Bogor City Pedestrian and Cycling Infrastructure Improvement Roadmap

Executive Summary

March 2025

ITDP

UK PACT

The Institute for Transportation and Development Policy (ITDP) is a global non-profit organization founded in 1985, headquartered in New York, United States, and focused on promoting sustainable transportation innovation and urban development. For nearly two decades, ITDP Indonesia has provided technical assistance to local governments in Indonesia, such as Jakarta, Semarang, Surabaya, Pekanbaru, and Medan in supporting sustainable transportation development through public transport integration and reform, active mobility enhancement, transit-oriented development (TOD), vehicle electrification, GEDSI, and traffic demand management.

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Published by:
Institute for Transportation and Development Policy (ITDP)

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Published in:
March 2025

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INTRODUCTION

Walking and cycling modes play an important role in a sustainable urban transportation system, especially in filling the gap between the first and last mile with public transportation services. Driven by the urgent need to reduce traffic congestion and air pollution caused by the high volume of private vehicles, the central government formulated a mitigation strategy through Presidential Regulation (Peraturan Presiden/Perpres) No. 55 of 2018 concerning the Jabodetabek Transportation Master Plan. Within this plan, the central government set a target of achieving a 60% public transport modal share in Jabodetabek by 2029. To support Bogor City in reaching this target, and amid the capital share of Bogor City, which only has 24% active mobility users (walking and cycling), 30% of public transport users (excluding online-based transport services), and 46% private vehicle users (results of the Public Perception Survey), there will be an urgency to support the implementation of city-scale public transportation, one of which is by improving pedestrian and cycling infrastructure as a step to close the gap between the first and last mile of public transportation that will be electrified.

Although the modal share target has been determined, the problems in providing pedestrian and cycling infrastructure were identified through observation, surveys, and discussions conducted by ITDP Indonesia with various stakeholders in Bogor City, including the government, communities, and the general public. These activities revealed the following issues:

1. Inadequate access to public transportation services, such as commuter line stations, bus stops, and terminals in Bogor City, which cannot fully accommodate the needs of pedestrians and cyclists,

2. Space for pedestrians and cyclists disturbed by other activities, such as street vendors (*pedagang kaki lima*/PKL) on sidewalks and bike lanes, as well as the use of on-street illegal parking that disturbs cyclists or on-sidewalk parking that disturbs pedestrians,

3. Facilities for pedestrians and cyclists are less inclusive, safe, and connected, especially outside the city center. This absence of inclusive facilities makes it difficult for vulnerable street users, especially people with disabilities, to access sidewalks. Cycling facilities lack safe intersection interventions and shared bike lane markings.

Based on the above issues, ITDP Indonesia has prepared a document called **Roadmap for Pedestrian and Cycling Infrastructure Improvement in Bogor City**, which is expected to be a guide and reference for the Bogor City Government in implementing pedestrian and cycling infrastructure for the next few years through the following approaches:

- Identification of conditions, challenges, and gaps in the provision of pedestrian and cycling infrastructure in Bogor City
- Collaborative participatory approach with the community through public perception survey activities and discussions with the community and Bogor City Government agencies
- Preparation of pedestrian and cycling infrastructure planning connected to city activity centers, public transportation hubs, and public facilities that are in line with Bogor City policies
- Application of universal and inclusive pedestrian and cycling infrastructure design that is safe, secure, comfortable, direct, coherent, and aesthetic
- Development of communication strategies to increase the use of pedestrian and cycling facilities in Bogor City

SCOPE OF ACTIVITIES

This roadmap document is compiled by emphasizing connections to public transportation corridors, street space determination plans with priority for pedestrians and cyclists, and determining strategic areas listed in various spatial planning documents in Bogor City. The data used in compiling this document are as follows:

- Road network map
- Map of sidewalk construction locations of the Public Works and Spatial Planning Agency (Dinas Pekerjaan Umum dan Penataan Ruang/DPUPR) in the last 5 years
- Data on the condition of existing public transportation in Bogor City
- Mobility network development plan
- Priority street sections for the development of public proposals
- Priority area plans and service centers

The recommendations presented as output from this activity are as follows:

- List of priorities for the development of pedestrian and cycling infrastructure for Bogor City annually from 2026 to 2030, along with mapping of street sections
- Estimated costs for implementing pedestrian and cycling infrastructure
- Physical interventions possible at public transport stopping points
- Design guideline (typical design) for pedestrian and cycling infrastructure
- Communication strategy for Bogor City Government in increasing pedestrian and cycling infrastructure use

KEY PRINCIPLES AND DESIGN ELEMENTS FOR PEDESTRIAN, CYCLIST, STREET SPACE SUPPORT, AND BUS STOP INFRASTRUCTURE

The complete streets principle emphasizes the importance of fairness in the distribution of street space and the application of universal design that accommodates the minimum space requirements for the mobility of vulnerable groups, including diversity of age, gender, and physical ability. This principle aims to create a safe, comfortable street space that has universal accessibility, supports environmental sustainability, and ensures effective mobility. The complete streets principle changes the paradigm of street space design from previously focusing on vehicles to being oriented toward human movement. In this approach, street space design prioritizes facilities for pedestrians, cyclists, and public transportation, followed by facilities for private vehicles.

In the provision of pedestrian and cycling infrastructure, several main principles that must be met are as follows:

Table 1. Main Principles of Pedestrian and Cycling Infrastructure

Principle	Information
Integrated	A network that is planned in an integrated manner from various aspects and implemented, connected to each other
Continuous and Direct	Connecting the origin and destination of the trip without interruption or obstructed by any obstacles, as well as avoiding detours
Safe and Secure	Infrastructure planning must emphasize safety for all street space user groups to reduce the risk of conflict
Accessible (Pedestrian)	Accessible to all users, covering a diversity of age, gender, and physical abilities
Easy and Comfortable	Facilities with comfort, safety, and smoothness to achieve its goals
Interesting (Cyclist)	Providing an attractive aspect to attract cyclists

The main principles above are derived and developed into the main design elements and supporting infrastructure for pedestrians, cyclists, street space, and bus stops as follows:

Table 2. Design Elements for Pedestrian, Cyclist, Street Space, and Bus Stop Infrastructure

Design Elements	Main	Supporters
Pedestrian	1. Sidewalk 2. Pedestrian crossing	1. Refuge island 2. Lighting system 3. Pedestrian wayfinding 4. Planting strip 5. Sidewalk bench 6. Rubbish bin 7. Bus stop 8. Bollard
Cyclist	1. Bike lane dimensions 2. Typology of cycling facilities 3. Bike lane at bus stops	Bicycle parking facilities
Street Space	1. Lane consistency and road diet 2. Intersection arrangement 3. On-street parking management 4. Speed limitation	
Bus Stop	1. Branding and information 2. Typology and placement 3. Passenger waiting area 4. Bus stop design	

ROADMAP REPORT PREPARATION PROCESS

The preparation of the roadmap involved the collection of primary and secondary data. Primary data was obtained from a field survey conducted by ITDP Indonesia, consisting of a physical survey of infrastructure (pedestrians, cyclists, and bus stops) and a Public Perception Survey to collect input from the people of Bogor City. In addition to the survey, meetings and discussions with the Bogor City Government were also conducted regarding technical matters of the report. Secondary data was obtained from sources provided by the Bogor City Government and sources that can be accessed publicly, such as regulations and the Bogor City development plan. From the results of this data collection, there are thirty street sections that Bogor City has prioritized through Bogor City Regional Regulation (Peraturan Daerah/Perda) No. 6 of 2021. These street sections will then be used as the basis for the analysis process.

In the analysis process, two outputs are produced:

1. The priority corridors for pedestrians and cyclists are based on scoring results, which are obtained from various criteria related to regional policies, connectivity to public transportation, regional connectivity, and input from the public and community.

2. The development stages of priority corridors are carried out based on the implementation planning in the Bogor City planning documents.

Other inputs are derivative products of the above analysis to be used as a reference in improving pedestrian and cycling infrastructure, namely recommendations for improving access and physical of the bus stops, city-wide bike lane networks, and typical street space designs.

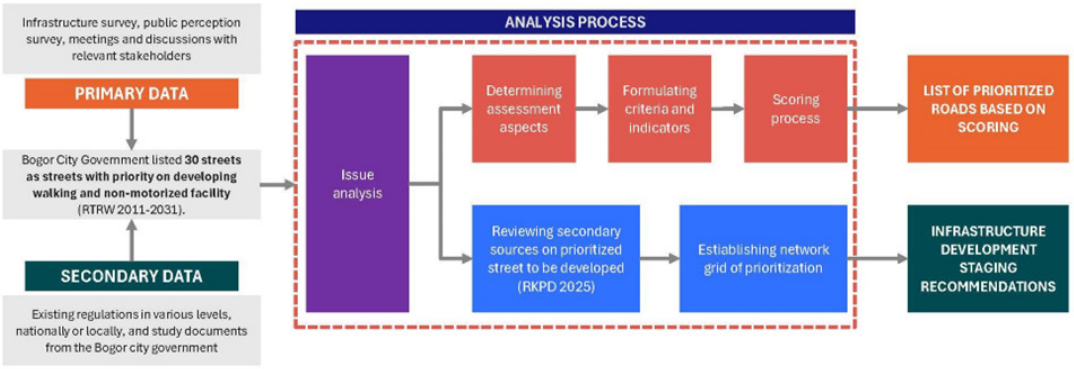


Figure 1. Roadmap Document Analysis Process

RECOMMENDATIONS

1.1. Priority Program Recommendations and Cost Estimates

Referring to the Ministry of Transportation's target of electrifying public transportation services in 2030, the year 2030 will be used as a benchmark for building all priority streets. Given the bureaucratic process related to the regional budget, infrastructure improvements can be implemented starting in 2026.

These priority street sections are then grouped into packages to form a more area-based implementation and align with the government's implementation program. These work packages are flexible and adjusted to the needs and capabilities of the Bogor City Government in the implementation stage.

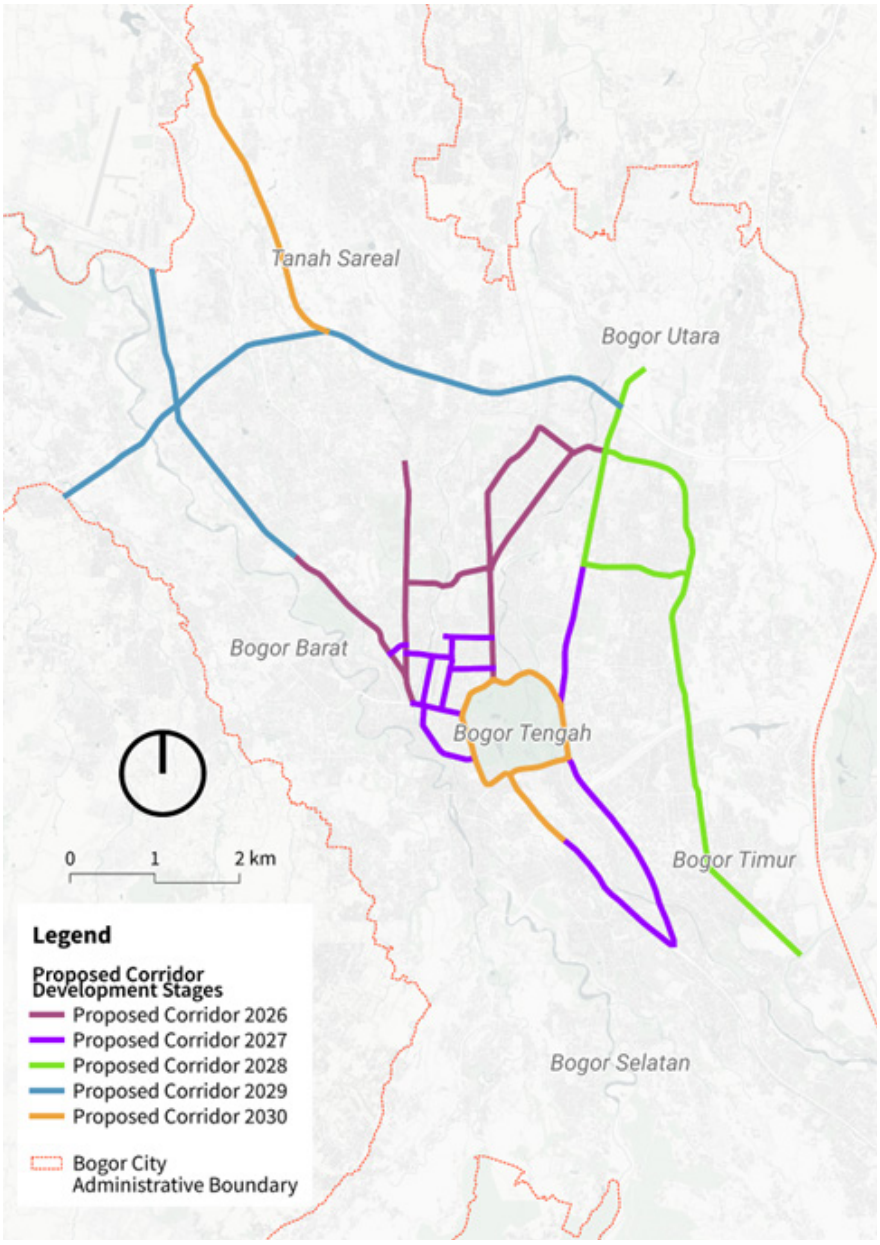


Figure 2. Map of the Stages of Improving Pedestrian and Cycling Infrastructure in Bogor City

The details of the annual activity packages will be explained in the tables below.

Table 3. Plan for Activity Improvement in Long Segments

Year	2026	2027	2028	2029	2030
Work Package Length per Year (km)	12,093	10,920	10,754	10,893	8,669
Street Sections Under the Authority of the Bogor City Government (km)	**9,453**	**4,850**	**8,324**	**3,423**	**2,729**
Street Section Under the Authority of the Province and Central Government (km)	2,640	6,070	2,430	7,470	5,940

Table 4. List of Recommended Work Packages for Development in 2026

No	Work Packages	Total Segment Length (km)	Segment Length Under the Authority of the Bogor City Government (km)	Notes
1	Preparation for Provincial Sports Week (Pekan Olahraga Provinsi/Porprov) 2026	5,940	**5,940**	There is a street (Tentara Pelajar) outside the priority list.
2	Porprov Priority Network Connectivity 2026	6,153	**3,515***	*Including the construction of 1.428 km of bike lanes

Table 5. List of Recommended Work Packages for Development in 2027

No	Work Packages	Total Segment Length (km)	Segment Length Under the Authority of the Bogor City Government (km)	Notes
1	The continuation of the sidewalk development in Bogor City's central area	1,830	-	-
2	Bogor Station accessibility	4,850	**4,630***	*Including construction of 0.615 km of bike lanes
3	City arterial street section improvement	4,240	-	-

Table 6. List of Recommended Work Packages for Development in 2028

No	Work Packages	Total Segment Length (km)	Segment Length Under the Authority of the Bogor City Government (km)	Notes
1	City arterial street section improvement	3,681	**1,251**	-
2	Trans Pakuan Bus accessibility improvement	7,073	**7,073**	-

Table 7. List of Recommended Work Packages for Development in 2029

No	Work Packages	Total Segment Length (km)	Segment Length Under the Authority of the Bogor City Government (km)	Notes
1	Outer-ring accessibility improvement	7,470	-	-
2	Continuation of Dr. Sumeru Street	3,423	**3,423**	-

Table 8. List of Recommended Work Packages for Development in 2030

No	Work Packages	Total Segment Length (km)	Segment Length Under the Authority of the Bogor City Government (km)	Notes
1	Improvement of the Bogor Botanical Garden ring road	5,119	**2,729***	*Including the construction of 2.729 km of bike lanes
2	Continuation of Sholeh Iskandar Street	3,550	-	-

The estimated cost of pedestrian and cycling infrastructure from 2026 to 2030 will be adjusted to the cost of building sidewalks and bike lanes in Bogor City, which is Rp1,384,300 (will be adjusted to inflation per year during the implementation period). By accommodating an inclusive approach, street sections with sidewalks only will require a minimum free space of 2.15 m (including curbs), while street sections with sidewalks and bike lanes will require a minimum free space of 4.2 m. Adding supporting facilities, such as greenery, utilities, and so on, should not reduce the recommended minimum effective space. The Bogor City Government could also seek creative funding from non-APBD sources so as not to burden regional finances too much.

Table 9. Estimated Cost of Implementing Improvement Activities from 2026 to 2030

Year of Implementation	Segment Length Under the Authority of the Bogor City Government (km)	Funding Needs (billion rupiah)
2026	9,453 (including bike lane)	68,294
2027	4,850 (including bike lane)	35,361
2028	8,324	55,767
2029	3,423	23,621
2030	2,729 (including bike lane)	31,141

1.2. City-Scale Cycling Infrastructure Network Recommendations

The development of a city-wide cycling infrastructure network can be based on the existing bike lanes in Bogor City, which are developed through three approaches:

- Development based on government and community input
- Development based on public transportation routes to support first and last-mile public transportation services
- Development that connects Bogor City's strategic areas listed in the Bogor City RTRW 2011—2031

The above networks are then connected to form a city-scale grid that can accommodate the continuity and connectivity of the city-scale cycling infrastructure network. The following figure illustrates potential street sections that can be developed with the two approaches above.

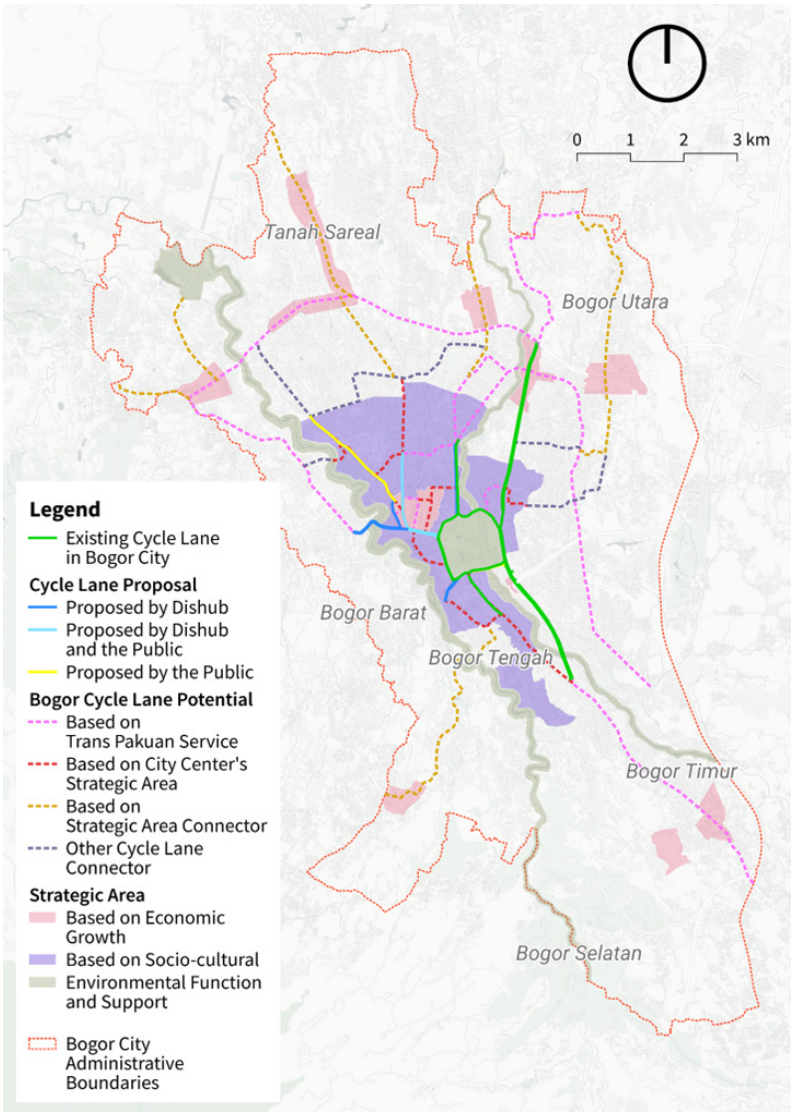


Figure 3. Development of A City-Scale Bike Lane Network Based on Government and Public Proposals, Trans Pakuan Services, and Strategic Areas

1.3. Bus Stop Intervention Recommendations

One of the inputs obtained from the Bogor City Government was on the design of existing bus stops. Based on this input, ITDP Indonesia surveyed 111 Trans Pakuan bus stops and identified the obstacles at each bus stop. ITDP Indonesia identified several key issues, such as:

- **pedestrian access** to bus stops related to inclusivity aspects;
- **continuity of the sidewalk to** the physical building of the bus stop;
- **the physical condition of the sidewalk around** the bus stop;
- **obstacle** which reduces/closes effective pedestrian space; and
- **the condition of cycling facilities.**

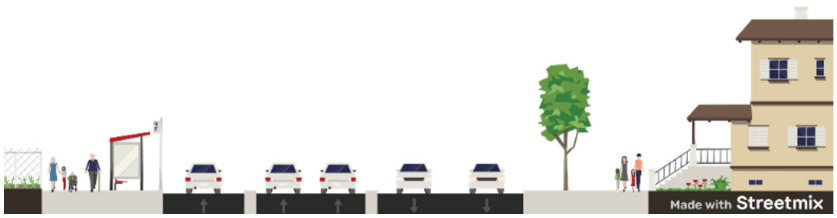
Each bus stop identified as having an issue will be recommended for physical intervention. This physical intervention can be one recommendation or a combination of existing recommendations for each issue found at the bus stop.

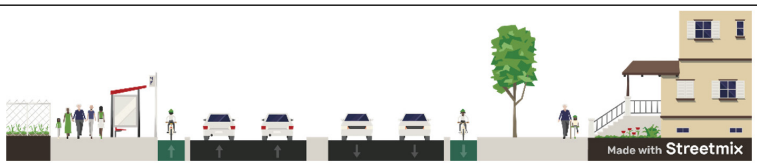
1.4. Typical Street Space Design Recommendations

Design recommendations follow the Complete Street approach (all streets are considered equipped with sidewalks and bike lanes). Typical design typologies are given by the arterial and collector street typologies of Bogor City, which are included in the priority for developing pedestrian and non-motorized vehicle facilities in the Bogor City RTRW document and are divided based on physical conditions and public transportation services. Street widening can be an option if the street configuration cannot be maintained with the available width. However, if street widening is not possible, what can be done is to reduce the street function or change the street configuration, for example, by reducing the number of lanes or adjusting the width of the lanes.

An example of a typical design output can be seen in the table below:

Table 10. Examples of Street Space Adjustments with An Inclusive Approach

Example of Implementation	Pajajaran Street (Cikuray Intersection—Lodaya Intersection segment) | Width: 30 m | Primary Artery
Existing Conditions	 (Google Street View)
	

	• Pedestrian space on the left: 3.3 m • Bus stop and green space on the left: 2.7 m • Mixed traffic lane on the left: 4 m and 5.4 m (assuming each lane is 2.7 m wide), separated by a 0.6 m curb • Median: 0.6 m curb • Motor vehicle lane on the right: 7.2 m (assuming each lane is 3.6 m wide) • Green space on the right: 4.2 m • Pedestrian space on the right: 2 m
Intervention	 In this segment, lane inconsistencies were identified at the neighboring segments that are prone to causing vehicle congestion (bottleneck). Therefore, the street configuration will be pushed to 4/2 T (four-lane, two-way street, physically separated). • Pedestrian spaces and greenways are maintained • Bike lane (both sides): 1.5 m with 0.3 m for protective curb • Median widening to 1.2 m • Motor vehicle lanes: 4 x 3.25 m

1.5. Communication Strategy Recommendations

Effective socialization is needed so the community and stakeholders can optimally utilize and support the pedestrian and cycling infrastructure. ITDP Indonesia identified communication issues related to this through public perception surveys and face-to-face discussions, with several key findings as follows:

- Some people in Bogor City are not yet familiar with the existence of bicycle and pedestrian paths.
- City government communication regarding infrastructure was deemed ineffective, with 28% of respondents being neutral, 25% rating it ineffective, and 7% rating it very ineffective.
- Social media was the main source of information about the benefits of cycling and walking, while only 6% of respondents received information from the city government.
- There is a lack of information that could encourage using pedestrian and bike lanes.
- More precise information boards or directions regarding pedestrian and bike lanes are needed in several areas, such as around the Bogor Botanical Gardens and the town square (alun-alun).
- There is a lack of community involvement, such as cycling communities, in planning the pedestrian and cycling infrastructure in Bogor City.

In response to these findings, ITDP Indonesia recommends four main approaches to communication strategies that can be applied according to the characteristics of each target group.

- **Informational Communication:** This approach engages communities and citizens in planning and managing pedestrian and bike lanes. It can target pedestrian and cycling communities, government and internal stakeholders, the private and development sectors, and disability and vulnerable communities.

- **Participatory Communication:** Melibatkan masyarakat dan komunitas dalam perencanaan dan pengelolaan jalur pesepeda dan pejalan kaki. Pendekatan ini dapat digunakan untuk menyasar komunitas pesepeda dan pejalan kaki, pemerintah dan pemangku kepentingan internal, sektor swasta dan pengembangan, serta komunitas disabilitas dan kelompok rentan.

- **Persuasive Communication:** This approach encourages behavioral change through persuasive campaigns. It can target the general public, school, and college students, pedestrian and cycling communities, the private and development sectors, and the disabled and vulnerable communities.

- **Technical and Functional Communication:** This approach provides access to technical information and strengthens infrastructure functionality. It can target the government, internal stakeholders, and the media.