE URBAN MOBILITY

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02.3 SUM



SUSTAINABLE URBAN MOBILITY

INTRODUCTION

These guidelines provide a framework for sustainable mobility and transit-oriented development (TOD) in ASEAN medium-sized cities. Rapid urbanization and urban sprawl are increasing resource demands, highlighting the need to integrate land-use planning with transportation.

The SMMR project, funded by the German Ministry of Economic Cooperation and implemented by GFA Consulting Group on behalf of GIZ Thailand, promotes sustainable mobility strategies in ASEAN secondary cities. It follows the AVOID-SHIFT-IMPROVE (ASI) approach:

- **Avoid** long distance trips with integrated planning and TOD strategies.
- **Shift** to the most energy-efficient modes.
- **Improve** the existing vehicle fleets with electrification.

The ASI approach provides planners

and policymakers with a holistic method to tackle the most pressing challenges of urban mobility. This publication is the result of an innovative alliance between the SMMR project and the Build4People project, financed by the German Ministry of Research and Education, which has been supporting Phnom Penh Capital Administration since 2019. The aim of this cooperation is to promote the sustainable neighbourhood planning, where mobility plays a central role.

These guidelines are divided into two main sections:

1. From vision to action plan
2. Improving Accessibility and connectivity

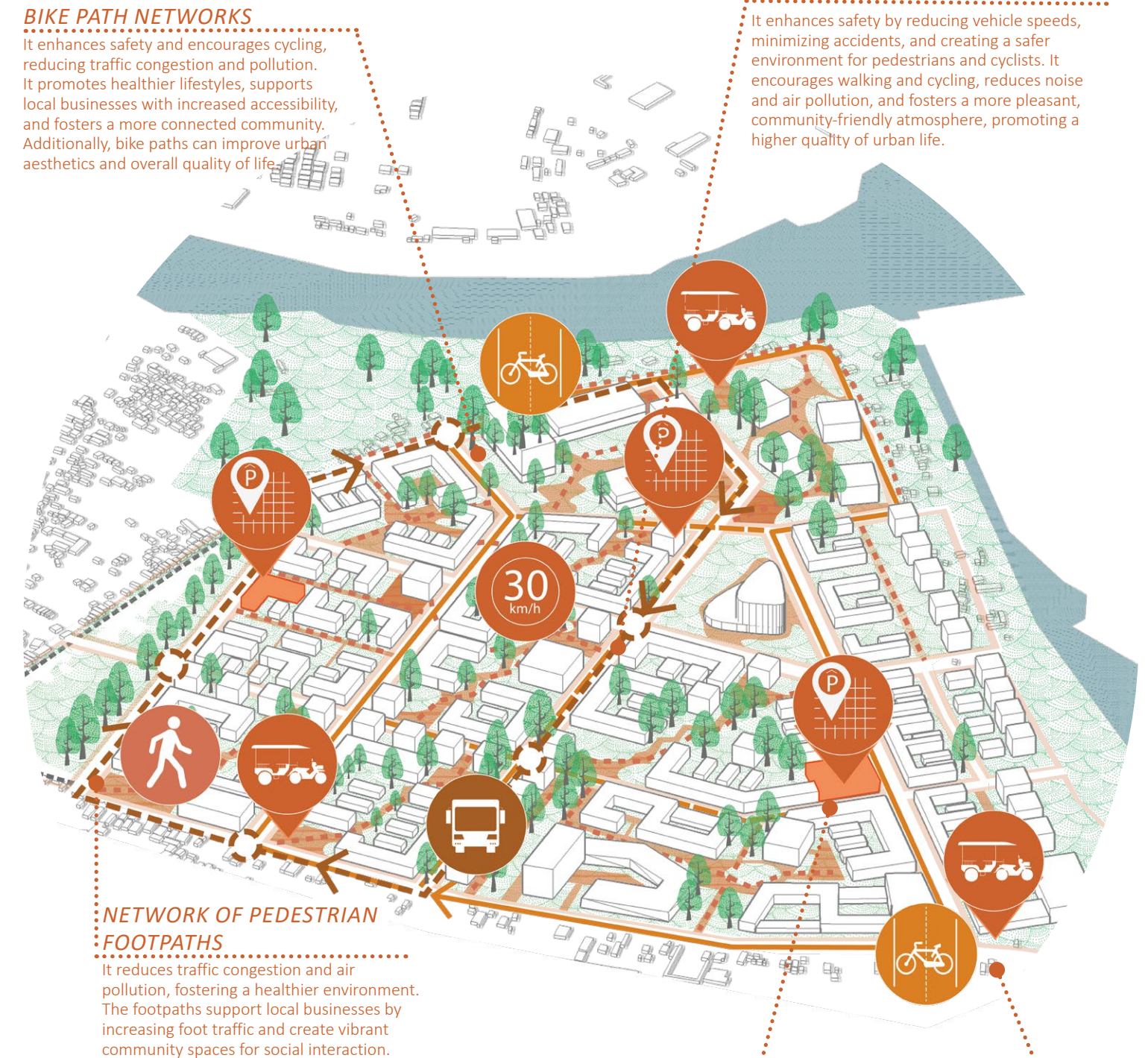
These guidelines are intended for urban planners, policymakers, local government officials in ASEAN cities. Successful implementation is expected to result in more sustainable urbanisation that promotes highly accessible and liveable urban neighbourhoods.

BIKE PATH NETWORKS

It enhances safety and encourages cycling, reducing traffic congestion and pollution. It promotes healthier lifestyles, supports local businesses with increased accessibility, and fosters a more connected community. Additionally, bike paths can improve urban aesthetics and overall quality of life.

MAINTAINING TRAFFIC CALMING MEASURES

It enhances safety by reducing vehicle speeds, minimizing accidents, and creating a safer environment for pedestrians and cyclists. It encourages walking and cycling, reduces noise and air pollution, and fosters a more pleasant, community-friendly atmosphere, promoting a higher quality of urban life.



NETWORK OF PEDESTRIAN FOOTPATHS

It reduces traffic congestion and air pollution, fostering a healthier environment. The footpaths support local businesses by increasing foot traffic and create vibrant community spaces for social interaction.

INCLUDE DISTRICT PARKING OPTIONS

It reduces private parking demand by providing centralized, efficient parking solutions. This frees up street space, reduces traffic congestion, and promotes a cleaner, more walkable environment.

INTEGRATING EXISTING MODES OF TRANSPORT

Such as like tuk-tuks. It enhances mobility by providing convenient, flexible travel options. It reduces traffic congestion and lowers emissions.

Figure 2. Proposal to integrate sustainable mobility solutions on a neighbourhood level: Case study of the Chbar Ampov district, Phnom Penh, developed during the Ecocity Transition Lab 2023.

ECONOMIC, SOCIAL AND ENVIRONMENTAL BENEFITS

Inclusivity in urban planning ensures that the needs and voices of all community members are considered in the development process. Inclusive urban planning offers significant benefits for private developers by attracting a diverse range of residents and businesses, thereby expanding market demand and ensuring long-term stability.

Inclusive neighbourhoods with accessible transportation, green spaces, and community amenities tend to be more desirable, leading to higher property values and rental rates. Mixed-use developments, often encouraged by inclusive planning, enhance the vibrancy and economic activity, which is highly desirable for private developers.

Inclusivity in urban planning not only enhances social equity but also lays a strong foundation for Transit-Oriented Development (TOD) by ensuring all community members benefit from improved accessibility and connectivity. By integrating inclusivity into TOD strategies, cities like Phnom Penh can realise economic, social and environmental benefits. These benefits manifest through increased investment, reduced congestion, and enhanced quality of life, making inclusivity a key component of sustainable urban development.



ECONOMIC BENEFITS FOR PRIVATE DEVELOPERS

To action Transport Oriented Development in Cambodia, private sector involvement is essential, creating win-win-win situations for the private sector, public sector, and citizens:

- **Stimulate local economies:** Through increased accessibility and higher foot traffic.
- **Increased Property Values:** Higher demand for properties located near transit hubs.
- **Higher Rental Rates:** Attractive to tenants due to accessibility and amenities.
- **Expanded Market Demand:** The diversity of residents and businesses can boost the market stability.
- **Mixed-Use Development Opportunities:** Enhanced economic activity and vibrancy.



ECONOMIC BENEFITS FOR PUBLIC AUTHORITIES

Phnom Penh, like many cities that have experienced rapid motorization, faces significant challenges with traffic congestion and air pollution. Implementing TOD strategies can encourage public transport use, which is key to reducing the number of vehicles on the road, alleviating congestion, and lowering pollution levels. As a consequence, public authorities can benefit from economic gains because of the expense reduction in road maintenance and increased worker productivity:

- **Enhanced Local Economies:** Increased foot traffic stimulates local businesses.
- **Attraction of New Businesses and Investments:** Development around transit hubs draws investment.
- **Cost Reduction in Road Maintenance:** Fewer vehicles on the road reduce wear and tear.
- **Increased Worker Productivity:** Reduced travel times and congestion improve efficiency.



ENVIRONMENTAL BENEFITS

TOD promotes more sustainable urbanization by concentrating development around public transport hubs. This can help prevent urban sprawl, reduce the need for long commutes, and promote more efficient land use, which is crucial for managing rapid urban expansion in a city like Phnom Penh:

- Sustainable Urbanization:**
- **Reduced Urban Sprawl:** Concentrated development limits expansion into natural areas.
 - **Lower Greenhouse Gas Emissions:** Increased public transport use reduces reliance on private vehicles.
 - **Efficient Land Use:** Maximizing the utility of developed areas curtails unnecessary expansion.

- Environmental Health:**
- **Reduced Pollution Levels:** Fewer vehicles on the road lead to lower emissions.
 - **Conservation of Green Spaces:** Focused urbanization preserves natural landscapes and biodiversity.



SOCIAL BENEFITS

By promoting developments around public transit, TOD can enhance accessibility and mobility for residents, making it easier to access work, education, and recreational activities. This can improve the overall quality of life and social equity, making the city more liveable:

- Accessibility and Mobility:**
- **Improved Access to Services:** Easier access to work, education, and recreational activities.
 - **Enhanced Social Equity:** Inclusive developments ensure benefits for all community members.
 - **Higher Quality of Life:** Reduced travel times and better access to amenities enhance living standards.
- Community Development:**
- **Vibrant Neighbourhoods:** Mixed-use developments create dynamic, lively areas.
 - **Stronger Community Ties:** Well-planned public spaces foster social interactions and community building.

Source: Own compilation based on various sources.

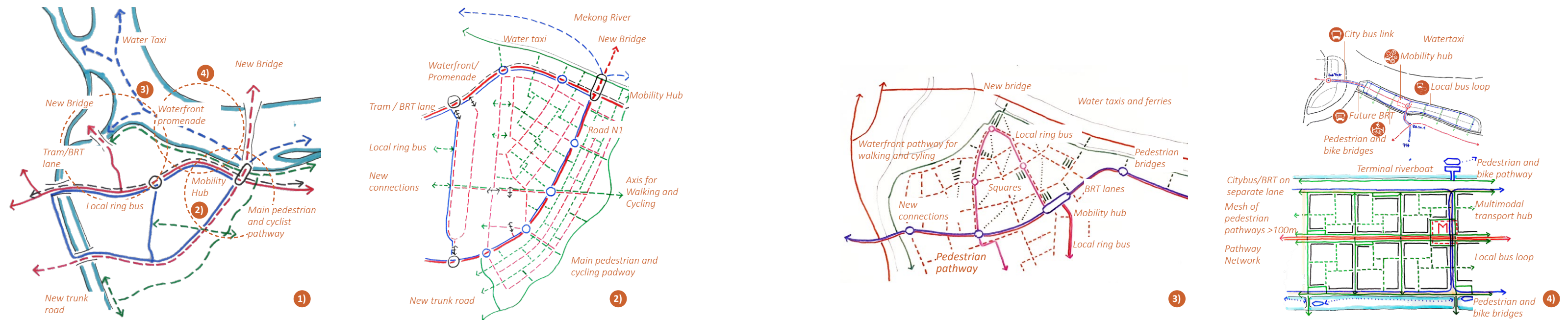


Figure 3. Sustainable mobility concepts developed for the Chbar Ampov district during the ECTL series. 1) District-scale sustainable mobility vision presented during the ECTL 2020. 2) Neighbourhood-scale mobility concept detailed for the ECTL 2020. 3) Neighbourhood-scale mobility concept planned for the north area of the Chbar Ampov district during the ECTL 2022. 4) Neighbourhood and neighbourhood-block scale mobility concept proposed for the Koh Norea Island development during the ECTL 2024.

SCIENTIFIC BACKGROUND AND KEY IDEAS

TRANSIT ORIENTED DEVELOPMENT (TOD) FOUNDATIONS

TOD is a strategy promoting walkability, cycling, and public transport. Introduced by Peter Calthorpe in 1993, it draws from the „garden city“ concept to improve mobility while reducing congestion and pollution. TOD prioritizes sustainable transport over private vehicles.

TOD is assessed through three key values:

- **Place Value:** Quality and attractiveness of the environment, ensuring liveability and walkability.
- **Node Value:** Efficiency and connectivity of transport hubs.
- **Market Potential Value:** Economic viability and investment appeal.

A balanced approach to these values enhances sustainability and urban quality. Improvements in one value reinforce the others, creating a feedback loop that fosters sustainable communities.

MULTISCALE APPROACH FOR TOD IMPLEMENTATION

To achieve sustainable urbanization in Phnom Penh, TOD strategies must be applied across different scales:

1. Metropolitan Level:

- **Comprehensive TOD Policies:** Establish city-wide guidelines prioritizing TOD principles.
- **Integrated Transport Planning:** Align transportation with land use and urban development.
- **Public Transit Investment:** Expand and enhance bus networks, BRT, and future rail systems.
- **Sustainable Development Incentives:** Offer tax breaks, grants, or expedited permitting for TOD projects.
- **Mobility Hub Network:** Identify priority locations based on transit lines, land use, and walking/cycling potential.

2. Corridor Level:

TOD initiatives should target major transport corridors, such as the Techo Sen Airport – Phnom Penh City Centre Corridor. Enhancing these corridors' capacity to support increased density and mixed-use developments will turn them into high-quality urban spaces that serve as the backbone of the city's transit system:

- **Transit Corridor Upgrades:** Improve infrastructure to support higher-density development.
- **Key Transit Hubs:** Establish nodes where multiple transport modes converge.
- **Pedestrian & Cycling Infrastructure:** Enhance streetscapes to promote active mobility.

3. Neighbourhood Level:

Projects like Koh Norea can serve as pilot models for TOD:

- **Pilot TOD Projects:** Showcase benefits like accessibility, economic vitality, and quality of life.
- **Community Engagement:** Involve residents in planning to ensure alignment with their needs.
- **Public Space Enhancements:** Create parks, plazas, and community spaces.
- **Paratransit Integration:** Ensure tuk-tuks and shared minibuses complement formal transit networks.

FROM VISION TO AN ACTION PLAN

DEFINING A SHARED VISION & GOALS FOR INCLUSIVE TOD

VISION

A vision defines the future a community wants, based on its core values and public input.

Key Elements of Visioning:

- Considers community assets and needs
- Involves early and continuous public participation
- Can be a stand-alone process or part of comprehensive planning

VISIONING PROCESS IN CAMBODIA

Visioning is new in Cambodian urban planning, requiring a phased approach:

- **Phase 1:** A pop-up kiosk at Koh Norea Riverfront gathered input from 1,000+ residents and visitors. Organized by Build4People, SMMR, and Impact-Hub, this initiative identified community aspirations.
- **Phase 2:** The Ecocity Transition Lab, facilitated by Build4People, brought key decision-makers together. OCIC envisioned transforming Koh Norea into a vibrant, high-demand neighborhood.

GOALS

Goals are specific, measurable targets that help achieve the vision.

They should be:

- Developed collaboratively
- Revised based on community input and data analysis (e.g., Pop-up Kiosk, sustainability criteria)
- Supported by measurable metrics (e.g., Build4People Sustainability Criteria)

GOAL SETTING FOR TOD IN PHNOM PENH

TOD goals vary depending on the area—mixed-use, business districts, industrial zones, or residential neighborhoods. In Koh Norea, the Ecocity Transition Lab Process helped define key issues and opportunities, forming the foundation for TOD goal setting. Planners translate broad TOD principles into specific, actionable goals, aligning with the city's master plan and government priorities.



Figure 5. Pop-up kiosk in Koh Norea
Source: Sovan Sieng (2024).

KOH NOREA POP-UP KIOSK A GOOD PRACTICE EXAMPLE OF NEIGHBOURHOOD VISIONING

With support from SMMR and Build4People, Impact Hub Phnom Penh (IHPP) launched a pop-up kiosk in Koh Norea to engage the community and gather insights on transforming the area into a vibrant destination. The project's guiding question was:

- » What are the public needs and preferences around how to transform Koh Norea into a vibrant and desirable destination?

Over eight days (Feb 28 – Mar 10, 2024), IHPP surveyed 1,041 residents of all ages through interactive activities along the riverside. The findings highlight public priorities for urban livability, offering valuable input for demand-driven development in Koh Norea and beyond.

POP-UP KIOSK VISIONING RESULTS

- **High Priority:**
 - » Green spaces & public greenery
 - » Effective waste management
- **Medium Priority:**
 - » Communal public spaces
 - » Inclusivity & accessibility
 - » Safety & orderliness
- **Medium-Low Priority:**
 - » Transportation & accessibility
 - » Aesthetics & functional qualities
 - » Recreational & social activities

This qualitative visioning complements quantitative site data collection. While no formal inventory was conducted for Koh Norea, these insights inform future neighborhood planning.

POP-UP KIOSK DERIVED PRIORITY GOALS

- 1. Ensure Convenient Access to Non-Motorised Transport**
Prioritize walking and cycling infrastructure for a more sustainable urban environment
- 2. Foster Neighbourhood Vibrancy**
Create dynamic spaces that encourage social interaction and local business growth.
- 3. Promote a Sense of Community**
Design inclusive spaces that meet diverse social needs.



Figure 4. Public participation snap shots at the pop-up kiosk in Koh Norea.
Source: Sovan Sieng (2024).

UNDERSTANDING
TOD POTENTIAL THROUGH A
MARKET INVENTORY

Collecting comprehensive data is crucial for TOD planning at the neighbourhood level. In specific urban contexts where data is lacking, the urban planning process may be adapted by leveraging community-based data collection, proxy data, local knowledge, and iterative methods. As a first step, participatory methods such as community surveys (pop-up kiosk), and focus groups with key stakeholders can engage with residents in identifying key local features, needs and priorities. Where direct data is unavailable, secondary sources, such as satellite imagery, provide useful proxies. Local experts and “anecdotal evidence” supplement these insights with their expertise.

IDENTIFYING
OPPORTUNITIES

A comprehensive multi-stakeholder approach was used to identify both problems and opportunities for urban mobility. This process can include several exchange sessions and workshops. For the specific case of Koh Norea, the SMMR team together with memebers of the B4P project identified main areas of opportunity for the island:

- Demand Management: Bridges, crossing and parking management
- Transport Offer: Public trasport, last-mile connectivity, cycling and walking infrastructure
- Transport Infrastructure: Road density, street network

MARKET INVENTORY
ASPECT

• BUILT ENVIRONMENT

» <i>Block size and nature of blocks</i>	Small, well-connected blocks enhance walkability and accessibility.	Identifying underutilized land allows for efficient street and pathway design.
» <i>Walking and cycling infrastructure</i>	Safe, well-planned pedestrian and cycling routes are essential for TOD.	Identifying gaps in infrastructure supports active mobility and reduces car dependency.
» <i>Public transport services and paratransit</i>	High-quality public transit ensures TOD areas are well-connected.	It helps optimize services and reduce congestion.
» <i>Green and public spaces</i>	Mixed-use planning integrates residential, commercial, and recreational spaces.	Redevelopment strategies ensure vibrant and sustainable communities.
» <i>Existing land-use and development typologies</i>	Encouraging street-facing businesses enhances safety and urban vitality.	Attract pedestrians and support local commerce.
» <i>Active street frontage</i>	Reliable access to water, electricity, sewage, and drainage supports higher densities.	It ensures infrastructure meets current and future demand.
» <i>Availability of utilities (water, sewage, electricity, drainage)</i>	Essential for community well-being, leisure, and environmental resilience.	
» <i>Cultural points of interest</i>	Incorporating cultural landmarks enriches urban identity and social cohesion.	

• SOCIO ECONOMIC

» <i>Residential and non-residential densities</i>	High densities near transit hubs support efficient public transport.	Well-planned density distribution fosters vibrant mixed-use areas.
» <i>Land ownership and tenure</i>	Understanding land tenure prevents displacement and ensures equitable development.	Policies should protect residents while promoting sustainable growth.
» <i>Demographics: Income, age, employment data</i>	Planning must address diverse community needs, including vulnerable groups.	Data ensures inclusive TOD strategies that benefit all residents.
» <i>Local businesses and economic activities</i>	Supporting local commerce strengthens economic resilience.	TOD should integrate spaces that encourage business growth and job creation.

• LEGAL AND INSTITUTIONAL
FRAMEWORK

» <i>Roles and responsibilities of agencies</i>	Clear agency roles streamline planning and implementation.	Reduces bureaucratic delays and improves project efficiency.
» <i>Coordination mechanisms</i>	Strong collaboration among stakeholders ensures successful TOD execution.	Addressing coordination gaps aligns efforts towards shared goals.

• FINANCIAL FRAMEWORK

» <i>Budget and funding sources</i>	Identifying sustainable funding ensures long-term project viability.	Securing investments aligns financial planning with TOD goals.
» <i>Maintenance funding</i>	Essential for long-term infrastructure upkeep and service continuity.	

OUTLINING
AN ACTION PLAN

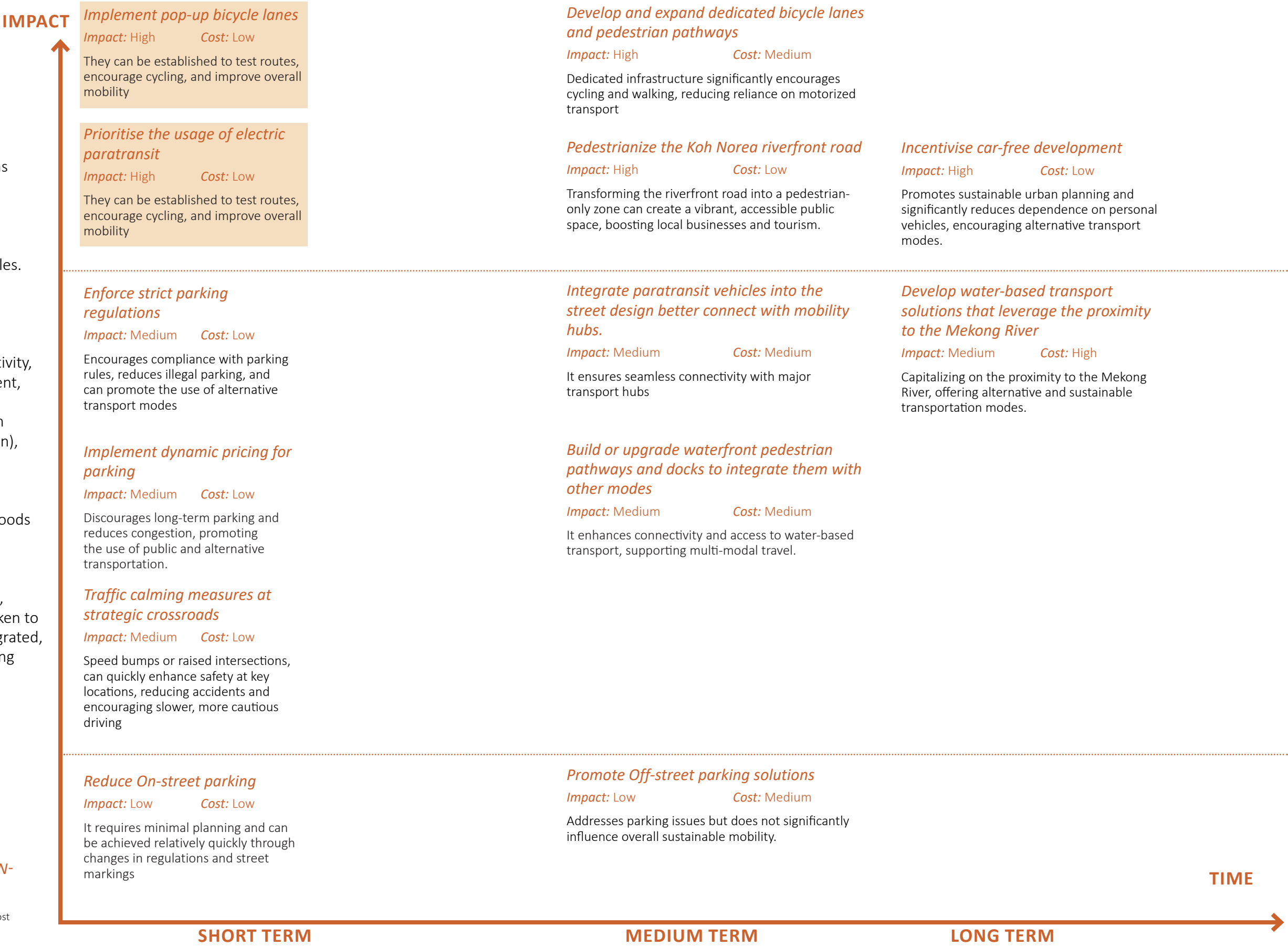
The following recommendations aim to develop Phnom Penh’s neighbourhoods into vibrant, sustainable and accessible communities with the strategic implementation of TOD principles.

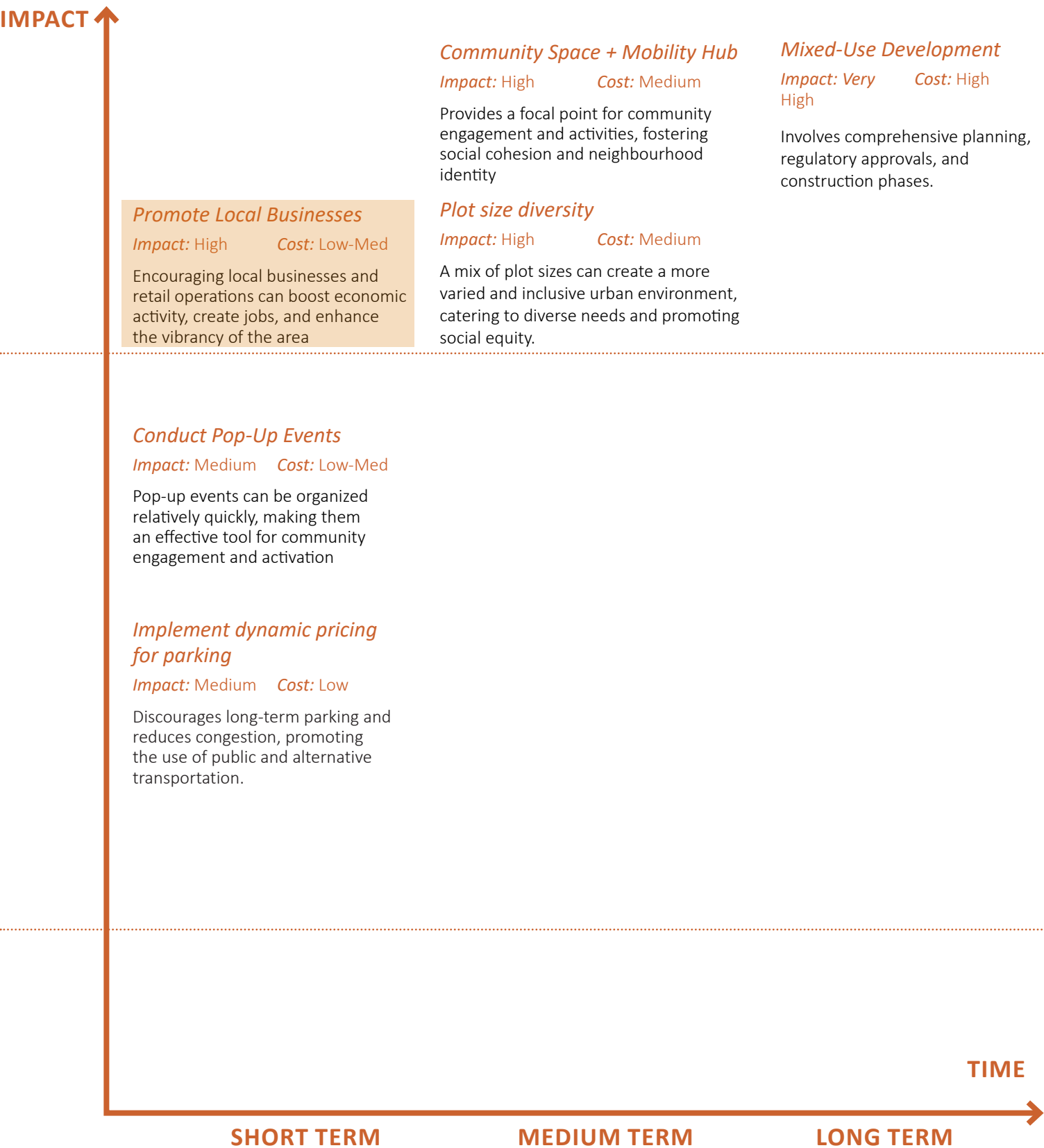
These recommendations are designed to address the city’s geographic and socio-political context, promote economic activity, enhance community engagement, and improving transportation and accessibility. By focusing on local economy (value generation), community development (placemaking) and improving accessibility (mobility), these strategies will help neighbourhoods create a robust framework for sustainable urbanisation.

The actions below are practical, actionable steps that can be taken to realise the vision of a well-integrated, liveable, an economically thriving neighbourhood.

GOAL 1: INCREASE
CONVENIENT ACCESS TO NON-
MOTORISED TRANSPORT

Higher Impact + Shorter Term + Lower Cost





GOAL 2: FOSTER NEIGHBOURHOOD'S VIBRANCY

Higher Impact + Shorter Term + Lower Cost



GOAL 3: PROMOTE A SENSE OF COMMUNITY

Higher Impact + Shorter Term + Lower Cost

IMPROVING ACCESSIBILITY AND CONNECTIVITY

ADAPTIVE PRINCIPLES TO PHNOM PENH

Transit-Oriented Development (TOD) integrates mobility and land use to create sustainable, accessible neighbourhoods. Key principles include:

- **Walking:** Prioritize walkability as a primary mode of transport.
- **Cycling:** Promote cycling to ease congestion and support sustainable mobility.
- **Connectivity:** Develop seamless transport networks for better accessibility.
- **Transit:** Ensure efficient, accessible public transport.
- **Mixed-use:** Encourage diverse, vibrant communities through mixed-use development.
- **Compact design:** Reduce travel distances with efficient urban layouts.
- **Density:** Support higher density to optimize land use and transit efficiency.
- **Mode shift:** Reduce reliance on private vehicles in favor of sustainable transport options.

CONTEXT-SPECIFIC CONSIDERATIONS

Phnom Penh's unique urban challenges require localized TOD strategies:

- **Geographic:** Adapt plans to the tropical climate's impact on walkability and cycling.
- **Infrastructure:** Upgrade and standardize transport networks to align with TOD principles.
- **Socio-political:** Address cultural mobility preferences and promote governance and community engagement.
- **Economic:** Leverage private investment and land value capture to finance infrastructure.

KEY STRATEGIES TO ENHANCE ACCESSIBILITY AND CONNECTIVITY

To achieve the TOD values of Node, Place, and Market Potential, accessibility and connectivity must be enhanced through targeted design strategies. Together, these design principles serve as the foundation for creating accessible and connected TOD neighborhoods that fulfill Node, Place, and Market Potential Values. By embedding these strategies in urban planning, TOD fosters neighborhoods that are economically robust, environmentally sustainable, and socially cohesive, thereby advancing the goals of sustainable urbanization. These strategies include:

1. **ATTRACTIVE WALKING ENVIRONMENTS**
Prioritizing pedestrian pathways creates a welcoming and accessible environment, encouraging walking as a preferred mode of transport. It reduces traffic, and fosters social engagement, reinforcing both Place and Market Potential Value by making the neighborhood more inviting and economically appealing.
2. **COMPLETE STREETS**
Complete streets ensure that streetscapes are accessible and usable for all modes of transport, including walking, cycling, and public transit. By accommodating diverse users, complete streets facilitate the integration of multi-modal transit options. This approach also promotes safety and inclusivity, supporting Place Value by making the community more accessible to all residents.
3. **MULTI-MODAL INTEGRATION AND TRAFFIC MANAGEMENT**
Effective multi-modal integration ensures seamless transitions between transport modes. Traffic management reduces congestion and prioritizes pedestrian and cycling access, reinforcing Place Value by creating safer, more walkable neighborhoods.



Figure 6. Pedestrianised roundabout in Bordeaux, France.
Source: Sovan Sieng (2024).



Figure 7. Electric jeepneys depot and charging station in General Santos, Philippines.
Source: Sovan Sieng (2024).



Figure 8. Cycling infrastructure in Paris, France.
Source: Sovan Sieng (2024).

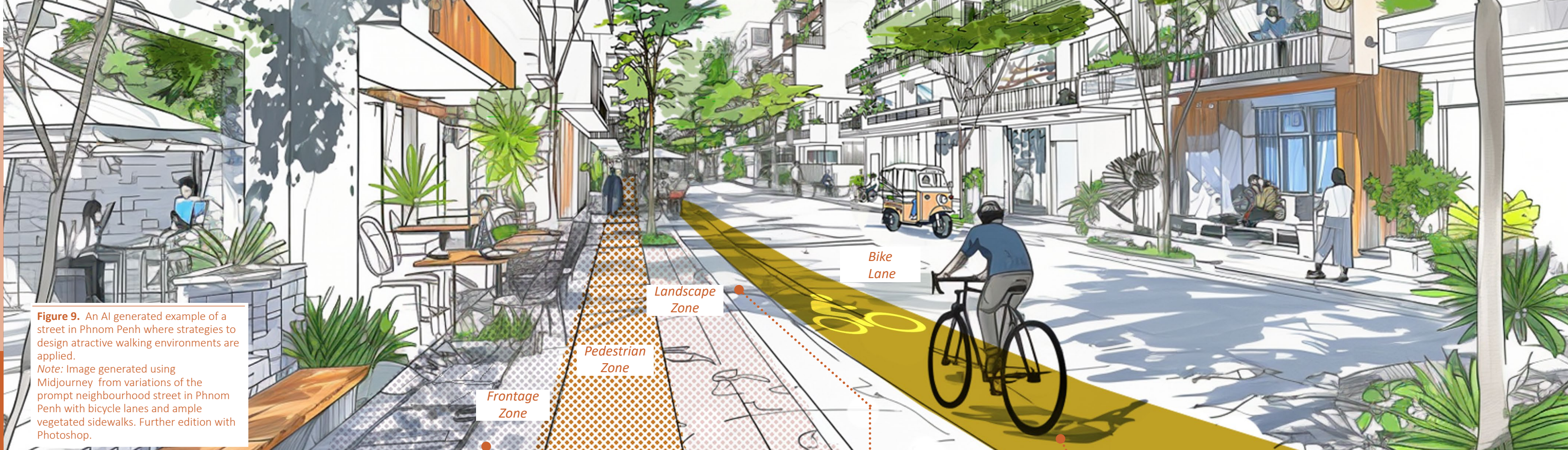


Figure 9. An AI generated example of a street in Phnom Penh where strategies to design attractive walking environments are applied.
Note: Image generated using Midjourney from variations of the prompt neighbourhood street in Phnom Penh with bicycle lanes and ample vegetated sidewalks. Further edition with Photoshop.

EVALUATION CRITERIA

PEDESTRIAN AND BIKE FRIENDLY ENVIRONMENT

DESIGN AN ATTRACTIVE WALKING ENVIRONMENT

The aim is to develop a complete network with continuous paths for cycling and walking to provide diverse experiences and amenities. This network must be planned at the city and corridor level, as well as detailed to the neighbourhood level of the neighbourhood.

Three-section Strategy Sidewalks

- **Frontage zone:** this is the transition zone from public to private property, which can be used for commercial purposes (shophouse, outdoor seating, porches).
- **Pedestrian clear zone:** this zone is strictly dedicated to pedestrian movement, free of all obstruction. This zone needs to cater to all users of all age groups.
- **Landscape-furniture zone**
- **A fourth zone** can be added (Depending on the street hierarchy) for bicycles, as an additional section of the sidewalk.

Make Walking a Comfortable Experience

- **Street trees:** at least 125 trees per km for streets with right of way smaller than 12 meters. At least 125 trees per km per footpath on streets with right of ways greater than 12 meters.
- **Street lighting:** spacing should be uniform with the distance based on minimum illumination required.
- **Street furniture:** benches, trash, vending kiosks and signages to be provided adequately.
- **Public facilities:** provide accessible public toilets at every 500 to 800 meters distance – preferably located close to transit stops, with easy access to pedestrians and public transport users.

Design Dedicated Cycle Lanes

Dedicated cycle lanes on trunk routes are essential for cyclist safety, especially where there is high traffic volume. These lanes accommodate all wheeled active modes, including tricycles and cycle-rickshaws. There are two main types of cycle lanes:

- **Physically segregated lanes:** use curbs, medians, or landscaping to separate cyclists from traffic.
 - **Marked lanes:** are delineated by road markings and signs on the main carriageway.
- While segregated lanes reduce the risk of vehicle collisions, they can be costly and require more maintenance. In that regard, marked lanes are more practical, being easier to maintain and clean.



Figure 10. Cycling infrastructure in Paris, France.
 Source: Sovan Sieng (2024).



EVALUATION CRITERIA

PEDESTRIAN AND BIKE FRIENDLY ENVIRONMENT



Figure 11. MUZ example in Paris, France.
Source: Sovan Sieng (2024).

DESIGN COMPLETE STREETS

Design Streets for the Entire Right of Way

- **Multi-Utility Zones (MUZ)** are defined as zones that can accommodate bus stops, street utilities, trees, street furniture, informal transit, street vending. MUZ should have a minimum width of 1.8 meters, and should be provided on all Collector and Arterial roads.

Plan a Balanced Street Network

- **The right of way** of streets located within 500 meters of the mobility hub shall have a width of 30 meters maximum.
- In local streets, the **maximum speed** shall be 30km/h and the optimum width shall be 3 meters for one-way movement and 4.5 meters for two-way movement.
- Dedicated protected **bicycle lanes** (3 meters wide for both direction) shall be created on all streets except the low-speed local streets

Design Streets According to its Land-use Mix

- Create a **continuous footpath** on each side of all streets with a right of way wider than 12 m.
- **Footpaths** shall be:
 - » 2 m wide for commercial/ mixed-use areas
 - » 2.5 m wide with shopping frontages
 - » 3 m wide with the presence of bus stops
 - » 4 m wide in high-density commercial areas.
- **Building edges and frontages** need to be incorporated into the street design.
- Building frontage should be **accessible to every public**.

Interconnected Street Network

- **Block sizes minimised:** recommended block size is between 110-150m.
- Preferred **density of pedestrian-friendly intersections:** 50 intersections per km².
- **Hierarchy of street network:**
 - » Arterial – 50m to 80m – 50km/h
 - » Sub-arterial – 30m to 50m – 50km/h
 - » Distributor – 12m to 30m – 30km/h
 - » Access – 6m to 15m – 15km/h

Figure 12. An AI generated Example of a street in Phnom Penh where strategies to design complete streets are applied.
Note: Image generated using Midjourney from variations of the prompt street in Phnom Penh with ample sidewalks, trees, benches and street lighting. Further edition with Photoshop.

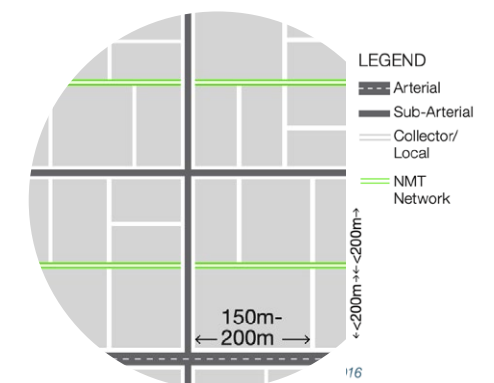
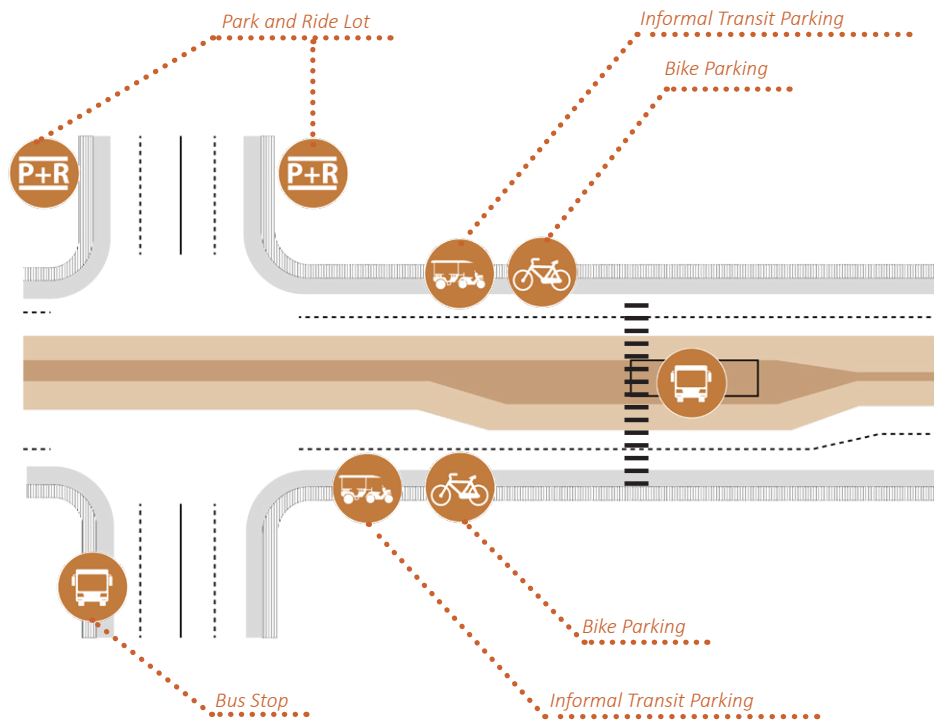


Figure 13. Block sizes and street hierarchy.
Source: MOUD (2016).

Figure 14. Multimodal options at transition station.
Source: Redrawn by EMP based on MOUD (2016).



EVALUATION CRITERIA

PUBLIC TRANSPORT INFRASTRUCTURE

DESIGN MULTIMODAL INTEGRATION

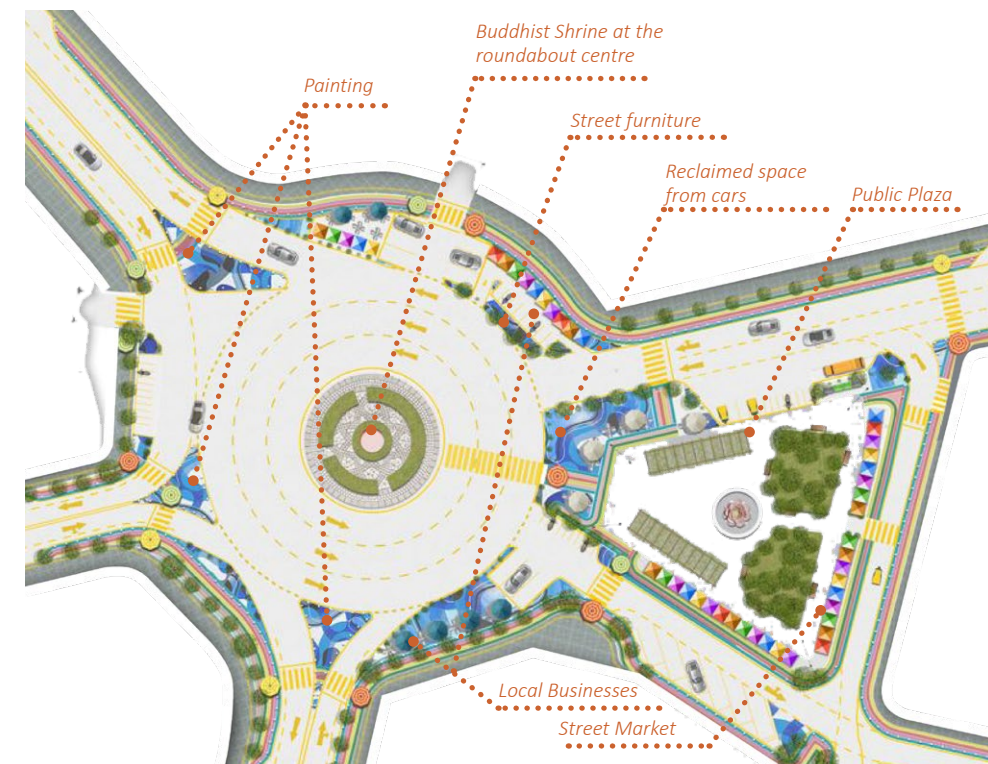
Part of a TOD strategy is to design seamless integration between modes, systems and routes:

Design Efficient Intermodal Transfer at the Station

- **Intermodal integration** of formal public transport, paratransit and cycling should be within 200 meters from each other.
- Coordinate local feeder transit **service schedules and routes** to provide seamless connectivity between local, regional and transit services by reducing waiting time. This strategy has already been successfully implemented in General Santos, where E-Jeepney services has been set and well received.

Focus on the Needs of First and Last Mile Connectivity

- Provide **designated parking** for informal/formal paratransit within 150 meters of walking distance from the mobility hub exit.
- Paratransit **parking bays** of 1.5 meters width should be provided near important junctions.
- **Maximum waiting time for pedestrians** is less than 60 seconds.



INCORPORATE TRAFFIC MANAGEMENT

Incorporate safe speed strategies, measures on traffic demand management and reduced parking to promote sustainable mobility choices:

Optimise Traffic Speed on Arterial Roads To Protect Nmt Users

- Disperse high traffic volume over **multiple parallel human-scale streets**
- **Limit speed** on arterial and sub-arterial roads to 50km/h and on collector and local streets to 30km/h
- **Traffic calming** of all streets with right of way of 12 meters or less with tactical intervention, tree use, islands and street furniture (see Figure 14).

Reduce Vehicle Trips in the Station Area

- Implement **vehicle demand management** measures
- **Streets** with right of way of 18 meters or less shall be totally **pedestrianised** if pedestrian traffic is greater than 8000 per hour in both directions.
- Narrow streets that allow **one-way motor traffic**, as well as bicycles and pedestrians, will significantly reduce congestion. Replace major arterials wider than 45 meters with efficient one-way couples (two narrower on-way couples).

Regulate Parking Needs Around the Mobility Hub

- On-street parking shall be kept for **short-term parking**.
- **Park-and-Ride facilities** for private vehicles may be provided only at major multi-modal interchanges and/or at transit terminals.
- **Special parking spaces** allocated for PWDs (1 for every 25 parking spaces)
- Minimum of 50% and preferably 100% of parking facilities shall be provided as a **shared parking facility** if it is greater than 2000 square meters.

EVALUATION CRITERIA

CAR-REDUCED NEIGHBOURHOOD



Figure 15. A tactical intervention is a short-term, low-cost, and scalable approach to urban planning that improves public spaces and address immediate issues. With SMMR support, the roundabout in Takmau municipality is undergoing tactical interventions to enhance road safety and traffic flow. These improvements aim to better manage the interaction between vehicles and pedestrians, addressing both the cultural and commercial needs of the area. A street market located adjacent to the roundabout and a Buddhist shrine at its centre attract daily foot traffic, making it crucial to redesign traffic management. The interventions include the use of plants and paintings to create a more organised and visually appealing environment.



WAY FORWARD

TO BE FURTHER DISCUSSED WITH LOCAL STAKEHOLDERS
DURING B4P IMPLEMENTATION PHASE 2025-2027

KEY RECOMMENDATIONS FOR POLICYMAKERS AND PRACTITIONERS

ENHANCING ACCESSIBILITY

- Prioritize pedestrian and cycling infrastructure with safe, well-maintained sidewalks and mobility hubs.
- Design hubs for seamless connections between transport modes, ensuring accessibility for all.

COMMUNITY ENGAGEMENT

- Use participatory planning to gather input and build public support.
- Implement innovative outreach methods like pop-up kiosks for wider engagement.
- Run public awareness campaigns to highlight TOD benefits, such as reduced congestion.

STRONG PARTNERSHIPS

- Collaborate with government, private developers, academia, and community organizations to fund and implement TOD projects.
- Leverage private investment to reduce public financial burdens and enhance infrastructure quality.
- Use joint development agreements to finance transit stations, pedestrian pathways, and cycling facilities.

BEYOND DESIGN PHASE POLICY ADVICE

ADDRESSING HOUSING DEMAND

- Implement inclusionary zoning, subsidies, and incentives for affordable housing.
- Preserve existing affordable housing stock to maintain socio-economic diversity.
- Reduce long-distance travel by ensuring TOD benefits all income groups.

AFFORDABLE HOUSING

- Promote mixed-income developments and incentivize developers to include affordable units.
- Establish funding mechanisms and collaborate with non-profits to expand affordable housing.
- Integrate housing strategies into TOD planning to prevent displacement.

MITIGATING GENTRIFICATION

- Enforce rent control, tenant protections, and assistance programs for at-risk residents.
- Require new developments to include affordable housing and community amenities.
- Ensure TOD fosters inclusive urbanization, balancing growth with social equity.

FINANCIAL STRATEGY

Implementing TOD requires significant investment in transport and social infrastructure. Land Value Capture (LVC) leverages rising property values from infrastructure improvements to fund further TOD investments, including public transport, open spaces, and NMT infrastructure. Well-planned public and green spaces enhance surrounding property values.

When private developers lead TOD, LVC can be applied without direct public sector involvement by maximising transit proximity benefits and strategic private investments. Key LVC strategies include:

1. Optimised Land Use and Zoning
2. Development of mixed-use projects
3. Public infrastructure investment
4. Strategic Tenant Selection
5. Private financing model
6. Incremental Development
7. Prioritising pedestrianisation to boost vibrancy and local economy

SPECIFIC FINANCIAL STRATEGIES

1. **Land Value Capture (LVC):**
Harness rising land values from public infrastructure investments (e.g., transit projects) to fund further development and improve market potential.
2. **Strategic Private Partnerships:**
Collaborate with private developers to share risks and maximize financial benefits from infrastructure-driven value increases.
3. **Joint Development:**
Public-private partnerships can combine resources—public land or infrastructure with private investment and expertise—to create high-value, mixed-use developments.

These strategies not only aim to enhance the financial viability of neighbourhood developments but also ensure sustainable growth and value addition in urban areas.



Figure 16. Vibrant Bassac Lane area in Phnom Penh, Cambodia.
Source: Sovan Sieng (2024).



Figure 17. Voting prioritisation with General Santos Transport Alliances.
Source: Sovan Sieng (2024).



Figure 18. Tactical intervention for traffic management in Iloilo city.
Source: Sovan Sieng (2024).

IMPLEMENTATION
STRATEGY

The strategy focuses on building an integrated transport network to improve connectivity and accessibility. Through a phased approach, it prioritizes:

PHASED IMPLEMENTATION AT THE
NEIGHBOURHOOD LEVEL

The initial phase focuses on establishing Mobility Hubs in key neighbourhoods. These hubs will serve as foundational elements for the overall mobility network:

TO BE FURTHER DISCUSSED WITH LOCAL STAKEHOLDERS DURING B4P IMPLEMENTATION PHASE 2025-2027			
	Phase 1: Essential Elements	Phase 2: Enhanced Elements	Phase 3: Full Build-Out
Koh Norea Hub	» Establish the primary Mobility Hub with basic infrastructure and essential services.	» Upgrade facilities: - bike-sharing stations - E-charging points - improved pedestrian pathways.	» Full amenities: - multi-modal transport - retail spaces - green areas
Riverside Night Market Hub	» Set up pedestrian-friendly zones and initial transport connections	» Expand pedestrian areas, » add transport options (e-scooters) » improve public transport connections.	» Full integration of alternative transport modes and community spaces.
Morodok Techo Flyover Hub	» Create essential connectivity infrastructure to link with key transport corridors.	» Enhance connectivity with Hun Sen Boulevard and Monivong Boulevard: - dedicated bus lanes -improved traffic management systems.	» Full connectivity with major transport corridors: - smart traffic management - seamless transport integration.

PHASED IMPLEMENTATION AT
CORRIDOR AND CITY LEVELS

After establishing the foundational Mobility Hubs, the next phase expands and connects these hubs to form a metropolitan-wide network:

	Phase 1: Hub Network	Phase 2: Corridor Connections	Phase 3: Future Mobility Hubs
	» Enhance connectivity to other neighborhoods » Integrate additional transport modes. » Develop a fully pedestrianized area with robust transport links.	» Improve links between existing hubs and secondary hubs - dedicated bus lanes, - bike paths - pedestrian walkways. » Develop enhanced transport links between neighborhoods:- seamless integration - reduced transit times	» Plan and develop a mobility hub (5-10 years) for the Areksat District. » Expand the network between Phnom Penh and surrounding districts » Ensure the network supports future urban growth.

Figure 19. Seoulo 7017 walkway, Seoul, South Korea. Source: Sovan Sieng, (2022).





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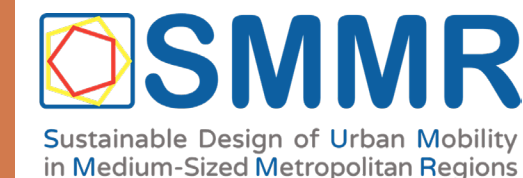
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