



# Documentation And Recommendations Of Low Emission Zone (LEZ) Kota Tua Jakarta

## Executive Summary

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December 2022





*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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### Written by:

Michael Tanuhardjo

### Editor:

Gonggomtua Sitanggang  
Etsa Amanda  
Fani Rachmita

### Editorial Design:

Fadlan Hamizan Ekantoro

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### Contact:

Fani Rachmita - Senior Communications & Partnership Manager  
[fani.rachmita@itdp.org](mailto:fani.rachmita@itdp.org)

Carlos Nemesis - Urban Planning Associate II  
[carlos.nemesis@itdp.org](mailto:carlos.nemesis@itdp.org)

ITDP Indonesia  
Jl. K.H. Wahid Hasyim No.47 (WH47) Lt. 6  
Menteng, Kota Jakarta Pusat, 10350

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# Findings

## THE NEED TO ADDRESS AIR POLLUTION FROM THE TRANSPORTATION SECTOR

Poor air quality has been one of the main problems in DKI Jakarta. Since 2016, air quality, as measured by the Air Quality Index (Indeks Kualitas Udara/IKU), has either stagnated or worsened. Jakarta ranks sixth in cities with PM2.5 pollution in Southeast Asia, with  $39.2 \mu\text{g}/\text{m}^3$ . Poor air quality has been one of the main problems in DKI Jakarta. Since 2016, air quality, as measured by the Air Quality Index (Indeks Kualitas Udara/IKU), has either stagnated or worsened. Jakarta ranks sixth in cities with PM2.5 pollution in Southeast Asia, with  $39.2 \mu\text{g}/\text{m}^3$ .<sup>1</sup> This is almost eight times the new annual PM2.5 limit set by WHO, with a threshold value of  $5 \mu\text{g}/\text{m}^3$ . Compared to the national standard in Government Regulation (Peraturan Pemerintah/PP) No. 22 of 2021, conditions in Jakarta are more than double the national quality standard of  $15 \mu\text{g}/\text{m}^3$ .

In addition to air quality issues, DKI Jakarta faces the problem of greenhouse gas (GHG) emissions contributing to global warming. In 2018, the energy sector contributed 46.4% of total GHG emissions in Jakarta, with the transportation sub-sector being the most significant contributor, with 48.8% of the energy sector.<sup>2</sup> To address the poor air quality, the DKI Jakarta Provincial Government has issued a series of regulations, such as Governor Instruction (Instruksi Gubernur/Ingub) No. 66 of 2019, concerning Air Quality Control in Jakarta and Governor Regulation (Peraturan Gubernur/Pergub) No. 90 of 2021 on Climate Resilient Regional Low Carbon Development Plan (Rencana Pembangunan Rendah Karbon Daerah/RPRKD).

Developing policies and mitigation plans for the transportation sector is a key step the government must take as part of its strategic agenda. Replication of the low emission zone (LEZ) is one of the priority action plans. At present, the implementation of the LEZ pilot has been carried out in Kota Tua Jakarta since 2020. ITDP has evaluated the implementation of LEZ in Kota Tua and developed recommendations to ensure a more optimal and impactful implementation.

<sup>1</sup> IQAir. 2021. *World Air Quality Report*. IQ Air. Source: world-air-quality-report-2021-en.pdf

<sup>2</sup> PT Andika Persada Raya. 2020. *Laporan Inventarisasi Profil Emisi Gas Rumah Kaca Provinsi DKI Jakarta*. DKI Jakarta Provincial Environment Agency. Source: Preliminary Report.

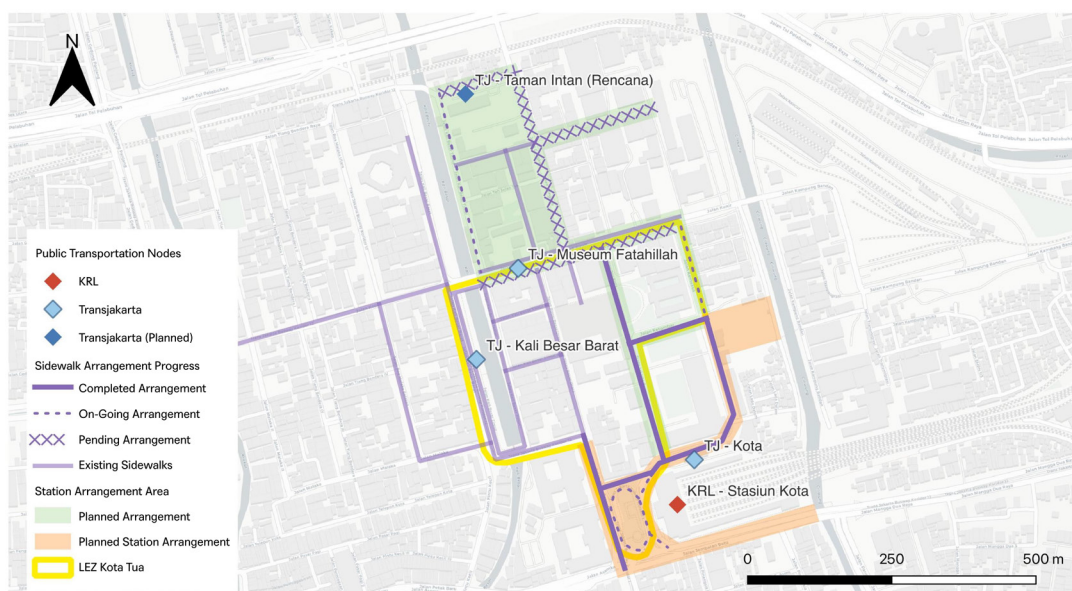
**Figure 1.** Air Quality Index in DKI Jakarta (Source: DKI Jakarta Environmental Quality Index Document 2021)



This report aims to evaluate the implementation of the LEZ pilot in Kota Tua that the DKI Jakarta Provincial Government has implemented, as well as provide recommendations for development in the short and medium-long term. The evaluation is based on pilot implementation in 2021 and field data collection in 2022. In the recommendation section, ITDP includes relevant stakeholders who play a role in implementing the recommendation strategy that has been prepared.

# CONDITION AND EVALUATION OF LEZ IMPLEMENTATION IN KOTA TUA JAKARTA

**Figure 2.** Sidewalk Arrangement Work in Kota Tua (Source: ITDP, 2022)



The implementation of LEZ in Kota Tua was conducted by prioritizing the use of space for pedestrians. Interventions in the form of pedestrianization were carried out on Jalan Lada—Ketumbar, while space reallocation—used to widen pedestrian space further but still allow vehicle traffic—was carried out on Jalan Lada Dalam. Pedestrian access improvements were also carried out between the Transjakarta BRT Station and Kota Tua Commuter Station by moving the BRT station on Jalan Pintu Besar Utama to Jalan Lada Dalam.

Traffic regulation across the LEZ Kota Tua was carried out by completely restricting motorized vehicles and only allowing environmentally friendly (electric) vehicles or people who lived/owned shops in the area. The impact of traffic regulation in the LEZ Kota Tua area on emission reduction was not significant. Data from emission monitoring in June 2022 show that PM2.5 concentrations have not met the quality standards of PP No. 22 of 2021.<sup>3</sup> Peak concentrations tend to occur at night to early morning when the area's logistical activities increase.

Based on ITDP's identification, several key issues need to be considered to optimize the implementation of LEZ in Kota Tua:

- Comprehensive motor vehicle restrictions are needed, not just based on emissions
- Limited monitoring and evaluation
- Ineffective traffic restriction interventions
- Integration of Transjakarta corridor 12 and commuter rail (*kereta rel listrik*/KRL) to be indirect
- Limited accessibility of logistics loading and unloading points
- Public transportation accessibility and parking spots that can be improved
- Limited choice of activities
- Potential expansion to the entire Kota Tua area

<sup>3</sup> Universitas Trisakti. (2021). *Paparan Universitas Trisakti dalam Rapat Evaluasi LEZ Kota Tua 20 Juni 2022*. Universitas Trisakti. *Unpublished report*

# Recommendations

## RECOMMENDATIONS FOR THE DEVELOPMENT OF KOTA TUA JAKARTA

ITDP formulated recommendations for the development of the LEZ of Kota Tua Jakarta, which are divided into short-term and long-term recommendations. A detailed explanation is made of the short-term recommendations as follows.

### 2.1 RESTRICT MOTORIZED VEHICLES ACROSS THE BOARD, INCLUDING ZERO-EMISSION MOTORIZED VEHICLES

The current condition of traffic regulation in the LEZ Kota Tua has been ineffective due to the lack of enforcement of motorized vehicle restrictions. The government needs to increase efforts to restrict motorized vehicle access at four access points in and out of the LEZ Kota Tua. These access restrictions can be improved by establishing a transit mall concept on roads that can still be traversed by motorized vehicles. This concept prioritizes access to public transportation and restricts private motorized vehicles. Exceptions can still be made to specific groups on a limited basis.

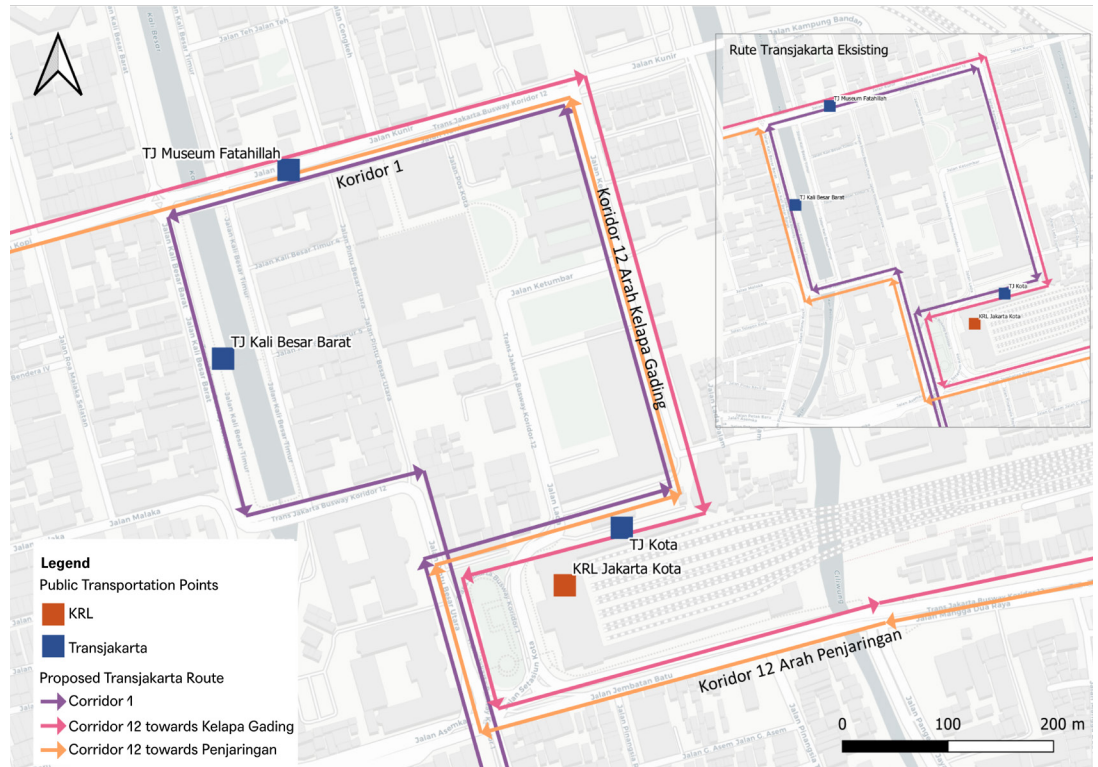
### 2.2 FORMULATE INDICATORS, COORDINATE, AND CARRY OUT MONITORING AND EVALUATION

Monitoring and evaluation is a critical stage that needs to be carried out thoroughly and consistently to evaluate the impact of the LEZ implementation in a measurable manner. The indicators currently used are still not comprehensive enough because they only focus on aspects of vehicle traffic and changes in air quality, which have also not been carried out in stages. The government must prepare monitoring and evaluation indicators with data collection conducted before and after implementation. Some categories of indicators that need to be evaluated include:

- physical changes: changes in non-motorized transportation infrastructure, changes in vehicle-free zones, changes in public transportation points, changes in bikesharing stations, and changes in lighting and amenities;
- changes in the use of public facilities: changes in the volume of motor vehicles, changes in pedestrians and cyclists, changes in the number of public transportation users, changes in perception, and changes in traffic accident rates;
- measuring impacts: changes in ambient air quality, changes in air pollutant emission concentration, changes in tourism activities, changes in economic activities, changes in population, and changes in land use.

## 2.3 DIRECTLY INTEGRATE KRL AND TRANSJAKARTA (CORRIDOR 12 TOWARDS PENJARINGAN)

**Figure 3.** Alternative Transjakarta Route Changes in the LEZ Area



The relocation of the Kota BRT Station to Jalan Lada Dalam resulted in a disconnected connection between corridor 12 towards Penjaringan and Kota Tua KRL Station. Corridor 12 bus passengers need to change stops first, and people in corridor 1 need to go around the LEZ area before reaching Kota Tua Station.

With the BRT stations already built, the best scenario for integrating Transjakarta corridor 1, corridor 12, and Kota Tua Station is to impose two-way streets on Jalan Lada Dalam, Jalan Kemukus, and Jalan Kunir. Kota BRT Station will become the integrated stop between Transjakarta and KRL services. The Fatahillah Museum Bus Stop will serve passengers from both directions for corridors 1 and 12.

## 2.4 IMPROVE THE ACCESSIBILITY OF LOADING AND UNLOADING LOGISTICS

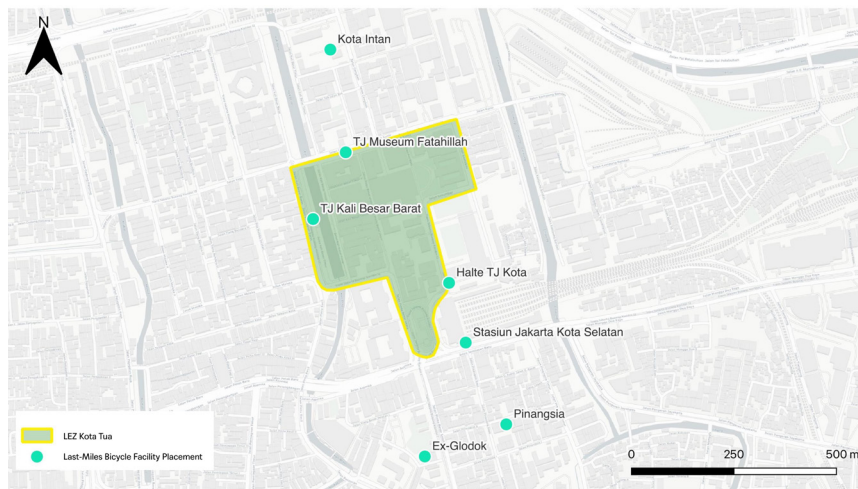
Limited access for logistics loading and unloading remains an issue in the LEZ Kota Tua, as it is still confined to Jalan Kali Besar Timur on the south side and cannot reach the entire area. The first solution to fulfill logistics delivery needs is to operate cargo bikes as a means of last-mile logistics delivery. If the implementation of the cargo bike system is not possible, additional loading and unloading points can be implemented with time restrictions.



## 2.5 IMPROVE THE ACCESSIBILITY TO AND FROM PUBLIC TRANSPORTATION POINTS AND PARKING LOTS

Improving visitor accessibility from public transportation points to the LEZ area in Kota Tua can focus on the development of non-motorized mobility. One of the environmentally friendly mobility services already available in Kota Tua is the onthel bicycle taxi service. Apart from being a means of tourism, onthel bicycle taxis are also often used by commuters from Kota Tua Station to the office in the LEZ area. This service needs to be further optimized by the government to ensure short-distance travel needs and improve the economic conditions of residents. ITDP recommends several potential pickup points for onthel bicycle taxis by considering land use activities, as shown in **Figure 4**.

**Figure 4.** Potential Placement Points for Bicycle Parking and Onthel Bicycle Taxis Pickup



Another development that needs to be considered is the improvement of walking comfort in the LEZ area of Kota Tua. Shading is an important infrastructure in improving visitors' walking experience. Some priority locations include Jalan Kali Besar Barat and Timur, Jalan Lada, Jalan Pintu Besar Utara, Cengkeh, and Jalan Kunir. Adding shade in the form of trees can be prioritized due to their dual function as urban greening. The following is an example of shade in the Kota Tua area, specifically on Jalan Kali Besar Barat.

**Figure 5.** Illustration of Shading on Jalan Kali Besar Barat

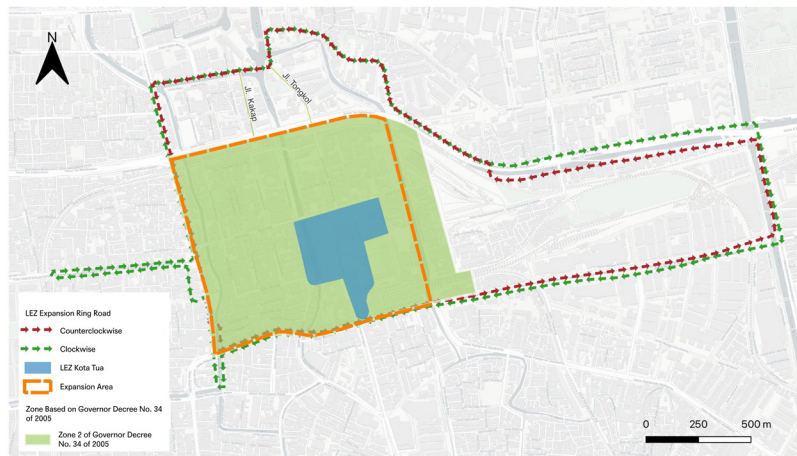


## 2.6 ACTIVATE THE KOTA TUA AREA THROUGH TEMPORARY-SEMI-PERMANENT ACTIVITIES

Visitors of the LEZ Kota Tua are currently concentrated in Fatahilah Park only. Space activation can be done on the west, north, and east sides of the LEZ area with tourism activities, including exhibitions or art installations, bazaars, music performances, art workshops, and sports events. These activities can be carried out on pedestrianized street spaces.

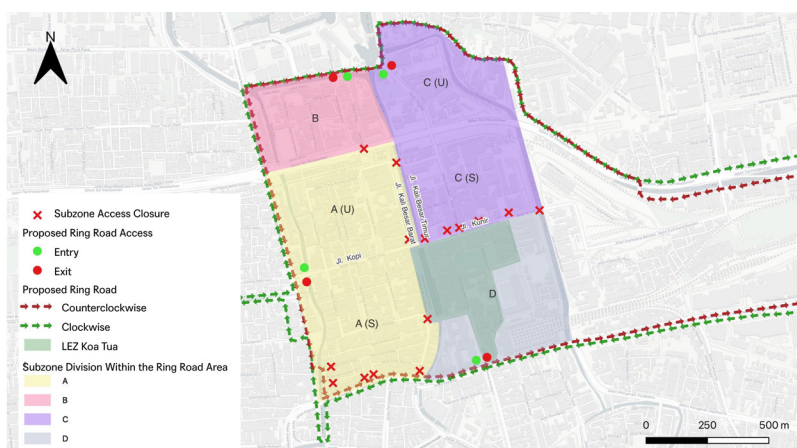
## 2.7 INCREASE CONTINUOUS TRAFFIC RESTRICTION INTERVENTIONS

**Figure 6.** Potential Formation of Ring Roads Using Existing Roads



In the short term, ITDP recommends that the LEZ Kota Tua intervention area be expanded by referring to DKI Jakarta Governor Decree (Surat Keputusan/SK) No. 34 of 2005 with orange delineation in **Figure 6**. Continuous traffic will be directed around the LEZ area for traffic from north to south and vice versa. Traffic management efforts in the LEZ Kota Tua area are carried out with the concept of filtered mobility to minimize traffic access for certain vehicles entering the area, as shown in **Figure 7**.

**Figure 7.** Subzone Division in the Inner Ring Road Area



The filtered mobility concept regulates vehicle access based on zones. Vehicles can only enter one zone in the LEZ area. If the vehicle wants to mobilize and switch modes, then the vehicle must exit the LEZ area first. Access between subzones will be limited by creating portals or bollards that pedestrians and cyclists can pass, but not motorized vehicles. These barriers can be temporarily removed in an emergency (such as firefighting or ambulance access).

A summary of the short-term and long-term recommendations for the development of the LEZ Kota Tua and related stakeholders is provided in the following table.

**Table 1.** Summary of LEZ Kota Tua Implementation Recommendations with Involved Stakeholders

Recommendation	Policy Stakeholders
<b>Short Term: Enhance and Improve Existing Implementation</b>	
Restrict motorized vehicles across the board, including zero-emission motorized vehicles	Transportation Agency (Dinas Perhubungan/Dishub)
Formulate indicators, coordinate, and carry out monitoring and evaluation	Regional Government Working Unit (Satuan Kerja Perangkat Daerah/SKPD) or Regional Government Work Unit (Unit Kerja Perangkat Daerah/UKPD) is involved under the coordination of the Bureau of Economy and Finance
Directly integrate KRL and Transjakarta (corridor 12 towards Penjaringan)	Dishub, Transjakarta
Improve the accessibility of loading and unloading logistics	Dishub, Public Works Agency (Dinas Bina Marga/DBM), Kota Tua Area Management Unit (Unit Pengelola Kawasan/UPK) Kota Tua
Improve the accessibility to and from public transportation points and parking lots	Dishub, UPK Kota Tua, Public Works Agency, Parks and Urban Forest Agency (Dinas Pertamanan dan Hutan Kota/ Distamhut)
Activate the Kota Tua area through temporary-semi-permanent activities	Tourism and Creative Economy Agency (Dinas Pariwisata dan Ekonomi Kreatif/Disparekraf), Cultural Affairs Agency (Dinas Kebudayaan/Disbud), DBM
Increase continuous traffic restriction interventions	Dishub, DBM
<b>Medium-Long Term: Expand LEZ</b>	
Improve the accessibility and facilities of non-motorized transportation infrastructure	Dishub, DBM
Activate through semi-permanent to permanent activities	Disparekraf, Disbud, Public Housing and Settlement Area Agency (Dinas Perumahan Rakyat dan Kawasan Permukiman/DPRKP), Distamhut, DBM
Encourage the use of low-emission or zero-emission motorized vehicles	Dishub, Environmental Agency (Dinas Lingkungan Hidup/ DLH)
Establish a sustainable logistics system	Dishub, DBM
Adjust zoning and enforce the land use	Urban Planning and Land Affairs Agency (Dinas Cipta Karya, Tata Ruang, dan Pertanahan/DCKTRP)
Replicate the intervention in other locations.	DKI Jakarta Provincial Government



