Ministry of Local Government and Rural Development (MLGRD)

Japan International Cooperation Agency (JICA)

Project for Formulation of Comprehensive Regional Development Plan for Greater Lusaka

Final Report

Volume I
Present Conditions and Development Issues of Greater Lusaka

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Abbreviation

2009MP	The Urban Master Plan for Lusaka of 2009
AfDB	African Development Bank
AQI	Air Quality Index
BAU	Business As Usual
BRT	Bus Rapid Transit
CBD	Central Business District
CBO	Community-Based Organizations
COMESA	Common Market for Eastern and Southern Africa
CP	The project's Counterpart
CU	Commercial Utilities
DACO	District Agricultural Coordinator
DEB	District Education Board
DRC	The Democratic Republic of the Congo
DHO	District Health Office
FAR	Floor Area Ratio
FDI	Foreign Direct Investment
FSM	Fecal Sludge Management
GDP	Gross Domestic Product
GHG	Greenhouse Gas
GRDP	Gross Regional Domestic Product
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GRDP	Gross Regional Domestic Product
HDF	Housing Development Fund
ICT	Information and Communication Technology
IDP	Integrated Development Plan
IUCN	International Union for Conservation of Nature
JCC	The Joint Coordination Committee
JET	JICA Expert Team
JICA	Japan International Cooperation Agency
KPIs	Key Performance Indicators
LA	Local Authority
LAP	Local Area Plan
LCC	Lusak City Council
LRA	Local Road Authority
LWSC	Lusaka Water Supply & Sanitation Company
MCC	Millennium Challenge Corporation
MCDA	Multi-criteria Decision Analysis
MFEZ	Multi-Facility Economic Zones
MFNP	Ministry of Finance and National Planning
MIHUD	Ministry of Infrastructure, Housing and Urban Development
MLGRD	Ministry of Local Government and Rural Development
MLNR	Ministry of Lands and Natural Resources
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOH	Ministry of Health
MFEZ	Multi-Facility Economic Zones
MSMEs	Micro-, Small and Medium-sized Enterprises
MTL	Ministry of Transport and Logistics
MWDS	Ministry of Water Development and Sanitation
MYSA	Ministry of Youth, Sport, and Arts
NAPSA	National Pension Scheme Authority
NDP	National Development Plan

NHA	National Housing Authority
NMT	Non-Motorized Traffic
NWASCO	National Water Supply and Sanitation Council
OD	Origin-Destination
OSS	On-Site Sanitation
PAMI	Priority Areas for Multisectoral Interventions
PEO	Provincial Education Office
PM	Particulate Matter
PPP	Public–private partnership
RD	Record of Discussion
RDA	Road Development Agency
RDP	Regional Development Plan
RTSA	Road Transport and Safety Agency
SADC	Southern Africa Development Community
SEA	Strategic Environmental Assessment
SDGs	The United Nations Sustainable Development Goals
TEVET	Technical Education, Vocational and Entrepreneurship Training
TOD	Transit-oriented Development
TWG	Technical Working Group
UGB	Urban Growth Boundary
URPA	Urban and Regional Planning Act
URPR	Urban and Regional Planning (General) Regulations
WARMA	Water Resources Management Authority
WDC	Ward Development Committee
WHO	World Health Organization
WWTP	Wastewater Treatment Plant
ZAF	Zambia Air Force
ZAMSTATS	Zambia Statistics Agency
ZCCZ	Zambia-China Economic & Trade Cooperation Zone
ZDA	Zambia Development Agency
ZEMA	Zambia Environmental Management Agency
ZICTA	Zambia Information and Communications Technology Authority
ZRL	Zambia Railways Limited

Unit of Measurement

Area

m^2	square meter
km^2	square kilometer
ha	hectare (= 10,000 m^2)

Length

mm	millimeter
cm	centimeter
m	meter
km	kilometer

Weight

µg	microgram
mg	milligram
kg	kilogram
t	ton (=1,000 kg)

Volume

l	liter
m^3	cubic meter (= 1,000 liter)

Time

sec, s	second
min	minute
h, hr	hour
d	day
y /yr	year

Energy

W	watt
kW	kilowatt
kWh	kilowatt-hour
MW	megawatt
MWh	megawatt-hour
GW	gigawatt
GWh	gigawatt-hour
KVA	kilovolt ampere
cal	calorie
J	joules (=4.18 cal)
kj	kilo joules
mmbtu	million metric British thermal unit

Other

%	percent
$	dollar
Avg	average
bill.	billion
degree	degree celsius
dB	decibel
mil.	million
ppm	parts per millio

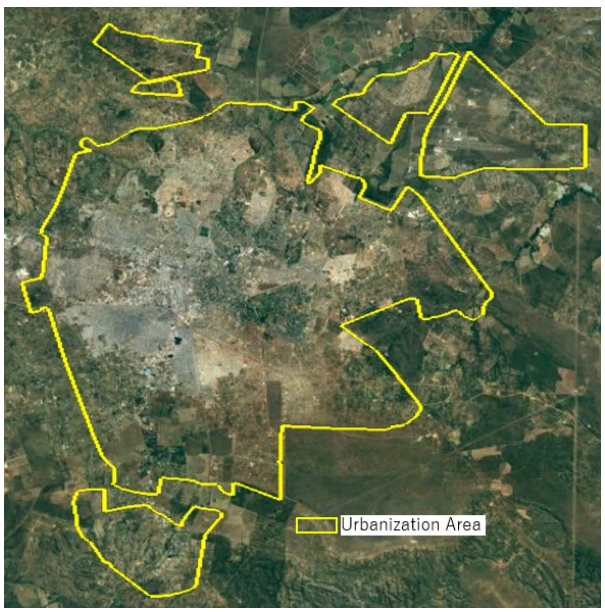
CHAPTER 1 INTRODUCTION

1.1 Background

Lusaka City is located at the nexus of Africa's economic corridors - the Lobito, North-South, Nacala and Dar es Salaam corridors - and is rapidly expanding as a transit city for international logistics. Lusaka City is already one of the largest cities on the African continent. Its population has increased rapidly from around 760,000 in 1990 to 1.08 million in 2000, reaching 1.45 million in 2007. According to the population census conducted in 2022, the population of Lusaka alone exceeded 2.2 million. Furthermore, urbanization has extended beyond the city limits to four neighbouring districts (Chibombo, Chilanga, Chongwe and Kafue). These neighbouring districts have experienced an annual population growth rate of well over 5% in the last 12 years.

In 2006, the government of Zambia formulated Zambia's 2030 Vision, which set a target of joining the ranks of the rich, middle-income countries by 2030, with the aim of achieving rapid economic growth; the government formulated a national development plan covering a five-year planning period to achieve this. Although the country's GDP has recorded negative growth in 2020, partly due to the Covid-19 pandemic, and Vision has not achieved the anticipated economic growth, the city of Lusaka is expected to be an important driving force in the country's economy. As evidence of this, industrial parks are being developed in the north-eastern and south-eastern suburbs of Lusaka, and many large, international logistics trucks currently travel on the main roads.

Lusaka City has been expanding for a long time, due to the influx of population from the countryside, however, in order to create an appropriate urban area and a sustainable city, a comprehensive urban development planning study for Lusaka was conducted by JICA. The Urban Master Plan for Lusaka (2009MP) was developed in 2009. The 2009MP projected that the city's population would exceed 2 million by 2020 and 2.6 million by 2030, but in reality, the city is expanding faster than the forecasted population figures. The built-up area has already exceeded the confines of the urbanization area, set out in the 2009MP land use plan (see Figure 1.1.1).



Source: Google Earth and JICA Expert Team (2023)

Figure 1.1.1 Built-up Area and the Limits of the Urbanization Area Planned in the 2009MP

In this context, the Project for the Formulation of the Comprehensive Regional Development Plan for Greater Lusaka (the Project) was devised, with the aim of developing a regional development plan to achieve sustainable growth, including the provision of a well-ordered living environment in Greater Lusaka, consisting of Lusaka City and the part of four surrounding districts of Chongwe. Chilanga, Kafue and Chibombo.

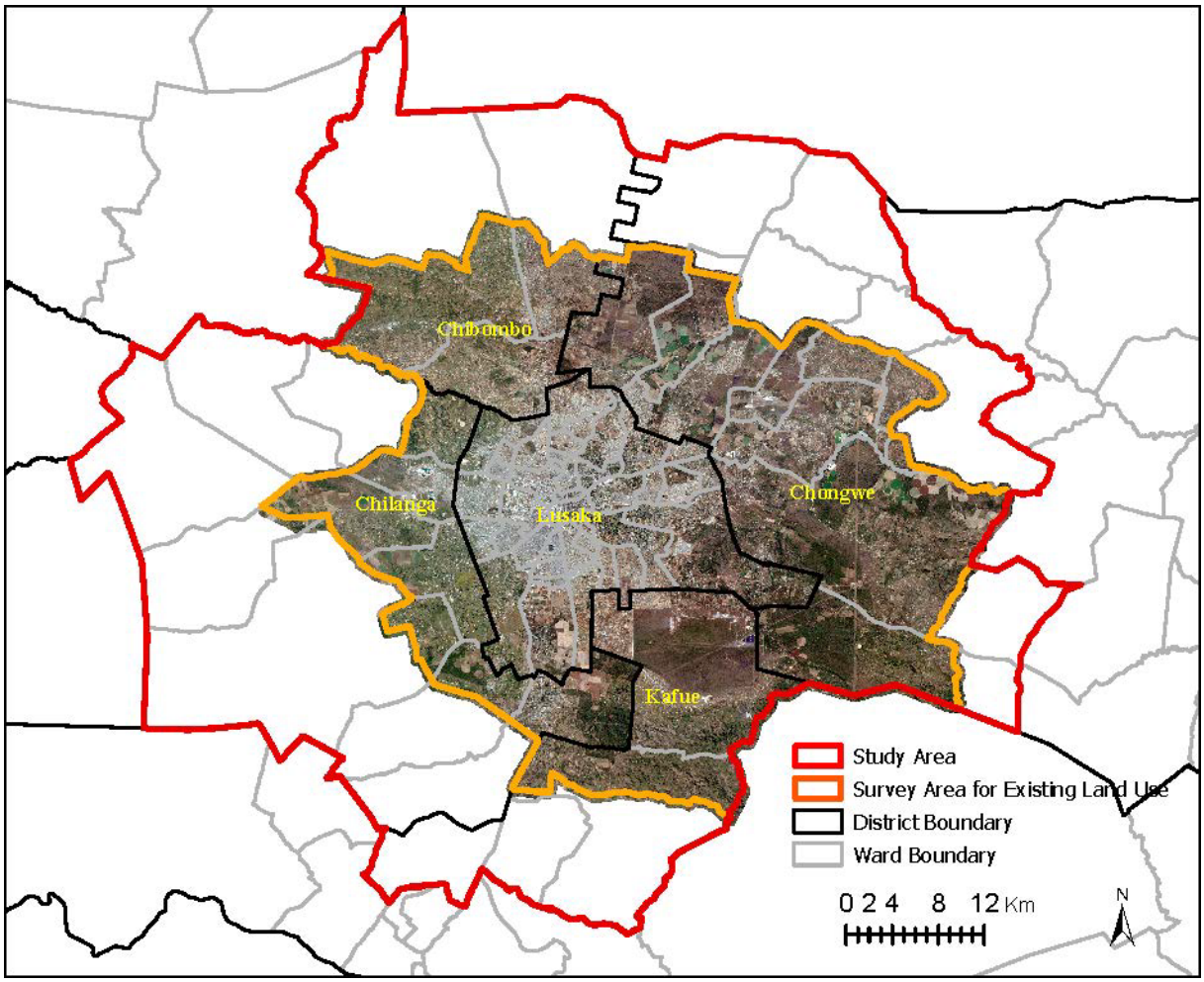
1.2 Overall Goal and Objectives of the Project

Based on the discussions held during the detailed planning survey of the Project, the Record of Discussion was agreed upon between the Ministry of Local Government and Rural Development, Lusaka City Council and JICA to specify the Scope of Works of the Project. According to the RD, the overall goal of the Project is defined to facilitate the endorsement of the Regional Development Plan (RDP) by the Zambian government to contribute to sustainable development and improved living conditions in Greater Lusaka. A further aim is to ensure that the RDP will be used as a medium- and long-term policy document providing guidance. To achieve this, the Project has two objectives: the preparation of the RDP and capacity development for its implementation.

1.3 Study Area and Administrative Setting

The Study Area of the Project is Lusaka City and part of its surrounding four districts of Chongwe, Kafue, Chilanga and Chibombo, with an area of about 3,869,3km^2, as shown in Figure 1.3.1. The Study Area include the following wards in four districts.

- Chibombo District: Cholokelo, Kamaila, Katuba, Chunga and Mungule
- Chilanga District: Chilanga, Mount Makulu, Chilongolo, New Farms, Nakachenje, Kalundu, Namalombwe, Kasupe, Nyemba, Chinyanja and Mondengwa
- Chongwe District: Kapwayambale, Kasenga, Kasisi, Ngwerere, Madido, Ntandabale, Chinkuli, Chainda, Palabana, Nakatindi and Njolwe
- Kafue District: Chisankane, Malundu, Shimabala and Kabweza



Source: Zambia Statistics Agency for district and ward boundaries
JICA Expert Team for the study area boundaries (2024)

Figure 1.3.1 Study Area and Administrative Boundaries

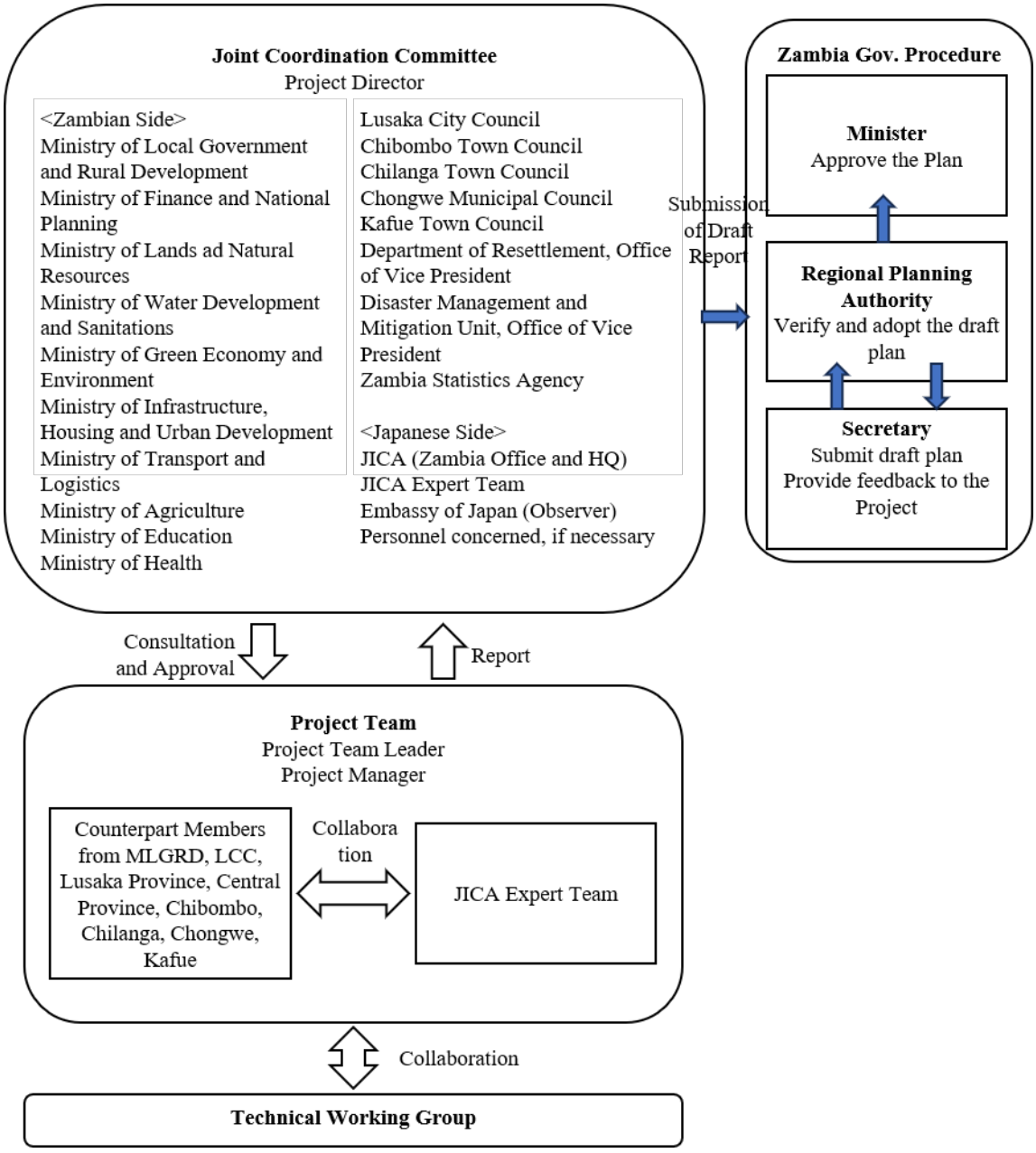
Initially, the Study Area was set to cover the area of 1,869.6 km^2 encompassing Lusaka City and part of four surrounding districts and agreed at the first Joint Coordination Committee meeting. However, the high rate of population growth in the four surrounding districts raised concerns as to whether the Study Area could accommodate the population growth over the next 20 years. The Study Area was therefore expanded to cover the area of 3,869,3 km^2. It should be noted in view of budgetary constraints and the limited manpower of the JICA Expert Team, it was decided that the current land use map should be prepared for the initial Study Area, called as the survey area for existing land use as shown in Figure 1.3.1, while the database is created for the expanded Study Area utilizing the open source data.

1.4 Implementation Structure

In order to implement the Project, a project implementation structure, formulated by the JICA Expert Team and the Zambian government and based on the RD is established as shown in Figure 1.4.1. The Joint Coordination Committee (JCC) is responsible for approval of the project outcomes and activities, while the Technical Working Group (TWG) is responsible for collaborating with the JICA Expert Team including technical discussion, data provision and review of the project reports. The Counterpart (CP) member collaborates with the JICA Expert Team as they are the target for the capacity development. The CP member is also responsible for arranging the meeting with TWG members and related organizations. The CP member has

discussion about technical issues, mainly related to urban planning and facilitate the workshop.

The JCC meeting is held at the time when the project report is submitted and whenever necessary. Based on the report to be prepared under this project, the Government of Zambia will conduct the deliberation and approval procedures by the Regional Planning Authority in accordance with the Urban and Regional Planning Act, 2015.

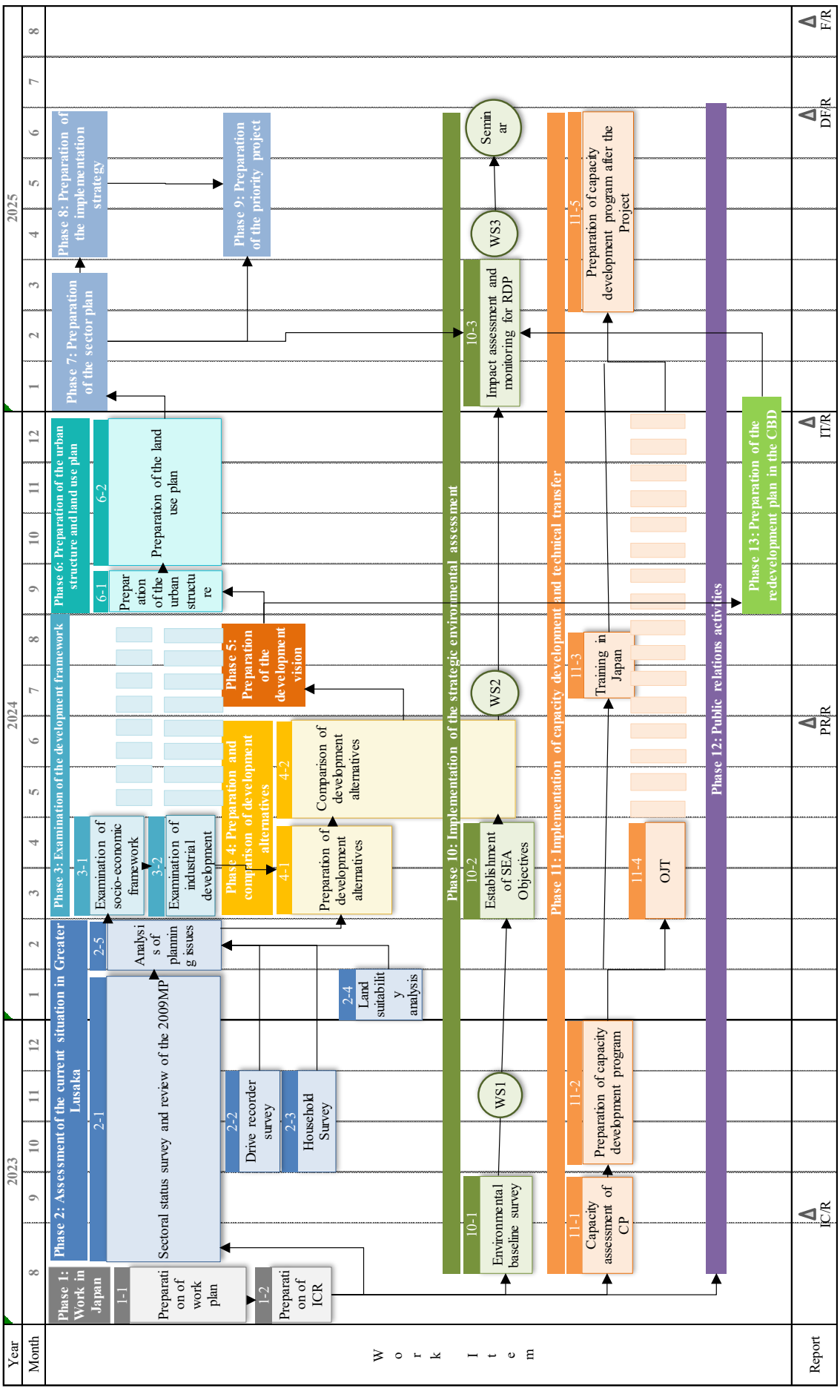


Source: JICA Expert Team and Record of Discussion (2023)

Figure 1.4.1 Implementation Structure

1.5 Implementation Schedule

The Project started in August 2023 and will be completed in August 2025. Figure 1.5.1 shows an overall workflow of the Project. The activities in the Project consist of 13 phases, as shown in the workflow.



Source: JICA Expert Team

Figure 1.5.1 Workflow

1.6 Relevance to SDGs

The Project pursues sustainable development of Greater Lusaka. The United Nations Sustainable Development Goals (SDGs) consist of 17 goals for a sustainable society. Among them, the Project is relevant to Goal 11 (Sustainable Cities and Communities), Goal 6 (Clean Water and Sanitation), 8 (Decent Work and Economic Growth), 9 (Industry, Innovation and Infrastructure), and 13 (Climate Action).

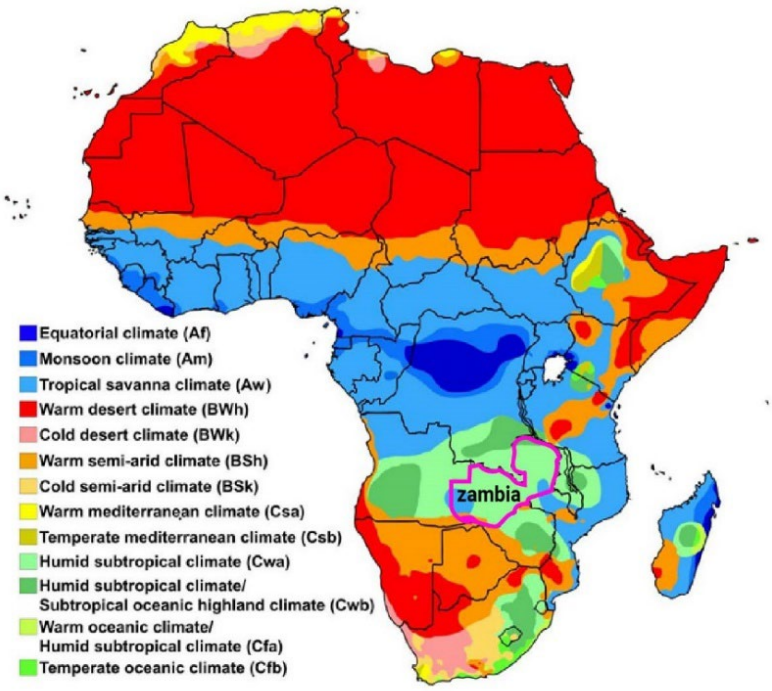
Goal 11 defines the following as necessary conditions for sustainable cities and communities: creating career and business opportunities, providing safe and affordable housing, and building resilient societies and economies. It involves investment in public transport, creating green public spaces and improving urban planning and management in participatory and inclusive ways. To meet these requirements, the Project will provide recommendations for improving economic aspects, creating safe urbanization areas, community development including public participation, public transport, parks and other recreational facilities.

CHAPTER 2 NATURAL CONDITION AND ENVIRONMENT OF THE STUDY AREA

2.1 Natural Conditions

2.1.1 Climate

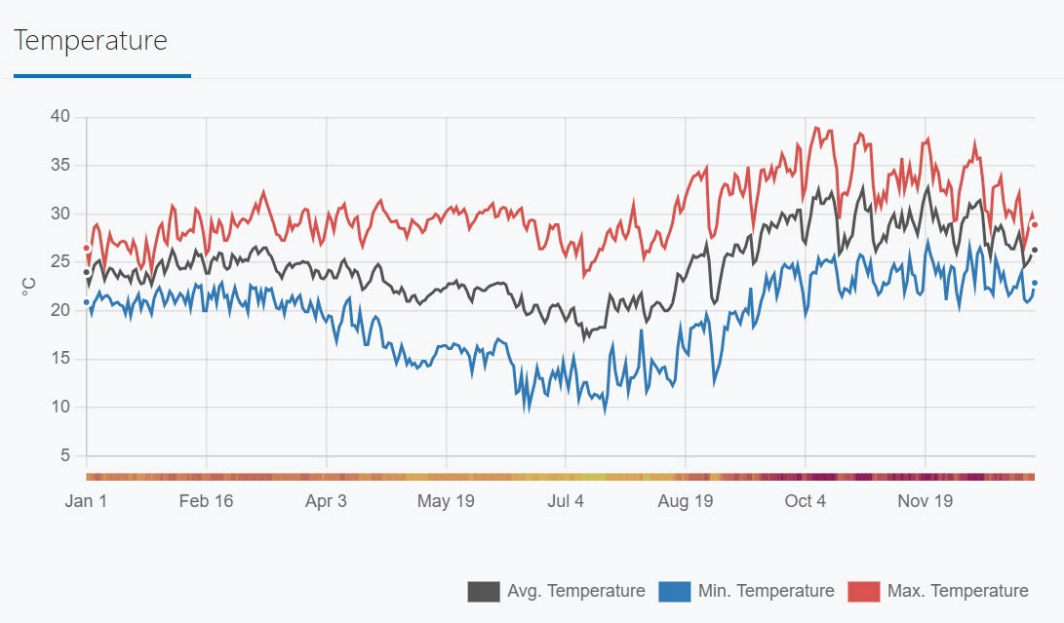
Zambia, officially the Republic of Zambia, is a landlocked country located in the southern of Africa, sharing the borders of Democratic Republic of the Congo and Tanzania in the north, Malawi and Mozambique in the East, Botswana, Namibia and Zimbabwe in the south, and Angola in the west. Lusaka, the capital city of Zambia, is located in the south, at 15˚25'S 28˚17'E, with an altitude of 1,280 metres (4,200 ft). It exhibits a tropical savanna climate characterized by distinct wet and dry seasons. This climatic classification aligns with the Köppen-Geiger system, identifying it as humid subtropical climate (Cwa).



Source: JICA Expert Team based on Bangelesa F.F. (2021). "Impacts of climate variability and change on Maize (Zea mays) production in tropical Africa"

Figure 2.1.1 Köppen-Geiger climate classification Map

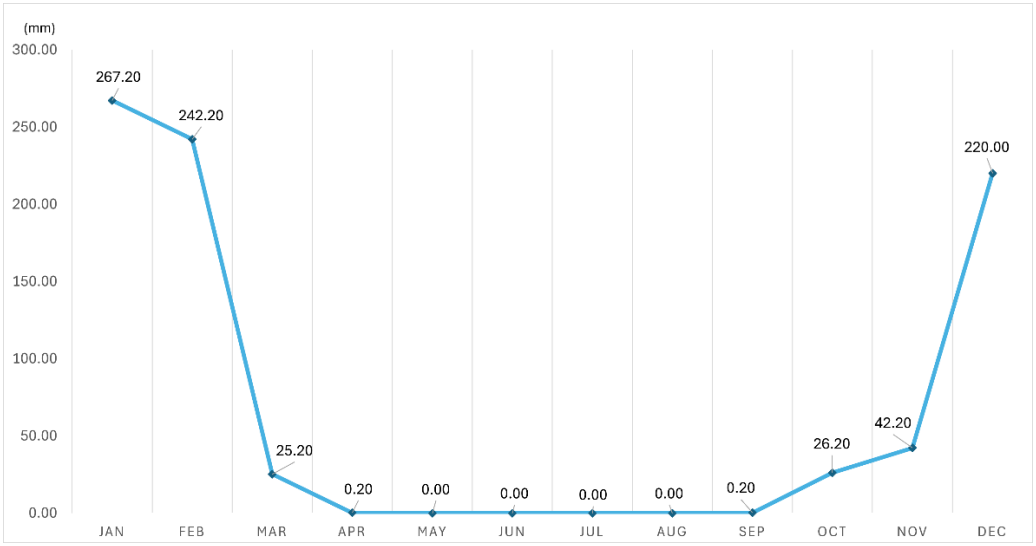
Temperature variations in Lusaka are relatively moderate throughout the year. Average temperatures range from around 15°C to 31°C during the course of the year. The highest temperatures are typically observed in October, just before the onset of the wet season.



Source: Meteostat.net (2024)

Figure 2.1.2 Annual Temperature in Lusaka City (Lusaka International Station) in 2023

The wet season in Lusaka typically spans from November to March, corresponding with the austral summer. During this period, the city experiences increased precipitation, with the peak of rainfall occurring from December to February. Rainfall patterns are characterized by convective storms, often accompanied by thunder and lightning. The wet season contributes to a temporary greenery in the region, fostering agricultural activities and replenishing water resources.



Source: SASSCAL Weather Net. (Weather station: Lusaka International Airport) (2024)

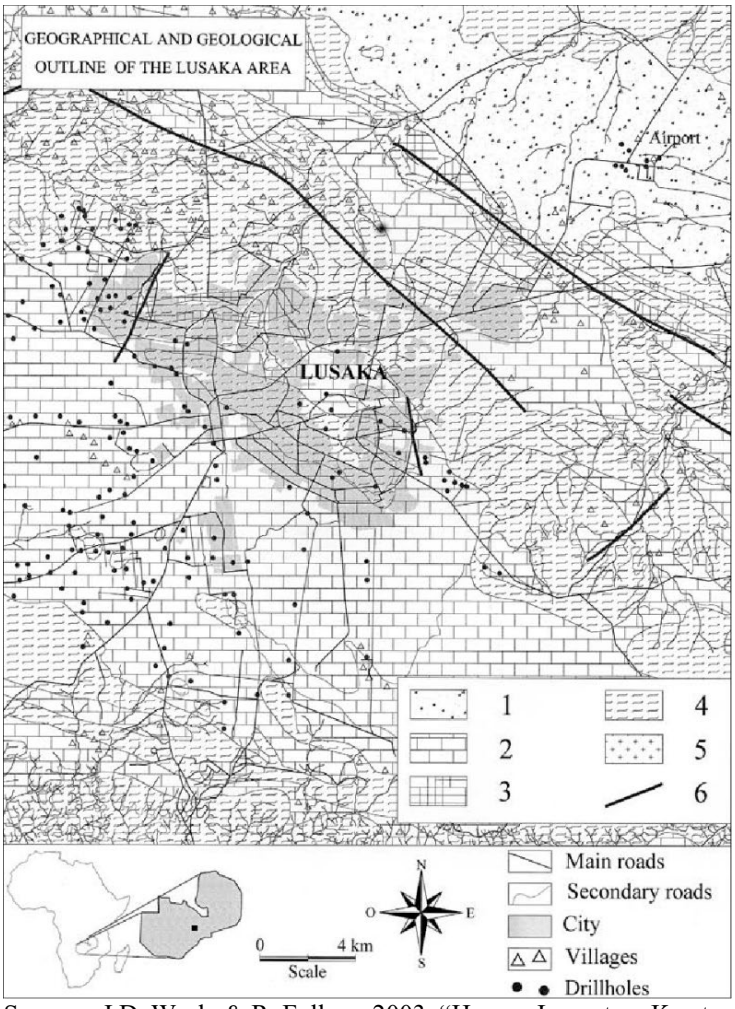
Figure 2.1.3 Monthly Total Precipitation of Lusaka in 2023

Conversely, the dry season prevails from April to October, aligning with the austral winter. This period is characterized by reduced precipitation and cooler temperatures. The absence of substantial rainfall during the dry season results in the gradual desaturation of vegetation and a decrease in water availability. Additionally, the dry season is associated with a notable diurnal temperature range, with cooler nights contrasting the warmer daytime temperatures.

2.1.2 Geology and Soil

The geological composition beneath Lusaka primarily consists of dolomitic marbles and schists. The dolomitic marble aquifer in Lusaka is assessed to possess a thickness within the range of 15 to 20 meters, accompanied by an average specific capacity of around 50 square meters per day. The schists, however, exhibit low permeability, whereas the marbles form a karst aquifer, offering a relatively cost-effective water source. Due to numerous fractures and a high water table (at times reaching 2 meters below ground level), the aquifer is susceptible to contamination [1]. Furthermore, dolomite can be eroded by natural water (rainwater) to form cavities, so care should be taken to avoid unexpected events such as sinking or sudden upwelling.

In details, the geology is Ridgeway schist from the centre to the north of Lusaka City, while to the west and south the geology is predominantly Lusaka Dolomite, but again Ridgeway schict and other geologies from about the Chilanga area. Old and recent alluvial deposits are the main geological formation in the area around the international airport.



Source: J.D. Waele & R. Follesa. 2003. "Human Impact on Karst: The example of Lusaka (Zambia).
1: Old and recent alluvial deposits; 2: Lusaka Dolomite; 3: Matero Quarzite; 4: Ridgeway schict; 5: Granite

Figure 2.1.4 Geographical map in Lusaka City

2.1.3 Topography and Water Body

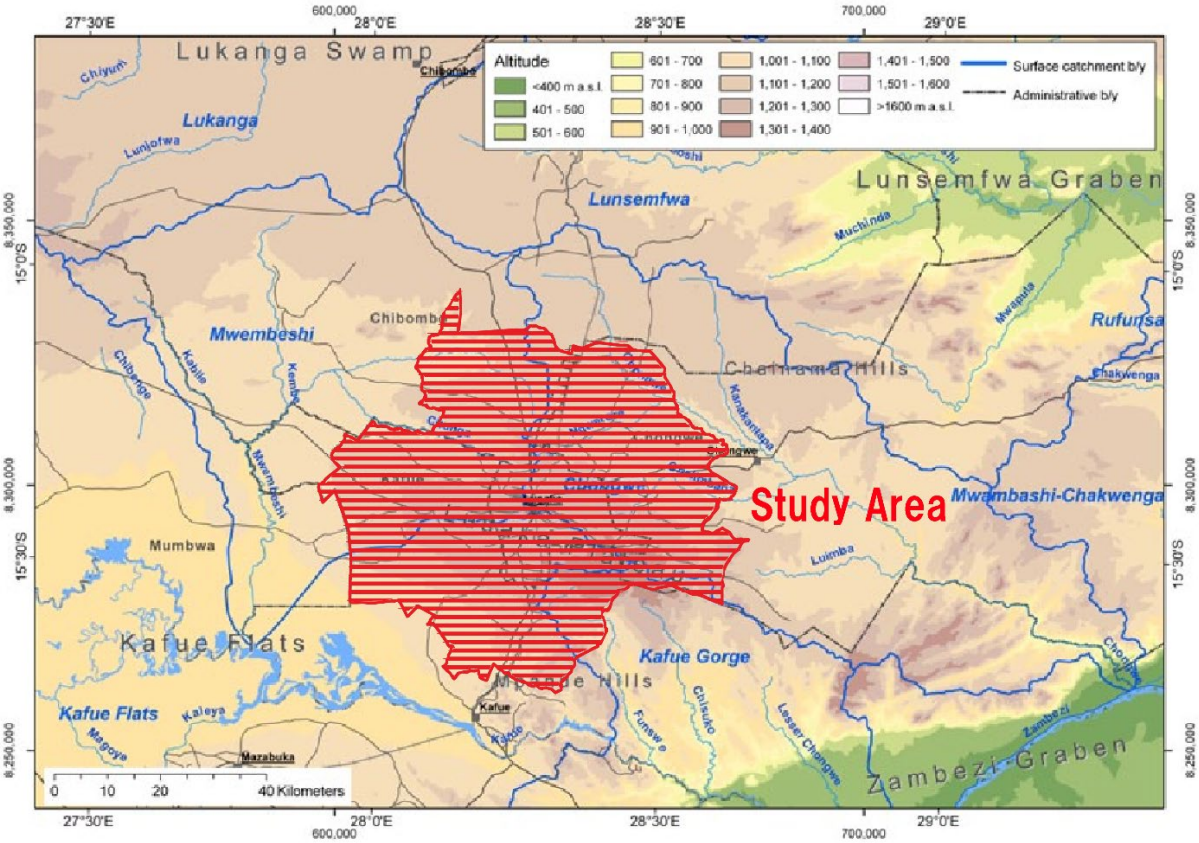
(1) Topography

The Study Area is located on the Lusaka Plateau, which is characterized by a low ridge stretching approximately 70 km in an ESE-WNW direction and spanning a width of about 10 km (Figure 2.1.5). The elevation of the plateau varies from 1,200 meters above sea level in the western region to over 1,300 meters above sea level in the eastern part. The highest point in the

[1] J.D. Waele & R. Follesa. 2003. "Human Impact on Karst: The example of Lusaka (Zambia).

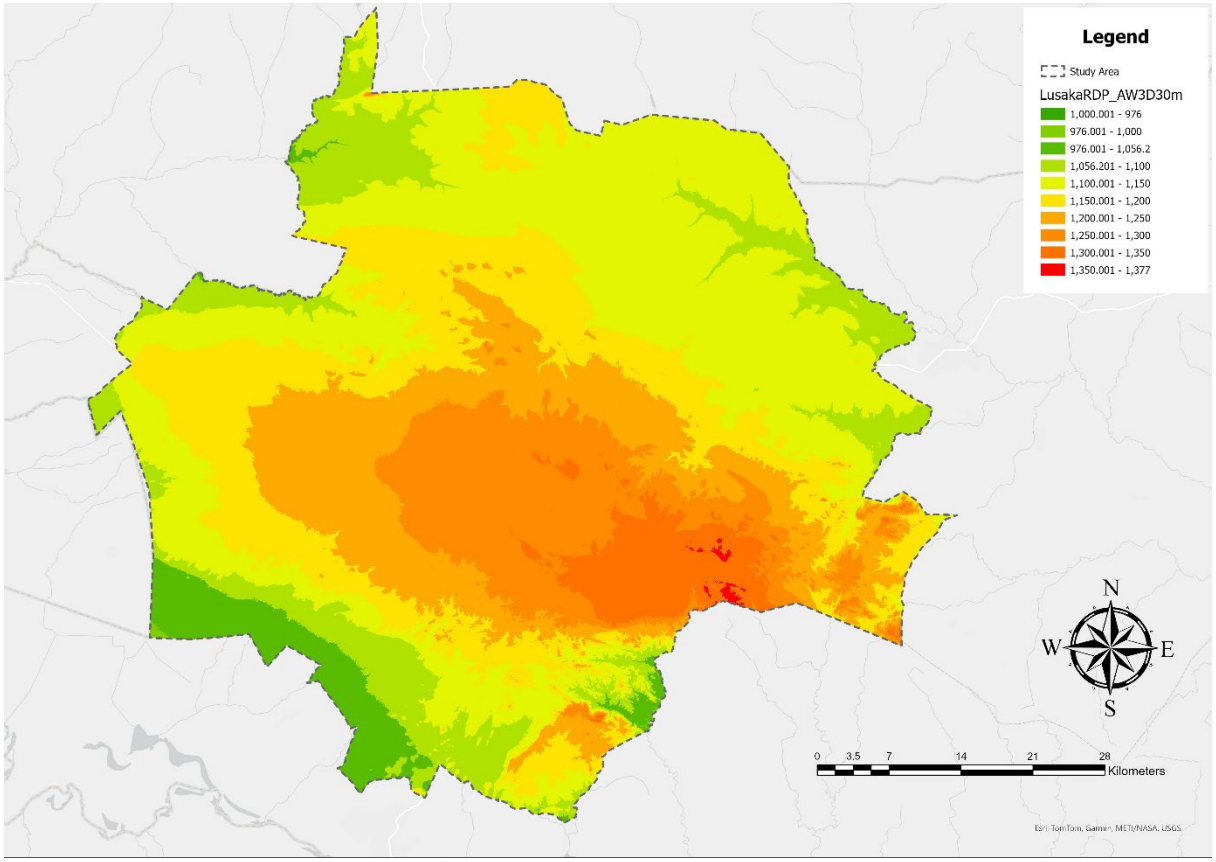
Study Area is between 1,350 to 1,377 meters above sea level in Mwabula in Kafue District, gradually sloping down towards the north-east.

Geologically The plateau is made of very old carbonate rocks of Precambrian age and the Mwembesi and Chongwe catchments was formed by tectonic movements and consists mainly of strongly folded and oxidised sedimentary rocks of Katanga (Neoproterozoic) age, intruded by granites and basic rock bodies.



Source: Bäumle, Roland et al. "Groundwater Resources of the Mwembeshi and Chongwe Catchments including the Lusaka Region-A Brief Description of Physiography, Geology, Climate, Hydrology and the Groundwater Systems of the Area." (2013).

Figure 2.1.5 Topography of Lusaka Region



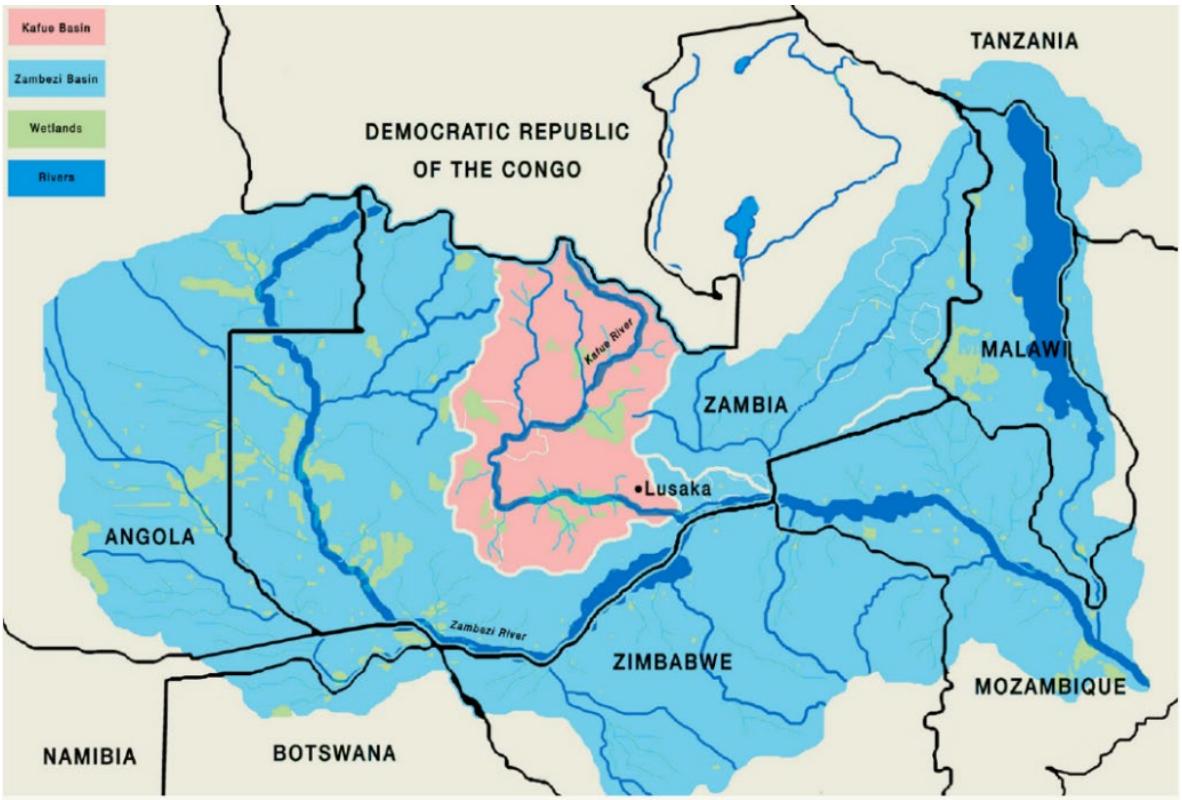
Source: JICA Expert Team based on DEM data (2024)

Figure 2.1.6 Topography of the Study Area

(2) Water Body

The Study Area faces on the absence of major natural water bodies such as lakes or rivers within its immediate vicinity and it relies on the Kafue River as a primary water source. While the Kafue River does not traverse the Study Area directly, Lusaka is geographically situated within the broader Kafue River basin. The Kafue River assumes a significant role in contributing to Lusaka's water supply, accounting for approximately 44% of the total water resources supporting the city of Lusaka [2] and the rest rely on groundwater.

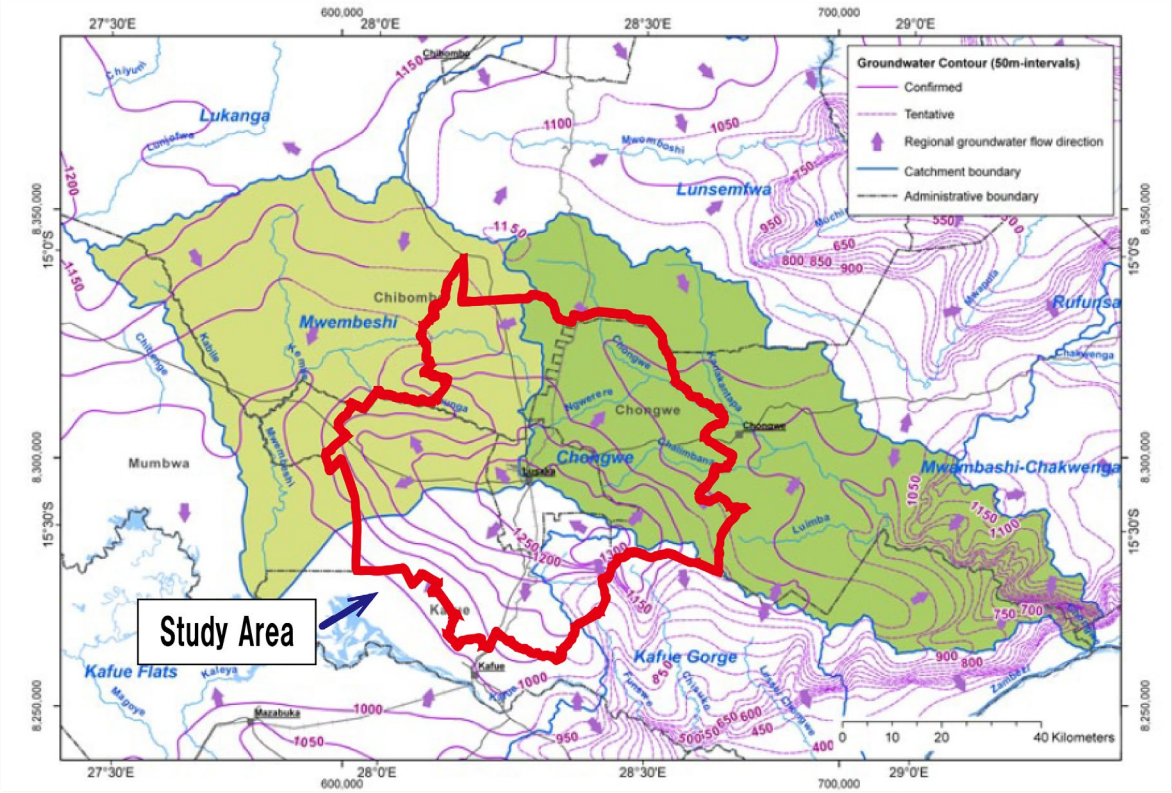
[2] WWF, 2016, Kafue Flats, Zambia: Importance to Business.



Source: WWF, 2016, Kafue Flats, Zambia: Importance to Government
*Pink = Kafue Bassin; Clear Bleu = Zambezi Bassin; Green = Wetland; Dark Blue =River

Figure 2.1.7 Map of Kafue and Zambesi Basin

Figure 2.1.8 illustrates the groundwater flow in the Greater Lusaka. In the Study Area, the groundwater primarily flows from the southeast (Kafue Gorge which connected with Kafue River) of the Study Area, diverging towards the northeast and northwest. Additionally, a portion of the groundwater also flows southwest from within Lusaka City.



Source: JICA Expert Team based on "Groundwater Resources of the Mwembeshi and Chongwe Catchments including the Lusaka Region (R. Baumle et alt., 2012)

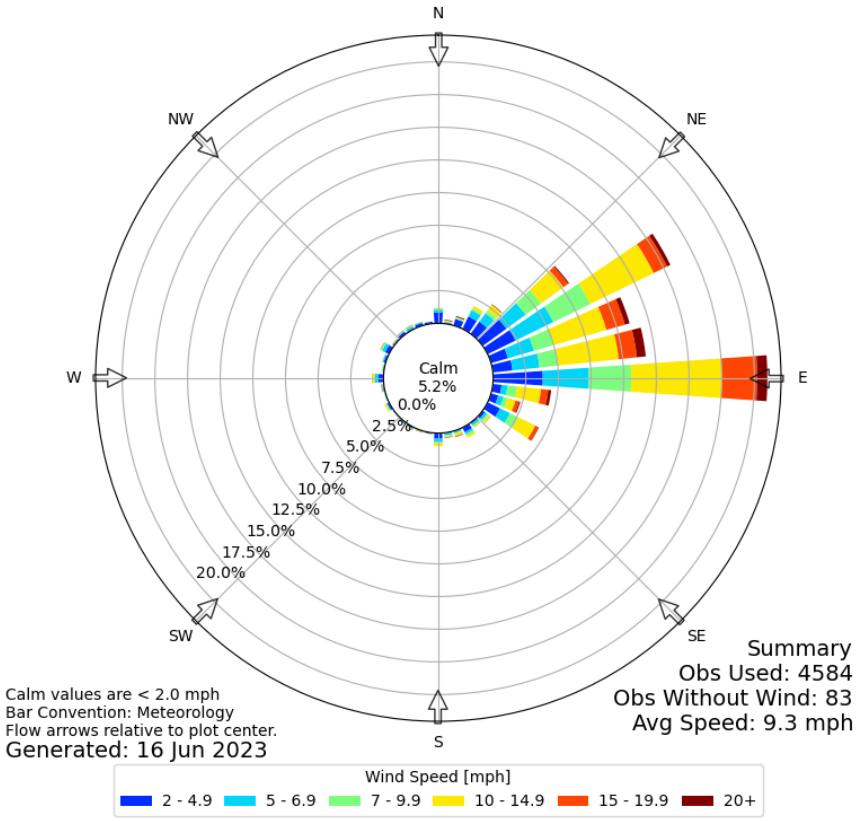
Figure 2.1.8 Groundwater Contour in Lusaka Region

As mentioned in 2.1.2, structurally, numerous fracture joints, shears, and thrust faults are prevalent, particularly at the interface between schist and dolomite. These areas represent high permeability zones, allowing surface water to readily reach the water table. Furthermore, due to the impact of commercial activities such as excavation of industrial and domestic boreholes, the water table has been lowered, leading to a discernible water scarcity issue. Although the water scarcity issue experiences a temporary alleviation during the rainy season, the water scarcity causes adverse impacts on both ecosystems and human activity.

2.1.4 Air Quality

(3) Wind Roses

The predominant annual average of wind direction is from East to West, followed by from Northeast to Southwest, and in the dominant direction wind (from East to West) blows between 3~7.8km/h about 7.5% of the time, 8~11km/h about 7.5% of the time, 11~15km/h about 3% of the time, 16~23km/h about 13% of the time, 14~32 km/h about 2.5% of the time and more than 32km/h about 1% of the time (Figure 2.1.9).

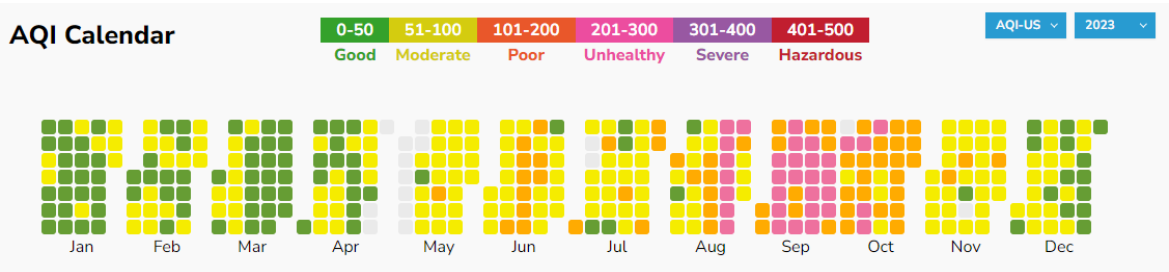


Source: Iowa Environmental Mesonet (2024)

Figure 2.1.9 Diagram of Annual Average of Wind Roses in Lusaka

(4) Air Pollution

Air quality in most parts of Lusaka is between moderate to unhealthy. Figure 2.1.10 indicates the Air Quality Index (AQI) calculated with the data conducted the air monitor in the Centre for Energy Environment Engineering Zambia, located near CBD in 2023. AQI is a numerical scale employed to assess and communicate the level of air pollution in a given area. It incorporates key air pollutants such as ground-level ozone, particulate matter (PM_{10}), carbon monoxide (CO), sulphur dioxide (SO_2), and nitrogen dioxide (NO_2). The AQI categorizes pollution levels into distinct bands, ranging from "Good" to "Hazardous," with higher values indicating more severe pollution. Based on Figure 2,1.10 Lusaka has an 'unhealthy' index during the dry season of 2023, with the rest of the year being “Moderate” to “Good”.



Source: AQI In (2024)

Figure 2.1.10 Annual Air Quality Index in 2024

Furthermore, short-lived deterioration in air quality is recorded in heavy industrial areas such as Chinika and Mungwi industrial areas in Lusaka West (Figure 2.1.11). These industrial areas include steel and manufacture industries, Various factors may contribute to environmental

pollution, such as air emissions from industrial estates, charcoal use or bushfires in households and illegal waste disposal (household waste incineration), but as a problem in urban areas, the majority of vehicles used to use fossil fuels, the increase in heavy vehicles and the increase in emissions due to traffic congestion have been pointed out[3].

Source: JICA Expert Team based on Google Map (2024)

Figure 2.1.11 Chinika and Mungwi Industrial Area Zones

In addition, the cement factories in Chilanga have been considered as a problematic cause of health problems. Research[4] shows the health status of residents in Freedom in Lusaka, which is located near one of Zambia's major cement factories (Lafarge cement factory), and Bauleni as control for comparison, shows that the ambient air of Freedom contains had higher concentrations of PM2.5 and PM10 than in Bauleni, and it also states the possibility of the health impact especially lung function by PM exposed from cement duct.

The quality of ambient air is generally good in places like Chongwe, Chibombo and Kafue. This is attributed to the absence of point or diffused sources of air quality deteriorating agents such as exhaust emissions from heavy industries and concentrated vehicular traffic. However, negligible sources of air pollution in these areas include smoke from burning of fuel (wood and charcoal) at domestic levels as well as dust raised especially from unpaved roads.

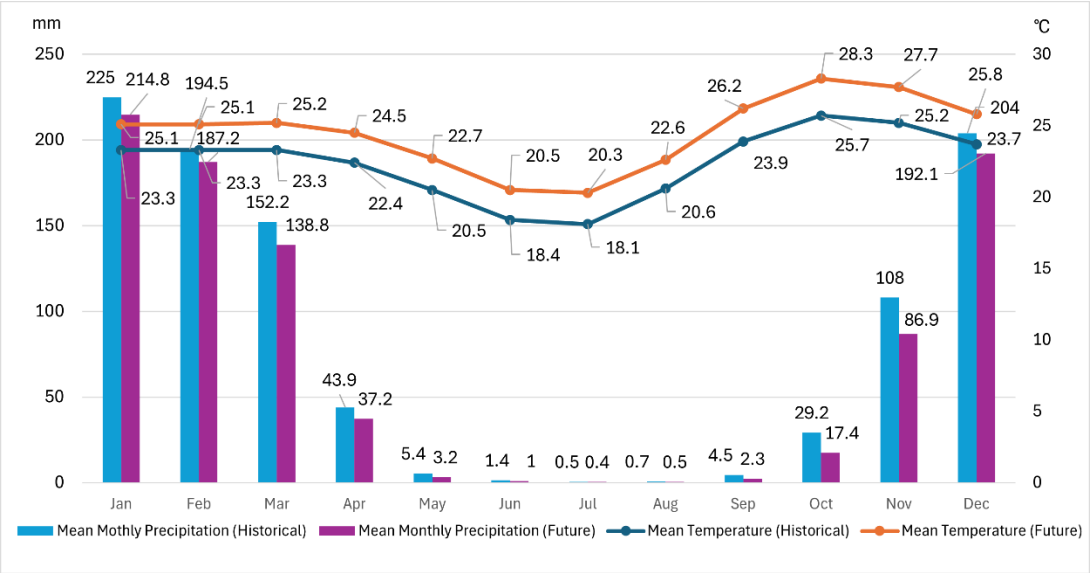
2.1.5 Climate Change

Zambia has been grappling with the detrimental effects of climate change, such as a rise in the occurrence and intensity of seasonal droughts, sporadic dry periods, elevated temperatures in valleys, heat waves, sudden flash floods, and alterations in the growing season.

International Fund for Agriculture Development (IFAD)'s research indicates that climate change will lead to a consistent increase in average temperature over spatial and temporal scales in Zambia, based on projected changes in monthly mean temperature (TMean) over the timeframe from 'historical'(the period 1980-2010), to 'Future' (the period 2040-2069). Although this is a uniform projection for each province of Zambia, it projects that average temperatures will increase by at least 1.8°C from 'Historic' to 'Future'. Specifically, the hottest months - September, October, November and December - are projected to increase by 2.3-2.6°C

[3] ZEMA, 2017, Zambian Environment Outlook Report 4
[4] E. Nkhama et al. (2017). Effect of Airborne Particulate Matter on Respiratory Health in a Community near a Cement factory in Chilanga, Zambia: Results from a Panel Study. Int J Envrion Res Public Health. 2017 Nov; 14 (11): 1351

compared to the historical average of 23.9-25.7°C, with similar increases of 1.8-2°C projected for all other months throughout the year. This includes the important rainfed agricultural season (September and October to March and April) and the cool winter months of May to August.



Source: JICA Expert Team based on Hunter. R., Crespo. O., Coldrey, K, Cronin, K, New, M. 2020. Research Highlights – Climate Change and Future Crop Suitability in Zambia. University of Cape Town, South Africa, undertaken in support of Adaptation for Smallholder Agriculture Programme' (ASAP) Phase 2. International Fund for Agricultural Development (IFAD), Rome.

Figure 2.1.12 Projected Influence of Climate Change on Mean Monthly Precipitation and Mean Temperature in Zambia

The overall impact of these temperature increases, coupled with the predicted decrease in rainfall, is expected to have a complex impact on the agricultural sector. In particular, the significant temperature increase between October and December (2.1-2.6°C) is projected to increase crop water demand and evapotranspiration losses from agricultural land.

Projections of mean monthly precipitation indicate a decrease in mean monthly precipitation and total annual precipitation during the period from the 'Historical' to the 'Future'. In particular, total precipitation in October, November and December, the start of the wet season, is projected to decrease from 29 mm/month to 17 mm/month, 108 mm/month to 87 mm/month and 204 mm/month to 192 mm/month respectively (total precipitation decreases of 12 mm, 21 mm and 11 mm) The midsummer rainy season from January to March and further decrease in monthly precipitation is predicted for the period January-March, with a range of 7-13 m/month.

Higher average temperatures may increase the frequency and severity of heatwaves and exceptionally hot days, exacerbating water evapotranspiration losses and stressing crops. Cumulatively throughout the growing season, the combination of reduced rainfall and increased temperatures can reduce agricultural production through reduced yields and crop failure, particularly affecting heat- and drought-sensitive crops such as maize and wheat.

2.2 Environment

2.2.1 Fauna

In Zambia, the estimated mammalian diversity is 224 species and there are 490 species of fish,

6,135 species of invertebrates, and approximately 74 species of vertebrates[5]. As the Study area is the capital and center of development and human settlement, several mammals had been already extinct such as lion and cheetahs etc.

According to the International Union on for Conservation of Nature and Natural Resources (IUCN), in Study Area, 5 species (3 birds, 1 fish and 1 mammal) are under "Critically Endangered", 7 species (7 birds) are under "Endangered", and 11 species (6 birds, 2 fishes, 2 mammals and 1 reptile) are under "Vulnerable" (Table 2.1.1). A significant proportion of these fauna comprise of resident species of the Study Area. Many avian and mammalian species of them are cited as being in a state of extinction or facing a crisis due to the reduction of forests and wetlands caused by agricultural and urban development, as well as human-induced overexploitation. Conversely, concerning fish species, the primary factor emphasized is the adverse impact associated with the introduction of non-indigenous species, rather than a decline in habitat.

[5] ZEMA, 2017, Zambian Environment Outlook report 4.

Table 2.2.1 Endangered Species (Fauna) in Study Area

General Animal Classification	Comment name	Status	Population Trend	Note
Critically Endangered				
Bird	Hooded Vulture	Extant (Resident)	Decreasing	
	White Backed Vulture	Extant (Resident)	Decreasing	
	White Headed Vulture	Extant (Resident)	Decreasing	
Fish	Kariba Tilapia	Extant (Resident)	Decreasing	In Study Area, only from central of Lusaka City to East and South (Chilanga, Kafue and Chongwe)
Mammal	Black Rhino	Extant & Reintroduced	Increasing	
Endangered				
Bird	Bateleur	Extant (Resident)	Decreasing	
	Grey crowed Crane	Extant (Resident)	Decreasing	
	Martial Eagle	Extant (Resident)	Decreasing	
	Lappet-faced Vulture	Extant (Resident)	Decreasing	
	Madagascar Pond-heron	Extant (Resident)	Decreasing	
	Secretary bird	Extant (Resident)	Decreasing	
	Steppe Eagle	Extant (Resident)	Decreasing	
Vulnerable				
Bird	Red footed Falcon	Extent (Breeding)	Decreasing	
	Slaty Eagle	Extant (Non breeding)	Decreasing	
	Southern Grand hornbill	Extant (Resident)	Decreasing	
	Tawny Eagle	Extant (Resident)	Decreasing	
	Wattled Crane	Decreasing	Decreasing	
	Zambian Barbet	Extant (Resident)	Decreasing	
Fish	Oreochromis Macrochir	Extant (Resident)	Unknown	In Study Area, only from central of Lusaka City to East. The west side from Lusaka City is in probably Extant
	Threespot Tilapia	Extant (Resident)	Decreasing	
Mammal	Leopard	Possible Extinct	Decreasing	Only east part of Study Area is partially possible extinct.
	Temmincle's Pangolin	Extant (Resident)	Decreasing	
Reptile	Gaboon Viper	Extant (Resident)	Decreasing	In Study Area, only East part (Chilanga and Kafue: 35km).

Source: JICA Expert Team based on IUCN database (as of April 2024)

2.2.2 Flora

In the ecological classification of Zambia, the spatial distribution of flora and fauna is determined based on environmental variables such as elevation, climate, topography, soil characteristics, and land use patterns. Zambia is situated within the Zambezian woodlands, which is one of the primary ecological regions in Africa. This zone encompasses diverse ecosystems, including the Miombo woodland, undifferentiated woodland and mopane wood land etc. The majority of the Study Area, specifically Lusaka Province, falls within the Zambezian undifferentiated woodlands. Similarly, Chibombo in Central Province predominantly belongs to the Central Miombo woodlands. The Southern Miombo Woodlands

exhibit a drier climate in contrast to the Central Zambezian Ecoregion. Within this ecoregion, there is a distinctive pattern of increased dispersion of trees, reduced tree size, and a relatively higher prevalence of woody shrubs.

Furthermore, at a local scale, classically four distinct vegetation communities are identified within the Study Area: Miombo woodland, Mopane woodland, Munga Woodland, and Riparian grassland.

Miombo Woodland

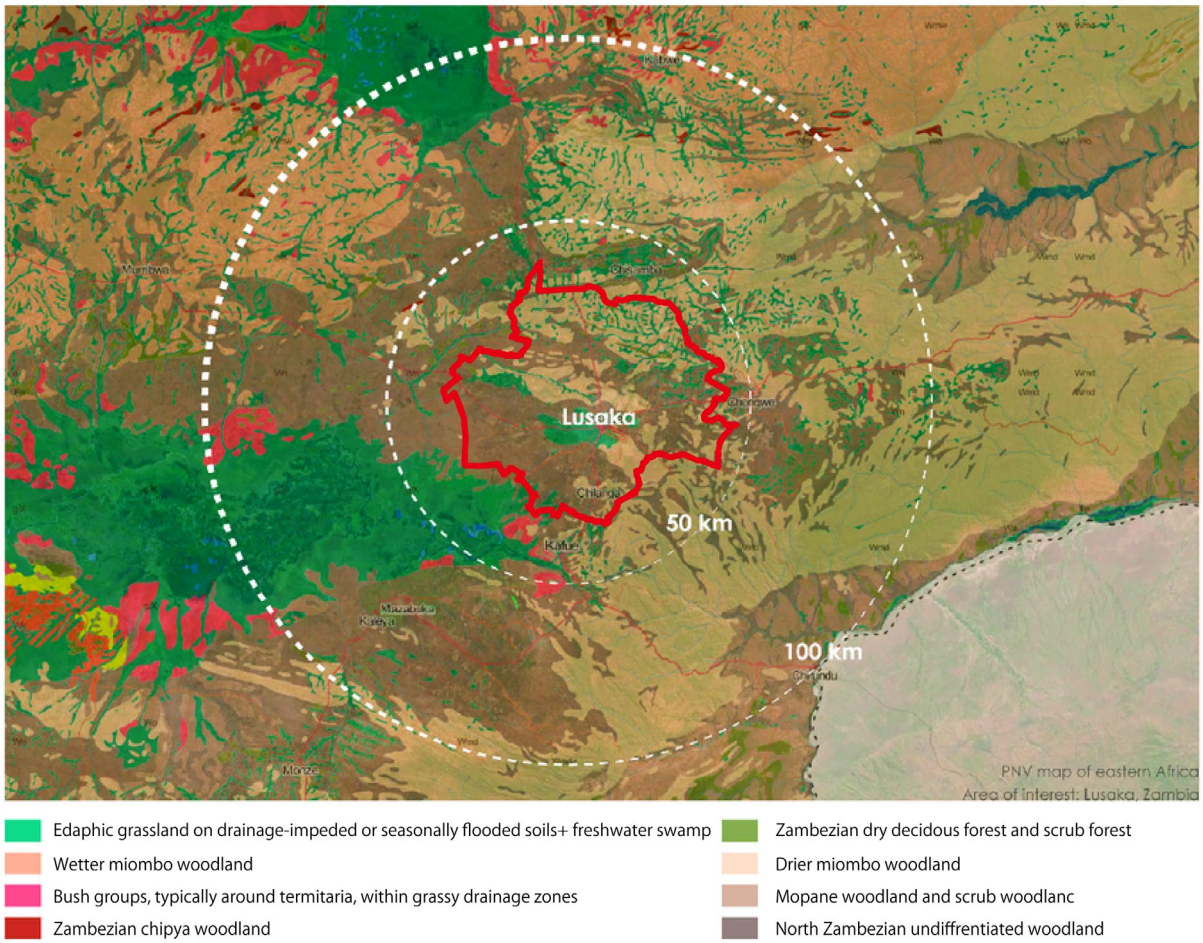
Miombo woodland is the most extensive Zambian ecoregion covering about 65% of the country. The name "miombo" is the plural for "muombo", the Bemba name for Brachystegia longifolia, a tree which dominates extensive areas of the Zambesian plateau. Typical tree species dominating Miombo Woodland areas comprise Brachystegia spiciformis (Mutobo), Julbernardia paniculate (Mutondo), Pterocarpus angolensis (Mukwa/Mulombwa), Pericopsis angolensis (Mubanga), Uapaca kirkiana (Musuku), Parinari curatelifolia (Mpundu), Combretum Species (Mulama). Among Miombo woodland, there are several types based on forest and vegetation ecosystems: wetter miombo woodland, drier miombo woodland, scrub miombo woodland etc.

Mopane Woodland

This woodland is characterised by Colophospermum mopane, often with Acacia nigrescens and Combretum apiculatum. Common shrubs include Acacia nilotica, Albizia anthelmintica, Boscia matabelensis, Combretum elaeagnoides, Dalbergia melanoxylon, Diospyros quiloensis, Grewia bicolor, and Ximenia caffra. Phyllanthus emblica is very frequent. Colophospermum mopane is distributed along variable local climatic, topographical and edaphic factors in the low-lying areas. Mopane woodland reach hights of 20 to 25m.

Undifferentiated wood land (Munga Woodland)

The undifferentiated woodland, also called “Munga woodland” or “North Zambezian undifferentiated woodland and wooded grassland”, is characterised by diagnostic woody plant species such as Vachelia polycantha, V. seyal, V. nigrescens, A. gerrardi, V. sieberiana, Albizia harveyii, Combretum obovatum, Vanchelia tortilis, Piliostigma thorningii, Combretum ghasalence, Kirkia acuminata, Loncocarpus capassa, Ficus sp., and Lannea stuhlmannii. The grass component of this community is characterised by an abundance of Andropogon guyanus, Brachiaria brizantha, Digitaria milanjiana, Hyparrhenia filipendula, Setaria sphacelata and Tristachya superba. This woodland community has an open park-like appearance with many trees and thorn-bearing shrubs up to a mean height of 11m. It forms an intermediate zone between the seasonally wet dambos and other woodlands in the project area. The woody vegetation consists of fire tolerant species, although many trees show scars from previous fire damage.



Source: JICA Expert Team based on De Gregorio, S. et al. "Sustainable Architecture in Developing Countries: Harvest Map of the Lusaka Territory, Zambia." Sustainability 2023, 15, 6710.

Figure 2.2.1 Vegetation Communities Map in Lusaka and Surrounding Region

Comparing the fauna, the flora are less endangered and vulnerable in the list of IUCN and currently 1 plant specie is identified as Endangered, and 1 plant specie is identified as Vulnerable on the Study Area (Table 2.2.2).

Table 2.2.2 Endangered Species (Flora) in Study Area

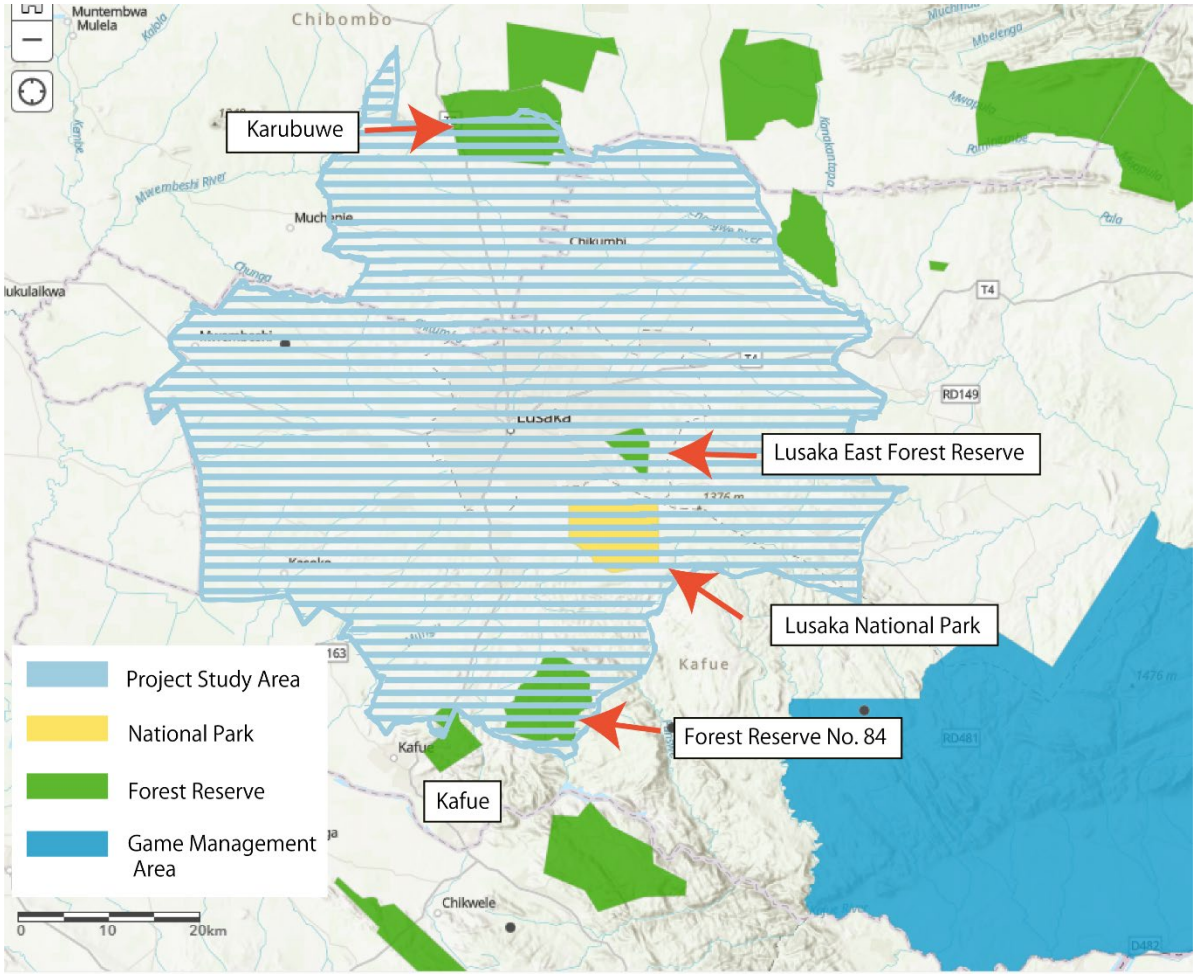
General Animal Classification	Comment name	Status	Population Trend	Note
Endangered				
Plante	Nymphoides tenuissima	Extant (Resident)	Unknown	
Vulnerable				
Plante	Dioscorea sylvatica	Extent (Resident)	Decreasing	

Source: JICA Expert Team based on IUCN database (As of April 2024)

2.2.3 Natural Conservation Area

The natural conservation area, Protected Area covers 40% of the total surface area of Zambia composing National Parks, National Forest reserves, Bird and Wild Sanctuary, Game Management Area, and Local Forests and Heritage Site. The study Area comprises four natural conservation areas: Lusaka North and Lusaka East are designated as forest reserves, while Lusaka South Ext, also called "Lusaka National Park", is identified as a national park (see Figure 2.2.2). Lusaka National Park encompasses of 50km^2 and harbours a diverse array of 21

wildlife species such black Rhino which is identified as Critically Endangered species by IUCN. In this national park, activities extend beyond the conservation of wildlife to include offerings such as game viewing, walking safaris, camping, and cycling, providing a multifaceted experience for visitors.



Source: JICA Expert Team based on UNEP-WCMC (2024). Protected Area Profile for Zambia from the World Database on Protected Areas, January 2024.Threats to the Ecosystem

Figure 2.2.2 Map of Natural Conservation Area in Lusaka

Although beyond the scope of the study Area, Game Management area in Kafue and additional forest reserves areas are designated.

While the protected areas especially forest reserves (Local forest) are designated, forests are disappearing due to human activities such as population growth and development, as follows;

- Lusaka South Local Forest Reserve No. 26
  - ✓ As of 2007, excised an area of 3,957 ha of leaving a balance of 2,698 ha, for establishment of the Multi-Facility Economic Zone in Lusaka, by pursuant to Statutory Instrument No. 82 of 2007. Rest of Lusaka South Local Forest Reserve after 2007 integrated into Lusaka National Park
- Lusaka East Forest Reserve No.27 (Initial area 1,764 in 1957; Current area 716 ha)
  - ✓ As of 2017, excised an area of 67 ha and 109 properties were created and allocated into individuals by pursuant to Statutory Instrument No. 62 of 2017
  - ✓ As of 2018, excised an area of 504 ha for allocating to the Zambian Air Force (ZAF) by pursuant to Statutory Instrument No. 59 of 2018

- ✓ As of 2019, excised an area of 477 ha for allocating to ZAF (367 ha of 477), and residential and mixed use and subsequently for the public servants, by pursuant to Statutory Instrument No. 13 of 2019

- Karubuwe (Protected Forest Area
  - ✓ Initial Area is approx. 245 ha (total area)
  - ✓ Listed as a Protected Forest Area in Central Province, Chibombo District, based on 1988 government records although no gazettement instrument (S.I.) has been identified. The area remains recorded in international datasets (World Database Protected Area (WDPA) ID: 26936), but its legal status under current forest legislation is unclear.
- Forest Reserve No.84
  - ✓ Although Forest Reserve No. 84 was legally revoked in 1973 by Statutory Instrument No. 236, it remains identified as a Forest Conservation Zone in the current Integrated Development Plan (IDP). This indicates that, while no longer protected under national forest law, the area is recognized for its ecological value and subject to planning-level conservation policies.
- Kafue (local Forest Area)
  - ✓ Identified as forest conservation areas in the Kafue District Integrated Development Plan (IDP 2024–2034). This area is not legally designated as Forest Reserves under the Forest Act, but are recognized locally for ecological and planning purposes.

2.2.4 GHG Emission and Climate Change

Greenhouse gas (GHG) emissions refer to the release of certain gases that have the ability to trap heat in the Earth's atmosphere and cause a greenhouse effect, a phenomenon known to cause global warming, and efforts are being made at various levels worldwide to reduce emissions in order to prevent this phenomenon. Major greenhouse gases include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), fluorinated gases and water vapour.

Zambia's total greenhouse gas emissions (kt CO2 equivalent) in 2020 are 36,108, which is a phenomenon compared to 2019 emissions (36,610 kt). 21% of these emissions in 2020 came from CO2, 34% came from N2O, and 43% came from CH4[6]. Carbon dioxide is the most dominant gas among the GHGs emitted in Zambia, followed by methane and nitrous oxide. Other gases are HFC and SF6 from refrigeration and electrical equipment, respectively.

The major souse of GHG emission in Zambia is the Agriculture Forestry and Other Land Use (AFOLU), followed by Energy, Industrial Processes and Product Use and Waste. Emissions from Waste, Energy and IPPU are increasingly becoming significant.

Given the prevailing challenges, Zambia has recently formulated a range of policies, strategies, projects, and programs specifically addressing climate change. These initiatives are designed to respond to the impacts of climate change on the country as below.

- Kyoto Protocol (1998)
- National Policy on Environment (NPE, 2007)
- National Climate Change Response Strategy (NCCRS, 2010)
- National Forestry Policy of 2014
- National Energy Policy of 2008,

[6] World Bank Database

- The National Agriculture Policy of 2014
- Transport Policy of 2002
- National Strategy for Reducing Emissions from Deforestation and Forest Degradation (REDD+, 2015)
- Second National Biodiversity Strategy and Action Plan (NBSAP2)
- The National Adaptation Plan of Action on Climate Change (NAPA, 2007)
- Technology Needs Assessment (TNA, 2013);
- Nationally Appropriate Mitigation Actions (NAMAs, 2014)
- Second National Communication (SNC, 2015)
- Paris Agreement (United Nations Framework Convention on Climate Change2016)

Zambia signed the Paris Agreement in September 20th of 2016, and submitted the first National Determined Contribution (NDC) in 2016. The conditional pledge of reducing GHG emissions is 25 % (20,000 Gg CO2 eq.) by 2030 against a base year of 2010 under the Business As Usual (BAU) scenario with limited international support1 or by 47% (38,000 Gg CO2 eq.) with substantial international support. In 2021 the revised and updated NDC was submitted, which includes mitigation measures in various sectors.

Elevated GHG emissions, particularly from vehicular sources, pose a significant apprehension. In Zambia, the decision by the Zambian Government in 2014 to abstain from imposing age restrictions on imported vehicles, combined with economic challenges namely the trend towards importing cheap second-hand vehicles, has contributed to a surge in emissions. A study conducted within the Central Business District (CBD) in Lusaka identified buses as the primary contributors to carbon dioxide (CO2) emissions, followed by private vehicles, heavy trucks, taxis, and light trucks. It also points out that afforestation initiatives in the CBD were found to be insufficient in mitigating CO2 levels due to a lack of adequate vegetation.[7].

2.3 Natural Disaster

(1) Flood

Zambia has encountered various natural disasters, including those induced by climate change. However, to date, the city of Lusaka and its surrounding areas have not faced natural disasters such as large scale of hurricanes etc., like other regions of Zambia. Nevertheless, the Study Area periodically confronts challenges related to seasonal weather, including issues like heavy rainfall, flooding, and associated problems.

During the rainy season, which typically occurs from November to April, there can be localized flooding in low-lying areas due to heavy rainfall. For instance, March 8th 2023 the inundation of torrential rains caused flood damage to the city of Lusaka, affecting numerous residences and roadways. This was due to heavy rains that had been falling since early February that year, causing damage in other parts of Lusaka province, and in March rivers in and around the city overflowed. Tens of thousands of residences were submerged, necessitating the evacuation of nearly 400,000 individuals, impacting the entire province of Lusaka. Furthermore, the floods precipitated a cholera epidemic in the capital, prompting the treatment of over a dozen individuals for waterborne diseases in city hospitals[8].

This occurrence had adverse consequences on public sanitation including contamination of water, transportation, and infrastructure.

[7] L. Ngenda. 2022. “Quantifying the CO2 Emissions of Motor vehicles and the urban tree carbon sequestration potential in the Lusaka Central Business District, Zambia. International Journal of Science and Business. Volume:13, Issue: 1
[8] Criris24. 2023, 8March. “Zambia: Flooding-related disruptions reported across parts of Lusaka as of March 8”

(2) Livestock Diseases

In the recent years, the numbers of reported outbreak of various livestock diseases have been on the increase. Livestock diseases that posed disaster threats include Foot and Mouth disease, East Coast Fever, Contagious Bovine Pleura-Pneumonia, Anthrax and African Swine Fever.

On November 1, 2023, Zambia's International Health Regulations (IHR) National Focal Point informed the World Health Organization (WHO) of a human anthrax outbreak. The initial human cases were documented in Southern province on May 5, 2023. Concurrently, reports emerged of domestic (cattle and goats) and wild animals (hippopotami) succumbing to an unknown cause in the vicinity. As of November 20, 2023, a total of 684 suspected human anthrax cases, resulting in four deaths and a Case Fatality Ratio (CFR) of 0.6%, were reported across 44 districts in 9 of Zambia's 10 provinces. While the Southern province was most heavily impacted with 370 cases (54%), it is also reported there are human anthrax cases in Lusaka (82; 12%)[9].

(3) Heat waves

As mentioned, Lusaka experiences a dry season and exceptionally hot weather from October. In recent years, temperatures exceeding 37 to 40 degrees Celsius have been frequently observed, with occasional instances of record-breaking observations. In October 2023, the Zambia Meteorological Department Advisory issued warnings about high temperatures and heatwaves, emphasizing the need for heatstroke prevention[10]. The impact of the same heatwave has also been noted in terms of its adverse effects on agricultural crops.

2.4 Issues to be Tackled

(1) Heavy rain and Flood

1) Road infrastructure and transport-related issues

The study Area, Lusaka and surrounding districts, constitutes a highly populated urban centre. Consequently, consideration has been drawn to the potential impact of climate change on urban functionalities, particularly the degradation of critical elements such as road infrastructure. Numerous primary roadways traverse Lusaka, making it indispensable for travel given the conditions of alternative routes. Consequently, a significant portion of distribution trucks is compelled to pass through the capital. On the other hand, the region, encompassing the Study Area, is recurrently subjected to flooding due to intense rainfall. Illustratively, in March 2023, substantial precipitation resulted in widespread flooding within Lusaka City, affecting numerous residential properties and roads. Studies indicate that the regional concentration of road networks has the potential to amplify the adverse effects on economic growth by influencing trade and disrupting supply chains in the event of flooding due to submerged roads[11].

2) Sanitation and Health related issues

As described in section 2.4, flooding instigates water pollution and adversely affects public health. The challenges associated with flood risk have been identified, especially in unplanned settlements where waste collection is either not conducted regularly or is absent, and in areas where residents rely on wells for their water supply.

[9] WHO. 2023, 8 December. Disease Outbreak News. Anthrax- Zambia
[10] ZNBC news. J. Jere. 10 October 2023. “Heat Alert: Met. Warns of high temperatures.
[11] International Food Policy research institute, 2023, “From Climate Risk to Resilience: Unpacking the economic impacts of climate change in Zambia.

The most recent cholera epidemic, first reported in Lusaka province in October 2023, peaked in January and February 2024, and although the number of cases has decreased since April and some cities except Lusaka have had no cases while several cases were still reported in Lusaka in May 2024. According to WHO as of the end of May 2024, the cumulative number of reported cases in Lusaka was 17,805, which is over 75% of the cumulative number of reported cases nationwide. And the number of cumulative deaths is 570, which is over 77% of the one in nationwide. Among the Lusaka Provinces, Lusaka City had the most cases of cumulative case of infection. Among them, Kanyama, Matero, and Chawama usually have a large number of infected people every year.

Furthermore, in the event of groundwater contamination within these concentrated unplanned settlements in Lusaka, there exists the potential for radial spread around the city owing to groundwater flow directions.

(2) Air pollution

1) Road infrastructure and transport-related issues

As a major thoroughfare for the transportation of heavy vehicles and human mobility, coupled with high population density, the Study Area has been experiencing an increased emission of exhaust gases from vehicles. This constitutes a significant contributing factor to air pollution.

2) Sanitation and Health related issues

Air pollution, resulting from the emissions of heavy trucks, industrial activities, and household activities such as using charcoal, exerts notable implications on public health, leading to an array of adverse effects on individuals exposed to contaminated air. The airborne pollutants, including particulate matter (PM), nitrogen dioxide (NO2), sulphur dioxide (SO2), ozone (O3), and carbon monoxide (CO), can adversely affect respiratory and cardiovascular systems, cancer risks, impacts on children, neurological effects, pregnancy complications etc. Research [12] indicates that PM which exposed from industrial activity such as cement factories affect people's health, especially respiratory problems. Moreover, it is pointed out that citizens who had been working in the atmosphere exposing them to varying degrees of PM2.5 in CBD area faced pulmonary function impairment[13].

(3) Heat waves

1) Sanitation and Health related issues

In recent years, heatwaves have been observed in the city of Lusaka and its surrounding regions, giving residents may experience soaring temperatures, potentially leading to heat-related health issues. Vulnerable populations, such as the elderly and those with pre-existing health conditions, may be particularly at risk. Adequate measures, including public awareness campaigns and the provision of cooling centers, may be necessary to mitigate the impact on public health. Furthermore, increased temperatures can contribute to dehydration, especially if there is a lack of access to clean water. Dehydration can have severe health implications.

[12] E. Nkhama et al. (2017). Effect of Airborne Particulate Matter on Respiratory Health in a Community near a Cement factory in Chilanga, Zambia: Results from a Panel Study. Int J Envrion Res Public Health. 2017 Nov; 14 (11): 1351
[13] Lumba Siachingli (2015). "Pulmonary function impairment in female workers exposed to environments with varied Ambien air pollution in the central Business area of Lusaka". University of Zambia

2) Agriculture and Environmental issues

In the realm of agriculture, prolonged periods of extreme heat can have detrimental effects on crops, resulting in diminished yields and posing a threat to food security. Concurrently, elevated temperatures contribute to heightened evaporation, placing a strain on water resources. The environmental repercussions of a heatwave in Lusaka encompass ecological stress, disturbance to local biodiversity, and an augmented susceptibility to wildfires. Furthermore, the escalation in temperatures also fosters increased evaporation rates, thereby exacerbating concerns about water scarcity, a matter of critical significance for urban areas reliant on water sources for diverse purposes.

3) Infrastructure and energy demand

Heatwaves exert pressure on infrastructure, notably on transportation systems, road networks, and utilities. Extended exposure to elevated temperatures poses a risk of material deterioration and increases the likelihood of infrastructure failures. The heightened temperatures also engender an augmented need for cooling in buildings, placing strain on energy resources and contributing to peak energy demand. Consequently, this heightened demand may result in power outages.

(4) Natural Resource Preservation

1) Deforestation

Lusaka has witnessed a concerning escalation in deforestation rates, posing a threat to both local ecosystems and human well-being due to expansion of human activities: urbanisation and infrastructure development, agricultural expansion, logging and timber extraction, fuelwood and charcoal production etc.

Deforestation results in the destruction of habitats for numerous plant and animal species. The loss of biodiversity can disrupt ecosystems, reduce species richness, and threaten the survival of endemic and specialized species. In addition, tree generally play a vital role in stabilizing soil and preventing erosion. The removal of forests can lead to increased soil erosion, loss of fertility, and degradation of agricultural land. This, in turn, affects crop productivity and agricultural sustainability.

In terms of climate change impacts, forests are essential for absorbing carbon dioxide and regulating the climate. Deforestation not only affects the reduction of GHG emissions and exacerbates climate change, but also leads to changes in rainfall patterns, higher temperatures and more frequent extreme weather events.

Forest restoration is a protracted undertaking, and the restoration of soil ecosystems, once disturbed, can be a time-consuming or financially burdensome endeavour. Consequently, the prudent conservation of forests becomes imperative to avert such challenges.

2) Underground water

The Study Are relays on the underground water, the appropriate utilization of groundwater and the preservation of its quality are imperative for the daily lives of citizens and play a pivotal role in sustaining economic activities like agriculture.

In Study Area, variations in groundwater levels exist, with some areas exhibiting notably high water tables. It is essential to exercise caution, as contamination of groundwater in these locales can impact not only the health and livelihoods of residents in the immediate vicinity but also holds the potential to extend its influence on other regions through the interconnected

groundwater network. Luck of adequate and appropriate treatment of domestic wastes and industrial effluents are identified contributors to groundwater contamination. Water contamination is one of the causes of cholera epidemic and results in a high number of cases and fatalities annually in Lusaka.

Furthermore, the excessive drilling of bore holes has the potential to result in the depletion of groundwater resources. The wells that lack proper design and environmental sensitivity may serve as contributors to groundwater contamination. Therefore, due consideration must be given to the design, placement, and environmental impact of wells to mitigate these adverse effects on groundwater quality and availability.

CHAPTER 3 SOCIO-ECONOMY OF THE STUDY AREA

3.1 Population

3.1.1 Population in the Study Area in 2010 and 2022

According to 2022 Census, the total population of Zambia was approximately 19,700,000. Lusaka Province had the largest population size at approximately 3,100,000, followed by Copperbelt with approximately 2,800,000, as Table 3.1.1 illustrates. The order of proportions has not changed between 2010 and 2022. However, the population growth rate varies by provinces. While the rate of Lusaka Province and Copperbelt Province are the lowest rate at 2.9 percent, that of North western Province is the highest rate at 4.8 percent.

Table 3.1.1 Population by Province in 2010 and 2022

Province / Country	2010		2022		Annual Average Growth Rate (%)
	Number	Share (%)	Number	Share (%)	
Lusaka	2,191,225	16.7	3,093,617	15.7	2.9
Copperbelt	1,972,317	15.1	2,768,192	14.1	2.9
Eastern	1,696,555	13.0	2,462,682	12.5	3.2
Southern	1,589,926	12.1	2,388,091	12.1	3.4
Central	1,307,111	10.0	2,261,336	11.5	4.7
Northern	1,105,824	8.4	1,623,853	8.2	3.3
Luapula	991,927	7.6	1,519,478	7.7	3.6
Western	902,974	6.9	1,375,604	7.0	3.6
North western	727,044	5.6	1,278,357	6.5	4.8
Muchinga	607,763	4.6	922,213	4.7	3.5
Whole Country	13,092,666	100.0	19,693,423	100.0	3.5

Source: JICA Expert Team base on Census 2010, Census 2022 (as of April 2024)

The population of the Study Area, namely 5 districts including Lusaka, Chilanga, Chongwe, Kafue, and Chibombo, was approximately 2,800,000 accounting for 14.5 percent of the national population as shown in Table 3.1.2.

The population growth rate of the Study Area has been lower than that of the whole country. The average annual growth rate of the Study Area was 3.1 percent from the 2010 census to the 2022 census, while that of Zambia was 3.5 percent in the same period.

In the Study Area, Kafue district and Chibombo district have the highest growth from the 2010 census to the 2020 census at 11.4 percent, while Lusaka City has low growth rate at 2.0 percent.

Table 3.1.2 Population of the Study Area in 2010 and 2022

District / Country	2010	2022	Annual Average Growth Rate (%)
Study Area	**1,978,680**	**2,848,862**	**3.1**
Lusaka	1,747,152	2,212,301	2.0
Chilanga	93,747	217,354	7.3
Chongwe	72,398	180,284	7.9
Kafue	19115	69,701	11.4
Chibombo	46268	169,222	11.4
Whole Country	**13,092,666**	**19,693,423**	**3.5**

*Data of Lusaka City is from Census 2010 (January 2013).
Source: JICA Expert Team base on Census 2010 and Census 2022 (as of April 2024)

3.1.2 Population Distribution in 2010 and 2022

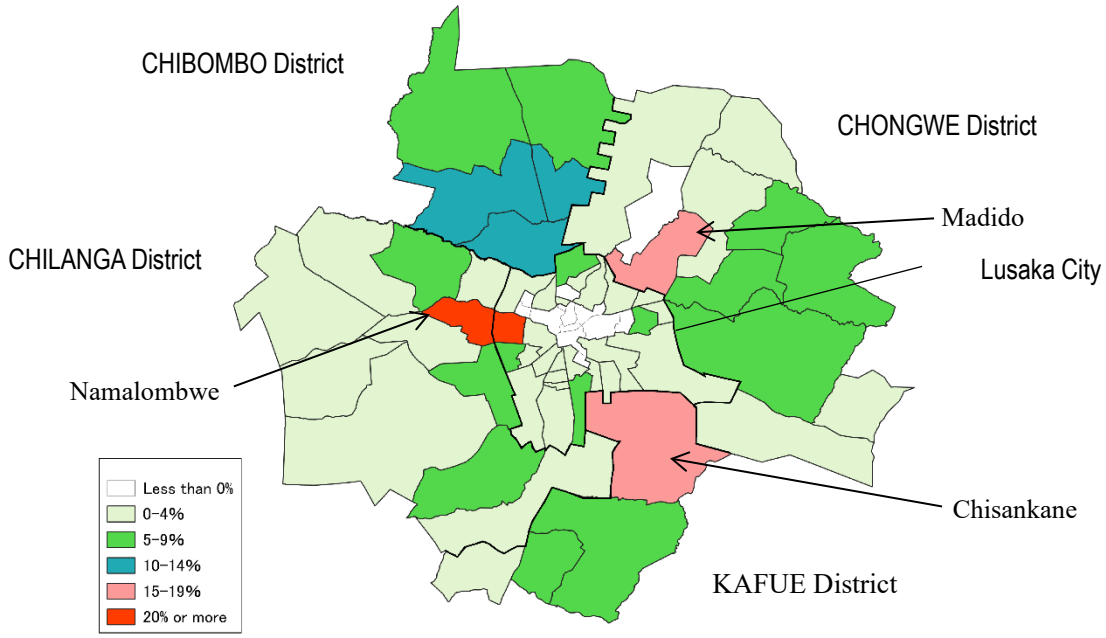
The population of Lusaka City only increased at a growth rate of 2.0% per annum as shown in Table 3.1.2. This is the result of the neighbouring wards of Lusaka City (excluding Garden Park) such as Namalombwe, Madido, and Chisankane increasing their population at an exceptional population growth rate of over 15% per annum for over 12 years, as Table 3.1.3 indicates. Between 2010 and 2022, urban migration to the Study Area shifted from Lusaka City to other 4 districts, such as Chilanga District, Chongwe District, Kafue District, and Chibombo District, as shown in Figure 3.1.1.

Table 3.1.3 Changes of Population in the Study Area

District	Ward	Population (2010)	Population (2022)	Annual Average Growth Rate (%)
Lusaka City	Chawama	71,701	73,213	0.2
	John Howard	29,526	30,547	0.3
	Lilayi	11,823	18,067	3.6
	Nkoloma	75,650	87,081	1.2
	Chilenje	53,351	56,686	0.5
	Kabwata	23,025	20,254	-1.1
	Kamulanga	41,093	80,866	5.8
	Kamwala	36,149	43,157	1.5
	Libala	22,068	28,750	2.2
	Chinika	44,777	45,632	0.2
	Garden Park	8,879	86,828	20.9
	Harry Mwanga Nkumbula	117,749	125,093	0.5
	Kanyama	117,455	130,842	0.9
	Makeni Villa	46,586	100,666	6.6
	Munkolo	28,927	37,357	2.2
	Independence	15,727	13,623	-1.2
	Kabulonga	51,188	80,577	3.9
	Lubwa	33,597	41,347	1.7
	Silwizya	6,757	4,916	-2.6
	Chaisa	22,275	19,901	-0.9
	Justin Kabwe	41,247	41,708	0.1
	Kabanana	37,944	65,297	4.6
	Mpulungu	47,856	133,235	8.9
	Mulungushi	11,285	8,117	-2.7
	Ngwerere	68,392	63,843	-0.6
	Raphael Chota	70,505	65,119	-0.7
	Roma	64,269	71,971	0.9
	Kapwepwe	49,146	43,303	-1.0
	Lima	76,997	71,566	-0.6
	Matero	53,204	49,162	-0.7
	Muchinga	53,612	74,084	2.7
	Mwembeshi	56,278	82,801	3.3
	Chainda	29,526	35,630	1.6
	Chakunkula	34,989	38,866	0.9
	Kalikiliki	50,550	91,169	5.0
	Kalingalinga	41,386	38,862	-0.5
	Mtendere	63,176	62,774	-0.1
	Munali	45,072	49,391	0.8
CHILANGA District	Chilanga	15,958	26,223	4.2
	Chilongolo	10,057	16,790	4.4
	Chinyanja	7,562	13,368	4.9
	Kalundu	13,158	19,040	3.1
	Kasupe	6,701	11,032	4.2
	Mondengwa	2,831	4,693	4.3
	Mount Makulu	12,903	27,823	6.6
	Nakachenje	4,469	5,790	2.2
	Namalombwe	4,358	50,446	22.6
	New Farms	7,641	17,240	7.0
	Nyemba	8,109	24,909	9.8
CHONGWE District	Chainda	6,873	13,383	5.7
	Chinkuli	6,648	14,034	6.4
	Kapwayambale	9,233	13,455	3.2

District	Ward	Population (2010)	Population (2022)	Annual Average Growth Rate (%)
	Kasenga	3,937	5,634	3.0
	Kasisi	5,879	8,684	3.3
	Madido	8,570	66,973	18.7
	Nakatindi	3,615	5,299	3.2
	Ngwerere	3,381	3,074	-0.8
	Njolwe	2,418	4,218	4.7
	Ntandable	8,476	20,254	7.5
	Palabana	13,368	25,276	5.5
KAFUE District	Chisankane	6,501	43,514	17.2
	Kabweza	2,428	4,068	4.4
	Malundu	7,508	15,547	6.3
	Shimabala	2,678	6,572	7.8
CHIBOMBO District	Cholokelo	7,951	18,938	7.5
	Chunga	12,485	61,495	14.2
	Kamalla	5,856	17,621	9.6
	Katuba	9,500	32,430	10.8
	Mungule	10,476	38,738	11.5
		1,985,265	2,848,862	3.1

Source: JICA Expert Team based on data from ZamStat (as of April, 2024)

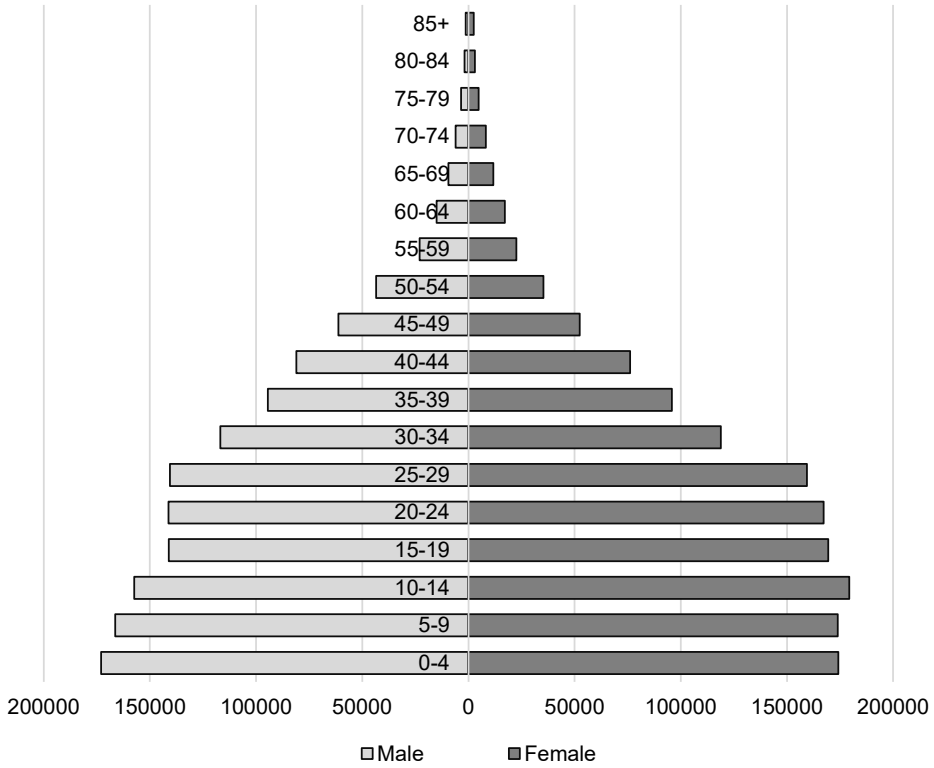


Source: JICA Expert Team base on data from ZamStat (as of April, 2024)

Figure 3.1.1 Population Growth by Ward in the Study Area

3.1.3 Age-group Structure

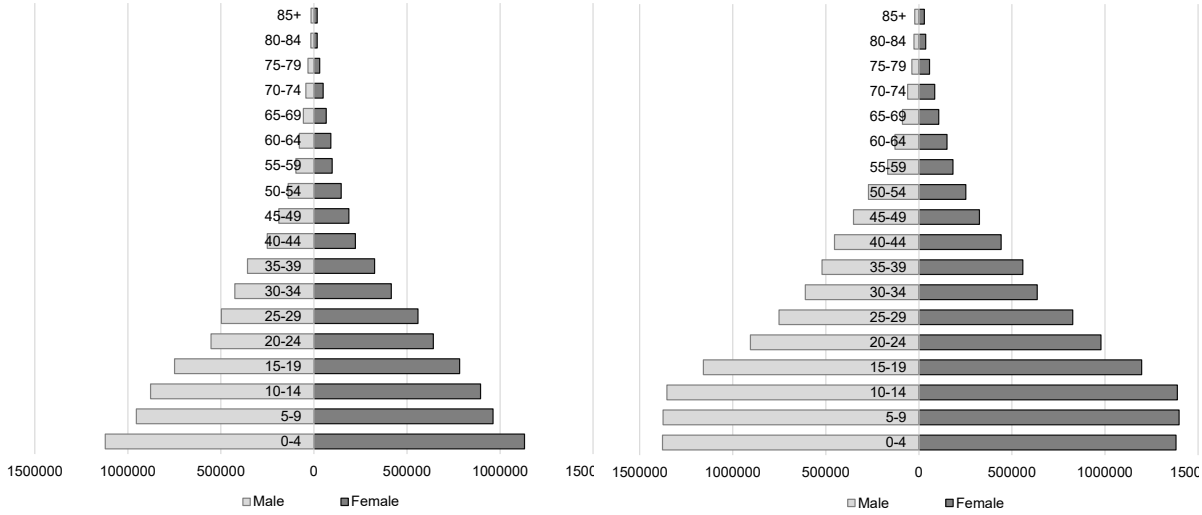
As shown in Figure 3.1.2, the age structure of the population of the Study Area in 2022 forms a bell-shaped age pyramid, showing a demographic dividend with a large number of younger generations.



Source: JICA Expert Team base on Census 2022 (as of April, 2024)

Figure 3.1.2 Age Structure of Population in Study Area

Figure 3.1.3 shows the age structure of the nationwide population in 2010 and 2022. The age structure has shifted from a typical pyramid shape in 2010 to a bell-shaped pyramid in 2022, similar to that of the Study Area.



[Zambia 2010] **[Zambia 2022]**

Source: JICA Expert Team base on Census 2011 and 2022 (as of April, 2024)

Figure 3.1.3 Age Structure of Population in Zambia

The age structure of the population of 4 districts in the Study Area in 2022 are shown in Table 3.1.4.

Table 3.1.4 Population of the Study Area by District and by Age-group in 2022

	Study Area			Lusaka			Chilanga		
Age Group	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	172,911	174,137	347,048	131,269	131,926	263,195	13,874	14,056	27,930
5-9	166,386	173,961	340,347	125,859	131,932	257,791	13,779	14,277	28,056
10-14	157,415	179,284	336,699	119,207	137,286	256,493	13,103	14,381	27,484
15-19	141,077	169,459	310,536	108,976	131,815	240,791	11,318	13,160	24,478
20-24	141,203	167,283	308,486	111,307	131,763	243,070	10,478	11,834	22,312
25-29	140,488	159,440	299,928	111,907	127,404	239,311	10,159	10,815	20,974
30-34	116,829	118,841	235,670	92,855	94,508	187,363	8,434	8,206	16,640
35-39	94,456	95,817	190,273	73,748	75,526	149,274	7,210	6,913	14,123
40-44	81,063	76,138	157,201	62,857	60,363	123,220	6,351	5,344	11,695
45-49	61,245	52,479	113,724	47,271	41,727	88,998	4,969	3,530	8,499
50-54	43,431	35,387	78,818	33,761	28,238	61,999	3,381	2,333	5,714
55-59	23,049	22,644	45,693	17,691	17,972	35,663	1,856	1,467	3,323
60-64	14,922	17,168	32,090	11,389	13,483	24,872	1,190	1,141	2,331
65-69	9,492	11,687	21,179	7,292	9,249	16,541	782	765	1,547
70-74	6,053	8,157	14,210	4,768	6,419	11,187	435	534	969
75-79	3,398	4,872	8,270	2,568	3,626	6,194	278	347	625
80-84	1,808	3,015	4,823	1,324	2,265	3,589	137	200	337
85+	1,297	2,570	3,867	886	1,864	2,750	104	213	317
Total	1,376,523	1,472,339	2,848,862	1,064,935	1,147,366	2,212,301	107,838	109,516	217,354

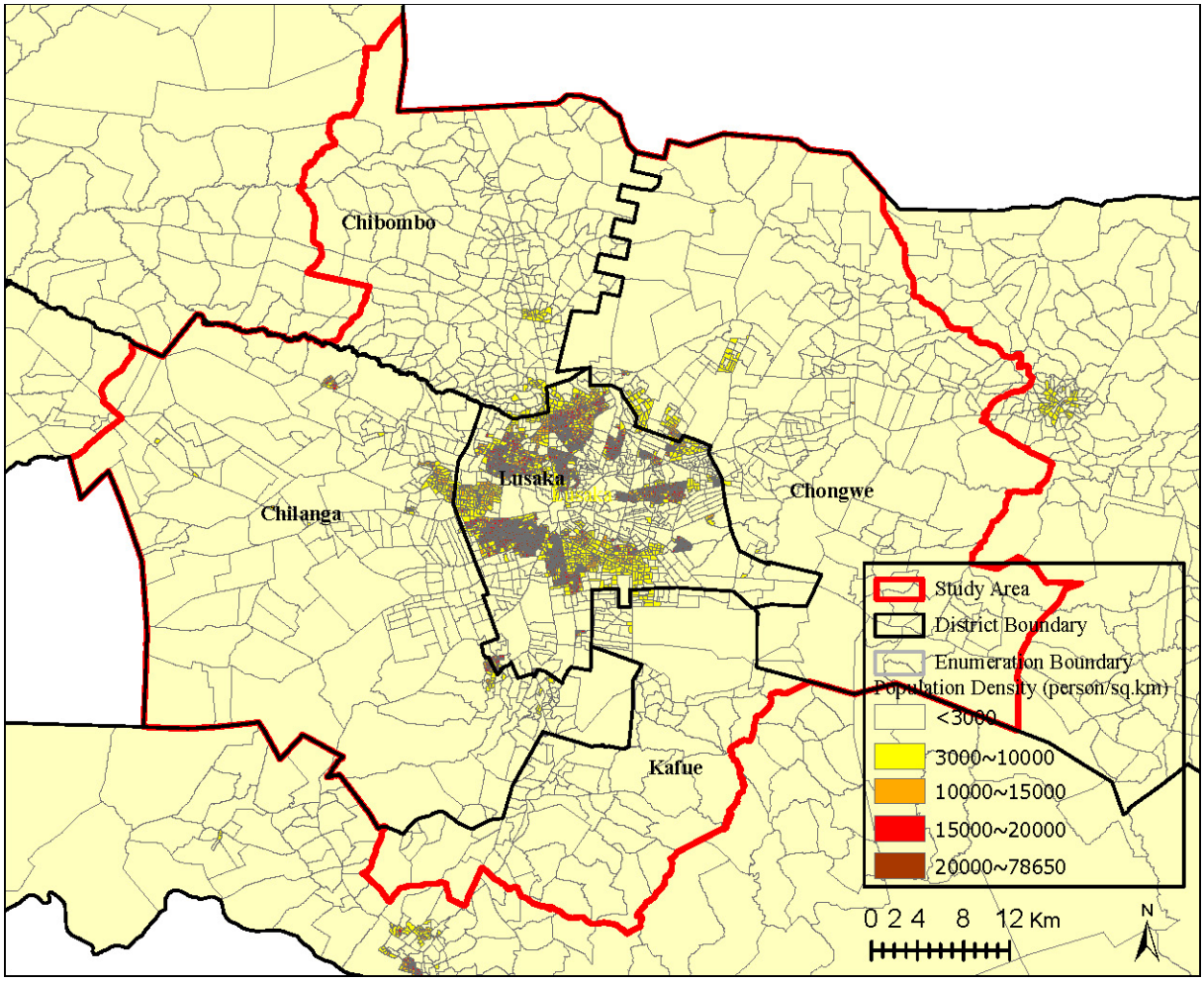
	Chongwe			Kafue			Chibombo		
Age Group	Male	Female	Total	Male	Female	Total	Male	Female	Total
0-4	11,152	11,531	22,683	4,569	4,634	9,203	12,047	11,990	24,037
5-9	11,213	11,284	22,497	4,186	4,533	8,719	11,349	11,935	23,284
10-14	10,640	11,623	22,263	3,835	4,264	8,099	10,630	11,730	22,360
15-19	9,094	10,851	19,945	3,299	4,005	7,304	8,390	9,628	18,018
20-24	8,660	10,536	19,196	3,299	4,228	7,527	7,459	8,922	16,381
25-29	8,143	9,111	17,254	3,307	3,795	7,102	6,972	8,315	15,287
30-34	6,563	6,843	13,406	2,803	2,774	5,577	6,174	6,510	12,684
35-39	5,561	5,899	11,460	2,267	2,298	4,565	5,670	5,181	10,851
40-44	5,172	4,907	10,079	2,031	1,722	3,753	4,652	3,802	8,454
45-49	4,095	3,433	7,528	1,405	1,192	2,597	3,505	2,597	6,102
50-54	2,948	2,304	5,252	1,006	838	1,844	2,335	1,674	4,009
55-59	1,593	1,420	3,013	616	532	1,148	1,293	1,253	2,546
60-64	1,074	1,073	2,147	390	445	835	879	1,026	1,905
65-69	637	770	1,407	211	296	507	570	607	1,177
70-74	376	517	893	152	206	358	322	481	803
75-79	216	360	576	85	153	238	251	386	637
80-84	135	218	353	69	102	171	143	230	373
85+	121	211	332	60	94	154	126	188	314
Total	87,393	92,891	180,284	33,590	36,111	69,701	82,767	86,455	169,222

Source: JICA Expert Team base on Census 2022 (as of April, 2024)

3.1.4 Population Density

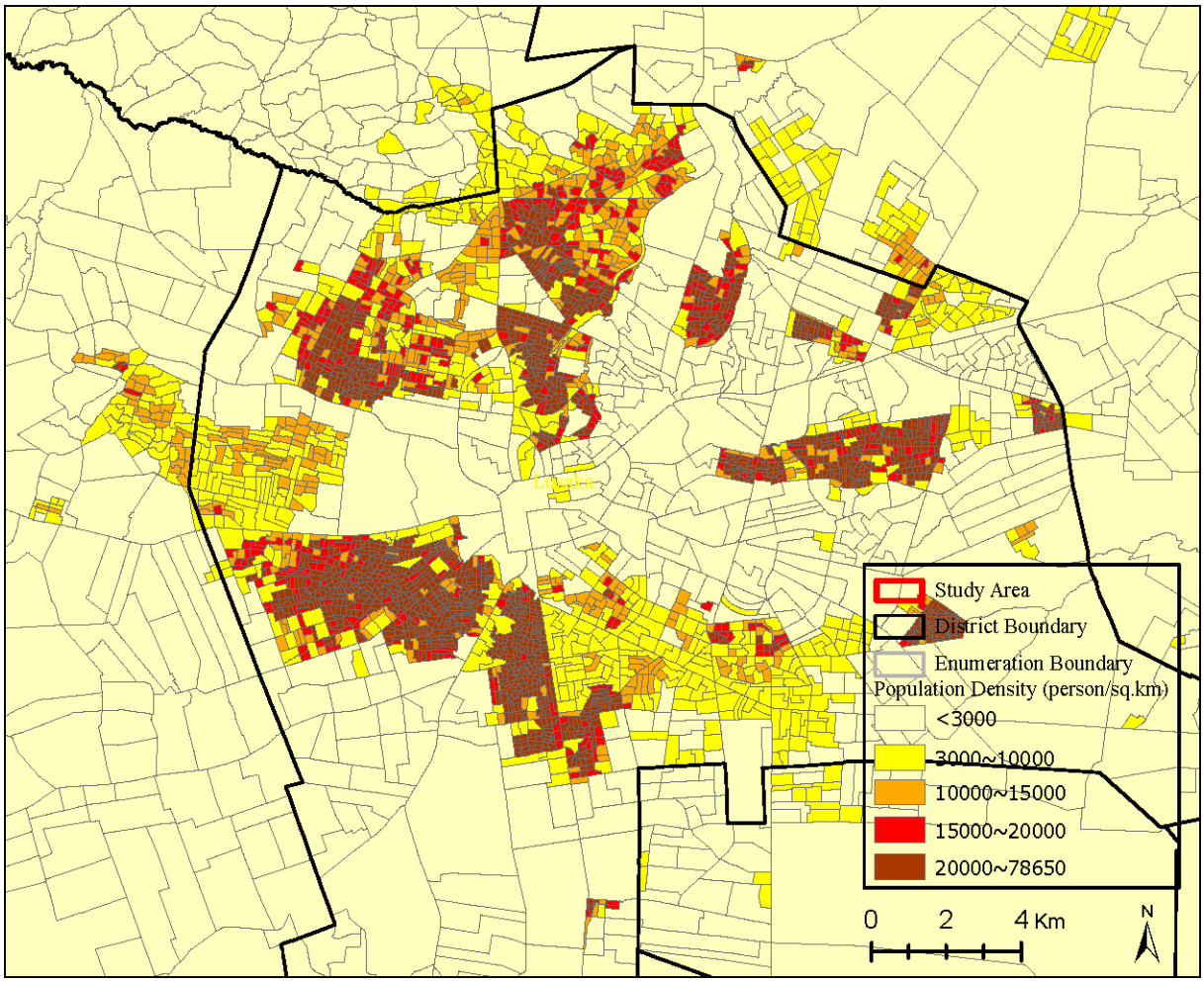
The population density by enumeration unit is estimated based on the population census of 2022. Areas with a very high population of more than 70000 per sq.km are distributed within Lusaka City, whereas areas with less than 3000 people per sq.km are widespread. Figure 3.1.3 shows the distribution of population density within Lusaka City on an enlarged scale. Most of the area with a high population density of more than 15000 people is urbanized with unplanned settlements. However, most of the areas in the four surrounding districts have a population

density of less than 3000 people.



Source: Population Census in 2022, Zambia Statistics Agency

Figure 3.1.4 Population Density by Enumeration Unit in the Study Area



Source: Population Census in 2022, Zambia Statistics Agency

Figure 3.1.5 Population Density by Enumeration Unit in the Study Area (Enlarged)

3.2 Economic Structure

3.2.1 Related National Plan

(1) National Long Term Vision 2030 (Vision 2030)

Vision 2030 is Zambia's first ever written long-term plan, expressing Zambians' aspirations by the year 2030. The Vision highlights three scenarios outlining development options, namely the baseline, the preferred and the optimistic. The socio-development development objectives enshrined in the Preferred Scenario are: to attain and sustain annual real growth of 10 percent between 2021 and 2030. Zambians aspire to achieve middle-income status by 2030. The Vision has been operationalized through the five-year development plans starting with the Fifth National Development Plan 2006-2010 and annual budgets.

(2) Eight National Development Plan 2022-2026 (8NDP)

8NDP is the fourth in the series of national development plans (NDPs) towards the national Vision 2030 in which Zambians aspire to live in a prosperous middle-income country. During the Plan period, the Government seeks to restore macroeconomic stability by raising real GDP growth as well as attaining fiscal and debt sustainability to improve the livelihoods of the Zambian people, especially the vulnerable. The objective of an annual real GDP growth rate is at least 4.5 percent by 2026.

There are 5 strategic development areas in the 8NDP as follows: a) Economic transformation and job creation; b) Human social development; c) Environment sustainability; and d) Good governance environment. Related to the economic area, it is the focus of the country to attain economic transformation that will be marked by advancements in industrialization and economic diversification for sustained growth driven by the agriculture, mining, manufacturing, and tourism sectors. These include increasing agricultural production and productivity, promoting mining of traditional and non-traditional minerals, promoting value-addition and manufacturing, and promoting tourism growth.

The emphasis within the manufacturing sector will be on light manufacturing, characterized by operations that are less capital-intensive but more labour-intensive. Priority will be given to value chains such as processed foods, engineering, wood and wood products, textiles, leather and leather products, metallic and non-metallic mineral beneficiation and value-addition, and pharmaceuticals. Additionally, 8NDP emphasizes the promotion of the development and operation of Multi-Facility Economic Zones (MFEZs) and industrial parks, with the provision of appropriate incentives.

3.2.2 National GDP

(1) GDP Growth

Table 3.2.1 illustrates the trend of GDP and GDP per capita in Zambia. Zambia's economy rebounded in 2021, with real GDP growing at 6.2 percent, from a contraction of -2.8 percent in 2020, supported by firmer copper prices, favourable external demand, good rainfall, and post-election market confidence. The steady recovery was interrupted by the Ukraine conflict in 2022, resulting in muted growth of 5.2 percent.

GDP per capita has also recovered after the 2021, it decreased to 2.4 percent in 2022. GDP grew at an average of 3.4 percent annually during 2013-2022, while GDP per capita grew more slowly, at 0.3 percent per annum, during the same period.

Table 3.2.1 GDP and GDP per capita in Zambia

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GDP (Current, US$ Billion)	28.0	27.1	21.3	21.0	25.9	26.3	23.3	18.1	22.1	29.2
Real GDP Growth (Annual %)	5.1	4.7	2.9	3.8	3.5	4.0	1.4	-2.8	6.2	5.2
GDP per capita (Current, US$)	1,840.3	1,724.6	1,307.9	1,249.9	1,495.8	1,475.2	1,268.1	956.8	1,134.7	1,456.9
Growth Rate of GDP per capital (Annual %)	1.7	1.4	-0.3	0.6	0.3	0.9	-1.6	-5.6	3.3	2.4

Source: JICA Expert Team based on World Development Indicators (World Bank, Dec.2023)

(2) GDP Structure

As Figure 3.2.1 shows, while the share of agriculture value added in GDP declined from 8.2 percent in 2013 to 3.1 percent in 2022, the contribution of the services sector to GDP grew from 53.1 percent to 55.5 percent, and the contribution of the industry (covering manufacturing, construction and mining) increased from 32.6 percent to 35.3 percent.

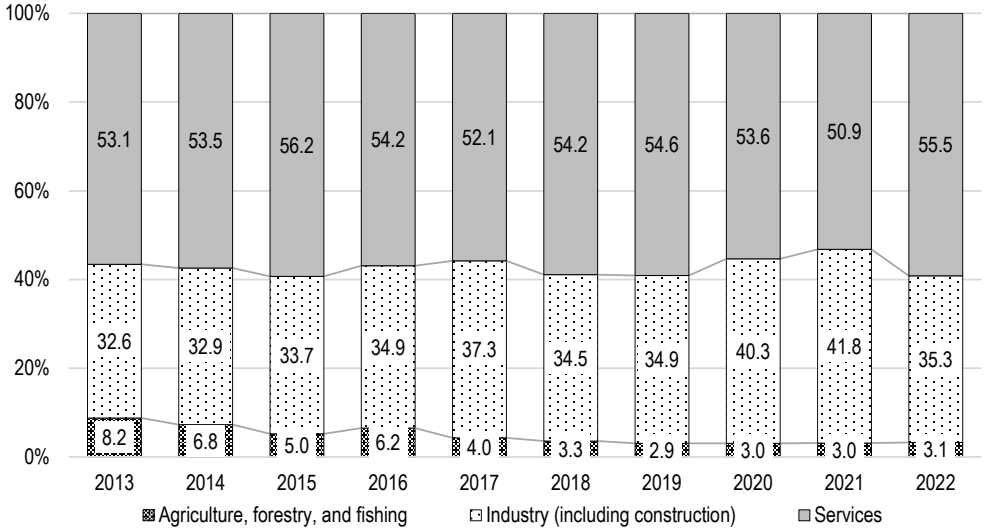
The primary sector accounts for 3.1 percent of GDP, though more than half of the workforce derives its livelihood from agriculture. The share of agriculture in GDP has declined while that

of industry and services has increased. The Zambian primary sector focuses mainly on crop-farming (maize, cotton, soybeans, tobacco, groundnuts, paprika, sorghum, wheat, rice sunflower seeds) and livestock production.

The tertiary sector is the predominant sector in Zambian economy representing 55.5 percent of GDP in 2022. The sector includes a large wholesale and retail industry. Table 3.2.2 indicates that the wholesale and retail subsectors represented approximately 20 percent of GDP. The finance and insurance subsectors are also important contributors to GDP, accounting approximately 8 percent of GDP.

The secondary sector activities, which accounts for 35.3 percent of GDP in 2022, are driven by the good growth in mining and quarrying. Zambia is endowed with abundant natural mineral resources, including copper, cobalt, and precious stones, which have been the main drivers of its economy. Copper mining, particularly, has been a significant contributor to the country's economic growth, according for around 70 percent of its export earnings. Zambia has around 6 percent of the world's known reserves of copper and is Africa's second-largest producer of copper in 2021.

However, concerns remain that the economy is not diversified enough to cope with a collapse in international copper prices. Moreover, the share of manufacturing (as a subset of industry) which accounts for nearly 14 percent of GDP in 2022, has experienced weaker growth, as Figure 3.2.2 indicates. Currently, the main manufacturing activities in Zambia are the food and beverages, textile and leather industries, wood and wood products, paper and paper products, chemicals, rubber and plastic products, non-metallic mineral products, basic metal products, and fabricated metal products.



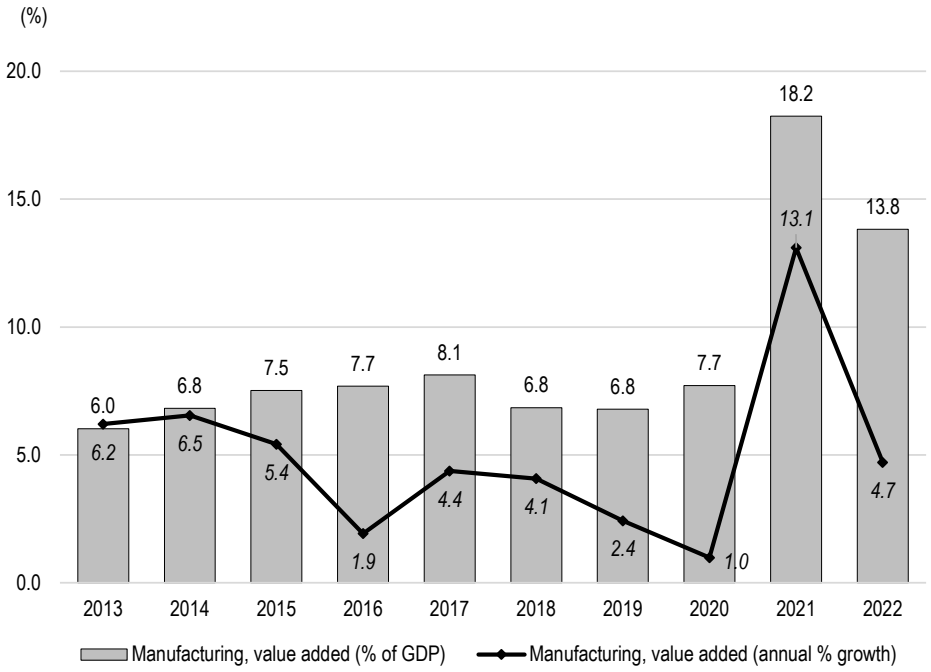
Source: JICA Expert Team based on World Development Indicators (World Bank, Dec.2023)

Figure 3.2.1 GDP Composition, by Sector of Origin

Table 3.2.2 GDP Composition, by Sub-sector of Origin

	2017	2018	2019	2020	2021
Primary sector	**4.3**	**3.6**	**3.1**	**3.1**	**3.5**
Agriculture (crop and Livestock)	3.0	2.6	1.9	2.0	2.0
Forestry & Logging	0.6	0.6	0.7	0.6	0.9
Fishing & Aquaculture	0.6	0.4	0.5	0.5	0.6
Secondary sector	**39.9**	**37.5**	**37.8**	**41.6**	**44.4**
Mining and quarrying	17.0	16.2	15.4	15.8	18.2
Manufacturing	8.7	7.4	7.3	8.0	9.8
Electricity generation	3.7	3.1	2.8	2.1	1.7
Water supply; Sewerage	0.4	0.4	0.4	0.5	0.5
Construction	10.2	10.4	11.9	15.2	14.2
Tertiary sector	**55.8**	**58.9**	**59.1**	**55.4**	**52.1**
Wholesale and retail trade;	20.3	23.4	21.8	17.9	18.2
Transportation and storage	6.1	8.3	9.0	10.2	8.9
Accommodation and food service	1.7	1.3	1.3	0.5	0.4
Information and communication	2.1	2.0	2.8	2.7	2.4
Financial and insurance activities	5.5	6.1	7.7	8.1	7.6
Real estate activities	4.6	3.8	4.0	3.3	2.9
Professional, scientific	1.5	0.8	0.8	0.7	1.0
Administrative and support	1.0	0.7	0.5	0.8	1.0
Public administration and defense;	4.3	4.0	4.6	4.5	3.6
Education	6.8	5.4	4.0	3.7	3.1
Human health and social work	1.1	1.7	2.0	2.0	1.9
Art, entertainment and recreation	0.3	0.3	0.4	0.2	0.2
Other service	0.4	1.1	0.4	0.6	0.7
Total for the economy	100.0	100.0	100.0	100.0	100.0

Source: JICA Expert Team based on ZAMSTAT data (Oct. 2023, Provincial GDP by production at current prices)

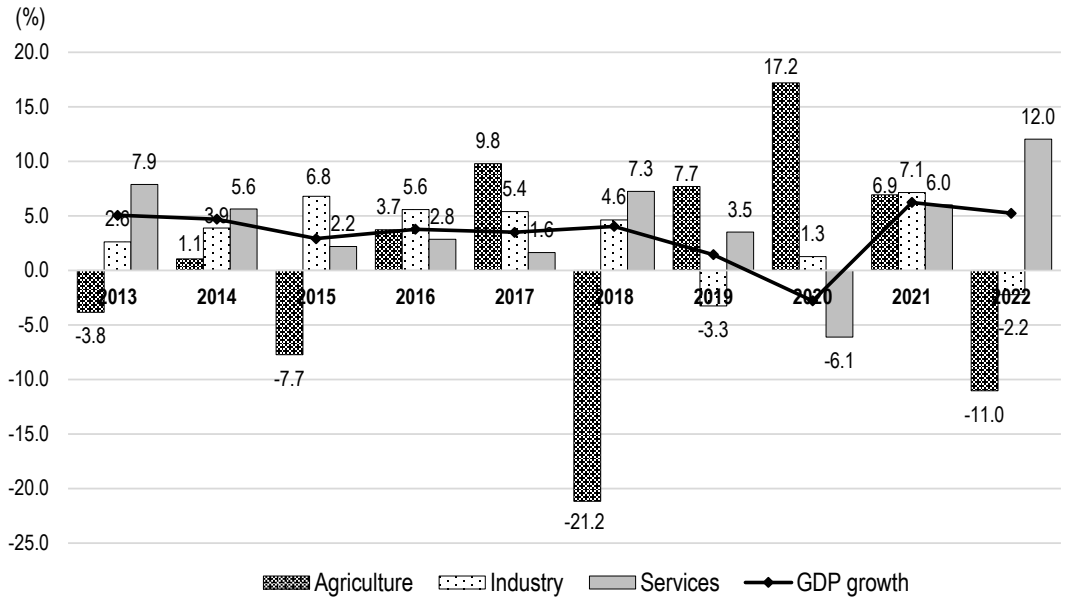


Source: JICA Expert Team based on World Development Indicators (World Bank, Dec.2023)

Figure 3.2.2 Performance of Zambia's manufacturing sector

Figure 3.2.3 illustrate the driven sectors of economic growth. One of the characteristics may be a high volatility in the agricultural sector. Agriculture, oriented largely on food security and a

few staple crops, is highly vulnerable to climate shocks, like droughts and floods.



Source: JICA Expert Team based on World Development Indicators (World Bank, 2023)

Figure 3.2.3 GDP Growth, by Sector of Origin

As Table 3.2.3 shows, the faster growing subsectors over the last 5 years have been textile, clothing, and leather, and information and communication (ICT), though their shares in the overall economy were limited.

Table 3.2.3 Growth Rates of GDP by Subsector (Constant 2010 prices)

KIND OF ECONOMIC ACTIVITY	2017	2018	2019	2020	2021	*Average of 5 years*
Agriculture, forestry and fishing	-6.06	-31.64	60.09	1.46	7.19	*6.2*
Agriculture (Crop & Livestock)	-6.59	-35.08	66.92	2.78	10.25	*7.7*
Forestry & Logging	-2.03	-2.34	1.52	-0.05	-9.07	*-2.4*
Fishing & Aquaculture	0.22	-1.42	50.90	-18.01	2.19	*6.8*
Mining and quarrying	9.09	1.87	-4.80	6.99	-9.31	*0.8*
Mining	10.44	1.90	-6.16	7.78	-11.11	*0.6*
Other mining and quarrying	0.26	1.65	4.97	1.91	3.62	*2.5*
Manufacturing	6.45	1.47	0.59	-1.31	5.64	*2.6*
Food, Beverages & Tobacco	0.13	-0.05	0.99	-2.23	8.47	*1.5*
Textile, Clothing & Leather	63.82	73.60	-48.95	18.34	43.53	*30.1*
Wood & Wood Products	-2.03	-2.34	1.52	-0.05	-9.07	*-2.4*
Paper & Paper Products	-10.05	-0.91	11.65	1.15	5.88	*1.5*
Chemicals, Rubbers & Plastics	5.52	1.10	5.05	-10.11	17.53	*3.8*
Non-metallic Mineral Products	28.25	2.75	-0.24	-13.48	23.46	*8.1*
Basic Metal Industries	5.74	3.42	0.57	10.31	1.77	*4.4*
Fabricated Metal Products	6.69	-4.62	1.81	-6.27	-25.00	*-5.5*
Electricity, gas, steam and air conditioning supply	22.61	10.25	-17.51	16.17	9.92	*8.3*
Water supply; sewerage, waste management and remediation activities	-6.82	5.46	-0.27	6.41	1.57	*1.3*
Construction	2.00	-4.07	-9.09	2.43	9.62	*0.2*
Wholesale and retail trade; repair of motor vehicles and motorcycles	2.15	2.73	-9.62	-11.90	-2.98	*-3.9*
Transportation and storage	8.84	10.79	-16.61	18.04	11.01	*6.4*
Accommodation and food service activities	4.85	-3.67	9.74	-28.20	13.40	*-0.8*
Information and communication	-0.53	75.21	20.08	13.73	17.52	*25.2*
Financial and insurance activities	-0.63	-0.15	10.96	14.49	9.78	*6.9*
Financial services, except insurance and pension funds	-4.43	19.22	7.57	19.35	-0.27	*8.3*
Insurance and pension funds	4.91	-25.85	18.21	5.07	24.26	*5.3*
Real estate activities	2.90	3.40	3.49	3.58	3.65	*3.4*
Professional, scientific and technical activities	6.42	-2.09	2.72	5.07	-0.89	*2.2*
Administrative and support service activities	8.55	3.44	-1.24	2.76	1.65	*3.0*
Public administration and defense; compulsory social security	0.90	8.18	2.28	-21.39	11.60	*0.3*
Education	3.00	8.44	2.14	-22.05	4.20	*-0.9*
Human health and social work activities	20.54	10.94	8.27	5.08	1.56	*9.3*
Arts, entertainment and recreation	-7.12	12.48	-16.31	-63.40	85.10	*2.2*
Other service activities	2.90	3.40	3.49	3.58	3.65	*3.4*
Total Gross Value Added for the economy	3.23	2.50	0.70	-2.63	3.87	*1.5*

Source: JICA Expert Team based on ZAMSTAT data (https://www.zamstats.gov.zm/, Jan.2024)

3.2.3 Gross Regional Domestic Product (GRDP)

ZAMSTAT has calculated the provincial GDP or GRDP. Table 3.2.4 shows that Lusaka

province makes up approximately 31 percent of the total GDP of Zambia, while comprising only about 14 percent of Zambia's Population. Furthermore, Central province, which is partially Study Area, accounts for approximately 8 percent.

The tertiary sector, such as wholesale and retail trade, transportation and storage, and financial and insurance activities is major component of GDP in Lusaka province, as Table 3.2.5 indicates. However, the share of the tertiary sector has decreased since 2017, while its share of the secondary sector, in particular, manufacturing has increased. Lusaka City as the Capital has made it to be one of the most important economic hubs of Zambia as it provides the market for the absorption of the agriculture produce from all provinces. For instance, there may be potential for industries to process raw materials including agriculture products and export making full use of corridors.

Compared with Lusaka province, the primary sector, particularly agriculture, in Central province accounts for approximately 6 percent, though the tertiary sector is the largest component of GDP. In the secondary sector, additionally, manufacturing and construction account for 37 percent in 2021.

Table 3.2.4 Proportion of GDP, by Province

	2017	2018	2019	2020	2021
Central	6.2	6.2	7.5	7.8	7.6
Copperbelt	22.6	24.0	22.2	21.3	21.8
Eastern	5.2	5.6	5.2	4.8	4.6
Luapula	2.7	2.8	3.2	2.9	2.8
Lusaka	29.8	30.2	30.6	31.5	31.3
Muchinga	2.9	3.0	2.9	2.5	2.4
Northern	3.5	3.7	3.6	2.9	2.8
N/Western	14.0	13.7	11.8	14.8	15.8
Southern	10.6	10.9	10.3	8.9	8.4
Western	2.6	2.8	2.8	2.6	2.5
Total	100.0	100.0	100.0	100.0	100.0

Source: JICA Expert Team based on ZAMSTAT data (Oct. 2023, Provincial GDP by production at current prices)

Table 3.2.5 GDP Composition, by Sub-sector of Origin and by Province

(1) Lusaka

	2017	2018	2019	2020	2021
Primary sector	**0.8**	**0.6**	**0.4**	**1.0**	**1.3**
Agriculture (crop and Livestock)	0.4	0.3	0.2	0.4	0.4
Forestry & Logging	0.2	0.2	0.2	0.3	0.5
Fishing & Aquaculture	0.0	0.0	0.1	0.3	0.4
Secondary sector	**26.3**	**25.6**	**26.8**	**35.7**	**39.1**
Mining and quarrying	0.6	0.7	1.0	0.6	0.7
Manufacturing	11.9	11.3	9.8	17.9	22.2
Electricity generation	0.0	0.0	0.0	0.0	0.0
Water supply; Sewerage	0.4	0.3	0.4	0.5	0.4
Construction	13.5	13.3	15.6	16.8	15.8
Tertiary sector	**72.9**	**73.8**	**72.7**	**63.3**	**59.6**
Wholesale and retail trade;	24.6	27.9	22.8	20.3	20.8
Transportation and storage	8.5	12.2	13.7	11.6	10.2
Accommodation and food service	2.7	2.4	2.0	1.0	0.9
Information and communication	2.0	1.7	2.6	2.5	2.2
Financial and insurance activities	9.8	9.9	9.9	9.7	9.3
Real estate activities	2.9	2.9	2.4	2.0	1.8

Professional, scientific	1.1	1.1	0.5	0.6	0.9
Administrative and support	1.4	1.7	0.7	1.5	1.9
Public administration and defense;	10.2	3.2	10.9	10.6	8.5
Education	8.3	7.8	4.7	1.3	1.1
Human health and social work	0.9	2.4	1.5	1.6	1.5
Art, entertainment and recreation	0.3	0.3	0.6	0.2	0.2
Other service	0.3	0.3	0.2	0.4	0.4
Total for the economy	100.0	100.0	100.0	100.0	100.0

(2) Central

	2017	2018	2019	2020	2021
Primary sector	**12.1**	**8.1**	**5.7**	**5.9**	**6.2**
Agriculture (crop and Livestock)	11.8	7.9	5.6	5.8	6.0
Forestry & Logging	0.0	0.0	0.0	0.0	0.0
Fishing & Aquaculture	0.7	0.4	0.2	0.2	0.2
Secondary sector	**21.5**	**22.3**	**25.0**	**36.2**	**37.0**
Mining and quarrying	8.1	10.4	12.1	7.0	8.4
Manufacturing	0.7	0.9	0.8	2.3	3.0
Electricity generation	3.2	1.6	2.3	1.9	1.6
Water supply; Sewerage	0.3	0.2	0.2	0.3	0.3
Construction	9.2	9.2	9.6	24.7	23.8
Tertiary sector	**66.4**	**69.6**	**69.2**	**57.9**	**56.8**
Wholesale and retail trade;	22.6	26.0	29.0	21.5	22.6
Transportation and storage	8.1	8.5	8.4	4.5	4.1
Accommodation and food service	0.0	0.0	0.0	0.0	0.0
Information and communication	3.1	2.7	3.4	3.2	3.0
Financial and insurance activities	5.2	5.3	8.7	8.4	8.2
Real estate activities	7.3	7.6	5.2	4.1	3.8
Professional, scientific	1.4	1.3	1.1	1.1	1.7
Administrative and support	0.8	0.9	0.2	0.4	0.5
Public administration and defense;	5.7	5.5	5.6	5.3	4.4
Education	10.0	9.5	4.8	5.6	4.8
Human health and social work	1.6	1.3	2.2	2.2	2.1
Art, entertainment and recreation	0.0	0.0	0.0	0.6	0.5
Other service	0.7	0.7	0.5	0.8	0.9
Total for the economy	100.0	100.0	100.0	100.0	100.0

Source: JICA Expert Team based on ZAMSTAT data (Oct. 2023, Provincial GDP by production at current prices)

3.3 Employment

The Labour Force Survey report is enriched with social and demographic indicators such as employment to population ratio, labour force participation rate, unemployment rate and working conditions.

(1) Labour Force

The labour force constitutes two components: the employed and the unemployed population. Employed population is people who have a paid job, are running a business (i.e. farm or non-farm) or are contributing family workers within a specified short reference period (i.e., in a day or one week). On the other hand, unemployed population is people who are not in employment but are actively seeking paid work and/or business opportunities and are available for paid work and/or business opportunities.

Of all provinces, Lusaka province has the highest percentage share of the labour force (31.9 percent), followed by Copperbelt Province (19.2 percent) and Central Province (10.4 percent).

Table 3.3.1 shows the number and percentage distribution of the population in labour force by province and sex. In all provinces, the males accounted for higher percentages of population in the labour force compared to the females.

Table 3.3.1 Labour Force (15 years or older) by Province and Sex, 2021

	Total		Male		Female	
	Number	Percent	Number	Percent	Number	Percent
Central	374,765	10.4	213,309	9.9	161,456	11.1
Lusaka	1,151,752	31.9	680,666	31.5	471,086	32.4
Copperbelt	693,873	19.2	426,121	19.7	267,752	18.4
Others	1,395,117	38.6	1,267,148	38.9	821,843	38.1
Zambia	3,615,507	100.0	2,161,123	100.0	1,454,385	100.0

Source: JICA Expert Team based on Labour Force Survey Report 2021

(2) Employment-to-Population Ratio

The employed population comprises all persons of working age who in the short reference period were either in paid employment, self-employment or contributing family workers. Table 3.3.2 shows the employment-to-population ratio, which is defined as the proportion of a country's working-age population that is employed, by province and sex. Lusaka province has the highest at 48.6 percent.

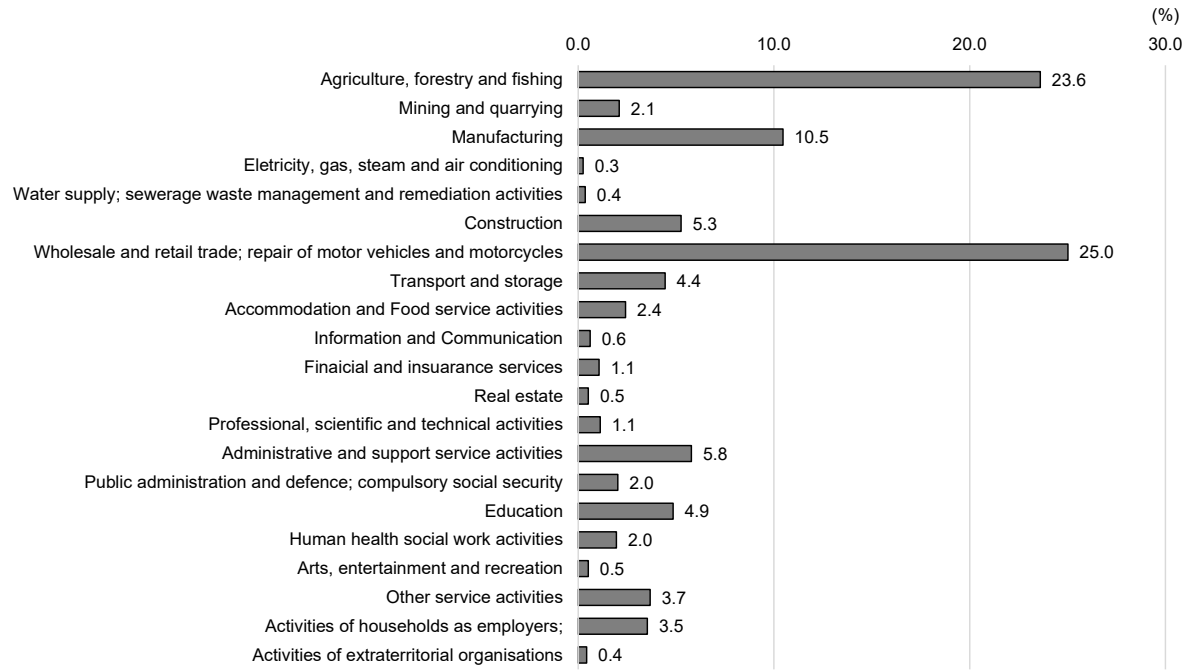
Table 3.3.2 Employment-to-Population Ratio by Province and Sex, 2021

	Both Sexes	Male	Female
Central	35.9	42.3	29.9
Lusaka	48.6	60.0	37.5
Copperbelt	38.3	49.0	27.9
Zambia	31.5	39.0	24.3

Source: JICA Expert Team based on Labour Force Survey Report 2021

(3) Industry

In Zambia, as Figure 3.3.2 indicates, the industry with the highest share of employed population is the wholesale and retail trade; repair of motor vehicles and motorcycles at 25.0 percent followed by the agriculture, forestry and fishing at 23.6 percent.



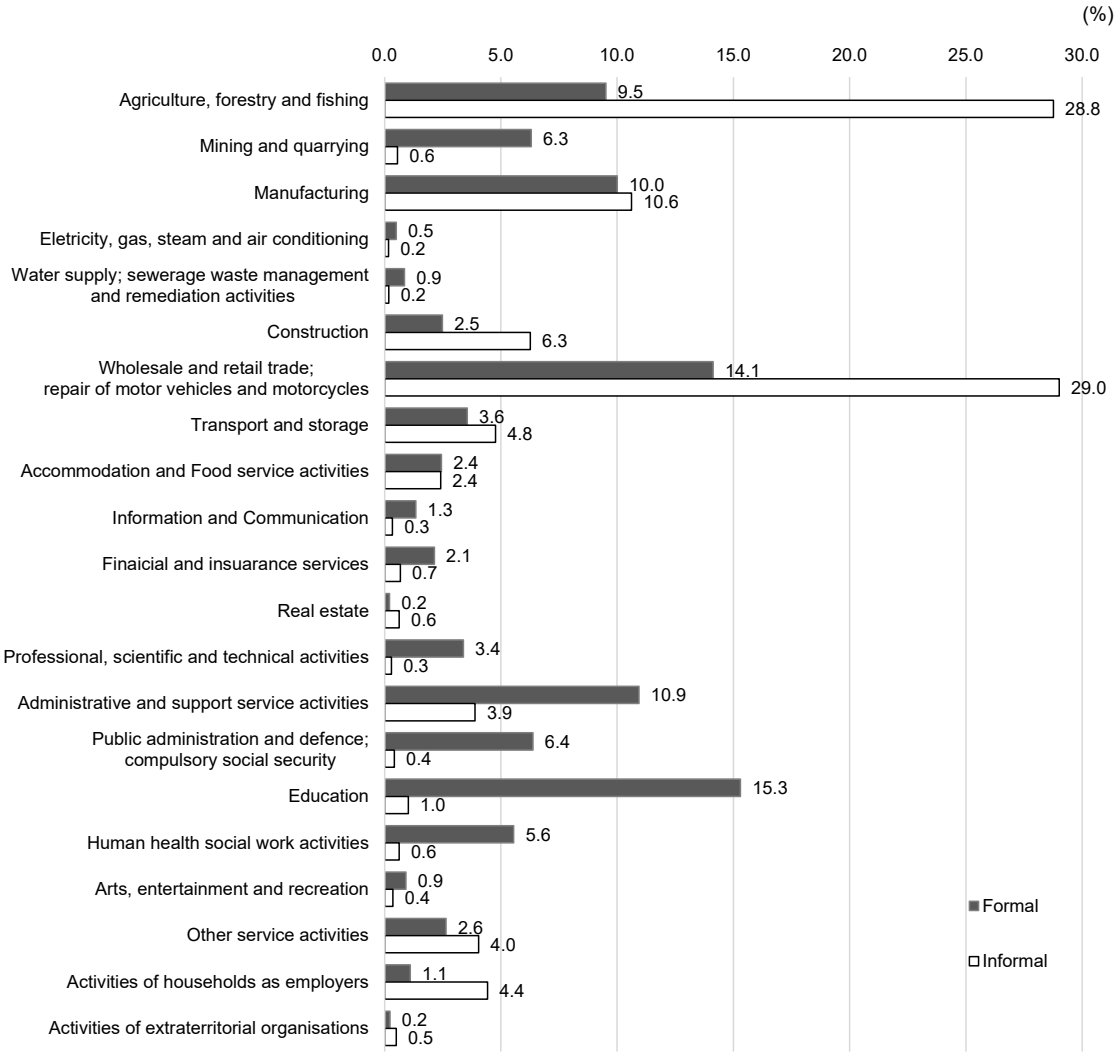
Source: JICA Expert Team based on Labour Force Survey Report 2021

Figure 3.3.2 Share of Employed Population by Industry (Zambia), 2021

(2) Type of Employment by Industry

Employment is either be formal or informal. Formal employment is the type of employment in which employees are entitled to social security coverage and contract in addition to annual paid leave, or any such entitlement and any legal registration for own account workers/employers. On the other hand, informal employment relates to employment in which the job holder is not entitled to any social security.

Figure 3.3.3 shows that the percentage distribution of the employed population by industry and by type of employment. The agriculture, forestry and fishing industry had a higher proportion of informally employed persons than the formal employed persons at 28.8 and 9.5 percent, respectively. Similarly, wholesale and retail trade; repair of motor vehicles and motorcycles industry had a higher proportion of informally employed persons at 29.0 percent.



Source: JICA Expert Team based on Labour Force Survey Report 2021

Figure 3.3.3 Share of Employed Population by Industry and by Type of Employment (Zambia) ,2021

3.4 Economic Activities by Sector

3.4.1 Urban Agriculture

(1) System and Administration

1) Agriculture system

The agriculture system in Zambia is currently managed by Ministry of Agriculture (hereinafter referred to as ”MOA”). MOA placed district office with an officer called District Agricultural Coordinator (hereinafter referred to as “DACO”), implement the support programs and manage produced crops and vegetables.

The type of agricultural land includes small-scale farmers with land below 5 hectares; medium scale farmers owning land between 5 to 20 hectares and large-scale farmers with above 20 hectares of land. There are approximately 32, 000 registered farmers in Lusaka City engaging in farming.

In the agricultural zones around Lusaka City, farmers are engaged in cultivating two principal categories of crops: field crops such as maize, grains, and wheat, alongside horticultural varieties like fresh vegetables and fruits. The most prolifically produced crops, ranked by quantity, are maize, groundnuts, soybeans, wheat, and sweet potatoes, as detailed in Table 3.4.1 below.

The agricultural lands encircling Lusaka City are notably vital for their contribution to horticulture, with a focus on yielding fresh vegetables and fruits, in contrast to the production of field crops such as maize and grains. This is because farmers prefer to grow vegetables that are aligned with "stable supply" and "high profitability through quality." The role of Chongwe and Chibombo in terms of supplier vegetable to Lusaka City is very important.

The most prominent challenges of urban agriculture were the lack of water resources, followed by the decrease in farmland and low soil fertility. Another issue is the dominance of small-scale farmers, who are among the main vegetable producers in Lusaka City. The reasons for this could be limited capital, unstable pricing, and lack of manpower for production.

Small-scale farmers, who are key contributors to the supply of fresh vegetables in the Greater Lusaka region, require supportive interventions like improved agricultural infrastructure, including access roads and storage facilities. Such measures are essential to maintain their production, increase their competitiveness, and ensure sustainability in their farming practices.

Ferralsols, Acrisols, Nitisols, Leptosols and Regosols are major soil types in Lusaka. Maize, groundnuts, soybeans, sweet potatoes are suitable in those soil environments. Rainfall, river and stream, dam and reservoir, groundwater are major water source for agriculture. Rainfed agriculture is suitable for maize and beans in rainy season. Irrigated agriculture with groundwater and river is suitable to crops and various vegetables in dry season. Irrigated agriculture is mainly using water from River and Groundwater (39,852,000 m^3/year)[1].

Public investment in agriculture in Zambia is recommended, regardless of the region or farm size. Notably, initiatives such as the Zambia Climate-Smart Agriculture Investment Plan in collaboration with the World Bank, the Scaling up Nutrition Phase 2 program with UNICEF, and the Market Oriented Rice Development project in partnership with JICA are being implemented. These investments aim to enhance agricultural productivity, address climate change, and improve the economic viability of crops.

In the Lusaka City, rapid urbanization has led to the fragmentation of large-scale agricultural land, which are being converted for other land uses. There is growing concern about the reduction of available agriculture land. President Hakainde Hichilema highlights that agriculture is a leading industry in Zambia and emphasizes that its development is crucial for the country's overall economic growth. To support farmers, initiatives such as MOA, Farmer Input Support Program(hereinafter to as "FISP"), and Sustainable Agriculture Financing Facilities(hereinafter to as "SAFF") have been put in place.

[1] Development of a Groundwater Information & Management Program for the Lusaka Groundwater Systems (2010)

Table 3.4.1 Produce Number of Crops in Study Area

	Area	Area planted (Ha)	Area Harvested (Ha)	Expected production (MT)	Expected Sales (MT)	Basal Fert Applied (MT)	Top Fert Applied (MT)	Yield (MT/ Ha)
Maize	Chibombo	77,295	55,641	144,181	70,189	6,368	6,891	6
	Chongwe	30,965	20,555	61,477	27,838	2,809	2,935	6
	Kafue	18,961	14,136	35,216	12,796	1,977	1,917	4
	Lusaka	106	79	216	103	12	10	5
Groundnuts	Chibombo	9,470	7,826	7,870	3,148	1	1	2
	Chongwe	4,395	3,203	3,583	1,775	14	3	1
	Kafue	1,570	1,161	2,123	1,242	1	1	6
	Lusaka	4	4	2	-	0		0
Soya beans	Chibombo	25,601	23,779	37,189	26,450	550	17	4
	Chongwe	5,247	5,168	7,263	5,875	436	612	2
	Kafue	7,969	7,861	19,601	19,228	2,112	364	4
	Lusaka	450	450	1,164	533	87	8	3
Sweet potatoes	Chibombo	2,385	2,227	7,916	2,565	3	1	8
	Chongwe	1,744	1,600	5,676	2,487	44	20	3
	Kafue	302	267	330	41			1
	Lusaka	1	1	2	-			3
Wheat	Chibombo	3,668	3,666	18,583	13,927	947	860	5
	Chongwe	852	852	1,423	527	337	262	2
	Kafue	1,248	1,248	4,874	4,814	375	440	4
	Lusaka	210	210	900	900	113	53	4

Source: The National Agriculture Policy 2012-2030
*Minor Crops are not displayed, Chilanga is included in Kafue

Table 3.4.2 Type of Famers in Zambia

Characteristics	Small Scale Farmers	Medium Scale Farmers	Large Scale
Number of farmers	792,212 (97%)	20,728 (2.5%)	2,052 (0.5%)
Farm size	Less than 5ha	5 to 20 ha	More than 20 ha
Crops grown for	Food	Food/cash	Cash
Type of production	Subsistence and occasional sales	Commercial	Commercial

Source: The National Agriculture Policy 2012-2030

2) Institute

MOA consists of nine departments as follows: 1. Zambia Agricultural Research Institute, 2. Seed Control and Certification Institute, 3. Plant Quarantine and Phytosanitary Services Department, 4. Agribusiness and Marketing Department, 5. Human Resource and Administration, 6. Department of Finance, 7. Policy and Planning Department and 8. Internal Audit Department. In addition to the Departments, the Ministry comprises of Procurement and Supplies Unit. The Ministry's headquarters is based in Lusaka, and it has presence in all the 10 Provincial Centres and 116 Districts.

3) Support Programs

MOA in Zambia has earmarked land in each province for individuals interested in undertaking

large-scale agricultural endeavours, part of an initiative known as the Farm Block Development Programme. This programme aims to foster agricultural land development and to attract private sector investment. Furthermore, the Ministry runs programmes like FISP and SAFF, designed to provide farmers with access to necessary inputs and financing, thereby bolstering national food security. At the district level, DACO offer support to farmers requiring governmental assistance. However, there are no tax incentives or financial support programs to discourage farmers from abandoning farming and selling their land or converting it to residential or commercial use.

(2) Key Issues in Existing Policy and Plan

1) Eighth National Development Plan (2022-2026)

To boost agricultural production and productivity, the Zambian Government plans to create a favourable environment for the private sector's involvement in agriculture. This will be done by stabilizing trade policies, easing export restrictions on agricultural products, and making financial services more accessible. Additionally, starting with the 2022/2023 farming season, a comprehensive agricultural support program will be rolled out, which will include an electronic system for distributing farming inputs, along with providing extension services, and support for value addition, storage, and logistics. The specific programs are Agricultural Mechanisation, Agribusiness development etc.

2) Second National Agricultural Policy (2016-2020)

The Second National Agricultural Policy of Zambia serves as a framework for the advancement of the country's agricultural sector. It was developed in response to new trends and challenges that arose within the agricultural landscape and to address the obstacles encountered during the execution of the previous National Agricultural Policy spanning from 2004 to 2015. This policy revision is aimed at reflecting the current state of the sector and guiding its development with contemporary and relevant strategies.

3) Development Plan of Local Authorities

All local authorities have a vision and implement policy related to increase production and productivity on agriculture sector in Integrated Development Plan.

(3) New type of urban agriculture(gardening)

To sustain agricultural production in the district, the MOA has been promoting urban agriculture through technologies namely, Keyhole gardening[2], and Sack gardening[3]. These sustainable gardening techniques are a simple solution to the issue of agricultural space. The DACO in Lusaka City office has so far trained 3,000 farmers among 32,000 registered farmers in these gardening methods in Lusaka City under the Scaling Up Nutrition phase II project sponsored by UNICEF[4].

[2] Keyhole Gardening: Keyhole gardening is a space-saving and water-efficient way to garden. Its shape is likely to “Keyhole” cutout on one side for easy access to the center compost bin. It has a compost bin in the middle to feed plants and is raised off the ground for easy access. It's great for growing plants in small areas and reduces the need for watering and fertilizers.
[3] Sack Gardening: Sack gardening is a method of growing plants in vertical containers, like sacks or bags, filled with soil. It's a space-saving technique ideal for areas with limited land, like urban or rooftop gardens.
[4] UNICEF SUN 2 Programme : https://www.unicef.org/zambia/media/2411/file/Zambia-SUN-II-factsheet.pdf

(4) Present Condition at Ground

1) Lusaka City

The widespread agriculture activity is small scale gardening. Commercial farming activities are limited due to constrained land available for cultivation in the urban district. Agricultural land availability has been diminishing over the years due to subdivision of private agricultural land for commercial purposes.

"Cross-border" or "distant farming" is a widespread practice for farmers residing in Lusaka City. Majority of those own or rent land in the neighbouring districts of Lusaka such as Chongwe, Chilanga and Chibombo. Lusaka also has planned to promote production of aqua-culture and urban agriculture by 40% of current production (2023) by 2034 in their Integrated Development Plan (hereinafter referred to as "IDP")

2) Chilanga District

There are 24, 000 farmers across the district segmented into six (6) blocks with nineteen (19) agricultural camps. These cover a total hectarage of 21,000.

Historically, Chilanga's land use has been primarily agricultural, serving as a support system for Lusaka City. However, recent trends in the district show a swift shift from agricultural to other types of land uses, predominantly for residential, commercial, and industrial purposes.

High Poverty rates is the most core issue related agriculture in Chilanga. Several detailed concerns are suggesting with poverty issue: over dependency on rain fed crops, poor food storage at both household level and community level, lack of infrastructure development for production, processing and marketing of agricultural products, inadequate staff houses.

3) Kafue District

Chisakane Ward where included Study area stands out for orchestrating the most substantial vegetable trade with brokers serving the Kafue District. In contrast, Malundu Ward, which is among the more expansive wards of Kafue District, is characterized by its patchwork of farmland and indigenous vegetation dispersed across undulating terrain, much of which suffers from neglect.

Given that agricultural land has been shrinking, there has been increase in horticultural production which are predominantly tomatoes, cabbages, onion and chilli. Some farmers particularly those in proximity to Lusaka City have access to irrigation infrastructure for year-round production of horticultural crops. Market of the produce is Lusaka as the areas are in the periphery of Lusaka City.

4) Chibombo District

The farming activities are predominantly in Chikumbi and Mungule areas and are mostly small-scale horticultural producers. Vegetable production is concentrated along streams or wetlands with some farmers utilising underground water for irrigation.

Mungule Ward, renowned for being one of the most expansive wards in the Greater Lusaka region, dominates in vegetable transactions compared to its counterparts. This ward, known for its diverse usage of land that accommodates both agricultural pursuits by small-scale farmers and residential areas, shares this characteristic with Katuba Ward.

Market of the produce is Lusaka as the areas are in the periphery of Lusaka City. Approximately half of the population of Chibombo is in Study Areas such as Mungule. Chibombo has faced

issues to increase crops production and productivity for keeping their food security.

5) Chongwe

Chongwe's economy is largely driven by agriculture, with small and medium-scale farmers contributing about 90% to this sector. The district's households primarily earn from various agricultural activities, with over 75% of income stemming from this source.

This district is the vegetable transactions where both small and medium-sized farmers are important suppliers of fresh vegetables as one of the larger agricultural production areas.

There is a concerted effort to adopt climate-resilient agricultural technologies and practices to secure food production and alleviate poverty. The district is shifting focus towards sustainable activities like beekeeping and permaculture, which offer both economic benefits and environmental protection.

3.4.2 Industry and Manufacturing

According to the National Industrial Policy (March, 2018), it should aspire to raise the contribution of the manufacturing sector to GDP to between 20 percent and 35 percent with industrialising countries such as Brazil, Russia, India, China and South Africa (BRICS).

As Figure 3.2.2 shows, the contribution of Zambia's manufacturing sector to GDP between 2013 to 2022, averaged 9 percent with the highest contribution being 18.2 percent in 2021 and the lowest being 6.0 percent in 2013. Manufacturing is a relatively small segment of Zambia's overall economy yet.

By the Eight National Development Plan 2022-2026, in the last decade, the manufacturing sector is largely driven by the agro-processing (food and beverages), which accounted for 32.5 percent share of total manufacturing, followed by base metals at 29.4 percent.

Government recognizes that the manufacturing sector will play a key role in job creation and economic growth. Therefore, the Government has proposed to suspend corporate income tax for persons carrying on the business of manufacturing ceramic products for the charge years 2022 and 2023 to facilitate the entry of new players into the industry. Furthermore, the Government has been working on setting up Multi Facility Economic Zones (MFEZ), Industrial Parks and other support infrastructure to accelerate industrialization. The Government through the Zambia Development Agency (ZDA) is also implementing the business linkage programme aimed at creating synergies in industry and market access for micro, small and medium enterprises.

3.4.3 Services, Tourism and Logistics

Services play a major role in the Zambian economy. Especially, the wholesale and retail sector is significant. In 2021 it contributed approximately 18 percent of GDP and provided 790,000 jobs. This was 25 percent of total employment. The sector is characterized by the presence of a large number of retailers. The businesses are diversified from informal street traders to small outlets and to large supermarkets in shopping centres. The retail market has been dominated by foreign service providers from South African chain supermarkets, like Shoprite, Spar, and Pick 'n' Pay, etc.

Tourism is also growing and has a positive effect on the transport and hotel sectors. The sector is an important contributor to the country's economic development through job creation and foreign exchange earnings.

According to 2021 Tourism Statistical Digest, the contribution of tourism to GDP was on a steady increase in pre-COVID 19 pandemic years. Tourism shows signs of recovery in 2021 as some of the COVID-19 restriction measures were relaxed.

Zambia has significant potential for tourism and offers a wealth of natural tourism assets, such as Victoria Falls. There are abundant lakes and rivers, and wildlife-protected areas in the form of 20 national parks and 34 game management areas that together occupy some 10 percent of the country's total area. Zambia is also endowed with a rich and diverse culture that enjoys more than 30 colourful traditional ceremonies annually.

In comparison to neighbouring countries, however, the number of international tourists visiting Zambia is still limited. Table 3.4.3 shows that South Africa continued to lead in international tourists' arrivals. Tanzania recorded a significant increase from 2020 to 2021, because the country did not impose a lockdown, PCR testing or Quarantines among others.

Table 3.4.3 Tourist Arrivals in the Southern Africa Development Community (SADC)

	2017	2018	2019	2020	2021
Angola	260,961	217,866	217,512	63,617	**
Botswana	2,305,205	2,587,511	**	358,225	**
Congo DRC	151,000	158,000	**	**	**
Eswatini	1,342,639	1,277,253	1,225,520	345,348	210,705
Lesoto	1,137,166	1,172,648	1,142,381	**	**
Madagascar	255,460	291,299	383,717	68,330	**
Malawi	837,233	932,913	978,327	198,905	**
Mauritius	1,341,860	1,399,408	1,383,488	308,980	179,780
Mozambique	1,513,640	2,869,869	2,032,923	958,588	548,812
Namibia	1,608,018	1,659,762	1,681,336	192,026	354,508
Seychelles	349,861	361,844	384,204	114,858	177,504
South Africa	10,285,197	10,472,105	10,228,593	2,802,320	2,255,699
Tanzania	1,327,143	1,505,720	1,527,230	620,867	1,400,000
Zambia	**1,009,173**	**1,072,012**	**1,266,427**	**501,606**	**554,290**
Zimbabwe	2,422,930	2,579,974	2,294,259	639,356	375,799

** Missing data at time of reporting
Source: 2021 Tourism Statistical Digest (Ministry of Tourism, Mar.2021)

There are 12 Tourism Development Areas (TDAs), which is taken into consideration of location, access, and so on., by the Zambia Tourism Master Plan 2018-2038. For example, the Lusaka TDA in the Study Area covers the city centre and extends towards the south east to include the new Lusaka National Park. Lusaka has several tourism resources, including National Museum, the Kaunda House Museum, the Kabwata Cultural Centre and several colourful street markets, though the city has limited international leisure tourism appeal.

The Master Plan indicates that Lusaka's principal tourism appeal is more focused upon the international and domestic business and Meeting, Incentive tour, Convention and Exhibition (MICE) which are supported by the Mulungushi and New Government conference centres and the presence of a wide-ranging supply of accommodation covering international branded hotels, local hotels and lodges. To achieve its potential, it is necessary to tackle several issues: product improvements and packaging of the various attractions; improvement of the range and quality of shops; reduction in traffic congestion; and enhancement of entertainment / night life and places to experience local culture.

3.4.4 ICT Industry

Zambia's ICT sector has experienced some growth. Table 3.2.3 illustrates that the ICT sector experienced high growth rates of 20.1 percent in 2019 and 17.5 percent in 2021 while the

national average was 0.7 percent and 3.9 percent respectively. This made ICT the best performing sector during the period under review and the highest contributor to growth. Most of this growth in the ICT sector is accounted for by the expansion of digital financial services which has recorded rapid growth. (National ICT Policy 2023)

Following the implementation of the National ICT Policy 2006, the country recorded significant progress in the development of ICT infrastructure and services. The Government facilitated investment in infrastructure supporting second generation (2G), third generation (3G), and fourth generation (4G) technologies and nationwide fibre backbone network. As at December 2022, the country had 92 percent population coverage of mobile communication base on the gap analysis undertaken by ZICTA (Zambia Information and Communications Technology Authority). This enabled the delivery of various services such as e-services in the public sector such as e-Government, health care, education, agriculture, and financial services. Table 3.4.4 shows the ICT performance.

Table 3.4.4 ICT Sector Performance Statistics

	2006	2017	2021	2022
Mobile Subscriptions	1.7 million	13.4 million	20.2 million*	19.8 million*
Internet Subscriptions	12,000	7.7 million	10.4 million	11.1 million
Internet Penetration rate	0.1%	47.1%	56.3%	56.8%
Smart Phone Penetration		13.5%	29.6%	36.8%
Volume of Mobile Money Transactions		172 million	834 million	1,518 million
Value of Mobile Money Transactions (ZMW' million)		7,288	169.351	295.828
Number of Communication Towers		2,510	3,417	3,548
Telecommunication Infrastructure index		0.12	0.34	
Cybersecurity index		43.6	68.8	68.8
Average Broadband Speeds		1.16	2.73	
Fixed Telephone Line Services	93,427	101,444	65,913	96,284
Fixed Internet Subscription	11,996	36,108	80,611	86,446

*Consist of 7.5 million for 2021 and 8 million for 2022 of unpublished subscriptions
Source: 2021 Tourism Statistical Digest (Ministry of Tourism, Mar.2021)

Share of individuals using the Internet in 2021 is 21 percent in Zambia and its proportion is low same as Madagascar and Malawi, while worldwide rate is 63 percent, as shown in Table 3.4.5.

Table 3.4.5 Individuals using the Internet (% of population) in SADCs

	2013	2017	2021
Angola	13.0	26.0	32.6
Botswana	30.0	41.4	73.5
Congo DRC	2.2	8.6	22.9
Eswatini	24.7	35.3	58.9
Lesotho	15.0	39.0	48.0
Madagascar	3.0	6.4	19.7
Malawi	5.5	7.8	17.4
Mauritius	40.1	55.4	67.6
Mozambique	5.1	7.0	24.4
Namibia	13.9	36.8	53.0
Seychelles	50.4	58.8	81.6
South Africa	46.5	56.2	72.3
Tanzania	4.4	16.0	31.6
Zambia	**4.8**	**12.2**	**21.2**
Zimbabwe	15.5	24.4	34.8
World	35.6	45.5	63.1

Source: JICA Expert Team based on World Development Indicators (World Bank, Dec.2023)

3.4.5 Informal Sector

The Informal sector, broadly defined, comprises of enterprises which do not comply with the full extent of Government laws and regulations. This sector is typically characterized by its ease of entry, low levels of skills, labour intensive technology, and small firm size. In terms of employment, the informal sector in Zambia employs 86 percent of the labour force, and has grown rapidly in recent years (approximately more than a million informal businesses), as Table 3.4.6. illustrates. Besides Seychelles, Mauritius, South Africa, Eswatini and Namibia, the shares of informal employment are more than 70 percent. It has grown to assume a prominent role in most African economies, including Zambia.

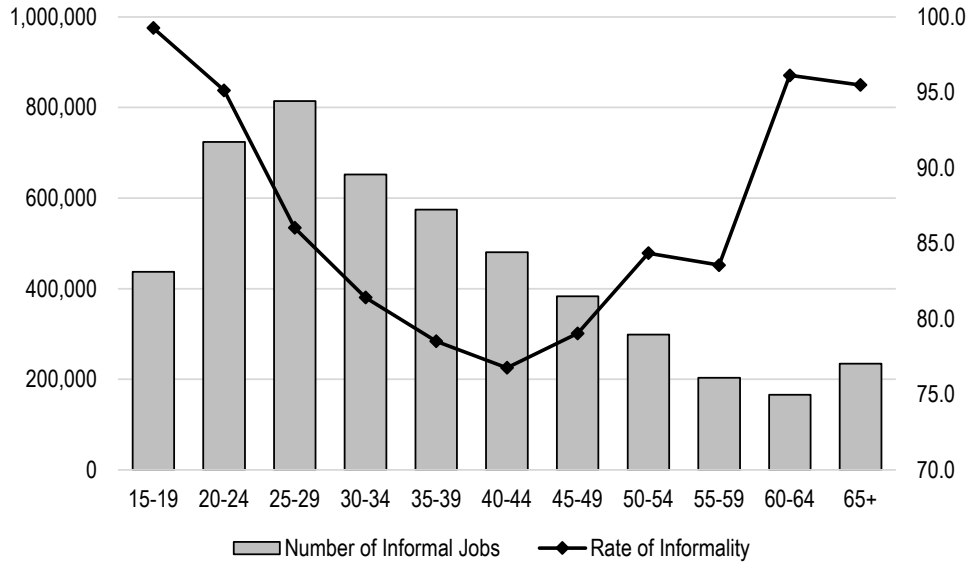
Table 3.4.6 Informal Employment Rate by Sex in SADCs

	Year	Total	Male	Female
Angola	2021	90.3	84.8	95.5
Botswana	2022	74.4	76.1	72.5
Congo, DRP	2012	97.3	96.0	98.7
Lesotho	2019	80.9	80.7	81.1
Madagascar	2015	95.2	93.8	96.7
Mozambique	2015	95.7	92.7	98.4
Mauritius	2022	32.5	37.1	25.1
Malawi	2013	87.1	83.2	90.9
Namibia	2018	55.8	53.2	58.4
Eswatini	2021	55.4	50.7	59.9
Seychelles	2020	17.0	25.3	9.0
Tanzania	2020	93.3	90.9	95.9
South Africa	2022	42.2	41.3	43.3
Zambia	**2022**	**85.6**	**81.7**	**90.0**
Zimbabwe	2021	88.4	85.4	91.6

Source: JICA Expert Team based on International Labour Organization Data (ILO, Jan.2024)

The informality rate also varied markedly by age as shown in Figure 3.4.1. Cohorts of younger workers (15-24 years) and older workers (60 years of age or older) recorded relatively higher rates of informality. While the younger ones are less skilled and inexperienced provably due to being in school or training, the older ones might have left employment, due to retirement and

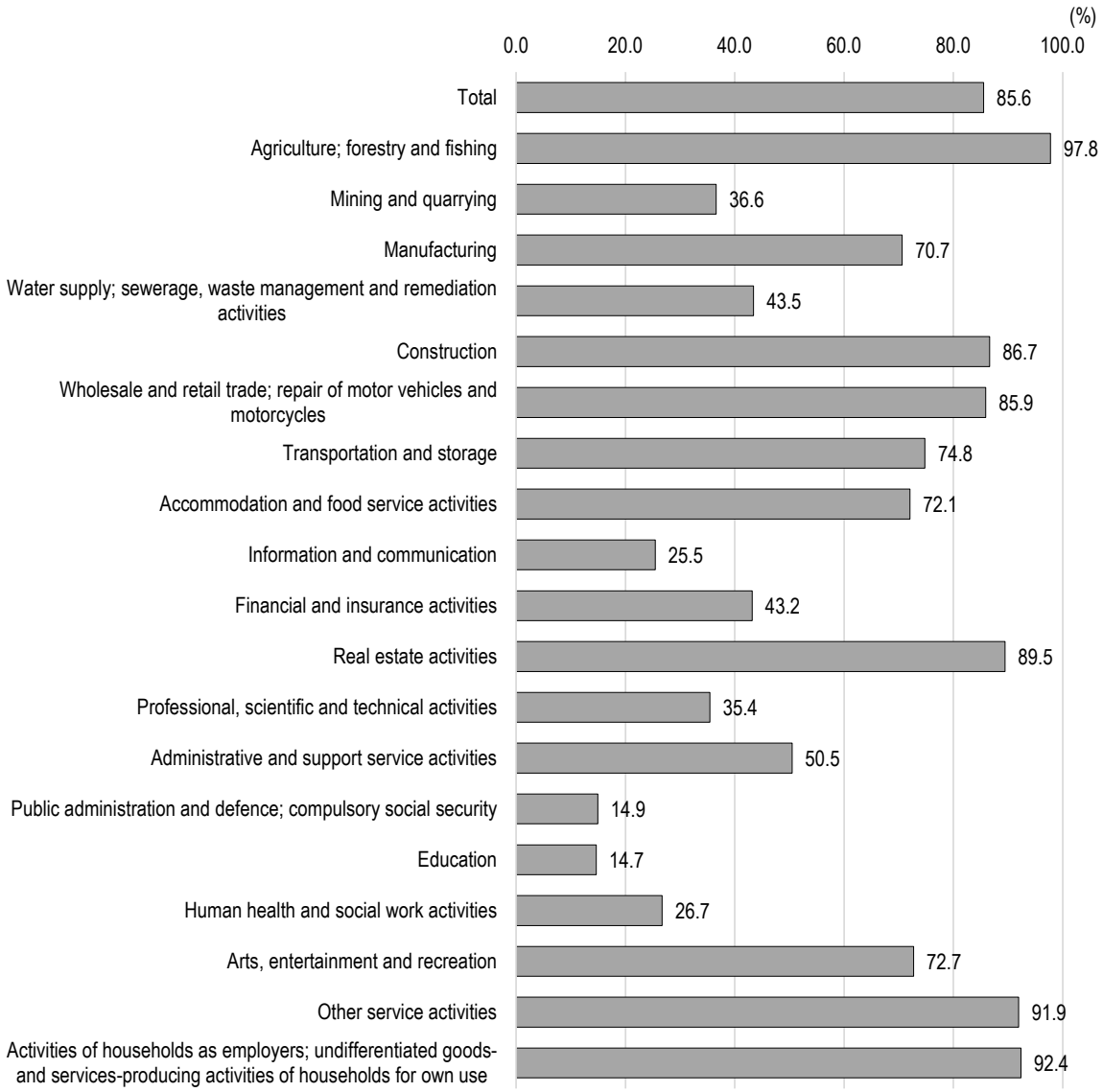
opted to join the informal sector. Individuals in the age group from 25 to 50 years of age recorded the lowest rates of informality, the stage in life during which the majority of citizens may have completed education thereby increasing their changes of being in paid formal employment. Moreover, the absolute number of informal economy workers is mostly concentrated in the 20-39 years range.



Source: JICA Expert Team based on International Labour Organization Data (ILO, Jan.2024)

Figure 3.4.1 Informality by Age Group (Zambia), 2021

Figure 3.4.2 shows that informality rates vary by industry. Agriculture, forestry and fishing (97.8 percent)、construction (86.7 percent), wholesale and retail trade, repair of motor vehicles and motorcycles (85.9 percent), real estate activities (89.5 percent) and other service activities (91.9 percent) have rates of informality in the range of more than 80.0 percent. On the other hand, the informality rates of information and communication (25.5 percent), public administration and defence, compulsory social security (14.9 percent), education (14.7 percent), and human health and social work activities (26.7 percent) are less than 30 percent.



Source: JICA Expert Team based on International Labour Organization Data (ILO, Jan.2024)

Figure 3.4.2 Informality Rate by Industry (Zambia), 2021

In addition, the size of an enterprise determined the extent of informality of an enterprise. The smaller the size of an enterprise, the higher the certainty of it being informal, owing largely to "invisible" legislation and policies guiding their registration. Findings from the analysis also showed that small- scale enterprises were predominant in the informal economy compared to large- scale entities.

3.4.6 Micro, Small, and Medium Enterprises (MSMEs)

According to the "Revised National Micro Small and Medium Enterprise Development Policy" (2023), the MSMEs account for 97 percent of all businesses contributing 70 percent of GDP and 88 percent to employment creation in Zambia. The Zambian MSMEs is defined based on the following variables: Annual turnover; Total fixed investments; Number of employees; and so on.

There are 110,508 tax paying MSMEs in 2019. Of these enterprises, 47 percent is in whole sale and retail trade, repair of motor vehicles and motorcycles. The others are 5 percent in the

construction sector, 4 percent in the agriculture sector, forestry and fishing sector, and 2 percent in the manufacturing sector. By region, Lusaka Province has the highest number of MSMEs, 43.5 percent of the total 110,508 enterprises, followed by the Copperbelt Province with 24.2 percent.

Business activities among the most MSMEs are managed by family members and remain characterised by low-level of technology and are oriented towards local and informal market segments.

There are 5 specific objectives in Revised National Micro Small and Medium Enterprise Development Policy as follows:

(a) To achieve a prosperous MSME Sector that contributes to employment and wealth creation;
(b) To contribute significantly to the country's economic diversification agenda;
(c) To develop a culture of innovation among MSMEs;
(d) To develop a culture of technological adoption among MSMEs; and
(e) To attain an integrated coordinating framework for MSME development programmes.

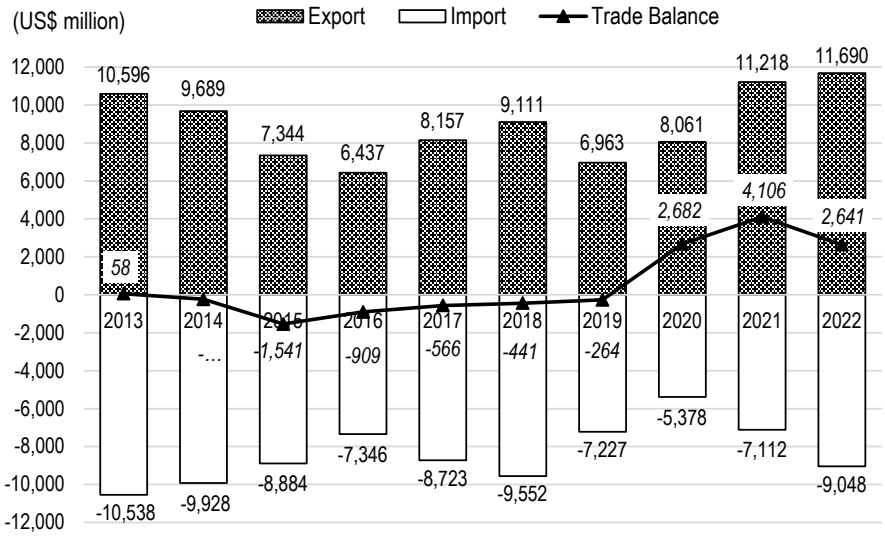
3.5 Trade and Investment Trend

3.5.1 Trade

(1) Trade Balance

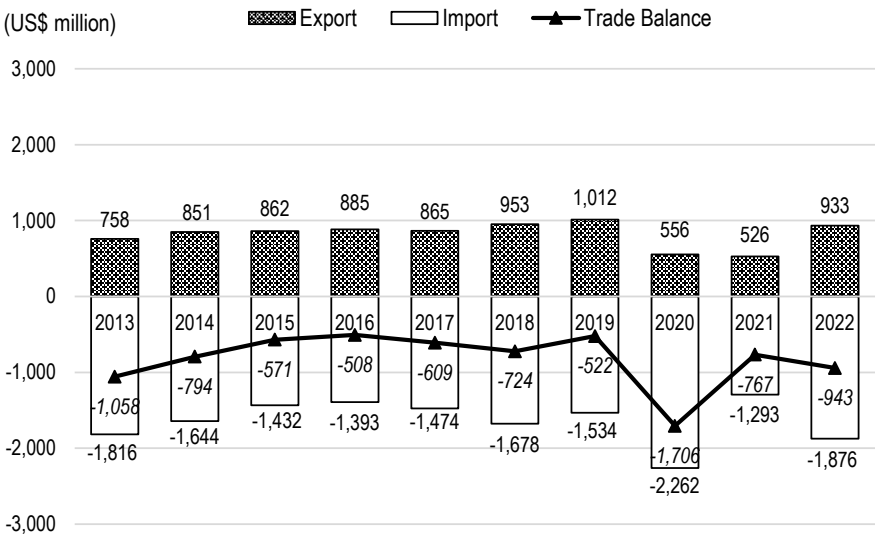
In 2022, as Figure 3.5.1 illustrates, the value of merchandise exports of Zambia is US$11,690 million, while its merchandise imports is US$9,048 million. The merchandise trade balance records a moderate surplus of US$ 2,641million. The decrease in the trade surplus from 2021 to 2022 was mainly the result of the decline in copper prices arising from knock-on effects of the Ukraine conflict.

Figure 3.5.2 shows that the value of exports of services including travel of Zambia reaches US$933 million, while its service imports such as transport is US$1,876 million. There is a relatively small trade in services deficit of US$943 million.



Source: JICA Study Team based on International Trade Centre (ITC) Database (Feb. 2024)

Figure 3.5.1 Total Products Trade, by Value



Source: JICA Study Team based on International Trade Centre (ITC) Database (Feb. 2024)

Figure 3.5.2 Total Service Trade, by Value

(2) Trade Products

The exports of Zambia are highly concentrated in a few products and a narrow market base. Copper accounted for an average of 73.1 percent of total export earnings from 2017 to 2022, as Table 3.5.1 (a) indicates. Non-value-added mining accounts for more than 70% of exports, which are heavily influenced by volatile global commodity prices. The range and diversity of non-traditional exports increased but were limited to auxiliary activities related to copper mining, primary agricultural products and processed products from agriculture, timber and non-metal products. On the import side, as Table 3.5.1 (b) illustrates, Zambia's top five import commodities were: parts of machinery; mineral fuels; vehicles and parts; fertilizers; and copper ores.

Table 3.5.1 Top 5 Export and Import Commodities, in 2013-2022

(a) Exports

(US Dollar thousand)

	2013-2017	Amount	%	2018-2022	Amount	%
1	Copper and articles thereof	30,190,454	71.5	Copper and articles thereof	34,406,763	73.1
2	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals **(Sulphuric acid, Cobalt oxides)**	1,193,095	2.8	Salt; sulphur; earths and stone; plastering materials, lime and cement (**Sulphur, Cement**)	1,489,645	3.2
3	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad **(Gold)**	1,062,733	2.5	Iron and steel	832,611	1.8
4	Salt; sulphur; earths and stone; plastering materials, lime and cement (**Sulphur, Cement**)	858,625	2.0	Mineral fuels, mineral oils and products of their distillation; bituminous substances **(Electrical energy)**	727,913	1.5
5	Sugars and sugar confectionery	807,014	1.9	Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals **(Sulphuric acid, Cobalt oxides)**	801,749	1.7
	Others	8,110,782	19.2	Others	8,782,743	18.7
	Total		100.0	Total		100.0

(b) Imports

(US Dollar thousand])

	2013-2017	Amount	%	2018-2022	Amount	%
1	Mineral fuels, mineral oils and products of their distillation; bituminous substances **(Petroleum)**	7,080,583	15.6	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof **(Parts of machinery)**	5,513,050	14.4
2	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof **(Parts of machinery)**	6,675,951	14.7	Mineral fuels, mineral oils and products of their distillation; bituminous substances **(Petroleum)**	4,405,130	11.5
3	Ores, slag and ash **(Copper ores and concentrates)**	5,369,508	11.8	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof **(Motor vehicles)**	3,585,515	9.4
4	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof **(Motor vehicles)**	3,150,940	6.9	Fertilizers **(Urea, etc)**	2,330,573	6.1
5	Electrical machinery and equipment and parts thereof; sound recorders **(Machines for the reception, conversion, and transmission)**	3,010,655	6.6	Ores, slag and ash **(Copper ores and concentrates)**	2,103,923	5.5
	Others	20,130,977	44.3	Others	20,378,853	53.2
	Total	45,418,617	100.0	Total	38,317,035	100.0

Source: JICA Study Team based on International Trade Centre (ITC) Database (Feb. 2024)

(3) Trade Partner

As Table 3.5.2 (a) shows, in 2017-2022, the top three countries importing goods from Zambia are Switzerland (41.5 percent), China (18.8 percent), and Congo, DR (11.6 percent). Switzerland is one of Zambia's main export markets over past 10 years. Its exports were dominated by copper, iron and steel, salt, sulfur, and stone.

On the other hand, Table 3.5.2 (b) indicates that the top three countries exporting goods to Zambia in 2017-2022 are South Africa (30.7 percent), China (14.4 percent), and United Arab Emirates (8.6 percent). Import from China has increased steadily. Its top imports were machinery and mechanical appliances, vehicles and parts, and fertilizers.

Table 3.5.2 Direction of Products Trade, 2013-2022 (% of Total value)

(a) Exports

(US Dollar thousand)

	2013-2017	Amount	%	2018-2022	Amount	%
1	Switzerland	17,753,721	42.0	Switzerland	19,540,648	41.5
2	China	7,594,363	18.0	China	8,860,123	18.8
3	Congo, DR	3,466,322	8.2	Congo, DR	5,442,261	11.6
4	South Africa	3,204,661	7.6	Singapore	3,752,511	8.0
5	Singapore	1,848,767	4.4	South Africa	1,497,296	3.2
	Total	42,222,713	100.0	Total	47,041,417	100.0

(b) Imports

(US Dollar thousand)

	2013-2017	Amount	%	2018-2022	Amount	%
1	South Africa	13,725,730	30.2	South Africa	11,745,016	30.7
2	Congo, DR	7,527,997	16.6	China	5,514,653	14.4
3	China	4,217,280	9.3	United Arab Emirates	3,309,290	8.6
4	Kenya	1,948,655	4.3	Congo, DR	2,679,458	7.0
5	Kuwait	1895258	4.2	Equatorial Guinea	1,922,620	5.0
	Total	45418617	100.0	Total	38,317,035	100.0

Source: JICA Study Team based on International Trade Centre (ITC) Database (Feb. 2024)

(4) Intra-Regional Trade

Zambia is part of 2 different Regional Trade Agreements, namely, Common Market for Eastern and Southern Africa (COMESA) and Southern African Development Community (SADC).

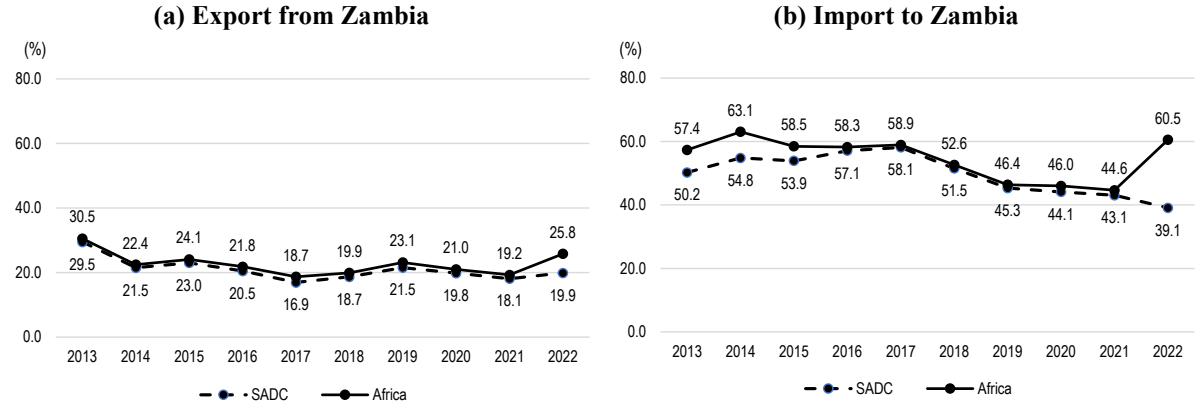
The value of Zambia's intra-African trade (total of imports and exports) was US$8.5 billion, accounting for about 40 percent of Zambia's total trade in 2022. The main intra-African trading partners of Zambia are South Africa, Equatorial Guinea and Congo, DRC. These three countries account for more than 90 percent of Zambia's intra-African trade.

Figure 3.5.3 illustrates product trades with African countries, and SADC countries (16 member, including Zambia). Excluding 2022, trades with Africa and with SADC have exhibited nearly same trends.

Zambia's intra-African exports in 2022 amounted to about US$3 billion, accounting for 26 percent of Zambia's total exports. Zambia mainly exports sulphur, electrical energy, sulphuric acid, non-alcoholic beverages, and cement to other African countries. 74% of Zambia's intra-African exports are destined for DRC and Equatorial Guinea.

On the other hand, the value of Zambia's intra-African imports was US$5.5 billion in 2022, 61 percent of the Zambia's total imports from the world. The main intra-African imports are copper ores & concentrates and cobalt. South Africa, Equatorial Guinea and Congo, DRC are the main source markets, accounting for nearly 100 percent of Zambia's intra-African imports.

Zambia's import from the SADC region exceeded exports to the region. This regional negative trade position is largely due to the "South Africa" factor, as discussed in the preceding section. Zambia has had a negative annual trade balance with South Africa. However, the SADC region remains a key market for non-traditional exports (NTE) as mentioned above. Neighbouring countries including SADC region, experiencing population growth, may be crucial markets for Zambia to increase its NTE.



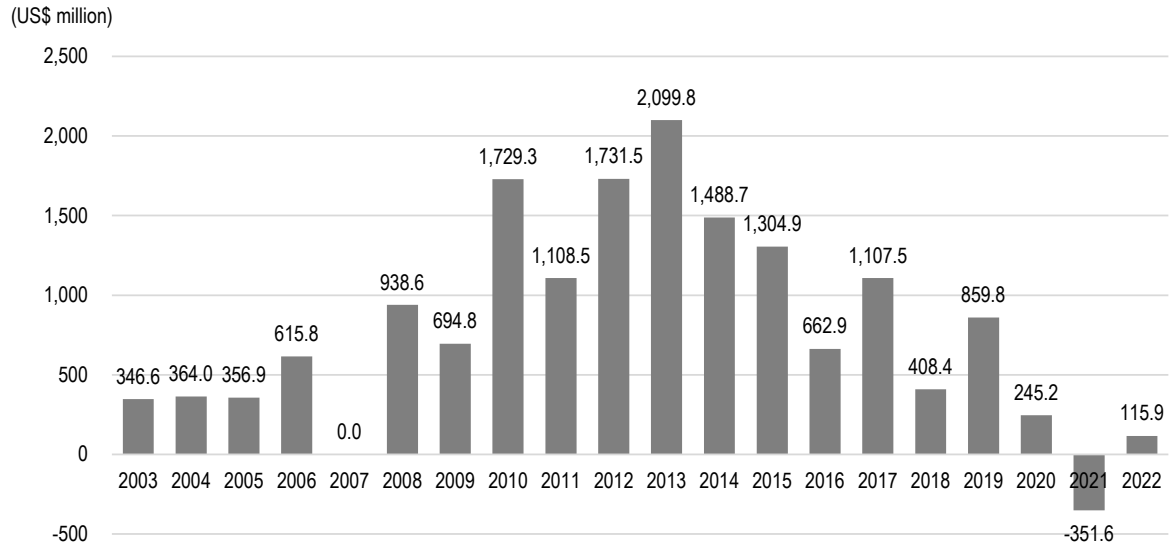
Source: JICA Study Team based on International Trade Centre (ITC) Database (Feb. 2024)

Figure 3.5.3 Intra-Regional Trade

3.5.2 Investment

(1) Recent Trend

Foreign Direct Investment (FDI) in Zambia peaked in 2013 at around US$2,100 million, as Figure 3.5.4 illustrates. FDI inflows to Zambia significantly declined to US$-351.6 million in 2021 from US$859.8 million in 2019. This was attributed mostly to lower re-invested earnings and debt repayments by the mining and quarrying sector. Loan repayments, mainly to enterprises by the mining sector and to non-affiliated enterprises by the ICT and electricity sectors, accounted for this outturn. Subdued profits in other sectors due to the effects of the Covid-19 pandemic also contributed to the declined in FDI inflows.



Source: JICA Expert Team based on UNCTAD Data (January, 2024)

Figure 3.5.4 FDI Inflows

Table 3.5.3 shows that major source country for FDI inflows in 2021 was Canada with a net amount of US$903.2 million. On the other hand, the bulk of the outflows in 2021 was to the United Kingdom due to accumulated retained losses and debt repayments.

Table 3.5.3 FDI Inflow by Source Country (US$ million), 2020-2021

	2020	2021
Canada	302.2	903.2
Australia	82.0	217.5
South Africa	135.6	141.2
Mauritius	82.2	47.3
United States	-	29.2
Netherlands	135.0	-397.9
United Kingdom	-315.7	-557.4

Source: JICA Expert Team based on 2022 Survey on Private Sector Foreign Investment in Zambia, and 2021 Private Sector Foreign Investment and Investment Perception Survey Report

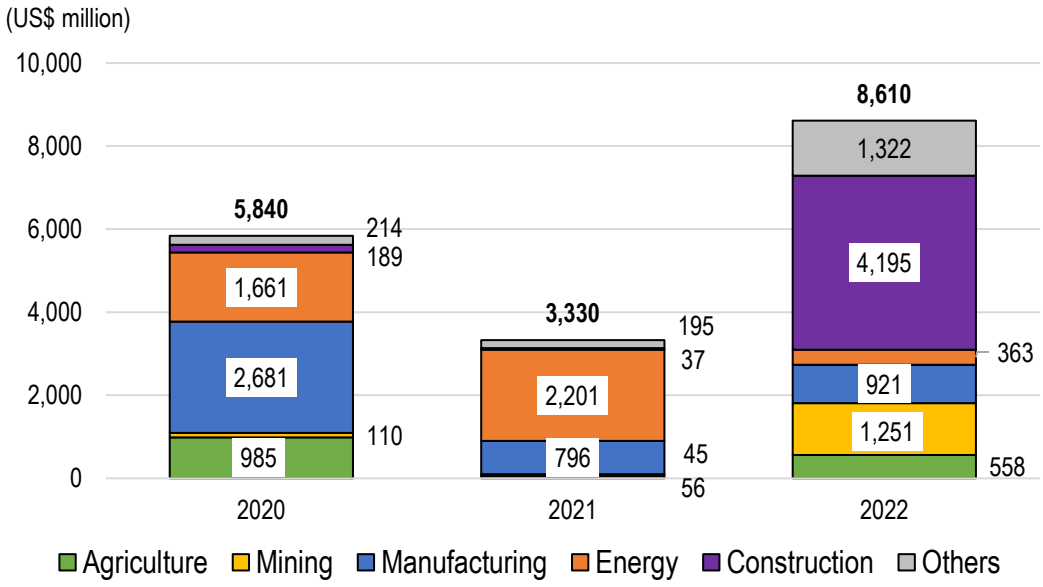
Table 3.5.4 indicates that the deposit taking corporations recorded highest net inflow of US$173.3 million in 2021. Other sectors that recorded net inflows are information and communication, manufacturing, and whole & retail trade. The mining and quarrying, electricity, real estate activities, transport and storage, as well as accommodation and food service, however, recorded net outflows due to negative re-invested earnings and debt repayments.

Table 3.5.4 FDI Inflows by Sector (US$ million), 2021

	2021	2020
Depository institutions	173.3	54.7
Information and Communication	82.2	-6.8
Manufacturing	76.7	138.8
Whole & retail trade	58.6	7.0
Agriculture, forestry, and fishing	6.3	30.0
Accommodation and food service	0.3	-2.5
Construction	-2.1	18.8
Transport and storage	-8.3	25.3
Real estate activities	-24.8	64.4
Electricity	-58.4	1.5
Mining and quarrying	-405.9	-95.4

Source: JICA Expert Team based on 2022 Survey on Private Sector Foreign Investment in Zambia, and 2021 Private Sector Foreign Investment and Investment Perception Survey Report

According to the Zambia Development Agency (ZDA) 's "Zambia Trade & Investment Opportunities, a total of US$8,610 million worth of investment is projected in 2022 compared to US$3,330 million that is projected in 2021. These investment projects include investments from both domestic and foreign investors. Figure 3.5.5 shows that the construction sector recorded the highest projected investment of US$4,195 million, representing 49 percent of total investment. This was followed by mining with US$1,250 million accounting for 15 percent.



Source: JICA Expert Team based on Zambia Trade & Investment Opportunities, ZDA (Feb. 2024)

Figure 3.5.5 Recorded Investment by Sector

(2) MFEZs and Industrial Parks

In an effort to promote industrialization and structural transformation in Zambia, the government has been implementing Multi Facility Economic Zones (MFEZs) or Industrial Parks development program since 2006 as a strategy for achieving the industrialization and job creation agenda. MFEZ or Industrial Park is an area or premises declared as such in which industrial and commercial activities take place, catering for both export and domestic-oriented industries.

Currently, there are about seven areas declared as either MFEZs or industrial parks that are operational, including Lusaka South MFEZ in Lusaka (2,100ha), ZCCZ Chambishi MFEZ in

Kalulushi (1,158ha), ZCCZ Lusaka East MFEZ in Lusaka (520ha), Kalumbila MFEZ in Kalumbila (97ha), Jiangxi MFEZ in Chibombo (600ha), Sub Sharan Gemstones Exchange Industrial Park in Ndola (130ha) and Roma Industrial Park in Lusaka (130ha). Among the seven MFEZs, six are privately owned, while the Lusaka South MFEZ is owned by the Zambian Government, through the Industrial Development Corporation.

The features or contents of four out of the seven MFEZs or industrial parks discussed above, all of which are situated within the Study Area, are summarized in Table 3.5.5.

Table 3.5.5 MFEZs and Industrial Parks in the Study Area

MFEZ or Industrial Park	Remarks
Lusaka South MFEZ	This MFEZ houses industries and facilities including high tech industries, research and development, commercial and residential development institutions and community facilities.
ZCCZ (Zambia-China Economic & Trade Cooperation Zone) Lusaka East MFEZ	Located adjacent to Kenneth Kaunda International Airport, this is suitable for light industries and commercial development such as provision of conference facilities, offices and hotel accommodation.
Jiangxi MFEZ	Located in the Chibombo district. Construction of the zone started in 2022 and was undertaken by a consortium of Chinese companies. The MFEZ will host an industrial cooperation zone, a commercial and residential zone, technology innovation zone, modern agriculture zone and leisure tourism zone spread.
Roma Industrial Park	Roma Industrial Park is a mixed-use development planned to focus on residential housing, commercial/retail and light industrial developments. Notable developments recently undertaken in the Park include the construction of 6km of internal asphalt tarred road.

Source: JICA Expert Team on Zambia Development Agency (ZDA) website, etc. (Feb. 2024)

3.6 Issues to be Tackled

As for the overall difficulties of economic sector, the following five points may be stressed.

First, there are constraints to economic diversification and high productivity. The Zambian economy remains undiversified with more than 70 percent of foreign earnings being from copper as a mining product. According to "Study of the Economic Diversification and Productivity Improvement in Zambia (AfDB, 2022), some constraints to the undiversified economy may be as follows:

- FDI into the country has continued to be in mining, namely, copper.
- The backbone infrastructure, such as roads, that was set up to service the mining industry has remained. All critical infrastructures such as electricity transmission lines are set up along these roads. The mining industry has had significant impact on shaping the structure of the economy.
- Almost all land amenable for commercial activities in the country is in the corridor that has been servicing the mining industry.
- The bulk of land in Zambia is customary land without the requisite security of tenure to motivate and incentives investments.

With regard to productivity, Zambia is one of the countries with the lowest labour productivity level. The contribution of the agriculture sector to employment for countries including Zambia is used as case in point for demonstrating productivity in the economy. While workers in the agriculture sectors are approximately 24 percent in 2021, its contribution to GDP is only 3.5 percent. Its low contribution to GDP is reflective of the low productivity of the sector.

Secondly, creating jobs is one of the crucial issues. Zambia has faced with high unemployment

levels especially among the youths. As seen in Table 3.4.4, about 86 percent of all employed population is in the informal sector. This means that approximately 90 percent of the employed persons has not paid any income tax, has not received benefit from social security coverage, and has not been entitled to annual paid leave. The Zambian government has been implementing various policies and strategies that aimed at addressing the challenge of unemployment, such as the micro-, small, and medium-sized enterprises (MSMEs) development policy, Technical Education, Vocational and Entrepreneurship Training (TEVET) policy, and so on. However, the further efforts need to be addressed for job creation. One of the challenges may be lack of a government coordinating job creation body because of duplication in job creation efforts including TEVET policy by each ministry.

Thirdly, raising entrepreneurs and supports for existed MSMEs may be more necessary. As mentioned in the above, Zambia including the Study Area struggles with high rates of informality and underemployment, as formal jobs have not kept pace with the rapid urbanization and population growth. Moreover, informal sector is largely made up of micro-firms who are below the minimum threshold for small business income tax. Enhancing (formal and informal) firm capacity for productivity and growth may create jobs and increase incomes. In the Study Area, considering its location and transportation convenience, it is desirable to promote the following businesses:

- Urban agriculture and agribusiness, contributing to food production for domestic and foreign markets
- Retail sector with a focus on consumer goods, including formalization of markets
- ICT industry, including software development, telecommunications, and related services
- Tourism sector, including high-quality hotels and restaurants

Furthermore, MSMEs have inherent limitations regarding economies of scale and scope. Therefore, creation of industrial clusters for MSMEs may be required to boost their competitiveness.

Fourthly, creating the necessary support infrastructure for the MSMEs or MSMEs clusters is also required. For example, the poor road infrastructure network and absence of developed public transports system has compounded the challenge of movement of goods and services making business operations costly. Under-developed infrastructure is a permanent brake on growth. It prevents businesses from connecting to local, regional, and global markets, and limits their willingness to invest. The provision of strategic economic infrastructure is significant for enhancement of connectivity, minimization of congestion, and improvement of movement of goods and services within and across the region.

Fifthly, high transportation costs pose a significant challenge. Road freight transport is the most utilized mode for transporting cargo in Zambia. However, in addition to the poor road network, large trucks cannot maintain a constant speed due to bad road conditions. Furthermore, there may be a mismatch between the number of logistics companies and clients' demand. For instance, even if a food processing company wishes to increase its production, it may struggle to find logistics companies offering services at an appropriate price. Moreover, transport and logistics enterprises often have limited capacities to deliver high-quality, low-cost services that could add value to transit flows, crucial for transforming the country into a regional transportation hub. The upward adjustment in toll gate fees for heavy vehicles and the increasing fuel costs may also contribute significantly to the overall high transportation costs.

Finally, human resource development is crucial, if the Zambia is to address the challenges and opportunities of economic development. The shortages of skills, experiences, linkage building

and technology use may limit economic diversification, productivity enhancement, and job creation. Although there have been several vocational programs, more effective approaches are in order to take more competitive advantages for domestic and foreign investment and growth.

In addition, the issues related to urban agriculture can be summarised as follows. In each District, support programs are being implemented in the direction of encouraging agriculture in order to ensure food security and alleviate poverty. In addition, efforts are being made to improve agricultural technology, such as seed improvement, irrigation technology, and fertilizer technology, in order to increase productivity and production.

On the other hand, the rapid population growth in Lusaka City with the strong demand for residential land, has led to a decrease in farmland. This situation has brought the district to a pivotal choice, where it must reconcile the promotion of agriculture with the advancing tide of urbanization.

CHAPTER 4 REGIONAL DEVELOPMENT AND LAND USE

4.1 Urbanization Trend

(1) History of Lusaka

The history of Lusaka can be traced back to the 6th century, when the area was inhabited by the Soli people, who named it "Lusaka" after their old state[1]. In the 11th century, a village of round huts was established near the modern suburb of Olympia. The village was later abandoned due to wars and migrations, and the area remained sparsely populated until the 19th century, when various ethnic groups settled there, such as the Ngoni, the Chewa and the Bemba.

In 1913, the British colonial government founded Lusaka as a remote outpost for British administrators and farmers[2]. The town was named after a local headman, Lusaka, who had died a few years earlier. Lusaka developed slowly until the 1930s when it became a railway hub and a centre for mining and agriculture. In 1935, Lusaka was declared the capital of Northern Rhodesia, replacing Livingstone and in 1953, Lusaka became the capital of the Federation of Rhodesia and Nyasaland, a political union of Northern Rhodesia, Southern Rhodesia and Nyasaland (now Zambia, Zimbabwe and Malawi).

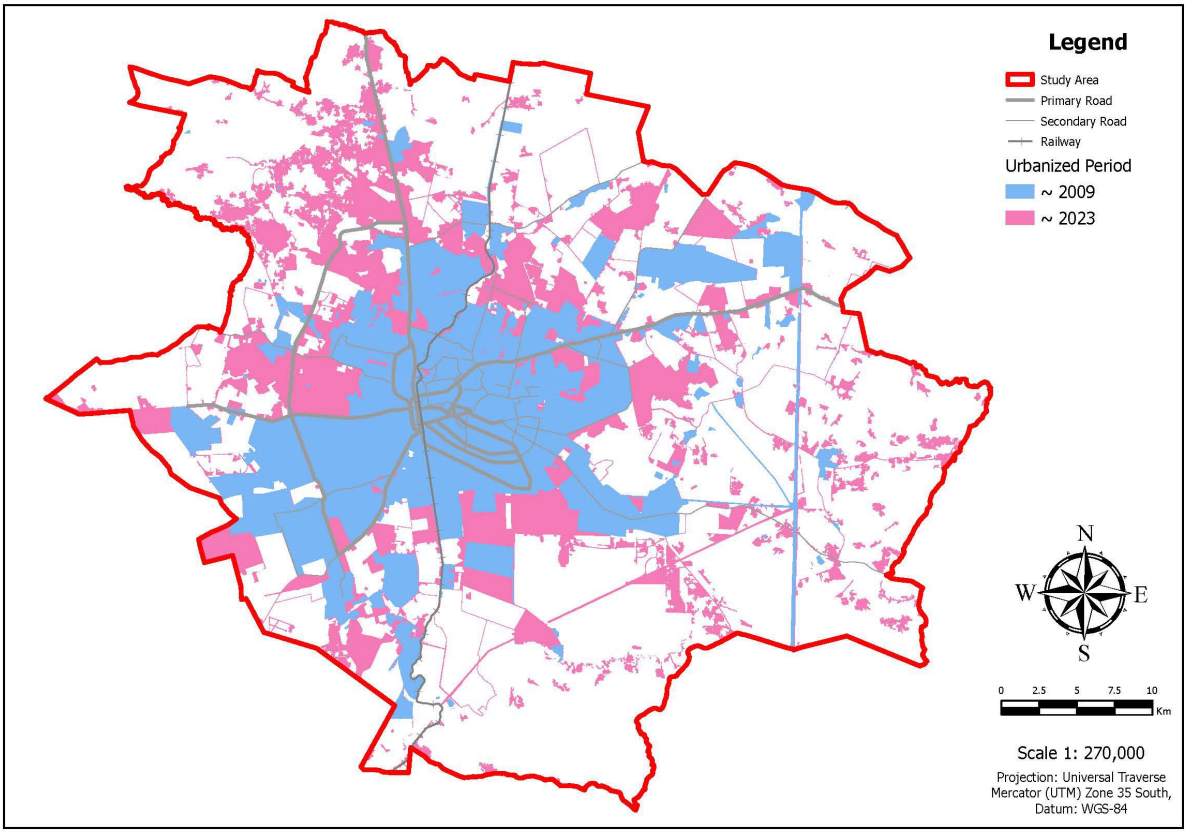
In 1964, Zambia gained its independence from Britain and Lusaka became the capital of the new nation. Lusaka witnessed rapid urbanization and population growth in the following decades, as people migrated from rural areas in search of opportunities and services. Lusaka also became a centre for liberation movements and anti-apartheid activism, hosting the headquarters of the African National Congress (ANC) and the Pan-Africanist Congress (PAC) of South Africa. Lusaka faced many challenges, such as poverty, unemployment, crime, pollution and inadequate infrastructure, as it struggled to cope with the urban expansion.

Development through the city planning of Lusaka in Zambia has been guided by various plans and policies, such as the Lusaka Master Plan (1978-2005), the Lusaka City Development Strategy (2009-2013), the Comprehensive Urban Development Plan (2009-2030), the Lusaka City Strategic Plan (2017-2021) and the Comprehensive Urban Development Plan (2020-2040)[3]. The main objectives of these plans were to improve the quality of life, the environment, the infrastructure, the governance and the resilience of the city and its surrounding areas.

(2) Urbanization Trend Between 2009 and 2022

The extent of the urban area in 2009 and 2023 is shown in the figure below. From this figure, it has been possible to recognize a trend of urban area expansion since 2009. Although it has been inferred that urbanization has been progressing along the primary roads, this figure shows that this is not the case in terms of actual urbanization. Urbanization is progressing fully in all directions from the centre outwards. Of particular note is the rapid urbanization that extends across the area west of the Great North Road. It has also been recognized that urbanization is progressing in the periphery of the Ring Road to the West.

[1] Comprehensive Urban Development Plan – Lusaka City Council. https://www.lcc.gov.zm/comprehensive-urban-development-plan/.
[2] Lusaka, Zambia (1913-) - Blackpast. https://www.blackpast.org/global-african-history/places-global-african-history/lusaka-zambia-1913/.
[3] Zambia: Zambia and JICA Partner to Develop ...- Lusaka Times. https://www.lusakatimes.com/2023/01/29/zambia-and-jica-partner-to-develop-comprehensive-regional-development-plan-for-lusaka-city/.



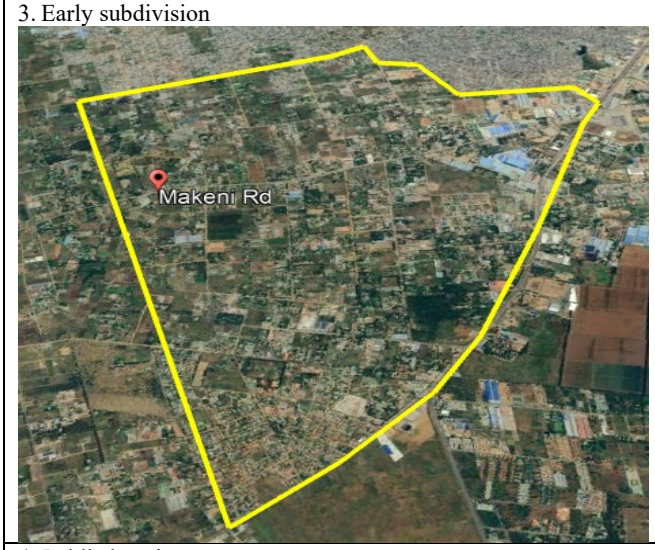
Source: JICA Expert Team (2023)

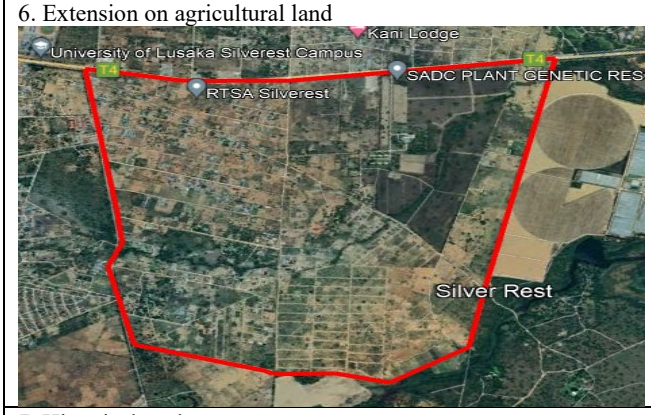
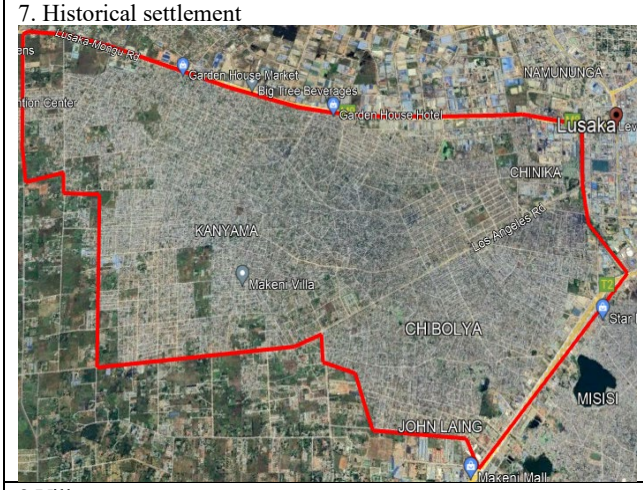
Figure 4.1.1 Urbanization in and around Main Agglomeration and its Surrounding Area Between 2009 and 2023

(3) Typology

The existing built-up area in the Study Area is divided into eight (8) characteristics of urban form, such as building formation, spatial characteristics, land use, etc., based on aerial/satellite images as shown in the table below:

Table 4.1.1 Urban Development Typology in the Study Area

Types	Location	Characteristics of Built-up Area
1. City core 	Thorn Park, Emmerdale, Northmead.	Residential areas located close to the central business district (CBD) of Lusaka City. These residential dwellings are surrounded by government offices or newly converted buildings for office use.
2. Prime residential 	Roma, Kalundu, Foxdale, Olympia Park, Chudleigh, Longacres, Sunnungdale, Kabulonga, Woodlands, Ridgeway, Ibex Hill, Chelston, Avondale.	Highly desirable areas, located close to commercial hubs and prominent places in the city like shopping malls and hospitals.
3. Early subdivision 	Ibex Hill extension, Salama Park, Chamba Valley, Meanwood Kwamwena, Leopards Hills, Makeni.	Areas legally divided, with the intention of providing land for the development of new residential areas, arising from the demand for new residential areas, which then developed into new townships.
4. Public housing area	Kabwata, Kamwala, Libala, Chilenje, PHI, Munali, Kaunda Square, Hellen Kaunda, Arakan Barracks, ZAF Twin Palm, Napsa Kabanana, Matero.	Areas with housing units, built by the local authorities and other public institutions to house their workforces. Civil service employees, e.g., those housed in police camps and barracks had the opportunity to own housing

		after these were sold to sitting tenants.
5. New settlement and communities 	Chalala, Chilenje South, Meanwood Ndeke, Obama, Vorna Valley, Meanwood Ibex, Lilayi, Nkwashi, Silverest.	Recently established areas with, detailed, planned housing developments, implemented by private sector and individuals with the availability of employment opportunities.
6. Extension on agricultural land 	Nkwashi, Silverest, Makeni Extension, 17 miles, Airport Villa, York Farm.	Located in peri-urban areas, usually next to personal farms and built-up areas on agricultural land. Typically supported by planning and development initiatives.
7. Historical settlement 	Chibolya, Misisi Compound, John Laing.	Characterized by unplanned and heavy population density, as a result of colonialism and the search for economic opportunities. Area plagued by natural disasters, such as flooding.
8 Village area	10 miles Chongwe, 10 miles Chibombo.	Located in rural and semi-rural areas with low housing density and usually

		occupied by low-income and lower-class residents, far from urban centres.

Source: The Study Area images are obtained from Google Earth, September 2023.

4.2 Land Use of Study Area

(1) Existing land use classification

In order to capture existing land use at a regional level, the land use classes are defined in Table 4.2.1 and applied to the Study Area. This process takes into account their classification and helps to underpin the development assessment by providing basic land use elements. The nine (9) land use categories and their classifications (22) are defined as shown.

Table 4.2.1 Existing Land Use Classification

Category	Existing Land Use Classification	Definition (types of facilities to be involved)
Rural/ Agricultural	Agriculture	All type of agricultural lands and agricultural facilities including livestock
	Rural Built-up	Rural village with agricultural land
	Non-agriculture	Grasslands and shrublands
Residential	Planned Settlement	Planned settlement defined by Local Authorities and organized settlements/subdivisions
	Unplanned Settlement	Unplanned settlement defined by Local Authorities and other non-organized settlement
Mixed use		Combination with residential and other uses (commercial and business, etc)
Commercial /Business	Commercial and Business	Retail shop, private business offices, restaurant, other commercial facilities
	Market and Mall	Traditional market by council and large-scale shopping centers/malls
	Tourism	Hotel, resort hotel and facilities, recreational facilities, leisure facilities
Industrial	Industrial area	Factory for heavy, light and cottage industries, industrial park, MFEZ, etc.,
	Quary	Mining site and relevant lands
Public Administration		Central and local administrative facilities and institutions
Transportation /Infrastructure	Infrastructure	Plants, network facilities of water supply, sewerage, power, telecom, others
	Transportation Facility	Bus, railway, logistic terminals and stations, workshop, large parking areas
	Airport	International airport, other airports (Lusaka City Airport, private airstrip)
	Road	All type of roads
Other Land /Open Space	Parks and Green	Park, public garden, zoo, golf-course, sports recreational facilities, others
	Cemetery	Public and private cemeteries
	Vacant area	No use land, abandoned area, others
Natural/ Environmental	Forest	Natural forest, persevered forest, afforestation area
	Wetland	Riparian area, permanent swamps, floodplains, etc.,
	Surface water	River, stream, pond, other water surface area

Source: JICA Expert Team (2023)

(2) Existing land use composition of main agglomeration and its surrounding area

1) Study area composition (total)

The current land use of the main agglomeration and its surrounding area is mapped by GIS utilizing the latest satellite imagery (2023) based on the classifications defined above. The total area of the study area is 1,869 km^2, and in the nine (9) main categories, 68% of the land area is 'rural/agricultural' category, including agriculture lands, rural built-up areas and non-

agricultural lands, followed by 'residential' (12%), and on a similar scale, 'natural/environmental' including forests and other natural vegetation (11%). The rest of categories share 9% of the total, including 'transportation/infrastructure' (2.3%), 'public facilities/administration' (2.1%), 'industrial' (1.8%), and 'commercial/business' (1.2%), and 'other urban land/Open Space' (0.7%). This land use balance by area in each district shows a similar balance to the land use in other districts, with the exception of Lusaka as the most urbanised district.

2) Lusaka City Council (Lusaka City)

In Lusaka as the capital city (419 km^2) with the largest population in Zambia, the 'residential' category shares 42% of the total land of the Lusaka City, while 'rural/agricultural' is the second largest land use in the district with 28%. Looking at the breakdown of use classification, agriculture land is the smallest in each of the five districts in the Study Area. The total share of non-residential use classification is also the largest among five districts in the Study Area at 23%. Among land use categories, the largest use is occupied by 'public facilities/administration' (8%), including central government facilities, followed by 'industrial' (less than 5%). As shown in Figure 4.2.2 and Table 4.2.2, unplanned settlement (101 km^2) classification in 'residential' is one of the distinct land uses in Lusaka City especially, where the area shares nearly half (48%) out of the total 'residential' in the city.

3) Chongwe Municipality Council (District)

The land area (682 km^2) in Chongwe District has the largest 'rural/agricultural' (524 km^2) among five (5) districts in the Study Area, accounting for 77% of the total area in Chongwe. The 'natural/environmental' is also the largest (97 km^2) among five (5) districts, accounting for 14% in the district. The area of 'transportation/infrastructure' including the Lusaka International Airport is the third largest (3.4%) along with 'residential' (3.4%) in the district, where large subdivisions are observed in the area adjacent to Lusaka City.

4) Kafue Town Council (District)

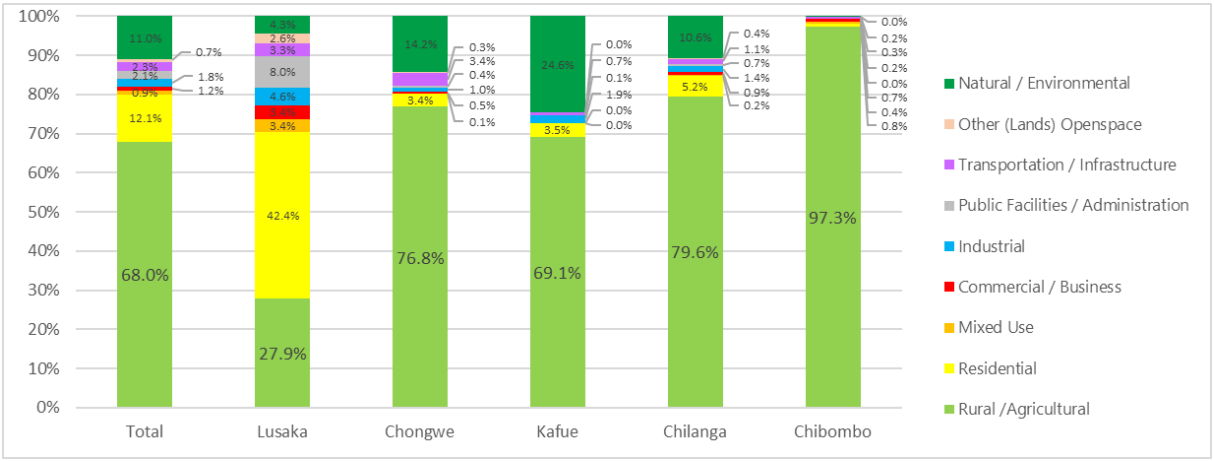
The Kafue area occupies the smallest in the Study Area, covering 240 km^2, where many lands by mountainous or hilly lands are spread. The majority of land use is occupied by 'rural/agricultural'(69%), followed by 'natural/environmental' at 27%, and 'residential' at only about 6% in the district.

5) Chilanga Town Council (District)

The Chilanga area, occupied by the third largest in the Study Area, has 285 km^2, with nearly 90% of the land uses for 'rural/agricultural' and 'natural/environmental' in the district, similar to other districts adjacent of Lusaka City. The other 10% is categorised by urbanised areas including 'residential' (5.2%) in the district as the third largest area (15 km^2) in the Study Area. Chilanga area has also a lot of unplanned settlements (11 km^2) sharing 78% out of the total 'residential' category in the area of Chilanga.

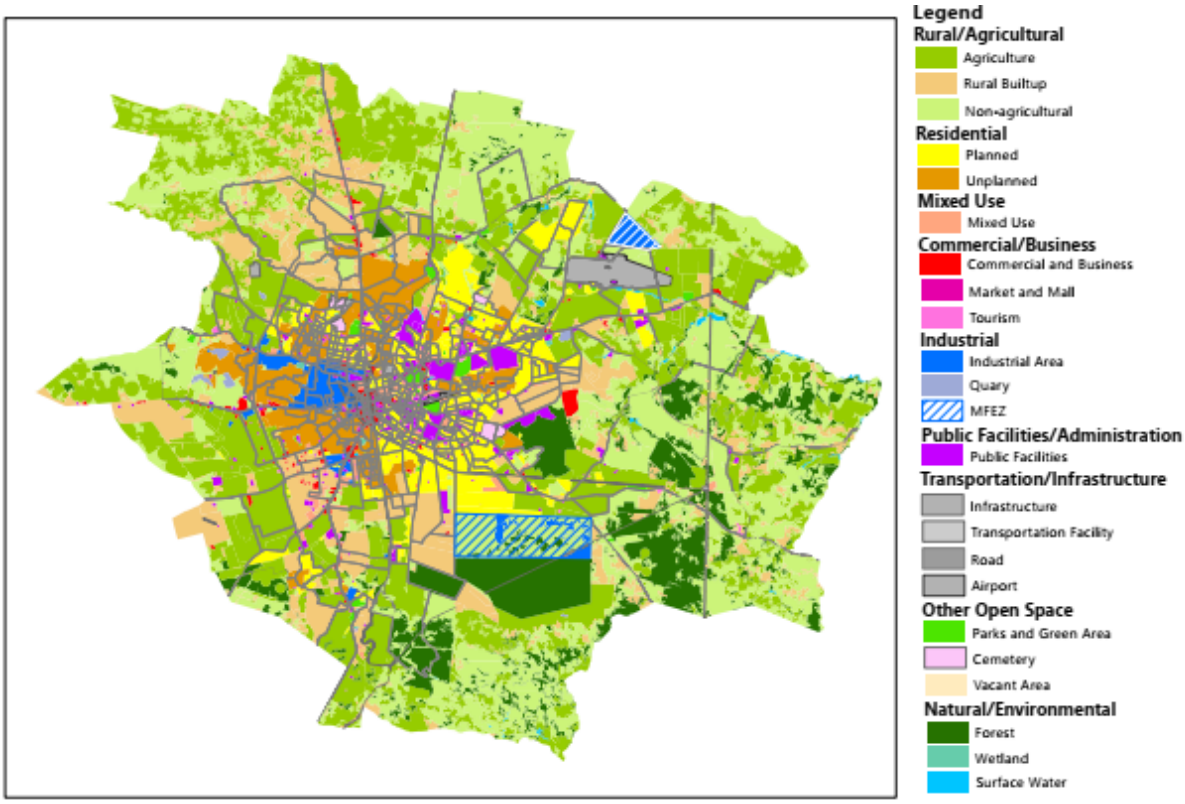
6) Chibombo Town Council (District)

The area (243 km^2) belongs to Chibombo District in Central Province, which is known for its agricultural production. The 'rural/agricultural' use category accounts for the largest proportion (97%) of the areas of five districts in the Study Area. On the other hand, 'natural/environmental' is only slightly distributed in the area. The remaining 3% are urbanised areas in terms of urban type land use classifications, distributed along the Greater North Road.



Source: JICA Expert Team based on the GIS Geodata (2023)

Figure 4.2.1 Existing Land Use Composition of the Main Agglomeration and its Surrounding Area (2023)



Source: JICA Expert Team based on the GIS Geodata (2023)

Figure 4.2.2 Existing Land Use Distribution of the Main Agglomeration and its Surrounding Area (2023)

Table 4.2.2 Existing Land Use Composition of the Main Agglomeration and its Surrounding Area (2023)

Existing Land Use		Total (ha)	Survey area by District in the Lusaka Province (ha)					Central Province
Category	Classification		Lusaka	Chongwe	Kafue	Chilanga	Sub-total	Chibombo
1.Rural / Agriculture	Agriculture land	563.38	58.16	200.26	59.88	135.58	453.89	109.49
	Rural Built-up area	242.85	45.88	62.61	27.81	39.25	175.55	67.30
	Non-agricultural land	464.41	13.01	261.43	78.47	52.32	405.24	59.17
	sub-total	1,270.63	117.05	524.30	166.16	227.16	1,034.67	235.96
2.Residential	Planned Settlement	124.81	91.31	21.61	8.52	3.30	124.74	0.06
	Unplanned Settlement	101.28	86.57	1.26	0.00	11.46	99.29	1.99
	sub-total	226.09	177.88	22.87	8.52	14.77	224.04	2.05
3.Mixed Use (residential + C&B)		16.38	14.36	0.40	0.01	0.63	15.40	0.98
4.Commercial / Business	Commercial and Business	18.38	11.36	3.08	0.07	2.19	16.69	1.69
	Market and Mall	2.38	2.28	0.10	0.00	0.00	2.38	0.00
	Tourism	1.50	0.82	0.28	0.05	0.35	1.50	0.00
	sub-total	22.26	14.46	3.46	0.12	2.54	20.57	1.69
5.Industrial	Industrial Area	30.98	19.26	5.82	4.37	1.52	30.98	0.00
	Quary (mining)	3.23	0.00	0.71	0.08	2.36	3.16	0.07
	sub-total	34.21	19.26	6.53	4.46	3.89	34.14	0.07
6.Public Facilities / Administration		38.99	33.43	2.84	0.27	1.94	38.48	0.51
7.Transportation /Infrastructure	Infrastructure	14.94	4.58	7.02	1.43	1.90	14.92	0.02
	Transportation Facility	0.18	0.07	0.02	0.00	0.09	0.18	0.00
	Road	12.79	8.44	2.06	0.30	1.23	12.03	0.76
	Airport	14.63	0.69	13.94	0.00	0.00	14.63	0.00
	sub-total	42.54	13.78	23.04	1.73	3.21	41.76	0.78
8.Other Lands / Open-space	Parks and Green	8.68	6.37	1.28	0.00	1.03	8.68	0.00
	Cemetery	4.68	4.07	0.62	0.00	0.00	4.68	0.00
	Vacant area	0.37	0.37	0.00	0.00	0.00	0.37	0.00
	sub-total	13.73	10.81	1.89	0.00	1.03	13.73	0.00
9.Natural/ Environmental	Forest	198.52	16.58	92.81	58.65	30.11	198.15	0.37
	Wetland	1.06	0.63	0.25	0.00	0.10	0.99	0.08
	Surface water	5.46	0.98	3.98	0.40	0.08	5.45	0.01
	sub-total	205.04	18.20	97.03	59.05	30.29	204.58	0.46
Total		1,869.87	419.22	682.37	240.31	285.45	1,627.36	242.51

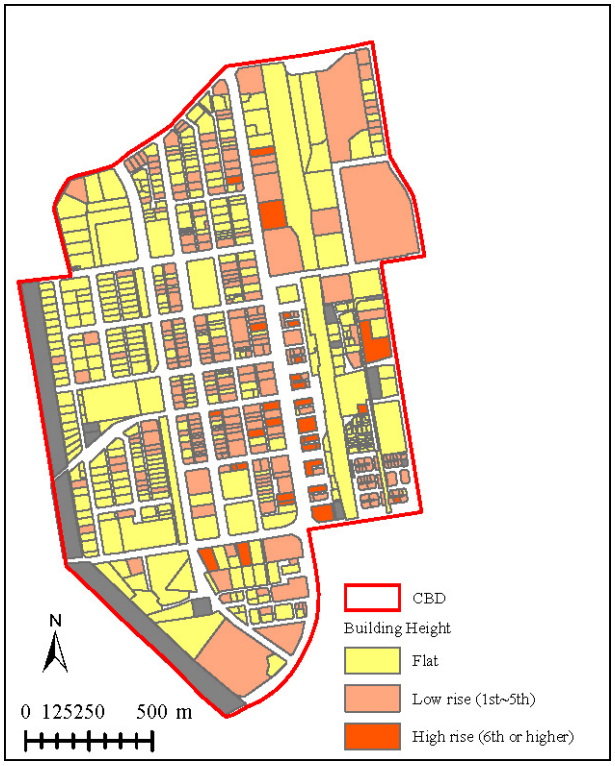
Source: JICA Expert Team based on GIS calculation (2023)

4.3 Land Use of CBD Area

The Lusaka CBD is the commercial and business centre of the city. The boundaries of the CBD are delineated by the JICA Expert Team and approved in the fist JCC meeting. The CBD contains commercial space and offices and is described as the financial district. Geographically, its location coincides with the centre of Lusaka City. The CBD is highly accessible and has a large variety and concentration of specialized goods and services compared to other parts of the district.

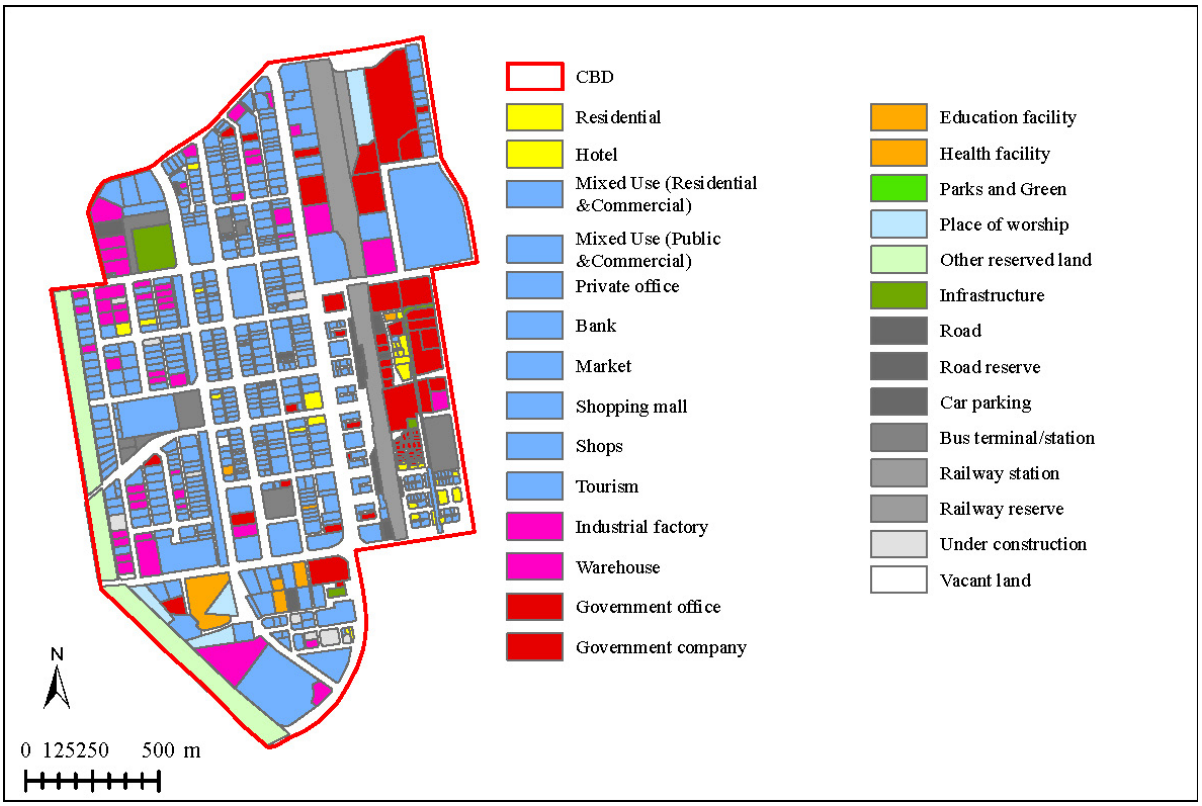
Over the years, the CBD has highlighted certain complex, intertwined challenges related to business closures, reduced foot traffic and, in some areas, widespread office vacancies. The CBD today is characterized by high floor space rent prices, a lack of open and green spaces and heavy traffic.

To make the Lusaka CBD attractive for living and leisure, it is important to improve the public realm and environment for pedestrians. To achieve this desired state, the Lusaka CBD will have to operate within a framework that will make this financial zone successful in attracting occupier and investor interest.



Source: JICA Expert Team (2024)

Figure 4.3.1 Building Height in CBD



Source: JICA Expert Team (2024)

Figure 4.3.2 Current Land Use of CBD

(1) Planning Issues for CBD

As a first step in formulating the conceptual redevelopment plan for the CBD, the planning issues are identified as described below:

1) Makeshift stores and street vending

The CBD has a large number of unregulated trading activities on the road reserves and service lanes which are housed in the makeshift trading structures in some streets corners, and service lanes and vendors selling their merchandise along some shops corridors. These traders operate depending on the traffic of pedestrians and vehicles moving through the city centre. They also set up temporal resting points which operate as flee markets targeting particular pedestrian traffic nearer to the bus stations during the late afternoons and motorist at particular traffic light junctions.

The mobile vendors often trade in mobile money services, fruit and vegetables, cooked food and clothing-related items, seeking an opportunity to sell their merchandise to pedestrians or those in vehicles passing through the CBD. The immobile vendors set up trading points in a convenient location along the routes of high pedestrian traffic throughout the CBD. They lay their merchandise on the corridor floor and other merchandise especially clothing on the walls, pillars and burglar bars of other shop windows. Some who establish a trading point that does not inconvenience shop owners build makeshift structures to hold the bulk of their merchandise.

2) Waste disposal, littering and blockage of drainage infrastructure in the CBD

Due to the uncontrolled trading activities towards the pedestrian and vehicle traffic on the streets of the CBD, the vendors, pedestrians and motorists have been observed to conveniently dispose waste at undesignated locations in the CBD. This waste and litter find its way into the

storm water drainage system and furthermore cause blockages and siltation in this underground infrastructure.

The local authority has been reinforcing with measure to clean the CBD every morning but have challenges due to the behaviour of traders, pedestrians and motorist who dispose waste at undesignated locations. This waste and litter drop into the covered storm water drainages and collect over time alongside the silt unnoticed. At some points the silt and waste become soils for the growth of vegetative matter which is destructive to the infrastructure in its design.

3) Congestion from transit vehicles and buses at the bus station in the CBD

The CBD connects three (3) main national roads. These roads are the Great North Road T1 that runs north to south through the CBD along its main street Cairo Road, The Great East Road T4 that runs from Kabwe round about going east and Mumbwa Road M9 which runs from Kabwe roundabout heading west. These major roads mentioned bring into the CBD transit vehicles that move from one district to another. Additionally, the CBD attracts vehicles from within the district whom the motorist use to access work and other shopping services from the CBD.

The CBD also has four (4) bus stations, namely the Intercity Bus Station, the Kulima Tower Bus Station, the Millenium Bus Station and the City Market Bus Station. These bus stations are transport hubs that connect pedestrians on one side of Lusaka City with the other. Similarly, the Intercity Bus Station serves as the primary transport hub connecting one district with another. Altogether, these bus stations lack in capacity to service the traffic of population they carry in and out of the CBD. The effect of this is seen from the congestion of mini buses at the facilities which spills into the road reserve carriage of the streets near these stations.

These bus stations are currently holding a greater capacity of buses than the facilities can accommodate. Therefore, most buses tend to park in the streets or wait in the traffic for the loading buses to leave the station.

4) Short-term and long-term parking spaces in the CBD

Most of the old building in the CBD were planned with parking provision along the street adjacent to the building for the principal users of the particular building. These provision of parking space vary depending on the estimated number of designated inhabitants and visitors. It is more clearer that the function of the original design facilitate what may have been sufficient in its planning. Today overtime with the changes of various activities in these business houses, the facilities have attracted more visitors/customers than originally planned.

Today, the CBD is prevalent with the shortage of short-term and long-term parking spaces. This being the case, most people tend to park elsewhere and walk to the location of their businesses. For a long period of time, the population has been moving to obtain services from the CBD and it has been proven that there is a need to provide more parking spaces to accommodate users in locations of interest as they conduct their business in the CBD.

5) Lack of social infrastructure in the CBD

The CBD is mainly characterised by its commerce. The CBD has been hampered by the same old infrastructure that has not been improved to accommodate different social facilities for the attraction of residents and other activities. The main issue is that there is not enough floor space for the establishment of social infrastructure in the city centre. The CBD requires community centres, cultural venues and recreational spaces. The initiative to create social infrastructure that will create safe public spaces will promote the cohesion of a community livelihood in the CBD.

6) Uncoordinated set-up of business activities in the CBD

Pedestrians and vehicle drivers are subject to serious security risks in the CBD, due to many street kids roaming around the CBD and targeting unsuspecting people to steal from them. As there are no safe parking places in the CBD, criminals also steal from parked cars and during the day and night. It also has been observed that it is not safe for a pedestrian to use the fly over bridges because they are the facilities that house the street kids.

The CBD will require the instalments of CCTV camera to easily identify culprits whom engage in such vices.

7) Low land use and absence of residential uses

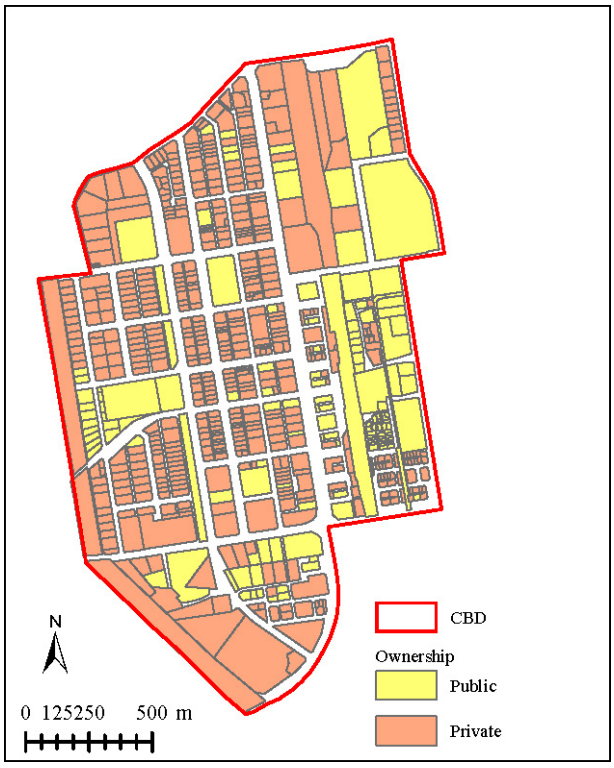
The existing land use reveals that residential uses are very limited in the CBD, this turns the CBD into an empty ghost town at night and on weekends. In order to create an attractive city, it is necessary to introduce residential uses and to create a bustling, always-occupied area.

In addition, many of the buildings are low-rise, which is undesirable from the perspective of effective land use in the urban centre. There is a need to promote higher use of land in coordination with transportation planning.

(2) Land Ownership in the CBD

The area of the CBD is divided into various parcels of land, which are owned by different developers. All limited propriety right of land is state land, which the private sector leases on a 99-year lease. Roughly 20% of the land is owned and reserved for the rail development of Zambia Railways, and this is where the main trunk rail passes.

Another 30% of the properties in the CBD are the properties of various government institutions, including the local authority. Notably, four (4) of the tallest buildings in the CBD are owned by the National Housing Authority, namely, Findeco House, Indeco House, Zimco House and Lima Tower. The other two (2) tall buildings are the property of Zambia Building Society, called Society House and the property of Zambia Revenue Authority, called Revenue House. There are other buildings around the town owned by different government institutions like the property for the Bank of Zambia and the Postal Services Cooperation (ZAMPOST), etc.



Source: JICA Expert Team

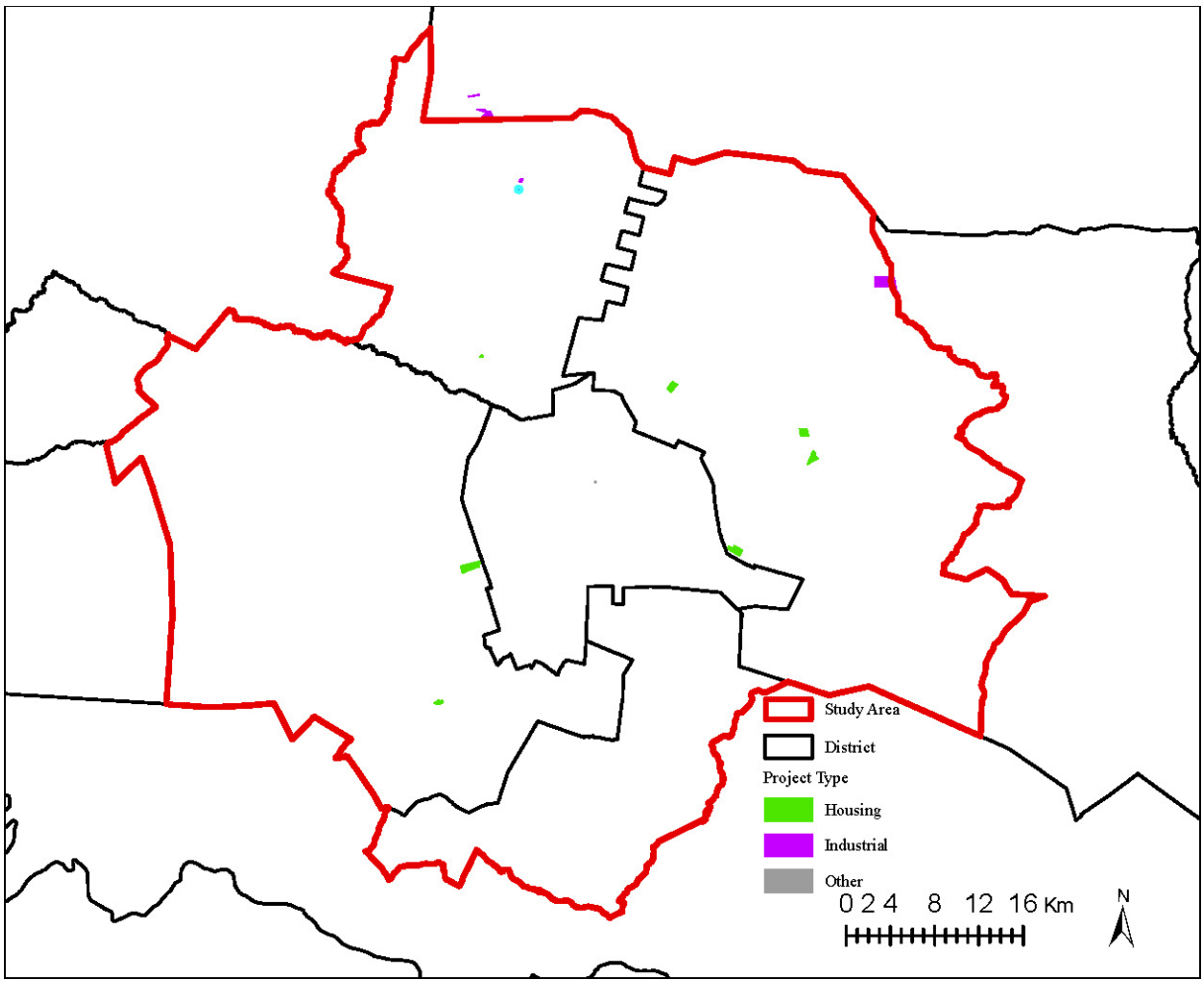
Figure 4.3.3 Land Ownership in CBD

A total of 50% of the properties in the CBD are those of private developers and corporations. Several banks and enterprises own the properties where they are housed. Examples of these properties include the building housing ShopRite stores, the Protea Hotel, Stanbic Bank and

filling stations, etc.

4.4 Major Urban Development Projects

Major urban development projects cover the large-scale projects including, but not limited to, urban development such as housing estate, industrial estate and tourism development. As efforts were made to collect information on urban development by the C/P and the JICA Expert Team, ZEMA provided the planned and on-going project data which have been approved. Figure 4.4.1 shows the spatial distribution of the planned and on-going projects.



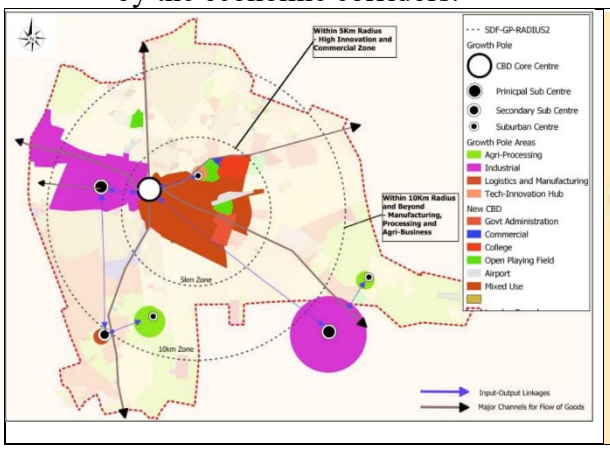
Source: JICA Expert Team based on data collected from ZEMA

Figure 4.4.1 Spatial Distribution of Planned and On-going Large-scale Urban Development Project

In addition, information on urban development covers the development concept shown in the draft Lusaka IDP as follows:

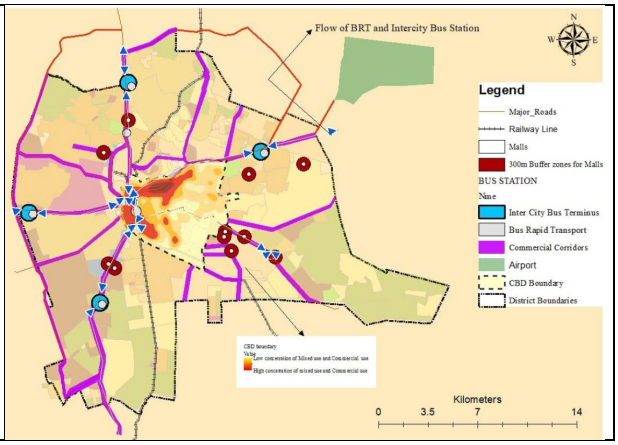
- Urban renewal: To redevelop the major underdeveloped settlements as a pilot project, mainly Msisi, Chiboya, Chaisa (Chifundo Market Area), Kuku and Mandevu-Marapodi. The aforementioned areas will be the main focus of urban renewal, the creation of housing schemes and mixed-use.

- In-situ upgrading: The focus will be on upgrading the basic services of water and sanitation, accessibility and the standard housing infrastructure of underdeveloped settlements such as Kabanana, Chunga, Garden Park, Kanyama, Mtendere, John Laing, Ngwerere, Freedom, Kanyama, Lilanda, George, Bauleni, Jack, Chawama, Chainda, Kabangwe, John Howard, Chipata, Garden Compound, Mandevu, Chazanga, Linda, Zingalume, Zani-Muone, Mapuloto, Chaisa, Ngombe, Kalikiliki, Kamanga and Mazyopa.
- Growth poles: The advancement of development within Lusaka will be propelled using the growth pole concept, which will entail the identification and empowerment of key zones to act as growth poles, thereby propelling growth dynamics within the city.
- Nodes and economic corridors: Nodes comprised of mixed uses that will attract people beyond their communities to access goods and services. These nodes will be interlined by the economic corridors.



Source: Lusaka City Integrated Development Plan 2024-2034

Figure 4.4.2 Growth Pole Proposed in the Draft Lusaka IDP



Source: Lusaka City Integrated Development Plan 2024-2034

Figure 4.4.3 Node and Economic Corridor Proposed in the Draft Lusaka IDP

4.5 Integrated Development Plan

Zambia's urban planning system was based on the Town Country Planning Act 1962 and the Housing (Statutory Improvement Area -Act 1975) Act. After several subsequent amendments and modifications, the new Urban and Regional Planning Act 2015 was passed and is in operation today. The main changes in the new Act are the reduction of central government involvement in planning and the strengthening of the devolution of planning and management by local authorities, in line with the trend towards decentralization.

The Urban and Regional Planning Act stipulates a three-tier planning structure, with an upper tier: Regional Development Plan (RDP), a middle tier: Integrated Development Plan (IDP) and a lower tier: Local Area Plan (LAP). Their definitions are defined in the Act as shown in Table 4.5.1. In addition, these planning documents are intended to be developed by local authorities following the decentralization policy. The Act requires that all districts in Zambia must have an IDP as its principal planning instrument.

Table 4.5.1 Roles and Definitions of Three-tier Planning Documents

	Definition
Regional Development Plan	A regional development plan means a plan for two or more districts, two or more provinces or parts of different provinces for coordinating and facilitating the synergy of transportation and the institutional, environmental, infrastructural and socioeconomic activities for the attainment of sustainable development.
Integrated Development Plan	An integrated development plan means a plan prepared by a planning authority. An integrated development plan shall be the principal planning instrument to guide and inform all planning and development in the area of the local authority and all planning decisions of a planning authority.
Local Area Plan	A local area plan means a plan to cover an area of a local authority. A planning authority shall use a local area plan as a planning instrument to provide detailed proposals for the development of an area designated for development under an integrated development plan. A local area plan shall link, integrate and coordinate plans and proposals for the development of an area or areas of the local authority in accordance with the principles of integrated development planning and may provide the basis for property delineation, cadastral surveys and land tenure registration or recognition under any certification relating to title or occupancy.

Source: The Urban and Regional Planning Act, 2015

After the enactment of the Urban and Regional Planning Act, the Ministry of Local Government and Rural Development developed guidelines for the formulation of IDPs in 2019 to facilitate their formulation, with technical assistance from the GIZ. The councils of Chibombo, Chilanga, Chongwe, Kafue and Lusaka have prepared IDPs. The IDPs have been approved. The following box describes the key features of these IDPs:

Box 4.1: Key Features Proposed in the IDP of Lusaka City for 2024-2034

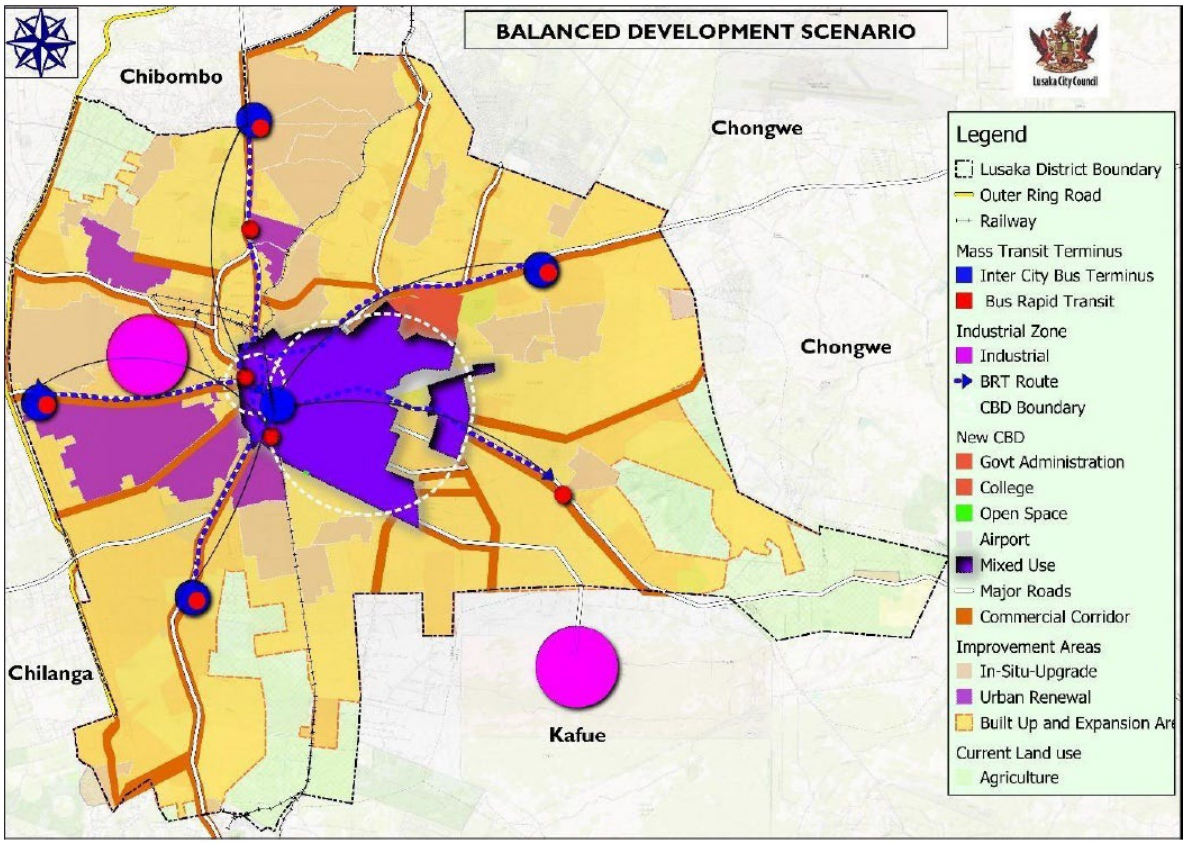
The IDP proposed the long-term development vision as "An economically strong city that is environmentally resilient, friendly, socially inclusive and safe to live in by 2034". In order to achieve the City's development vision, thematic areas of focus were identified with strategic goals and their respective objectives. The Lusaka IDP will focus on the following goals;

- Goal number one is to have an industrialized and diversified economy that promotes citizen participation and a competitive private sector.
- Goal number two is to promote investment in social service provision and delivery in various sectors such as education and skills development, through the improvement of access and quality of education and skills delivery, provision of quality health care services and increase access to water and sanitation services as well as reducing other social and developmental inequalities.
- Goal number three is to promote sustainable environmental and natural resources management and enhance climate change adaptation and mitigation in the City.

- Goal number four is to create an enabling environment for good governance through the investment in security and judicial services aims at promoting good governance in order to create an enabling environment that promotes sustainable socio-economic development in the District by 2034.

Population projections are estimates of future population sizes based on current demographic trends. According to ZAMSTATS, the population is estimated at 2,669,777 in 2030 and 2,711,991 in 2034.

The IDP has chosen the best development scenario as the Balanced Development scenario which hinges on the combination of all three proposed development alternatives namely; the Growth Pole and Smart cities concepts with a focus on increasing investment and riding on the technological and digital advancement in the city.



Source: Lusaka City Integrated Development Plan 2024-2034

Figure 4.5.2 Spatial Structure for Balanced Development Scenario

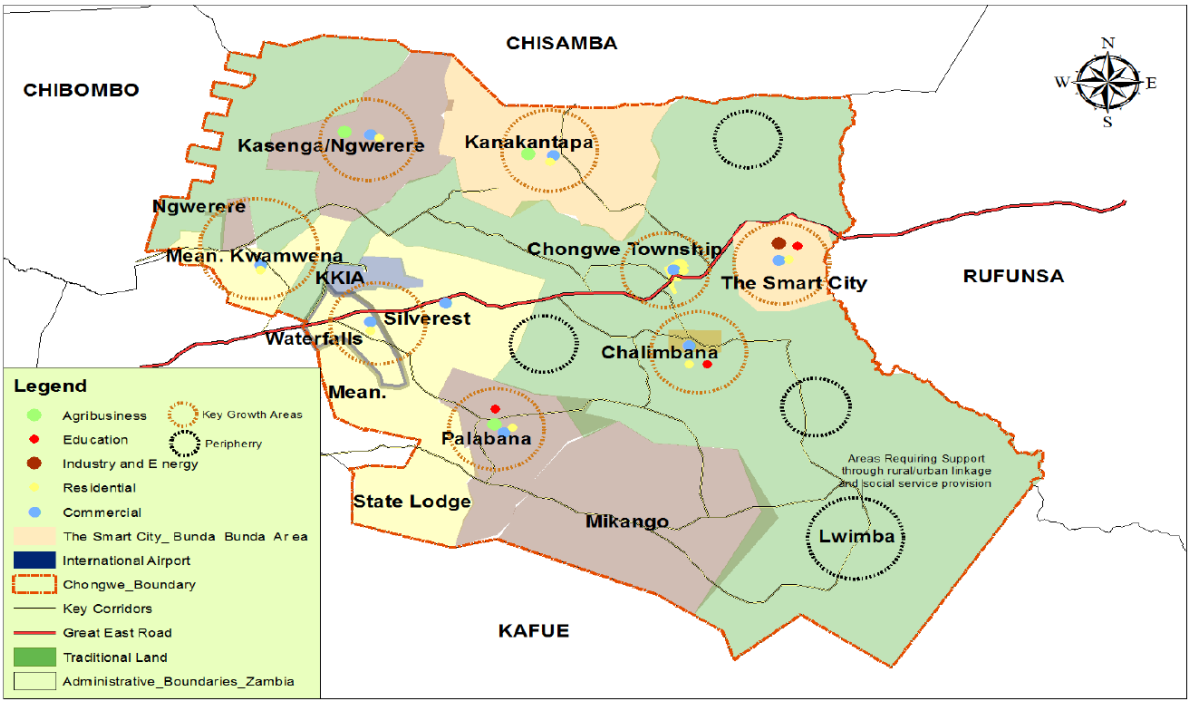
Box 4.2: Key Features Proposed in the IDP of Chongwe District for 2024-2034

The estimated population for Chongwe District was 207,613 as at 2024, of which 75% (155,710) was rural, while 25%(51,903) was urban. The population growth rate was estimated at 6.9% in the IDP base year 2024, according to the Zambia Statistical Agency Preliminary 2026 Census of Population and Housing Report. The population is expected to grow above 265,762 by 2030.

The vision for Chongwe District was stated as "A Liveable and Resilient Municipality by 2034". Based on the synthesis of the key development issues, the goals for development of Chongwe District were framed as below;

- Goal one: Balanced growth pattern of the spatial form ensured
- Goal two: Improved access to welfare and community development services in all wards
- Goal three: Accelerated and climate resilient economic growth
- Goal four: Sustainably managed environmental services

Three development scenarios were formulated to pursue the vision and goals and the third scenario was selected as the best option. The third scenario aimed to consolidate secondary settlement centres in Palabana, Chalimbana and Silverest, Ndeke, Ngwerere area and Kanakantapa. The proposal was based on the observed development patterns currently taking place in these areas. Another key feature of this strategy was to establish a new node – a secondary town centre ("Smart City" in Chief Bunda Bunda's area), east of the current centre. This scenario required the development of the existing nodes in order for them to spur growth to the periphery through backward forward linkages.



Source: Chongwe District Integrated Development Plan 2024-2034

Figure 4.5.3 Concept Map of Scenario 3

Box 4.3: Key Features Proposed in the IDP of Kafue District for 2023-2033

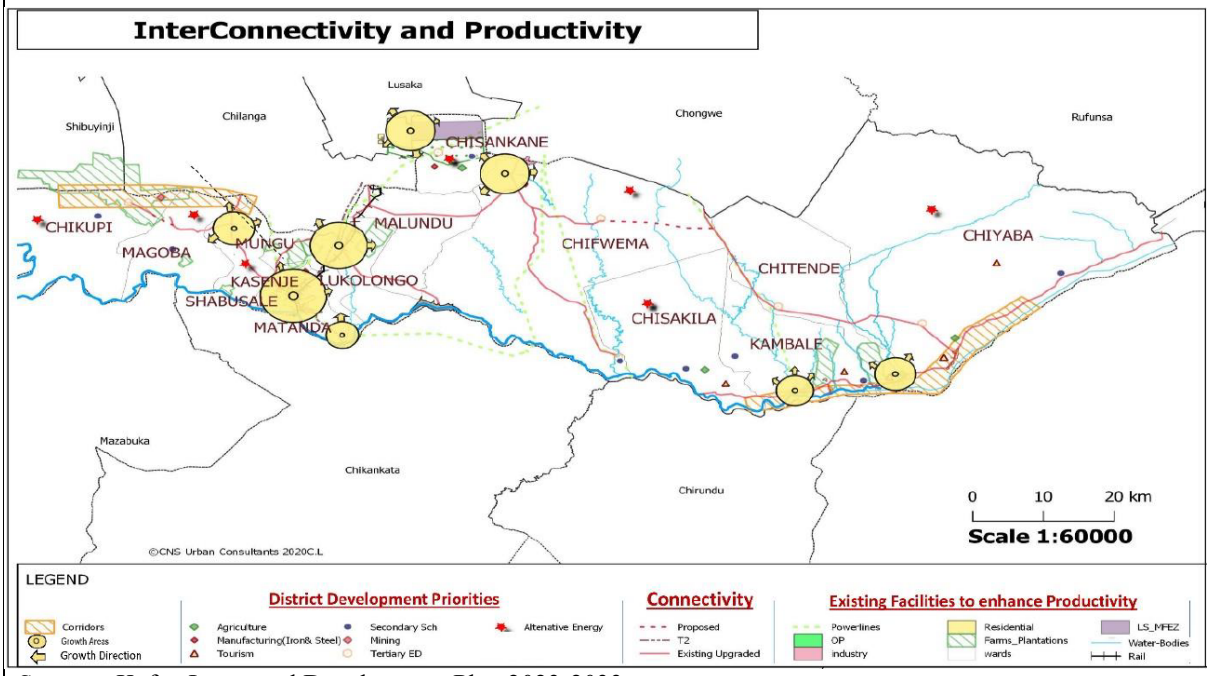
The projected population for Kafue District as at 2019 is 324,726 and is projected to soar to 513,572 by 2035 (Zambia Population and Demographic Projections, 2011-2035). This represents 10% of the population of Lusaka Province. Kafue has a population growth rate of 3.2% and is among the districts in the country with a fast-growing population.

Vision for the District is proposed as "An inclusive, industrialized, and diversified green economy offering an improved quality of life by 2032". To achieve the vision, the following development policies will guide the development framework for the District for the period 2023~2033:

- Design resilient public infrastructure for service provision;
- Promotion of sustainable use practices;

- Scale up smart and integrated agricultural practices;
- Develop and strengthen access to renewable energy solutions;
- Strengthen social protection and creation of social assets; and
- Diversification of the economy through tourism promotion.

In the IDP, three development scenarios were formulated and scenario 1 was selected as the best alternative. The scenario 1 set a target of a productive and growing economy value addition. Kafue was set up as an industrial zone for the development of the Greater City from Lusaka from a historical point of view. This led to the establishment of a number of industries in the District that is now dis-functional. This IDP envisions the building and rebuilding of existing industries with its associated value chains as a way of growth the local economy of Kafue and creating job opportunities within the District.



Source: Kafue Integrated Development Plan 2023-2033

Figure 4.5.4 Concept Map of Scenario 1

Box 4.4: Key Features Proposed in the IDP of Chilanga District for 2025-2035

The IDP for Chilanga District assumes the district is likely to experience increase in population during the IDP period largely due to a number of factors based on natural and policy interventions. For instance, the district may experience increased migration, improved life expectancy, reduced mortality and morbidity and reduced emigration which may come as a result of policy and natural interventions. In the IDP, the district population has been projected to increase from 227,844 in 2022 to 360,492 in 2035. The population will be further increased to 558,765 in 2042.

The IDP proposed the long-term vision as "A prosperous and sustainable town by 2033". The district's goals are to improve residents' quality of life while fostering opportunities for wealth, competitiveness, self-sufficiency, and shock resistance. To achieve the vision and address the issues identified, the primary objective of the IDP is to establish a district that fosters the following:

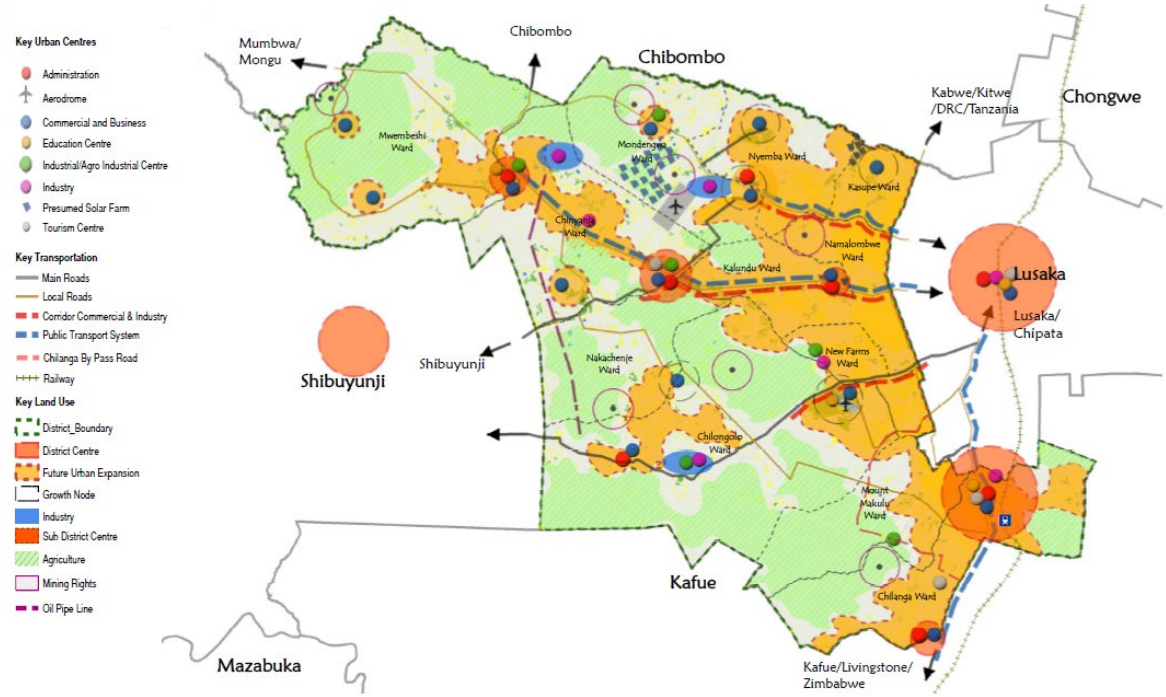
- The creation of jobs and district economic development

- Human and social development
- Well-ordered and adequate infrastructure provision
- Environmental sustainability
- Good governance environment

Three spatial development scenarios were created in an effort to realize the district's vision. These scenarios were based on essential components of an urban structure categorised as;

- Urban expansion and green spaces,
- Urban functions,
- Corridor development.

The three scenario includes i) Corridor Development Concept, ii) Compact City Development and iii) Balance Development. Following a thorough examination of several development scenarios, their key elements of urban layout, and the benefits they provide. The best option for the Chilanga district was determined to be Scenario Three (3), "Balance Development." This is justified by the fact that balanced development promotes the establishment of links between rural and urban areas as well as the equitable distribution of infrastructure, services, and economic activity. The equal and efficient distribution of infrastructure and services would facilitate complementary rural-urban growth with the diversification and commercialization of rural economies in the district which are agriculturally based.



Source:

Figure 4.5.5 Concept Map of Balance Development Scenario

Box 4.5: Key Features Proposed in the IDP of Chibombo District for 2024 – 2033

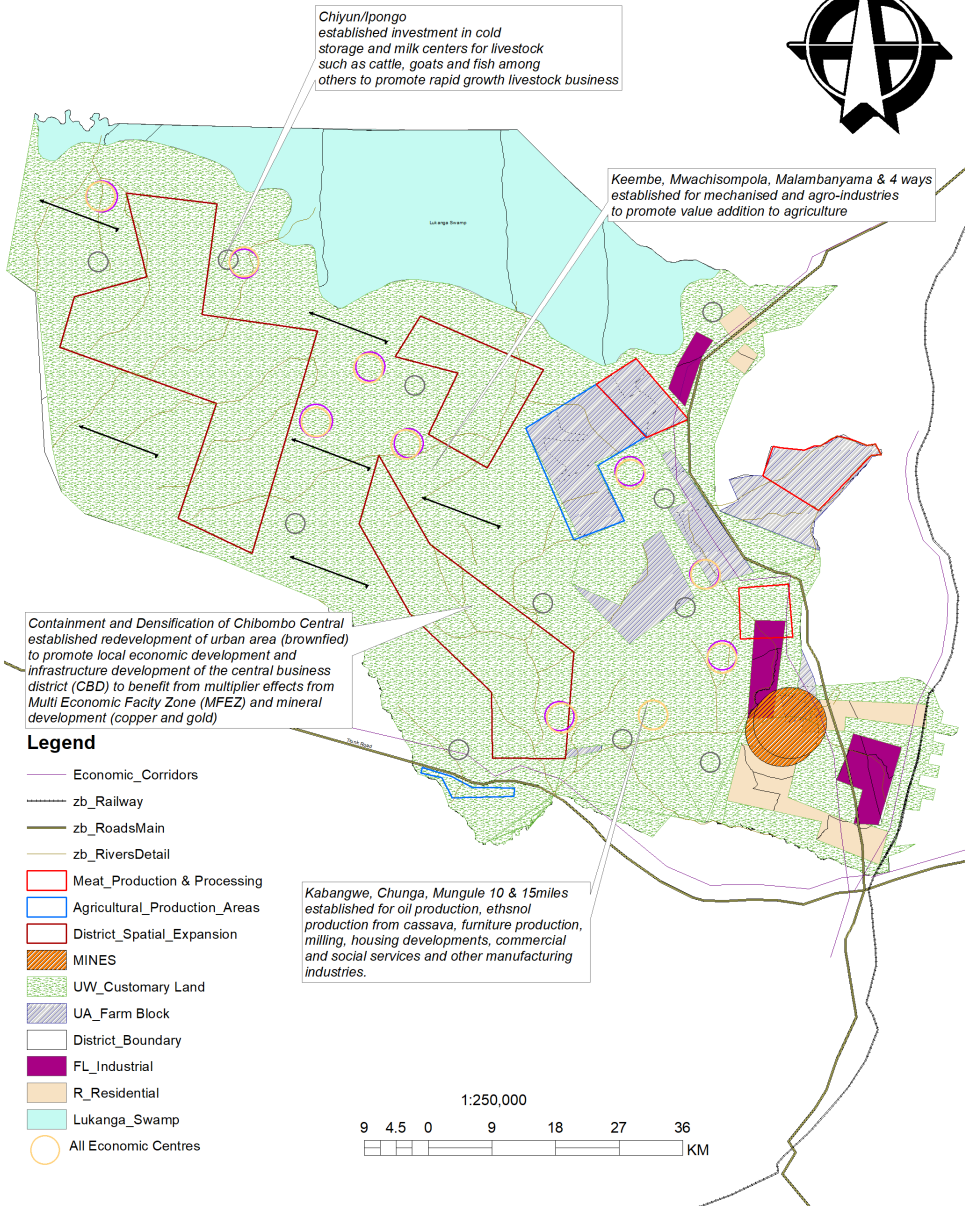
The vision of the Chibombo IDP is becoming “A Prosperous Agricultural and Industrialised District by 2033” whose main goal towards achieving this is through “Enhanced agricultural diversification and sustainable industrialised economy”. Furthermore, to realise this vision,

various strategic outcomes have been formulated.

- Inclusive economic growth with expanded job and business opportunities for all especially youths and women
- A diversified and resilient economy
- A transformed green, clean, and healthy district attractive for investment.
- To mitigate the impact of climate change on the environment through SMART agriculture practices, forestry management and other climate resilient programs
- Improved education and skills development
- Improved water supply and sanitation
- Enhance human and social development through promotion of access to public and social services
- Reduce poverty and vulnerability by creating an enabling environment for equal business opportunities

According to Zambia Census Projections 2010 (Zambia Population and Demographic Projections, 2011-2035), the existing and future population is estimated at 390,366 in 2020, 488,951 in 2030 and 545,279 in 2035.

In order to curtail urban sprawl and the mushrooming of incompatible land-use activities especially with the rampant land conversions from customary tenure to leasehold tenure, the mixed-use spatial development scenario is the most preferred spatial strategy. The spatial structure of the District is envisaged as shown in figure below.



Chibombo District Integrated Development Plan 2024-2033

Figure 4.5.6 Envisaged Spatial Structure of Chibombo District

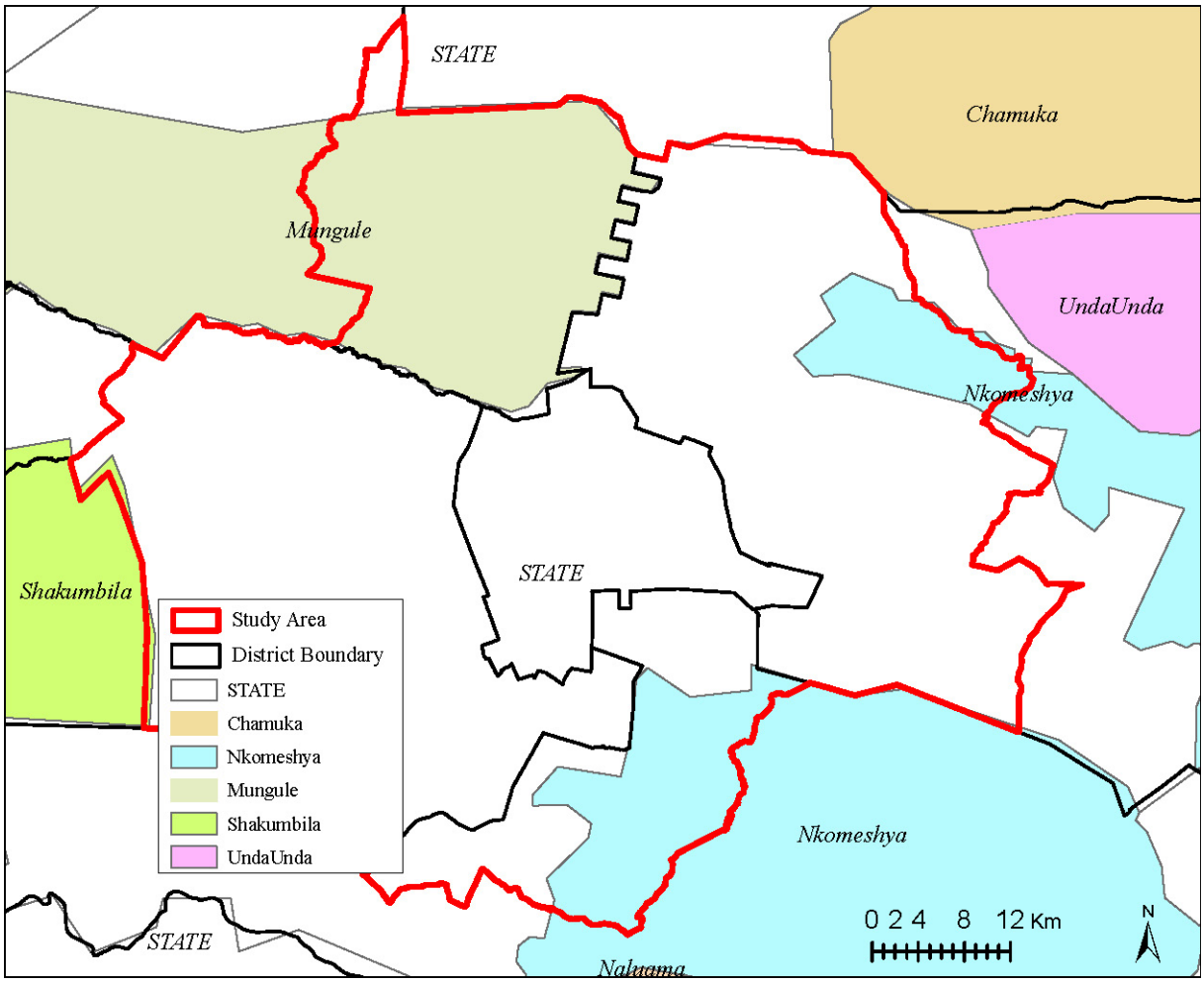
4.6 Customary Land

Zambia's national territory comprises approximately 6%[4] state-owned land and 94% customary land held in common by tribal communities. In the 1970s, in a move to promote a market-oriented economy, the government enacted and revised the Land Act (1975), allowing state-owned land to be held under leasehold (1995). Most urban areas, including the Lusaka urban area, constitute privately owned land with a certificate of land tenure based on long-term leases of state-owned land. Conversely, private individuals and private companies are allowed to hold customary land, enabling the residents of customary land to enter into economic activities such

[4] Data Collection Survey on Urban Development and Urban Transport in Lusaka City, JICA, 2022

as agriculture and other businesses by mortgaging their land and securing funds.

In the Study Area, two chiefdoms govern the customary lands, namely, the Mungule chiefdom covering the Chibombo district and the Nkomeshya chiefdom for the Chongwe and Kafue districts (Figure 4.6.1).



Source: Ministry of Lands and Natural Resources (2024)

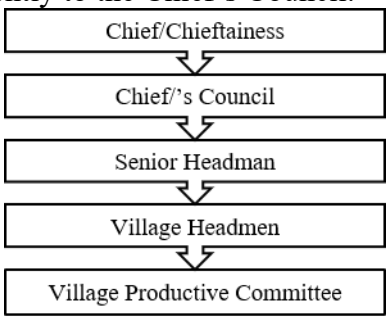
Figure 4.6.1 Location Map of Chiefdom

The organizational structure of the chiefdom is as follows, as depicted in Figure 4.6.2:

(a) Chief: The Chief is a traditional leader who is responsible for the administration of justice and the maintenance of order in the village communities of a particular ethnic group. Generally, the Chief is responsible for resolving disputes, maintaining peace and security and promoting the welfare of the community. The ascension to the position of Chief is hereditary.

(b) Chief's Council: The Chief's Council is a group of traditional councillors (Senior Headmen), family members, the Chief's Secretary and elderly members of the chiefdom who advise the Chief on matters of governance and administration. The Chief's Council is usually composed of senior members of the community, responsible for making decisions on behalf of the community. The council's role is to ensure that the Chief's decisions are in line with the community's customs and traditions.

(c) Senior Headman: The Senior Headman is one of the headmen who are selected as Zonal Representatives and ascends to be recognized as Senior Headman by the other Headmen in a particular zone of the chiefdom. The Senior Headman also functions as the traditional councillor who has the responsibility of presenting and deliberating on matters in the interest of his zonal inhabitants at the Chief's Council.
(d) Headman: The Headman of a particular village settlement is recognized by all or a majority of the other villagers. The Chief also recognizes this person as the chairman of the village settlement, which is acknowledged by the majority of the villagers in the particular settlement.
(e) Productivity Committee: The Productivity Committee is a village committee comprising senior members of each respective household who plan the growth and development of the village and promote the well-being of the villagers. This village committee is the primary court prescribed by the Headman to adjudicate on any matter that affects the village settlement. Should this body fail to resolve the matter and wish for it to be resolved by higher authorities, the matter will be presented to the Senior Headman and subsequently to the Chief's Council.



Source: JICA Expert Team (2023)

Figure 4.6.2 Organizational Structure of Chiefdom

The Zambian legal system recognizes the customary authority, however, the state laws do not provide guidance for customary ruling and land administration. Therefore, customary law is simultaneously accepted as a functioning process of the traditional practices of its own decision-making. The customary administration is limited to rural and peri-urban areas where the land has not been converted to state land. Customary law is a system that is based on the customs and traditions of a particular ethnic group. It is usually practised in village settlements to resolve disputes related to land ownership and to regulate land use, issues of inheritance of villagers and issues surrounding marriages.

A particular village community, made of various households, will recognize among themselves an individual who will represent them as a Village Headman. The Village Headman keeps a register of households and members living in the village and his/her role is to administer governance to village settlements. Upon written request and subject to meeting the necessary conditions, the Village Headman has the responsibility to admit and register someone in the village register and to report to the Senior Headman, Chief and the Ward council on all matters affecting the composition of the village settlement and its living conditions.

A village settler may be allowed to stay in the village under a particular household and when he/she wishes to acquire land identified in the village area, the Headman and the Senior Headman present the matter to the Chief's Council for their recommendation to the Chief. Once the Council advises and makes recommendations, the settler will obtain a land permit, which allows him/her to occupy a particular area in the village under the chiefdom. At that point, the settler is allowed to conduct his/her business without contravening the interests of the village community.

4.7 Urban Structure

The development issues through urban structure are analysed to reflect measures in Regional Development Plan (RDP). The analysis is examined using GIS, literature review, and discussions with JET members and Zambian counterparts. Data sources include population density, road network, the existing land use and land cover, topography, and etc. Figures 4.7.1 and 4.7.2 describe the characteristics of each of the two themes: settlements and urban functions, respectively. Figure 4.7.3 is a summary diagram of the main development issues.

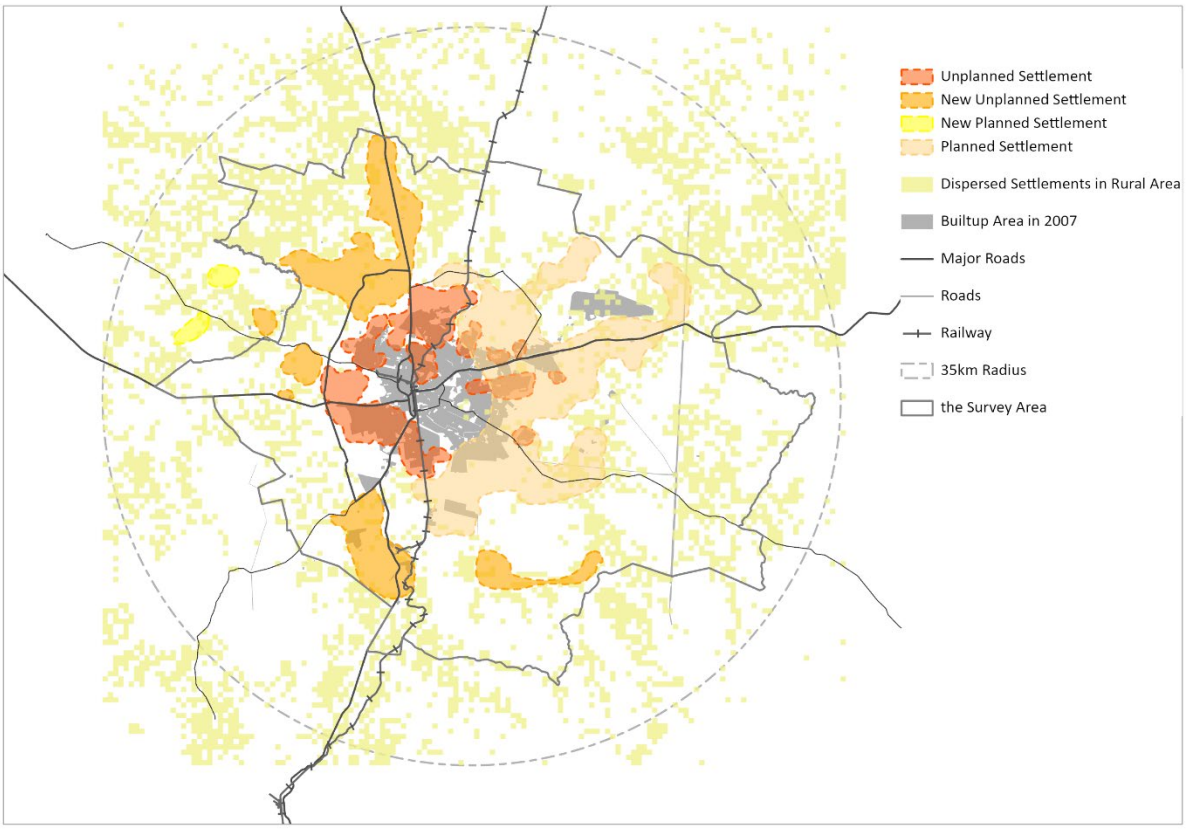
Due to the expansions of urban sprawl and the limitations to future urban development, available land for future urban expansion may be insufficient within Survey Area for Existing Land Use. Thus, the analysis for land use plan including urban structure is examined for wider area than the Survey Area.

(1) Settlements

Figure 4.7.1 shows the location of different types of residential areas named settlements distributed in wider area than the Survey Area. The grey area in the centre shows the urbanised areas that were already developed as of 2007 when 2009MP was prepared. Since then, new settlements have been developed and spread throughout Study Area. Unplanned settlements accommodate a large population and are located in the western part of the city and on the edge of the built-up areas in 2007. On the other hand, planned settlements[5] subdivided by roads[6] are located and have been expanded in the eastern part of the city. Outside the Survey Area, rural settlements are dispersed. Recently, new settlements have been developed and expanded along the main roads. Newly planned subdivisions (new planned settlements) are found in the suburban areas on both the east and west sides of the city. New unplanned settlements are scattered in the north and south of the city. The lack of urban services such as water supply, sewerage, waste management and storm drainage has been a critical problem in Lusaka. As the further rapid expansion of settlements, the increase in the number of settlements without such services causes a range of public health, natural and disaster risk problems.

[5] "Planned settlement" emerged as an opposite concept to "unplanned settlement," and it does not have a clear definition. Since land ownership and development actors in planned settlements vary case by case, it is difficult to categorize them under a single definition.

[6] Private developers only build roads for residential land division and do not provide pavement or stormwater drainage systems, resulting in limited contributions to infrastructure development. On the other hand, public institutions like NPSA and the Zambia National Building Society are carrying out relatively large-scale residential land developments in Greater Lusaka. They provide unpaved roads with stormwater drainage and electricity, resulting in higher-quality residential developments compared to small-scale private estates.



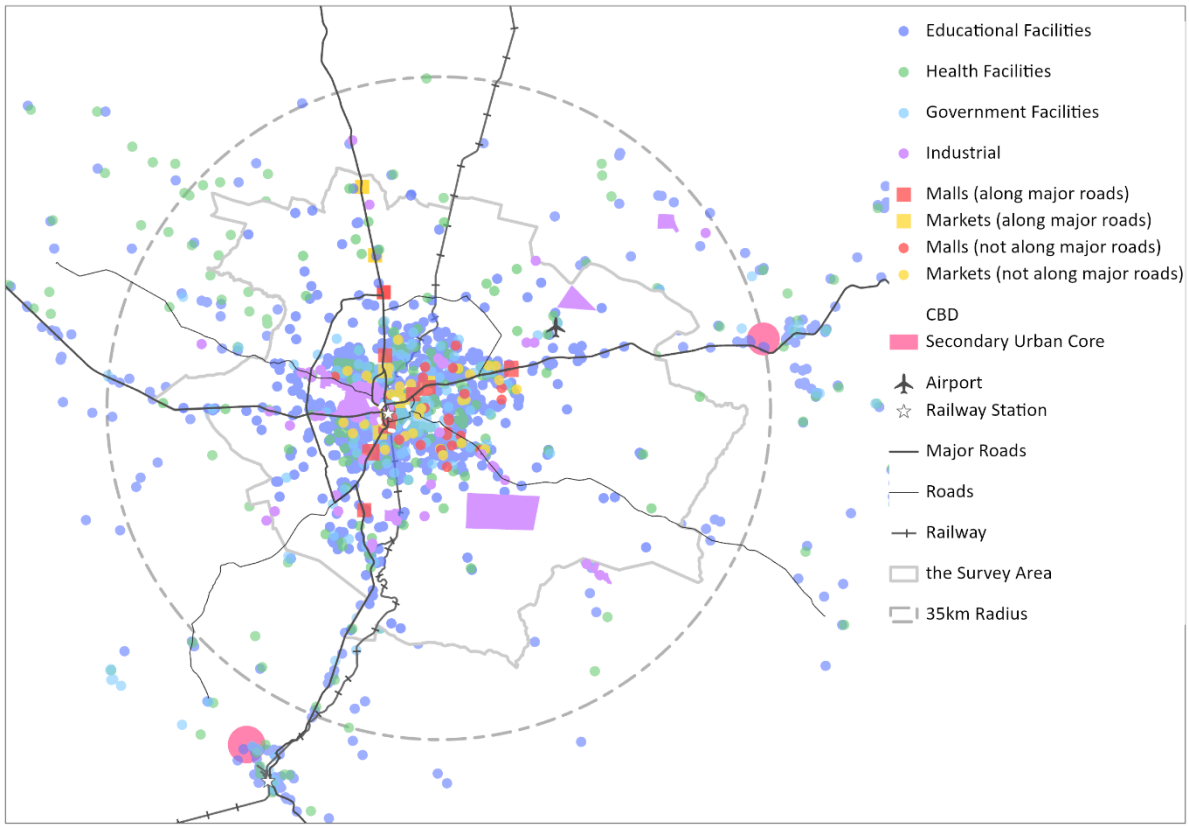
Source: JICA Expert Team (2024)

Figure 4.7.1 Settlement Distributions by Type in Study Area

(2) Urban functions

Figure 4.7.2 shows the urban functions in wider area than the Survey Area. Public facilities (educational, health, and governmental facilities) are highly concentrated within 10km of the centre of Lusaka. Outside the radius, they are dispersed and concentrated along major roads and in secondary urban cores around 35km from the city centre but the concentration in secondary urban cores is smaller than that in Lusaka. There are two types of commercial facilities: markets and malls. Markets refer to traditional local markets with no parking spaces, where locals buy fresh produce. Malls refer to large shopping malls with parking spaces, where locals can buy fresh produce as well as household goods and clothing. Most of commercial facilities are also located within 10km of the centre of Lusaka, especially widely spread out in the eastern part of the city, while few are located outside the area or around secondary urban cores. Malls are located along major roads as the major access is by car. Industrial facilities are located in the radius, along or close to major roads, and near major transport facilities such as an airport and railway stations. However, MFEZ located in the south-east of the city is disconnected from the main roads and far from transport facilities.

Overall, the distribution of urban functions is highly concentrated within 10km of the centre of Lusaka, which is a structure that fuels overcrowding toward the centre. There are secondary urban cores in the periphery of the region, but they do not appear to have developed into urban cores capable of dispersing the population concentration.



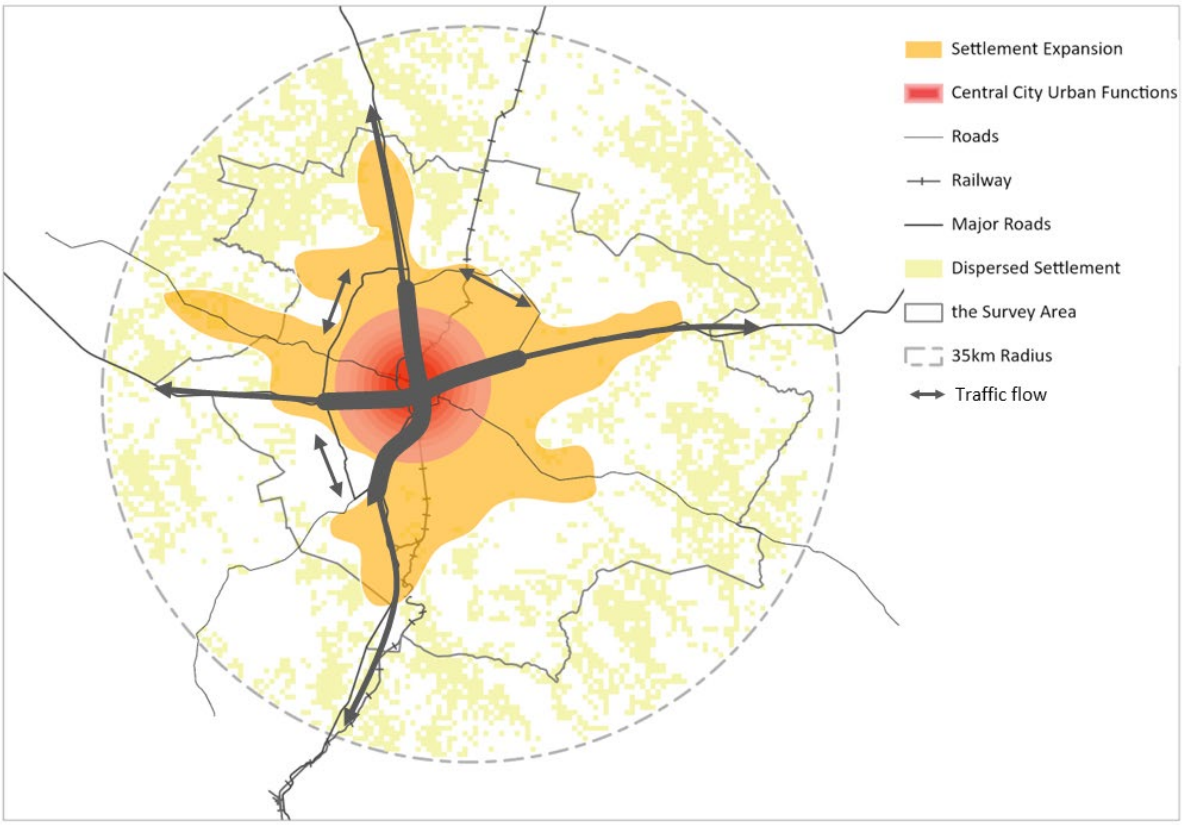
Source: Facility data within Study Area is updated by JICA Expert Team (2024). Data outside Study Area is retrieved from OpenStreetMap and Zambian Governments

Figure 4.7.2 Urban Functions in Study Area

(3) Summary diagram of urban structure

Figure 4.7.3 shows a summary diagram taken into account development issues descried in the last two thematic maps. Descriptions are listed as follows:

- Sprawl of residential areas have been expanded along major roads in unplanned ways; there is no comprehensive plan for the region. The demand of urban services will be increasing even more.
- Urban functions are highly concentrated within 10km of the city centre. Taking also into account the distribution of people, this suggests that people who are distributed in Lusaka and along the major roads in the suburban areas will travel to urban functions within 10km of the city centre of Lusaka.
- On the other hand, the ring road in southeast is not connected to the western half. This fails to divert people and goods from the centre, leading to traffic congestion towards the centre.



Source: JICA Expert Team (2024)

Figure 4.7.3 Summary Diagram of Urban Structure

4.8 Green Infrastructure

4.8.1 Definition of Green Infrastructure

JICA Expert Team re-define 4 types of "Green Infrastructure" that it includes Major Park and Recreation, Green and Open Space, Water surface, Private Green Space in the Project.

Figure 4.8.1 Redefine Green Infrastructure

Type	Specific Facilities
Major Park and Recreation	National Park, Urban Park, Private Park, Recreation Center, National Stadium
Green and Open Space	Agriculture land, Forest, Play Park, Playground, Sidewalk reserved greenery, Roundabout
Water surface	River and Stream
Private Green Space	Private Open Space, Private Sports Club

Source: Lusaka IDP (JICA expert team revised from Lusaka City Land Use Map 2024)

4.8.2 Summary of each Green Infrastructure

(1) Major Park and Recreation

1) National Park

Zambia boasts 20 national parks and 36 game management, which collectively cover approximately 30% of the nation's land, marking it as one of the largest wildlife estates in Africa. The Department of National Parks and Wildlife (hereinafter referred to as "DNPW"), operating

under the Ministry of Tourism is tasked with the stewardship and preservation of Zambia's wildlife. The DNPW is dedicated to ensuring that wildlife conservation is harmoniously integrated with economic, environmental, and social policies to contribute effectively to Zambia's sustainable development.

2) Private Park

Some of the Park like a Munda Wanga Environmental Park is running by Private sectors. This kind of park well managed with profit from visitors and can attract low, middle-income citizen. Recently, those kinds of park are facing profitability matter in their own business, licensing for wildlife and tax payment after in COVID-19.

3) Recreation Centre

Local authority is running a recreational complex. They call this kind of facility to Recreation Centre. This space includes sanitation facility, swimming pool and attraction for kids. This space has been installed and managed by local authority. Because of limited recreation facility, recreation activities on holyday and vacation doesn't have many options for citizens. Even local authority has a plan to install recreation centre, construction doesn't proceed because of shortage of land.

4) National Stadium

There are two National Stadium currently. The first one is Heroes National Stadium in Lusaka. Second one is Levy Mwanawasa Stadium in Ndola. These National Stadia are managed by Ministry of Youth, Sport and Arts (hereinafter referred to as MYSA).

Heroes National Stadium is the only National Stadium in this Study Area.

The Olympic Youth Development Centre located at New Kansangula /Great North Road in Lusaka. This Centre serves as a sports hub under the MYSA, offering invaluable sports and community development prospects tailored for the youths and marginalized segments within the neighbouring communities.

Other Playground where is side by schools is managed by Ministry of Education. MYSA and Land use planning department on the Town Council has no relation with playground planning.

(2) Green Space and Open space

1) Agriculture land

The role of agriculture land in the green network system is significant in Lusaka City. Although the primary roles are providing food to the citizens and creating jobs, the role as green infrastructure is also noteworthy. In recent years, as urbanization progresses and urban sprawl increases, the reduction in agriculture land area affects the disappearance of the green network.

2) Forest

Forests constitute a vital component of Zambia's natural wealth. The National Forest Policy of 2014 states that forests envelop 66% of Zambia's total land area, which is about 49.97 million hectares. Within this expanse, 4.8 million hectares are designated as gazetted forest reserves.

The Forestry Department, under the Ministry of Lands and Natural Resources in Zambia, is responsible for the management of the country's forests. Its mission is to sustain the supply of both wood and non-wood forest products and services, ensuring that the forests' biodiversity is conserved and maintained for both current and future generations. This is achieved through

engaging all stakeholders in active participation.

The forestry sector contributes between 5.2 to 7% of Zambia's GDP. This contribution is primarily derived from forest-based industries, which make up about 3.7% of the GDP. Charcoal production and fuel wood collection also have significant contributions, accounting for 2.2% and 0.8% of the GDP, respectively. Moreover, commercial logging and the harvesting of non-timber forest products add around 0.3% and 0.1% to the GDP, respectively[7].

3) Play Park

Play Parks are a favored form of open space in the district, providing areas with greenery, playgrounds, and sanitation facilities. These open spaces are public spaces designed to provide recreational areas for children and families. Each district has intentions to develop such spaces. Nevertheless, they encounter challenges including budget constraints and land acquisition.

4) Playground

The open spaces adjacent to schools in Zambia are designed for the use of both students and the wider community. Primarily, these spaces are intended for sports and outdoor activities, which is why they are as expansive as the schools themselves. Nevertheless, some schools may not have a playground due to budgetary constraints or land availability issues. The Ministry of Education is the principal body responsible for the planning and sizing of these playgrounds.

5) Sidewalk Reserved Greenery and Roundabout

Due to the implementation of the Doxiadis Development Plan in 1975, Lusaka features several major boulevards. Alongside these boulevards, there are reserved areas of greenery lining the sidewalks. Also, there are several roundabouts on the crossroad. The maintenance of these green spaces is managed by the park and garden unit of the department of planning. In a collaborative effort, the Lusaka authorities have partnered with advertising companies, allowing these companies to utilize these spaces for their business operations in exchange for maintaining them.

Source: JICA Expert Team (2023)

Figure 4.8.2 Playground and Boulevard

(3) Water Surface

1) River and Stream

In the Lusaka City, there are three major rivers flowing. To the south of Lusaka is the Zambezi River, to the west is the Kafue River, and to the north flows the Lunsemfwa River. Although not included in this Study Area, parts of the Kafue and Chibombo Council areas do include

[7] REPORT OF THE COMMITTEE ON AGRICULTURE, LANDS AND NATURAL RESOURCES ON THE REPORT OF THE AUDITOR GENERAL ON SUSTAINABLE FOREST MANAGEMENT(2017)

these rivers. The Kafue River is considered an important river for agriculture, hydropower, and from an ecosystem perspective. However, it faces challenges that need to be addressed, such as water pollution issues and water shortages due to population growth. The Ministry of Water Development, Sanitation and Environmental Protection is primarily responsible for policy direction and coordination of water resources management, including rivers.

The water resource is gradually diminishing as the protective buffer zones, which are essential for maintaining the health of the water systems, are increasingly being compromised. Residential developments, in particular, are encroaching upon these critical areas, leading to a significant depletion of this vital resource.

(4) Private Green Space

1) Private Open Space

On the outskirts of Lusaka are Private Open Space, where visitors can experience the natural environment, along with Lodge, a hotel, Game Drive, and a riverfront. These facilities provide recreational venues by private operators targeting international tourists and middle-income household. Many of these facilities are located in the suburbs of Lusaka and provide a place for citizens who want to enjoy their leisure time away from the city life. However, the fees for using these facilities are high costed even for middle-income earners, and the majority of low-income citizens face the problem of having few recreational facilities.

Interviews revealed that these private operators do not currently have a working relationship with the Lusaka City Council or the Zambian government.


Source: JICA Expert Team (2023)

Figure 4.8.3 Private Open Space and Water Surface

2) Private Sports Club

In addition to the National Stadium and Provincial stadiums managed by MYSA, there are also sports fields and sports clubs in Lusaka City that are operated and managed by private sports clubs. Although these facilities are not under public control, they are heavily used by Lusaka citizens and play an important role as recreational facilities on intercity.

4.8.3 Key Issues in Existing Policy and Plan

1) The Urban and Regional Planning Act (2015)

This act provides the legal framework for spatial planning, land use, and development control. It addresses the designation and management of open spaces in urban areas.

This act includes that open space should have well managed amenity. And 3 standards ((a) about balance on settlements and open space, (g) about priority of open space on the redevelopment, (h) about harmonise with settlements and open space) expressed.

2) National Forestry Policy (2014)

The National Forestry Policy of 2014 in Zambia was developed to address the challenges facing the forestry sector and to ensure the sustainable management of forest resources for the long-term benefit of current and future generations. This policy includes Sustainable Forest Management, Conservation and Protection, Community Involvement, Economic Development, Legal and Institutional Framework, Research and Development, Climate Change, Private Sector Engagement, International Cooperation, Education and Awareness.[8]

3) Sustainable forest management

Sustainable forest management in Zambia is a strategic approach aimed at achieving a balance between the need for forest conservation and the demand for economic benefits from forests.

In Zambia, sustainable forest management is critical due to the country's dependence on forests for livelihoods, habitat provision, and other environmental services. The challenges faced include high rates of deforestation, primarily due to agricultural expansion, charcoal production, and illegal logging activities.

4.8.4 Present Condition at Ground

(1) Lusaka City

Lusaka Council call the open space to “Green & open space”. Lusaka Council has planned as a garden city until now. but most open spaces have been developed on due to lack of enforcement of planning controls. Recently, the population of the Lusaka get more dramatically increased, for this reason Lusaka Council has faced pressure to place on the open space to meet the demand for houses and other amenities. For example, Expansion of road infrastructure in the city led to a number of trees been cut down.

(2) Chilanga District

Chilanga council supervises five (5) general workers and engages seasonal casual workers for vegetation control twice a year. Chilanga staffs manages strictly infrastructure on council land.

There are currently four (4) parks of which three (3) are fully functional.

The Council has outlined future plans that focus on beautifying the town, which includes enhancing roadside aesthetics with greenery and constructing permeable pathways to accommodate non-motorized road users. These initiatives are part of a broader vision to create a more environmentally friendly and pedestrian-friendly urban space.

(3) Kafue

The area of Chisankane features a National Park which is surrounded by compounds. The National Park authority regulates production activities around the park, prohibiting residents of the compounds from producing anything. This control is aimed at preserving the park's environment.

While there are undeveloped lands within the more urbanized wards, they have not been designated as open spaces. In the swiftly developing Lusaka South area of Chisankane ward, there's a noticeable absence of public open spaces in the new residential and mixed-use developments.

[8] National Forestry Policy : https://zm.chm-cbd.net/national-forestry-policy

(4) Chibombo

The Chibombo Council is tasked with delivering public amenities, such as playgrounds, parks, and other recreational spaces, which are contingent on land availability. However, there is no established strategy or decision-making process for determining the size or location of these open spaces. The council is grappling with a land shortage for public facilities, impacting the provision of open spaces and other public amenities.

(5) Chongwe

The district has limited green infrastructure such as play parks and recreational spaces. The current play park in the district was in a deplorable state. The council endeavours to revamp and operationalise the park through Public Private Partnerships.

4.9 Housing Supply

This section sheds light on the status quo of the housing supply and finance in the Study Area. It provides an overview of housing development, involved actors, and available housing finance mechanisms. Furthermore, the discussion reflects on the results of a household survey to provide citizens' perspectives on current issues and possible solutions. The survey was conducted by JET in 2023 and it covers a sample of 3,000 households in Greater Lusaka. This section focuses on the provision of affordable housing for low/mid-income citizens in the Study Area.

4.9.1 Status quo of Housing Provision and Finance

The national policy towards affordable housing development is described in Zambia Vision 2030 which identifies ensuring an equitable society where citizens have property rights and affordable housing among the goals of the vision. A more quantitative description is explained in the National Housing Policy (2020-2024) by the (former) Ministry of Housing and Infrastructure Development (MHID). The policy estimates the housing deficit in Zambia by 1.54 million units and projects this deficit to reach 3.3 million units by 2030 if not properly addressed. The policy points out that addressing the estimated deficit number requires an annual development of 222,000 housing units by 2030.

This deficit is due to a lack of adequate housing provision since the 1990s. Since the 1930s, workers' housing was provided by employers in commercial and industrial businesses. Between the 1960s and 1980s, the government made many efforts to provide housing units including the construction of multistorey affordable housing such as Kabwata Flats. In the 1990s publicly provided housing was sold to tenants to provide them with security through ownership. Since then. the limited contribution of public actors in housing supply combined with the rising demand have resulted in new low-cost housing being largely provided by informal actors in unplanned settlements.[9] Table 4.9.1 summarizes the currently involved actors and their overall roles in the provision of housing in Greater Lusaka. The status quo is that previously built multi-story public housing is currently facing issues with overdue maintenance of buildings and infrastructure. The lack of funding has prevented NHA from carrying out its role in housing provision and research other than small-scale projects funded by other institutions such as NAPSA. Private developers currently play a key role in housing supply by providing either housing units or serviced land plots for incremental self-paced or contracted housing construction.

[9] UN-Habitat, Zambia Urban Housing Sector Profile, 2012.

Table 4.9.1 Housing Development Actors in Greater Lusaka

Type	Actors	Role
Public	Ministry of Infrastructure, Housing and Urban Development (MIHUD)	・ Policy and strategy formulation for housing development
	National Housing Authority (NHA)	・ Construction of affordable housing and acquiring the necessary land for it ・ Redevelopment of properties ・ Conducting housing-related research (on-hold due to funding)
Quasi-public	National Pension Scheme Authority (NAPSA)	・ Financing development of housing projects in collaboration with NHA and other actors ・ Managing and investing in commercial properties
Private	Private land and property developers	・ Providing serviced land parcels ・ Helping landowners form associations to install necessary facilities (e.g., sanitation). ・ Property construction or introducing contractors
	Non-profit organisations (e.g., Housing for Humanity)	・ Constructing and improving housing for low income and disadvantaged groups.

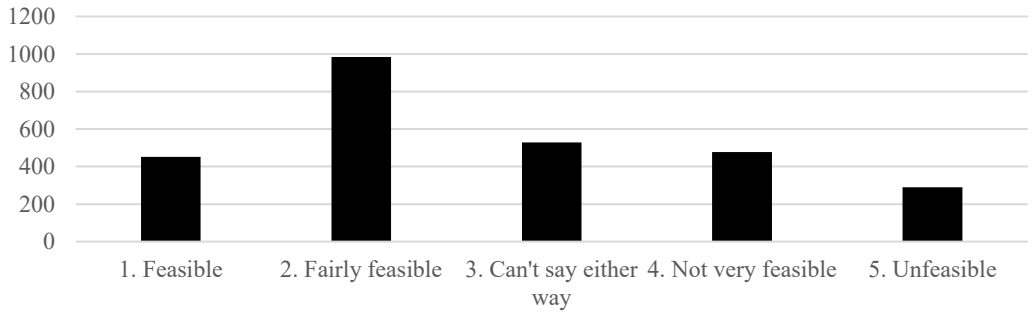
Source: JICA Expert Team (2023)

The prominent products in the housing market are usually single-storey detached dwelling units after the subdivision of land to parcels. JET members interviewed several housing providers including NASPA and four private housing developers in November 2023. Findings showed that housing units or land options provided usually range between 400 and 1200 sqm. When purchasing land or housing units, some private developers provide customers with instalments-based payment structures.[10] Other finance alternatives could be summarized as the following:

(f) Housing loan (mortgage): this includes housing loans from banks and quasi-public entities; however, interest rates are high and could exceed 20 per cent.[11] Zambia National Building Society (ZNBS) provides two options for housing-related loans: 1) Mortgage security loan and 2) Building materials loan. The latter option is more attainable to lower-income citizens as it does not require the applicant to provide a proof of security or collateral.
(g) Microfinance: this includes financial institutions that would offer loans to low-income individuals. They play an important role as their services are more flexible and might offer loans to individuals who might not have access to loans otherwise.
(h) Community-based financing: this includes acquiring the necessary funds through Village Banking or Chilimba Groups. Such methods utilize the savings of a group of community-based individuals to provide funds. This option relies on trust between the involved members and mainly focuses on short-term financing.

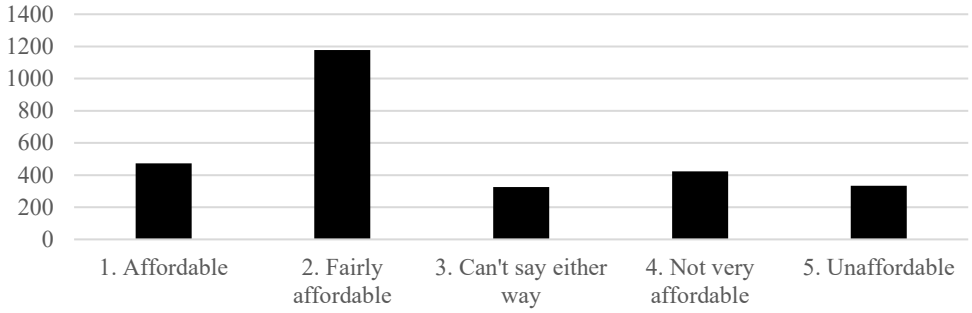
The participants in the household survey were asked about the affordability of housing and the feasibility of finance mechanisms. Figure 4.9.1 shows that more than half of the survey respondents consider the current options of housing finance feasible. Regarding the affordability of housing prices, Figure 4.9.2 shows that more than half of the respondents to the household survey consider housing prices relatively affordable. Furthermore, discussing housing affordability requires an understanding of the average repayment financial capacity of the citizens. Figure 4.9.3 illustrates that the vast majority of the respondents consider a monthly payment amount less than ZMW1,000 as an appropriate one.

[10] Payment structures where customers pay the full price of the house or land through a regular monthly amount over a period of time. The monthly amount might include interest.
[11] Center for Affordable Housing Finance in Africa, Housing Investment Landscapes – Zambia, 2019.



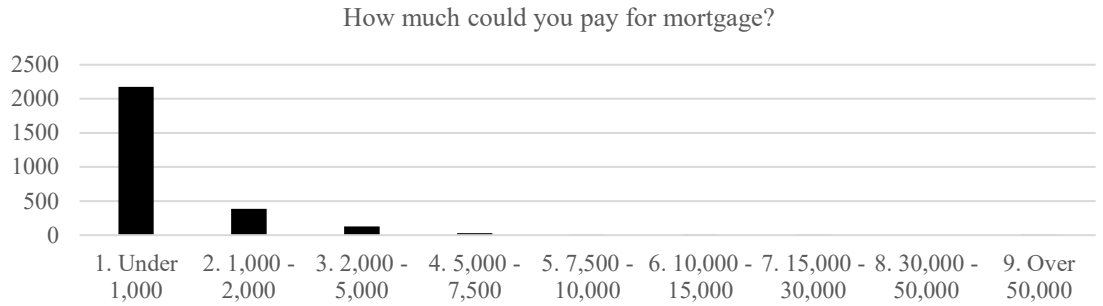
Source: Household Survey, JICA Expert Team (2023)

Figure 4.9.1 Feasibility of Currently Available Housing Finance Mechanisms



Source: Household Survey, JICA Expert Team (2023)

Figure 4.9.2 Citizens' Opinions on Housing Prices Affordability



Source: Household Survey, JICA Expert Team (2023)

Figure 4.9.3 Citizens' Mortgage and Rent Rate Payment Capacity

4.9.2 Issues and Challenges

The current state of housing supply and finance highlights several challenges for this sector. For instance, there is a clear gap between supply and demand in the housing market. The absence of publicly funded affordable housing development for decades in rapid population growth and urbanisation context has resulted in a significant housing deficit. Private actors have moved to fulfil the demand by either building new poor-standards housing in unplanned settlements or expanding the development of isolated housing projects without a clear citywide vision for future infrastructure development and service provision.

Furthermore, the dominant character of new housing is single-storey low-density development. According to interviews with private developers, the large size of the parcels is a result of prospective buyers preferring spacious properties and better privacy in addition to the wide distances necessary to avoid contamination when installing individual water (borehole) and

sanitation facilities. Private developers find investing in apartment buildings less attractive due to the higher cost, difficult construction, and lower market appeal compared to single units. Such development results in inefficient utilisation of land, pressure for infrastructure provision, and exacerbating urban sprawl through unplanned development among other issues.

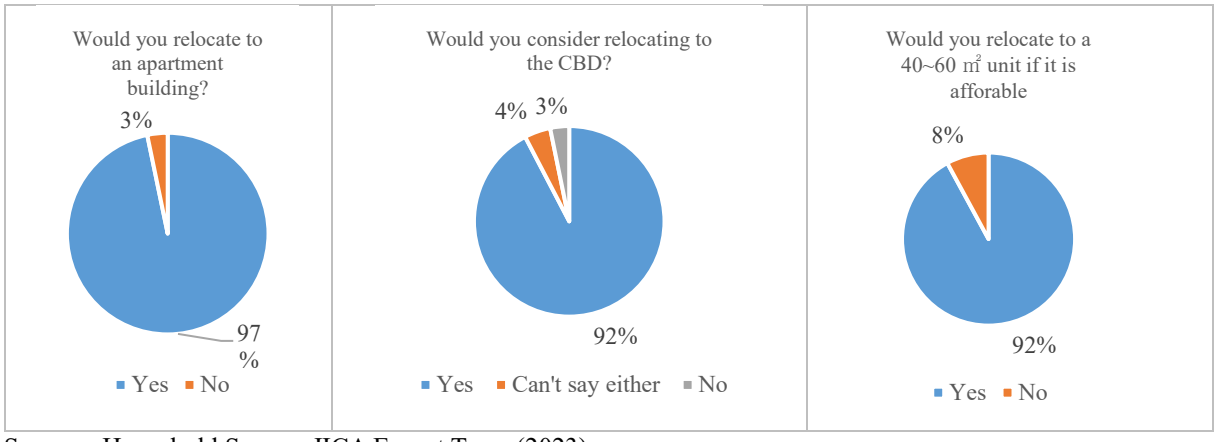
4.9.3 Recommendations for Improvement

In light of the above-mentioned issues and challenges, and towards tackling them by 2045, recommendations for improving the status of housing supply and finance should be considered when formulating Lusaka RDP.

Regarding housing finance, it is necessary to have adequate and affordable housing finance mechanisms for low/mid-income citizens. This could be done by considering an integrated approach that supports and amplifies the role and contribution of different actors and encourages them to provide affordable options. It is important for affordable housing finance mechanisms to recognise the repayment capacity of low/mid-income citizens for them to be successful.

Affordable finance should be paired with clear methods to introduce a stable supply of affordable housing to efficiently tackle the housing deficit. This could be done by enabling public housing authorities and considering housing schemes that integrate the resources of both public and private actors towards well-planned large-scale housing provision.

As for the current less-efficient style of housing development, one possible direction towards tackling this issue is the consideration of small-size (40~60 sqm) multi-storey housing units. The household survey respondents illustrated that they consider relocation to apartment buildings as a viable option. Figure 4.9.4 shows that the vast majority are willing to relocate to apartment buildings, smaller units, or housing units in the CBD as long as these units are affordable. These findings show the high potential of apartment buildings and redevelopment projects in the CBD.

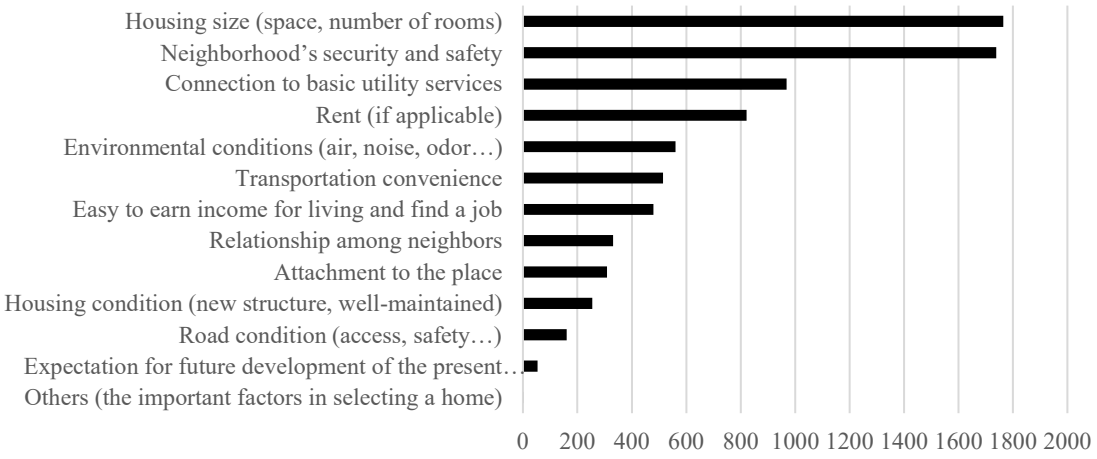


Source: Household Survey, JICA Expert Team (2023)

Figure 4.9.4 Citizens' Willingness to Relocate to Apartment Buildings, CBD, or Smaller Affordable Housing Units

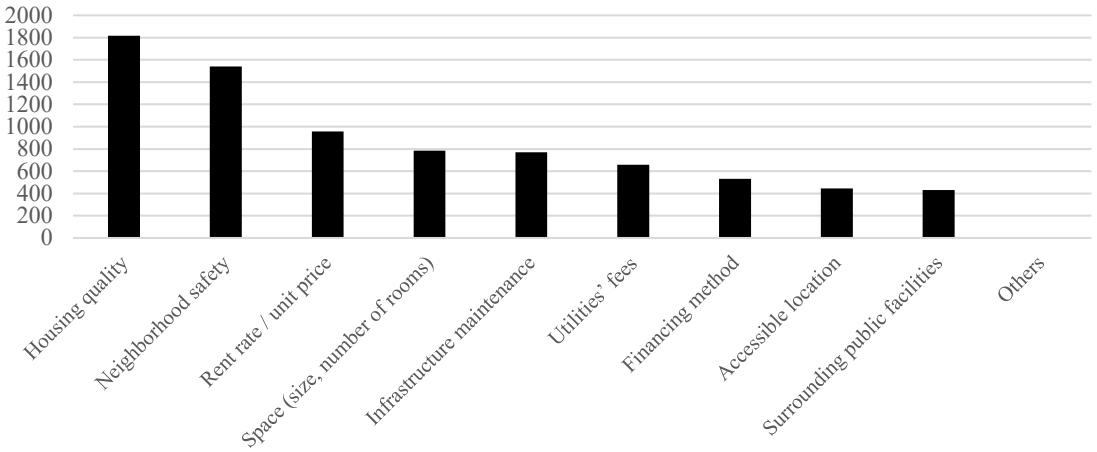
As illustrated in Figure 4.9.5, prospective house owners consider the size of the unit, safe neighbourhood environment, and connection to services as the top three priorities when selecting a future house. Furthermore, as demonstrated in Figure 4.9.6, findings show that the top three aspects necessary for apartment buildings to be appealing are: housing quality, neighbourhood safety, and rent rate/unit price. This shows that in addition to seeking the best quality for price/rate, apartment building projects should ensure a safe environment either

through design or facilities to out-compete stand-alone units or gated communities. It is important to consider these aspects in the planning of affordable apartment housing units to make them more attractive.



Source: Household Survey, JICA Expert Team (2023)

Figure 4.9.5 Important Aspects When Choosing a Housing Unit



Source: Household Survey, JICA Expert Team (2023)

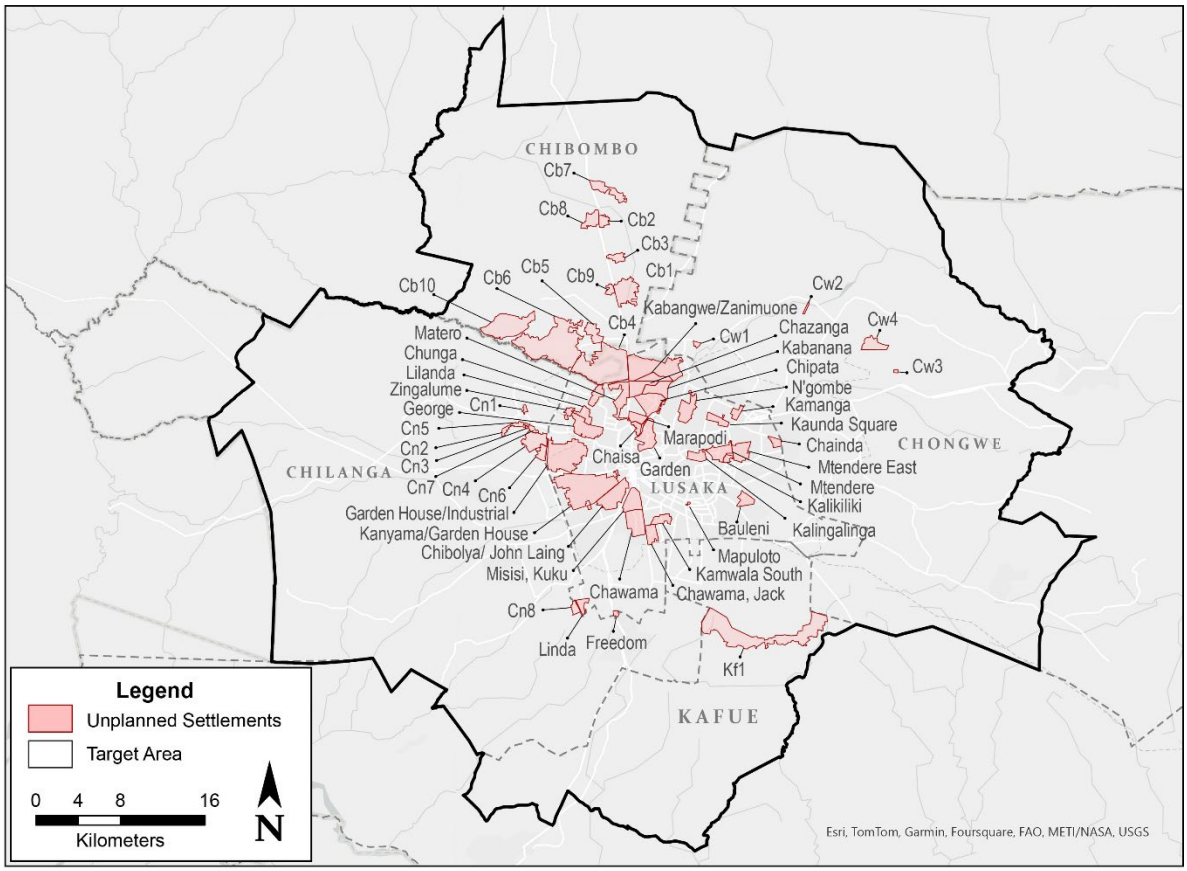
Figure 4.9.6 Necessary Improvement Aspects for Apartment Buildings

4.10 Unplanned Settlement

The rapid population growth of Lusaka combined with the historical development of the city resulted in the formation of large areas of unplanned settlements throughout Lusaka. Due to the unplanned nature of these settlements, they are characterized by poor living conditions, inadequate infrastructure, high population density, and lack of sufficient facilities provision among other challenges. Various actors including public authorities, international organisations and non-profit entities have carried out intensive efforts towards the improvement of the living conditions of citizens in these areas. This section provides an overview of the unplanned settlements in Lusaka, improvement initiatives, and the status quo on living conditions and challenges.

4.10.1 Unplanned Settlements in Lusaka

Figure 4.10.1 below illustrates the location and extent of unplanned settlements in Greater Lusaka. According to data from and consultations with the councils in Greater Lusaka we can identify over 50 unplanned settlements (Table 4.10.1). Unplanned settlements are officially referred to as improvement areas, or commonly as compounds. Under the Urban and Regional Planning Act No.3 of 2015, Section 28, local councils can define the boundaries and recognise unplanned settlements as improvement areas. This process legalises them and makes these areas eligible for infrastructure provision and planning activities. By overlapping the extent of unplanned settlements with population data distribution of the 2022 Census, the number of residents in these areas could be estimated to be 1.6 million in Lusaka City (73 percent of its population) and 1.74 M in the entire target area. The vast extent of the unplanned settlements and their significant share of the urban population emphasize that thorough consideration should be given to handling unplanned settlements while planning the future development of Greater Lusaka.



Source: JICA Expert Team (2025) based on data from and consultations with local councils in Greater Lusaka

Figure 4.10.1 Unplanned Settlements in Greater Lusaka

The figure above shows that unplanned settlements cover large extents in the northern and western sides of Lusaka City notably along the Great North Road and on both sides of Kafue Road. In addition, the figure shows that several unplanned settlements are in close proximity to the CBD as seen in the case of Chibolya, Msisi/Kuku and John Laing. In terms of scale, Kanyama to the west of the CBD is one of the largest unplanned settlements in the Study Area. The proximity to a prime location like the city centre sets areas like Msisi/Kuku and Chibolya as higher priority locations for redevelopment proposals.

Table 4.10.1 Improvement Areas (Unplanned Settlements) in Greater Lusaka

#	District	Ward	Area / Area Code				
1	Lusaka	Kabulonga Ward	Bauleni	34	Chilanga	Kasupe	Chikondano (Cn1)
2		Chaisa Ward	Chaisa	35		Namalombwe	Dolomite (Cn2)
3		Chainda Ward	Chainda	36			Handamana (Cn3)
4		Chawama Ward	Chawama	37			Kamango (Cn4)
5		Mpulungu Ward	Chazanga	38			Madalisto (Cn5)
6		Harry Mwanga Nkumbula Ward	Chibolya / John Laing	39			Magwaba (Cn6)
7		Raphael Chota Ward	Chipata	40			Maloni (Cn7)
8		Raphael Chota Ward	Chipata Overspil	41		Mount Makulu	Linda Exten. (Cn8)
9		Chankunkula Ward	Kamanga (Chestone)	42	Chongwe	Ngwerere	Ngwerere E. (Cw1)
10		Mwembeshi	Chunga (Madimba)	43		Madido	Kampasa (Cw2)
11		Lilayi Ward	Freedom	44		Ntandabale	Baghdad (Cw3)
12		Ngwerere Ward	Garden	45		Chinkuli	Cw4
13		Garden Park	Garden House / Industrial	46	Chibombo	Katuba Ward	Cb1
14		Lima ward / Kapwepwe Ward	George	47			Cb2
15		Kamulanga Ward	Jack / Jack Block 400	48			Cb3
16		Mpulungu Ward, Kabanana Ward	Kabangwe / Zamimuone (Mandevu)	49		Chunga Ward	Cb4
17		Kabanana Ward	Kabanana	50			Cb5
18		Kalikiliki Ward	Kalikiliki	51			Cb6
19		Kalingalinga Ward	Kalingalinga	52		Kamaila Ward	Cb7
20		Kamulanga Ward	Kamwala South	53		Mungule Ward	Cb8
21		Makeni Villa Ward, Kanyama Ward, Chinika Ward	Kanyama (including Site & Service)	54			Cb9
22		Munali Ward	Kaudna Square	55			Cb10
23		Nkoloma Ward	Kuku/ Misisi	56	Kafue	Chisankane Ward	Kf1
24		Kapwepwe Ward	Lilanda Site & Service / Lilanda Extension				
25		Munkolo Ward	Linda				
26		Chilenje Ward	Mapuloto				
27		Justine Kabwe	Marapodi				
28		Muchinga Ward	Matero				
29		Mtendere Ward	Mtendere				
30		Kalikiliki Ward	Mtendere East				
31		Roma Ward	New Kabanana				
32		Roma Ward	N'gombe				
33		Mwembeshi Ward	Zingalume				

Source: JICA Expert Team (2025)

The development and expansion of unplanned settlements are directly related to the influx of population to Lusaka combined with the shortage of affordable housing. In the past, unplanned settlements developed as landlords from the colonial period provided small plots for workers to settle. Other areas developed as workers settled around contractors' compounds or close to

industrial areas. In response to the growing demand for housing and the absence of affordable ones, poor-conditions low-standards housing units are rapidly developing in unplanned settlements. Due to the status quo of limited enforcement of urban management measures, no actions are taken by councils to stop the expansions of these settlements. Despite that fact that within the same unplanned settlement, some residents hold ownership documentation (formal) while others don't (informal), councils do not follow different procedures when handling matters related to their properties.

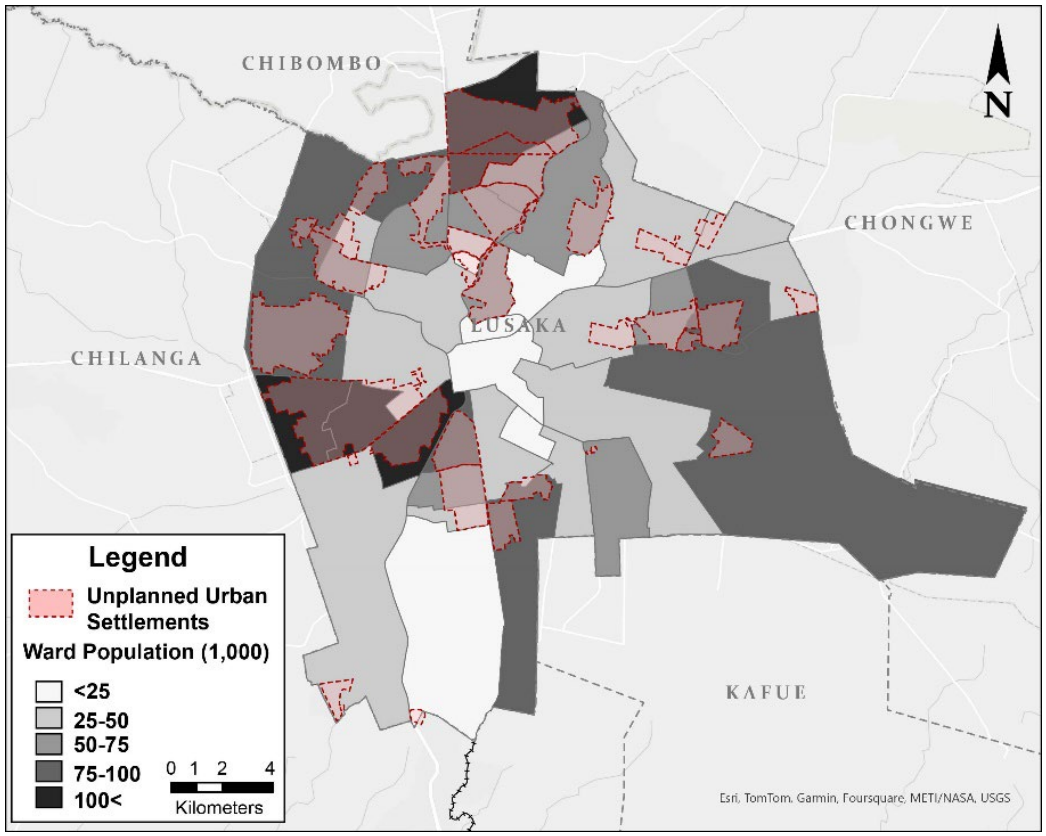
Originally, individuals acquired land in peri-urban areas for agriculture from headmen or government institutions without obtaining titles. The community's recognition sufficed as proof of ownership. These individuals would then allocate part of the land to relatives or other interested people. As communities expanded, chairmen were selected to represent their communities and they acted as intermediaries for land acquisition. The government later formed Residential Development Committees (RDCs), currently replaced by WDCs, where representatives' mandate included the mediating allocation of residential plots. After acquiring a piece of land from the community-recognized owner, prospective new residents would hire a local contactor to build their house without acquiring the necessary permits. Therefore, unregulated development continues in these areas as more units are built. Since the early 1970s, national development plans moved towards legalising these areas and residents were able to receive an occupancy licence under the Urban and Regional Planning Act to provide them with ownership and encourage them to invest in their properties.

New residents usually move into unplanned settlements by renting parts of existing structures or buying subdivided land plots. Land plots are acquired from their legal owners, those who hold title deeds, or locally recognized owners (i.e., those who are known to manage or live on this plot for an extended period of time). Then they could apply for occupancy licences after building the structure by providing ownership documentation. Land titles could be acquired through the National Land Titling Program, and the publicly available map of the program shows a majority of small-scale land divisions in unplanned settlements such as Kanayama.[12]

Forecasting the future expansion of unplanned settlements requires a deeper insight into density and population dynamics. Taking the example of Lusaka City, Figure 4.10.2 and Figure 4.10.3 shed light on the population trends in wards where unplanned settlements are located. For instance, Figure 4.10.2 illustrates the ward population in Lusaka based on the 2022 Census. The figure highlights that Kanyama, Chibolya and Kabangwe are among the most populated unplanned settlements in the Study Area.

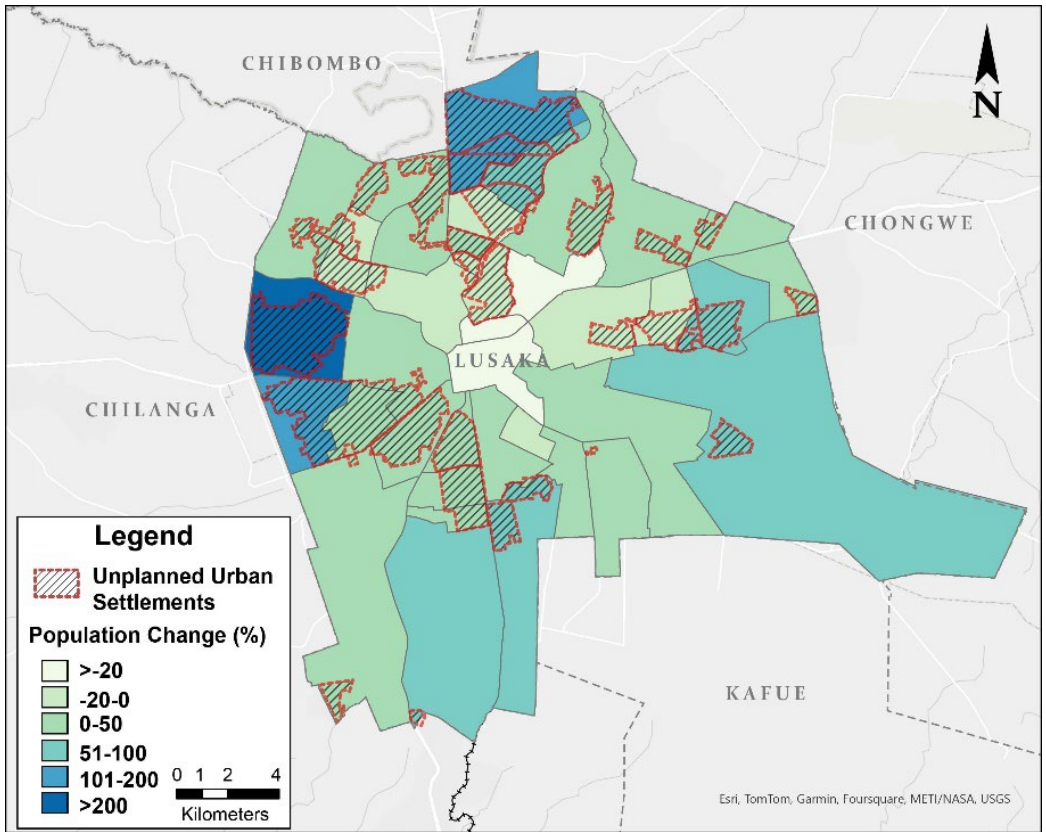
Furthermore, Figure 4.10.3 compares the ward population change ratio between the 2010 and 2022 census data. The figure shows that in terms of population growth, the western and northern peripheries are rapidly growing in population compared to other wards, especially to the west of the Kanyama area (Garden Park and Makeni Villa) and Kabangwe. For instance, in 2010 Garden Park Ward's population was less than 9 thousand, while it was around 87 thousand by 2022. Similarly, Makeni Villa was less than 47 thousand in 2010, and it exceeded 100 thousand by 2022. On the other hand, the figure shows that the population of central areas has shown a declining trend over the last decade. As the western and northern peripheries are showing an increased influx in population, it is necessary for Lusaka RDP to take into consideration a potential further expansion around these areas and proper urban control regulations are necessary to control this trend.

[12] Website: https://landum.mlgzambia.com/publicmap



Source: JICA Expert Team (2023) based on data from ZAMSTAT

Figure 4.10.2 Ward Population and Unplanned Settlements in Lusaka (2022 Census)



Source: JICA Expert Team based on the comparison of 2010 and 2022 census ward population data

Figure 4.10.3 Ward Population Change Ratio and Unplanned Settlements in Lusaka

4.10.2 Improvement Initiatives

The Housing and Social Services Department in LCC in conjunction with Ward Development Committee (WDC) members and stationed officers play a key role in organizing improvement efforts in the unplanned settlements. Several programs and initiatives were either taken or are currently in progress to tackle the inadequate infrastructure and poor living conditions in unplanned settlements in the Study Area. Table 4.10.2 provides a summary of key recent initiatives:

Table 4.10.2 Key Improvement Programs in Unplanned Settlements

Program/ Initiative	Overview	Actors
Participatory Slum Upgrading Program (PSUP / 2008~)	・ The program is comprised of three phases and currently it has reached the third phase ・ Activities have included the preparation of urban profiles and action plans in the target areas ・ The program focused its implementation on Kanyama ・ The program also partially worked on improving drainage infrastructure ・ Activities for crime prevention were also planned (not implemented)	UN-Habitat with support from African, Caribbean and Pacific States and the European Commission
Building Disaster Resilience Capacity in Lusaka City (2014~2016)	・ The program focused on developing a disaster risk reduction strategy ・ The program included a pilot project based on a participatory planning approach in Kanayama that revolved around flooding risk reduction.	UN-Habitat in collaboration with LCC
Lusaka Citywide Slum Upgrading and Prevention Strategy (2015~)	・ The project has focused on developing a strategy for upgrading unplanned settlements in Lusaka. ・ Activities in the project included identifying improvement priorities and domains for urgent interventions.	UN-Habitat, PPHPZ, LCC, and MLGH
Social Tenure Domain Model (STDM)	・ The project was implemented under the National Land Titling Program (NLTP). ・ The project has included mapping and numbering of parcels in unplanned settlements to facilitate issuing occupancy licenses. ・ It aimed to encourage issuing customary land occupancy certification ・ The project was implemented in Chamuka Chiefdom and Kanyama	UN-Habitat and GLTN in collaboration with LCC
Other efforts	Various other efforts and initiatives have aimed at enhancing infrastructure in unplanned settlements including: ・ Improving facilities of water supply and overall quality ・ Constructing drainage facilities. ・ Providing and enhancing on-site sanitation.	LWSC, MCC

Source: JICA Expert Team (2024)

Table 4.10.2 demonstrates that efforts toward improving the living conditions in the unplanned settlements have focused on securing titles and occupancy licenses, identifying intervention priorities, and improving infrastructure. These efforts have shown that involving the residents in a participatory planning process creates a platform for dialogue between the communities and local authorities and further enhances their communication. They also have empowered women to discuss and be part of matters related to property and land. In addition, enhancing the security of tenure has helped in decreasing land-related disputes, improving residents' livelihoods and encouraging them to invest in their properties. Implementing projects such as STDM has helped raise the capacity of the participants through their active involvement therefore enhancing the sustainability of the process and the possibility for the expansion of its

scope. The data collected concerning land and ownership come as a valuable resource for local authorities when considering future developments or tackling local issues. Therefore, the development of Lusaka RDP should build upon these efforts and provide an integrative strategy to smoothen their implementation and increase their scope. This is particularly important in terms of land titling as clear rights of ownership will facilitate redevelopment projects.

4.10.3 Living Conditions and Challenges in Unplanned Settlements

The status quo of the living conditions and challenges in unplanned settlements is discussed below based on the findings of a survey conducted by JICA Study Team of "Data Collection Survey on Urban Development and Urban Transport in Lusaka City" Project in 2021 for over 400 respondents in Kanyama, Chibolya, Misisi, and the Heavy Industrial Area.

- Vulnerable socio-economic conditions: The education level of the majority of the residents is at junior high school or a drop-out of high school. Around 80 percent of the residents make less than ZMW 2,500 per month and the majority work in small retail within the same unplanned settlement. The number of occupancy license holders remains very limited, and the majority of residents are renting properties. Residents lease part of their houses and those leasing two to three rooms are the majority.
- Limited infrastructure: The vast majority of housing structures are made up of concrete blocks. Electricity provision is relatively in a better condition as 70 to 80 percent of the residents have electricity supply. As for water supply, around half of the households get their water supply from LWSC while others depend on public water kiosk for drinking water among other sources. Drainage infrastructure is very limited and the majority of the residents release sewer water into their gardens or within their premises.
- Inadequate waste management: while many households depend on solid waste collection services, some residents merely dispose waste both inside and outside of their premises especially in the case of Msisi. The majority of existing toilets are simple pit structures and are shared by more than one household. On an application basis, households in unplanned settlements such as Kanyama could apply through LWSC for pit latrine private toilet. Human waste is removed by LWSC when the constructed toilets are filled.
- Flood risk and disease outbreaks: under the absence of proper drainage facilities, unplanned settlements are prone to floods and the majority of the respondents to the survey reported experiencing floods at least once or twice a year. After the flooding of an area, many residents reported that it would take the water more than a week to recede. The absence of proper waste collection combined with overflowing roads during rainy periods creates an environment which is prone to contamination and disease outbreaks such as Cholera. The majority of the residents highlighted the lack of current measures to deal with this issue.

In addition to the above-mentioned challenges, other aspects which are attributed to the unregulated nature of the development of unplanned settlements intertwine together and further accelerate the deterioration of the already poor living conditions. For instance, one of these aspects is the continuous expansion and densification of the unplanned settlements due to the resident influx. As more residents are building houses or relocating to unplanned settlements, the increase in population exacerbates existing issues and puts further pressure on the inadequate infrastructure. Furthermore, the existence of quarry borrows pits due to the continuous extraction of rocks and sand necessary for building materials causes land

degradation. The empty spots are filled with water in the rainy season, collecting contaminated water and being a fertile environment for the breeding of insects.[13] In addition, with the increasing population and a lack the proper facility planning and provision, the limited access to proper education and employment opportunities creates a fertile ground for crime, drug abuse, violence, or other illegal activities.

4.11 Social Services

4.11.1 Education

(1) System and Administration

1) Education System

The educational structure in Zambia is currently operated with categorisation of four stages as 1) early childhood care, development and education (hereinafter referred to as "ECE"); three years before basic education, 2) basic education; Grade one to seven in primary school, 3) high school education; Grade eight to twelve in secondary school, and 4) tertiary education in college and university. Leaners also have an option to go to schools for technical education, vocational and entrepreneurship training (hereinafter referred to as "TEVET") after basic education.

2) Institution

ECE, Basic Education and Secondary Education

From ECE to high school education is responsible by the Ministry of Education (hereinafter referred to as "MoE") (former Ministry of General Education), the Provincial Education Office (hereinafter referred to as "PEO"), the District Education Board (hereinafter referred to as "DEB") and Education Institutions. The MoE, PEOs and DEBs supervise at each level and Education Institutions provide educational service. Four types of Educational Institutions of public, private, community and grant-aided[14] are defined in the Education Act. Any types of the institutions registered by government under the act can provide any level of educational services. The Study Area has in total 731 ECE and primary and secondary schools as per statistical data.

Tertiary Education

Tertiary education is responsible by the MoE (former Ministry of Higher Education), the Higher Education Authority (hereinafter referred to as "HEA") and Higher Education Institutions. HEA regulates, registers and monitors higher education institutions and their tertiary education service. 5 districts in the Study Area have 4 public and 43 private universities and colleges.

TEVET

TEVET is responsible by the Ministry of Technology and Science, the Technical Education, Vocational and Entrepreneurship Training Authority (hereinafter referred to as "TEVETA") and Training Institutions. The TEVETA is responsible for regulating and monitoring Training Institutions who provide the TEVET. Lusaka Province has 117 Training Institutions in 2021.

City and District Councils (Local Authority)

Until now, staffs of the MoE have been dispatched or transferred to local authorities in the Study Area for preparation for an administrative decentralization to be implemented since the

[13] LCC, Kanyama – Local Area Plan, 2022
[14] Non-public institution established by person, organisation or community with financial assistance from the MoE.

beginning of 2024. However, the system of education sector may not be changed drastically.

3) Finance

Annual budget is allocated from the PEO via the DEB to each of schools. When special expenditure is needed for such as new building and repair, principal of school writes a letter to the Regional Director in PEO to apply additional budget.

(2) Key Issues in Existing Policy and Plan

1) The Vision 2030

A limited provision of educational facilities is a cause of negative chain leading to limited investment in education. Also, rehabilitation and newly development of universities facilities are mentioned to improve higher education. A target related to infrastructure is shown below.

- Reduce the average distance to basic schools to 5 km radius to 75 percent of the potential learners by 2030

2) Eighth National Development Plan (2022-2026)

An expansion of access and improvement of quality are focused issues in education. Infrastructure improvement, especially in rural area is focused.

3) Education and Skill Sector Plan (2017-2021)

The current latest plan was formulated during the Seventh NDP and it emphasizes that lack of number of classrooms is one of the key challenges. On the other hand, the MoE launched a new strategic plan (2022-2026) in the end of 2023. However, it has not been published.

4) Development Plan of Local Authorities

All local authorities are facing to shortage of classrooms and land for schools (Table 4.11.1).

Table 4.11.1 Issues and Plan in Education Development Plan of Local Authority

Name of Plan	Issues and Plan
Draft Lusaka IDP 2024-2034	・Shortage of land for school ・Inadequate water, sanitation, building, classrooms and furniture
Draft Kafue IDP 2024-2034	・To develop 3 schools in Malundu and 7 schools in Chisankane ・Accessible distance to school is 5 km
Draft Chibombo IDP 2024-2034	・Pupil / Class ratio will be 40/1 in 2021 ・Develop teachers houses and recreational facility for ECE,
Draft Chilanga IDP 2024-2034	・Most schools are constructed on donated or subdivided land without title. This causes encroachment by neighbours and hindrance to land expansion.

Source: JICA Expert Team (2023), based on plans listed in left column

5) Focus Points as per Discussion

Focused points in educational infrastructure are 1) to manage overcapacity with free education policy at primary and secondary school, 2) to complete remaining improvement at existing universities in Lusaka, and 3) to establish of new universities at each of all provinces in Zambia. So, relevant organisation has no intention to build new or relocate universities in the Study Area.

(3) Present Condition

1) Quantitative Condition (Class to Pupil Ratio)

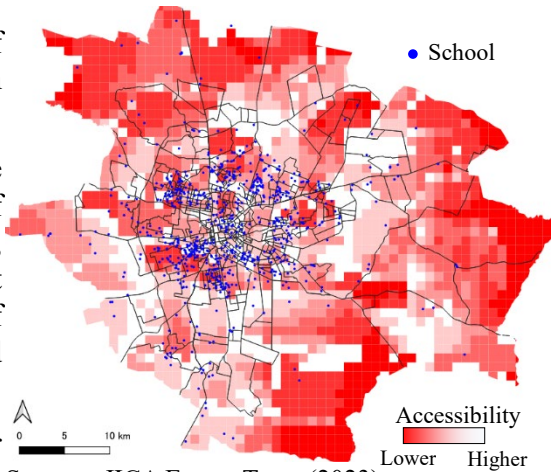
A gap between number of pupils and capacity of infrastructure is getting bigger especially since launch of free education policy in 2019. Number of pupils per one classroom at each of primary school and secondary school is 118 in actual against 45 in the standard, and 95 in actual against 25 in the standard in Lusaka City. Because school is not allowed to reject pupils even if lack of infrastructure is significant, schools try to keep service level of education with increasing number of pupils at each lesson, converting storage and teacher's rooms into classrooms, and operating two- or three-part system.

2) Accessibility to Schools

A result of analysis on a disparity in number of primary and secondary schools against population within 5 km, is shown in Figure 4.11.1.

The Study Area has an accessibility issue at whole area. In suburb, it is caused by small number of schools at such as wards of Malundu, Palabana, Madido, Katuba, Chunga majorly. In city centre, it is caused by larger demand than a capacity of schools at such as wards of Kanyama, Lima and Ngwerere despite of dense school allocation.

Also, it should be noted that the 5 km adopted for analysis is the accessible distance in the national standard, but it should be shorter to reduce disparity among the Study Area because an average distance among schools in the Study Area is 500m.



Source: JICA Expert Team (2023)

Figure 4.11.1 Disparity in Accessibility to Primary and Secondary Schools

3) Quality of Infrastructure

Most of school buildings has one or two stories. Buildings are maintained clean, but some are aged and broken. A lot of problems were observed such as rain leaking on ceiling, broken windows, and error on electrical system for lighting or water pumping (above of Figure 4.11.2). Also, capacity of water and sanitation are insufficient in comparison with numerous pupils.

4) Equipment and Facilities

There is a shortage of such as desks, chairs and toilets which are related to classroom obviously. Also, there is a shortage or aging of special equipment such as experiment facilities at high school education and tools at the TEVET (below of Figure 4.11.2).

Ceiling blown away

Ceiling panel fallen

Leakage of water tank


1 PC motherboard with 3-4 monitors


Broken tools at workshop


Aging braille printer

Source: JICA Expert Team (2023)

Figure 4.11.2 Insufficient Infrastructure and Equipment in Schools

4.11.2 Health

(1) System and Administration

1) Health System

The National Health Care Package 2012 defines hierarchy of health facilities in Zambia as shown in Table 4.11.2. Approximately 90% of hospital facilities are owned by government.

Table 4.11.2 Structure of Health Facility in Zambia

Category	Service	Staff
4th Level Hospital (Specialized Hospital)	Highest health care services and training and research, as to be centres of excellence in provision of specialized health care services	specialist doctors, medical doctor, radiology personnels, specialist nurses, and other personnels
3rd Level Hospital (Central Hospital)	Internal medicine, general surgery, paediatrics, obstetrics and gynaecology, dental, psychiatry and intensive care units (ICU), one MRI scan, and technical support to 2nd Level Hospitals	
2nd Level Hospital (General Hospital)	Same services in 3rd Level Hospital, and acting as referral centres for 1st Level Hospitals	
1st Level Hospital	Primary health care services, medical, surgical, obstetric and diagnostic services with High Dependency Unit, and acting as referral centre for Mini Hospital and Health Centre	medical doctor, radiology personnels, specialist nurses, and other personnels
Mini Hospital	Minor surgical, obstetrics and gynaecological and diagnostic services, therapy and testing for HIV, and outpatient services	medical doctor, and other personnels
Urban Health Centre	Antenatal, postnatal and neonatal care, immunisation, growth monitoring and management of childhood, treatment of communicable and non-communicable disease, water and sanitation, school health and nutrition	
Health Post	Promotive and preventive services, limited diagnostic and rehabilitative services, and curative services for uncomplicated case.	Other personnels of midwives, nurses, environmental health officers, public health nurses, and community health assistants.

Source: JICA Expert Team (2023), based on National Health Strategic Plan

2) Institution

The Ministry of Health (hereinafter referred to as “MoH”) is responsible for guiding and controlling health sector at the highest level. Provincial Health Office (hereinafter referred to as “PHO”) and District Health Office (hereinafter referred to as "DHO”) are responsible for supervising and monitoring hospitals. A distribution of medical equipment and referral system at hospitals are managed and directed by DHOs.

After implementation of administrative decentralization, city and district councils will be

responsible for supervising and monitoring lower-level hospitals. Supervision of higher-level hospitals and large-scale project will be responsible by the MoH continuously. For this, enhancement of capacity on finance and human resources in local authorities is in progress with the MoH.

3) Finance

Annual budget is allocated from the PHO via the DHO to each of hospitals. After the administrative decentralization to local authorities will be completed, budget allocation will be from local authorities at lower-level hospitals. A doctor as a representative of hospital makes decision on financial execution at each hospital within the allocated budget.

(2) Key Issues in Existing Policy and Plan

1) The Vision 2030

The vision clarifies that major factor to poor health care delivery are inadequate financial and human resources. Sector vision for health is defined as equitable access to quality health care by all by 2030. Key target and goal on infrastructure is shown as following;

- Increase the proportion of rural households living within 5km of the nearest health facility from the current 50 to 80 percent by 2030,

2) Eighth National Development Plan (2022-2026)

Strengthening public health, increasing access to quality health care, promoting the participation of non-state actors in health care delivery, strengthening integrated health system and enhancing food security and nutrition are focused issues in health sector.

3) National Health Strategic Plan (2022-2026)

The National Health Strategic Plan is a comprehensive strategic framework for the health sector as a blueprint to guide the sector's strategic agenda from 2022 to 2026. It stipulates development of medical infrastructure as one of national priority interventions as shown in Table 4.11.3.

Table 4.11.3 National Strategic Interventions for Health Infrastructure Development

Objectives	Strategic Interventions
1 To complete and equip all the unfinished health facilities	1.1 Strengthen the network of service delivery 1.2 Complete stalled projects and remaining phases of districts hospitals countrywide 1.3 Construct new health facilities and other health associated infrastructure 1.4 Expand, upgrade and modernize hospitals and health associated infrastructure. 1.5 Rehabilitate health infrastructure essential medical equipment at all levels 1.6 Establish biomedical regional/local workshops 1.7 Undertake a countrywide investment in medical equipment
2 To construct new health facilities where equity was not considered	2.1 Strengthen project planning for health infrastructure and medical equipment 2.2 Enhance capacity building in health infrastructure planning 2.3 Develop an infrastructure plan

Source: National Health Strategic Plan, Ministry of Health (2022)

4) Development Plan of Local Authorities

Development of a few higher level hospitals and expand coverage of primary health service are focused issues in plans of local authorities (Table 4.11.4).

Table 4.11.4 Issues and Plan in Health Development Plan of Local Authority

Name of Plan	Issues and Plan
Draft Lusaka IDP 2024-2034	・To upgrade 5 first level hospitals to second level hospitals; Chipata, Chilenje, Matero, Kanyama and Chawama. ・To operationalize 1 third level hospital: Levy Mwanawasa, 1 first level hospital: Chelstone, 27 clinics and 23 health posts.
Draft Kafue IDP 2024-2034	・To develop 3 health centres in Malundu and 1 in Chisankane
Draft Chibombo IDP 2024-2034	・To develop 1 first level hospital, 10 health centres and health post ・To upgrade, modernise and rehabilitate health facilities
Draft Chilanga IDP 2024-2034	・To construct 1 district hospital and health centres within the radius of 5km ・To construct offices for the DHO

Source: JICA Expert Team (2023), based on plans listed in left column in table

(3) Present Condition

1) Hierarchy of Hospitals

Statistical analysis on proportion of number of hospitals at each level against population identifies that primary health service may be sufficiently provided, but secondary and tertiary care services are insufficient (Table 4.11.5).

Also, while hierarchy of hospitals and its standard per population are defined, a hierarchical definition may not be common practically. The hierarchy and referral system are practically set based on actual function of hospitals based on the ground situation in each district.

Table 4.11.5 Evaluation on Number of Hospitals against Population in Study Area

Class and category		Population standard	Number	Population capacity		Cover ratio*1	Evaluation
				by category	by level		
Special	4th Level Hospital	None	6	-	-	-	-
High	3rd Level Hospital	800 k <	2	1.6 mil	1.6 mil	59%	Insufficient
Middle	2nd Level Hospital	200 – 800 k	7	1.4 - 5.6 mil	2.2-7.6 mil	81% <	Partially insufficient
	1st Level Hospital	80 – 200 k	24	1.9 – 4.8 mil			
Primary	Mini Hospital	50 - 80 k	4	0.2 – 0.3 mil	2.6 -4.3 mil	96% <	Partially sufficient
	Urban / Rural Health Centre	30 - 50 k	81	2.4 – 4.0 mil			
Health Post (care without doctor)		7 k	42	0.3 mil	0.3 mil	--	-

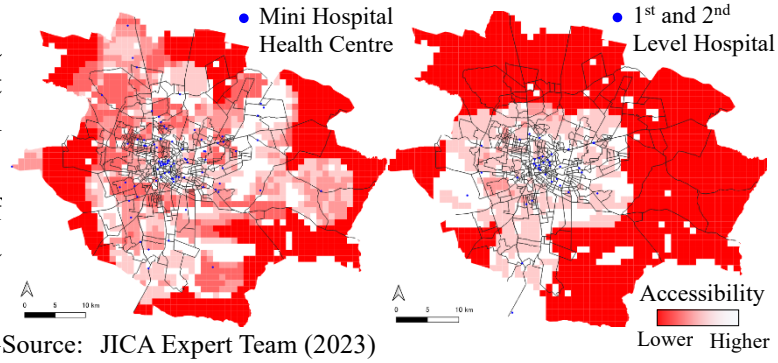
*1: Cover ratio is calculated by population capacity divided by total population in the Study Area
Source: JICA Expert Team (2023), based on GIS database from ZAMSTAT

2) Accessibility to Hospitals

A result of analysis disparity in a number of hospitals against population within 5 km, is shown in Figure 4.11.3.

For primary-class hospitals, some of unplanned settlement and edge area have lower accessibility.

For middle-class, 1st and 2nd level hospitals concentratedly locate around city centre and accessibility at suburb is definitely low.



Source: JICA Expert Team (2023)

Figure 4.11.3 Disparity in Accessibility to Hospitals (Left: Primary-class, Right: Middle-class)

3) Qualitative Condition

As prescribed, hospital hierarchy is not consistent among the Study Area. Some urban health centres have more doctors, department and equipment than some mini hospitals (Figure 4.11.4).

X-ray facility equipped by JICA in urban health centre

Bed in Urban Health Centre

Bed in Mini Hospital - more modernised

Source: JICA Expert Team (2023)

Figure 4.11.4 Equipment in Hospitals

4.11.3 Public Market

(1) System and Administration

A market established under the Markets and Bus Station Act (hereinafter referred to as "public market") is mainly for local traders and business operators from community, which is different from supermarket or shopping mall. Economic activities in the public market are variety of business such as retail, restaurant, workshop, warehouse and office as shown in Figure 4.11.5.

The public markets are developed, managed and financed by a District Council. A council of local authority makes decisions on establishment, repair, maintenance and financing for all public markets although the act defines management board in charge of management.

A local authority appoints a market master of each public market and the market manager is responsible for maintenance infrastructure and charge collection from tenants. Operators apply to Ward Development Community (hereinafter referred to as "WDC") to use the public market and pay fees after allocation of space.

Major financial resource for developing the public market is the Constituency Development Funds, but the PPP scheme is also available. Private organisation develops infrastructure and manages operation while paying leasing fee for local authorities in the PPP scheme.

Land for the public markets is sometimes acquired with other social facilities such as schools and clinics, so there is an example to arrange land among the facilities inside such as to provide new land for school by reducing land for the public market based on agreement of WDC.

Grocery and cooking tools

Clothes and fabric

Charcoal

Source: JICA Expert Team (2023)

Figure 4.11.5 Tenants in Public Market

(2) Key Issues in Existing Policy and Plan

Issues related to market is basically mentioned in a context of economic development - not social - at national level. Local plans indicate market as social infrastructure (Table 4.11.6).

Table 4.11.6 Issues and Plan in Public Market Development Plan

Name of Plan	Issues and Plan
Lusaka City IDP 2024-2034 (zero-draft)	· Inadequate drainage, sanitation and security · Lack of market shelter and modern storages · Limited access to transportation
Chilanga IDP 2022-2032	· Poor road infrastructure between market and production site · Weak market system of fish and livestock products

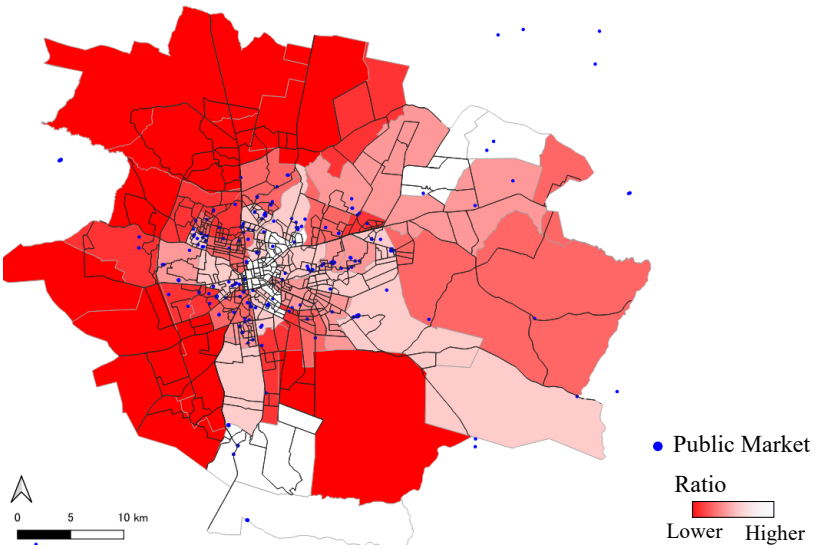
Source: JICA Expert Team (2023), based on plans listed in left column

(3) Present Condition

1) Quantity

The public market is currently fully occupied by operators. Survey of occupancy demand is not conducted regularly, but a demand, number of potential operators, is getting bigger according to the population growth despite of constraints on expanding infrastructure. Therefore, there are cases of market expansion without infrastructure development, and a lot of street venders located along streets in the Study Area.

A demand-supply relationship is evaluated by ward because the public markets are operated by WDC. Figure 4.11.6 shows comparative analysis by number of public markets divided population in wards. Dense unplanned settlement at such as wards of Muchinga, Makeni Villa, and Kanyama may suffer from insufficient capacity of public markets.



Source: JICA Expert Team (2023)

Figure 4.11.6 Disparity in Accessibility io Public Market

2) Quality

Insufficiency was observed at almost all infrastructure, which are building, pavement, drainage, sewerage, water and waste management as shown in Figure 4.11.7. Although the public market is kept clean by dairy maintenance, the market faces terrible environment especially in rainy season as per interview to operators.

Pavement is deteriorated and repaired with blocks.

Drainage system is weak and frontage road at entrance is not paved.

Solid waste is gathered at temporary dump site until moved to district dump site.

Some are built adjacent and outside of the public market with cheap structure.

Quantity of water is insufficient. Also, tapping point is only one for more than 200 tenants

Toilet is only one unit for more than 200 operators.

Source: JICA Expert Team (2023)

Figure 4.11.7 Insufficient Infrastructure in Public Market

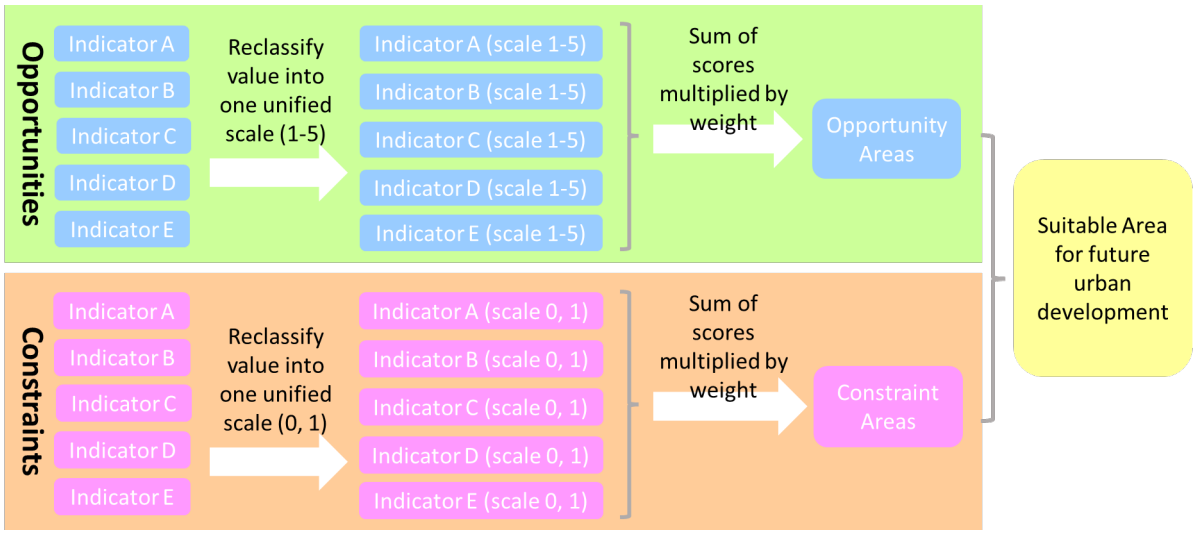
4.12 Urbanization Potential Analysis

4.12.1 Establishment of Methodology and Indicators

(1) Methodology

Despite urban sprawl and lack of proper planning for population distribution around Lusaka, the areas to accommodate increasing population properly need to be found. Multi-criteria Decision Analysis (MCDA) is widely used for a spatial decision making when conflicting and contradictory criteria need to be evaluated. GIS enables land use planners to integrate and assess factors and produce land suitability map[15]. Figure 4.12.1 illustrates the analytical process of suitability analysis for future urban development.

[15] Mustafa, A. A. (2011). *Land Suitability Analysis for Different Crops: A Multi Criteria Decision Making Approach using Remote Sensing and GIS*
https://www.researchgate.net/profile/Rabi-Sahoo/publication/265143331_Land_Suitability_Analysis_for_Different_Crops_A_Multi_Criteria_Decision_Making_Approach_using_Remote_Sensing_and_GIS/links/540ec9d10cf2f2b29a3accce/Land-Suitability-Analysis-for-Different-Crops-A-Multi-Criteria-Decision-Making-Approach-using-Remote-Sensing-and-GIS.pdf



Source: JICA Expert Team (2023)

Figure 4.12.1 Analytical Process of MCDA on Suitable Area for Future Urban Development

Each step in this diagram is described as follows:

(a) One indicator represents one GIS layer, and the indicators are selected for opportunity and constraint.
(b) After selecting the opportunity indicators, the values are reclassified within a unified scale of 1-5. For example, in the case of a Slope indicator, a 0-2% slope is reclassified into the highest score of 5 as development opportunities are higher on flatter land. Steeper Slope (10% and more) is given a score of 1.
(c) The constraint indicators are set to reclassify into inside the area (score 0) and outside the area (score 1) because the only condition is either outside or inside the constraint area.
(d) The reclassified scores are multiplied by the weighting ratio, and the values are summed.
(e) Finally, the Opportunity Area and Constraint Area are overlaid to calculate Suitable Area for future urban development (suitability score).

Due to the expansions of urban sprawl and the limitations to future urban development, available land for future urban expansion may be insufficient within Survey Area for Existing Land Use. Thus, the analysis for land use plan including urban potential analysis is examined for Study Area which was updated in early 2024.

(2) Establishment of parameters

1) Opportunity and constraint indicators and weights

Given the Zambian context and data availability, eight opportunity indicators and five constraint indicators are chosen for the Project. Opportunity indicators represent conditions suitable for future urbanisation while constraint indicators represent areas with limitation to future urbanisation. The weights are values representing the level of importance among all indicators. Indicators with higher weights have higher priority. The value of the weights for the opportunity and constraint indicators is determined by Analytic hierarchy process (AHP). Table 4.12.1 shows the indicators of potentials for future urban expansion and the weight of each indicator.

Table 4.12.1 Indicators and Their Weight for Potential Opportunities for Future Expansion

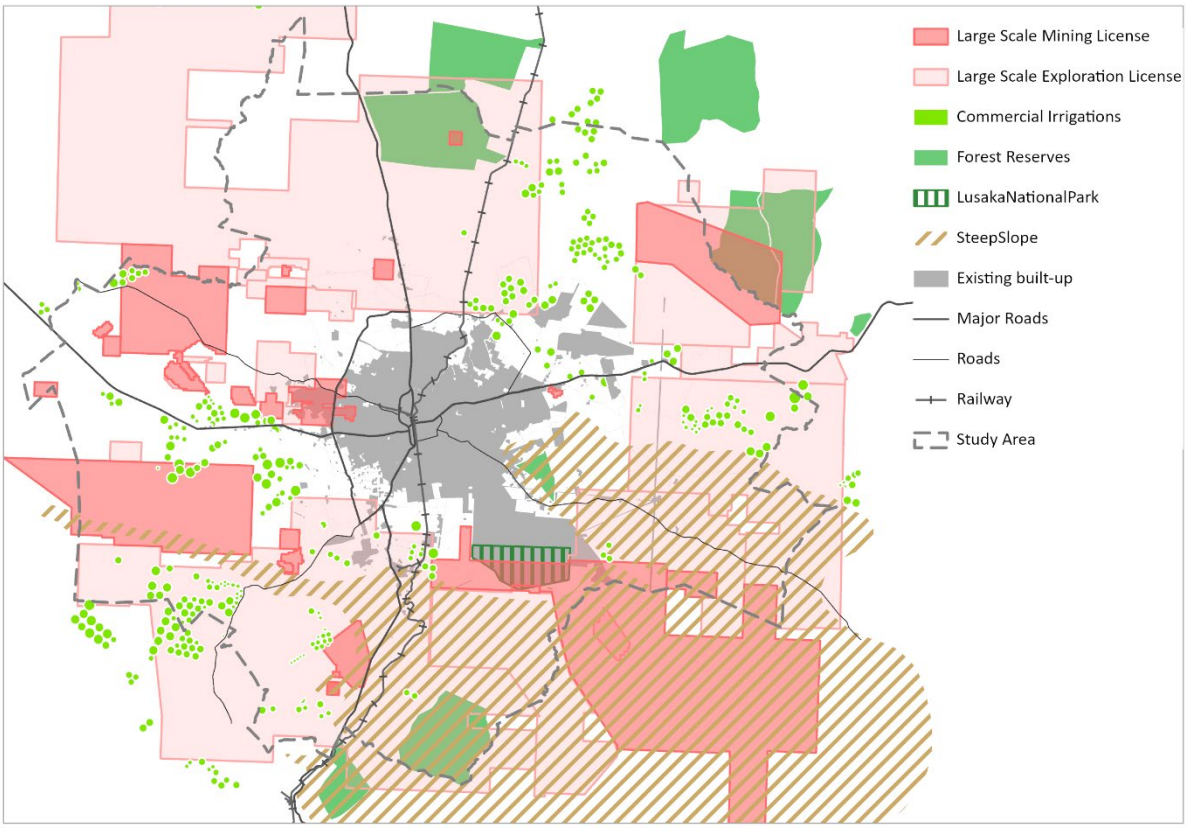
Indicator	Weight (%)	Score					Source (Year)
		1	2	3	4	5	
Slope (%)	26	>10	7-10	5-7	2-5	0-2	Produced by JICA Expert Team using USGS DEM (2014)
Proximity to the exiting secondary urban cores (Kafue, Chongwe, Chilanga) (m)	12	>10000	7500-10000	5000-7500	2000-5000	0-2000	JICA Expert Team (2024)
Proximity to railway (m)	7	>10000	5000-10000	2000-5000	1000-2000	0-1000	JICA Expert Team (2024)
Proximity to the existing water pipes (m)	4	>400	300-400	200-300	100-200	0-100	LWSC (2023)
Proximity to the existing major roads (m)	18	>5000	3000-5000	2000-3000	1000-2000	0-1000	JICA Expert Team (2024)
Proximity to the existing airport (m)	10	>10000	5000-10000	2000-5000	1000-2000	0-1000	JICA Expert Team (2024)
Proximity to MFEZ (m)	3	>5000	3000-5000	2000-3000	1000-2000	0-1000	JICA Expert Team (2024)
Built-up Area	20	Builtup area				No builtup area	Sentinel-2 Land Cover (2022)

Source: JICA Expert Team (2023)

Table 4.12.2 shows the indicators of constraints to future urban expansion and the weight of each indicator. The indicators are selected as limiting conditions to future new urban development, and Figure 4.12.2 shows their locations. The description of each condition is as follows:

- The Zambezi Escarpment runs from the south-east of Study Area to along the international boundary with Zimbabwe. The areas toward the escarpment are steep slope and not favourable for building.
- In the northeastern and southwest parts of Study Area, there are high concentrations of privately owned irrigated farmlands. These lands are actively cultivated and unrealistic to convert to other land uses.
- The entire suburban area of Study Area is covered by the area where mining license[16] and exploration license[17] are registered. Both licenses allow another person or company to hold and rent the ownership of the land on the surface of the registered area, which means urban development is permitted on surface ground. However, environmental issues (dust and pollution) at mining sites have led to conflicts between mining companies and residents of settlements near mining sites.
- Nature must be protected in National Park and Forest Reserves.

[16] The mining license allows applicants to mine commodities within the registered area.
[17] The exploration license allows applicants to explore commodities within the registered area.



Source: JICA Expert Team (2024)

Figure 4.12.2 Development Issues in Natural and Restricted Conditions

Table 4.12.2 Indicators and Their Weight for Constraints to Future Expansion

Indicator	Weight (%)	Score		Source (Year)/Note
		0	1	
Mining license area	41	Outside	Inside	JICA Expert Team based on the information off Ministry of Mines and Mineral Development (2024)
Exploration License	11	Outside	Inside	JICA Expert Team based on the information off Ministry of Mines and Mineral Development (2024)
Area to be preserved for agriculture	48	Outside	Inside	JICA Expert Team (2024) / Score 1 is given for the area with 4 and higher from the result of MCDA for agriculture

Source: JICA Expert Team (2023)

National Parks and Forest Reserves are integrated when the opportunity and constraint scores are overlaid.

2) Area to be preserved for agriculture

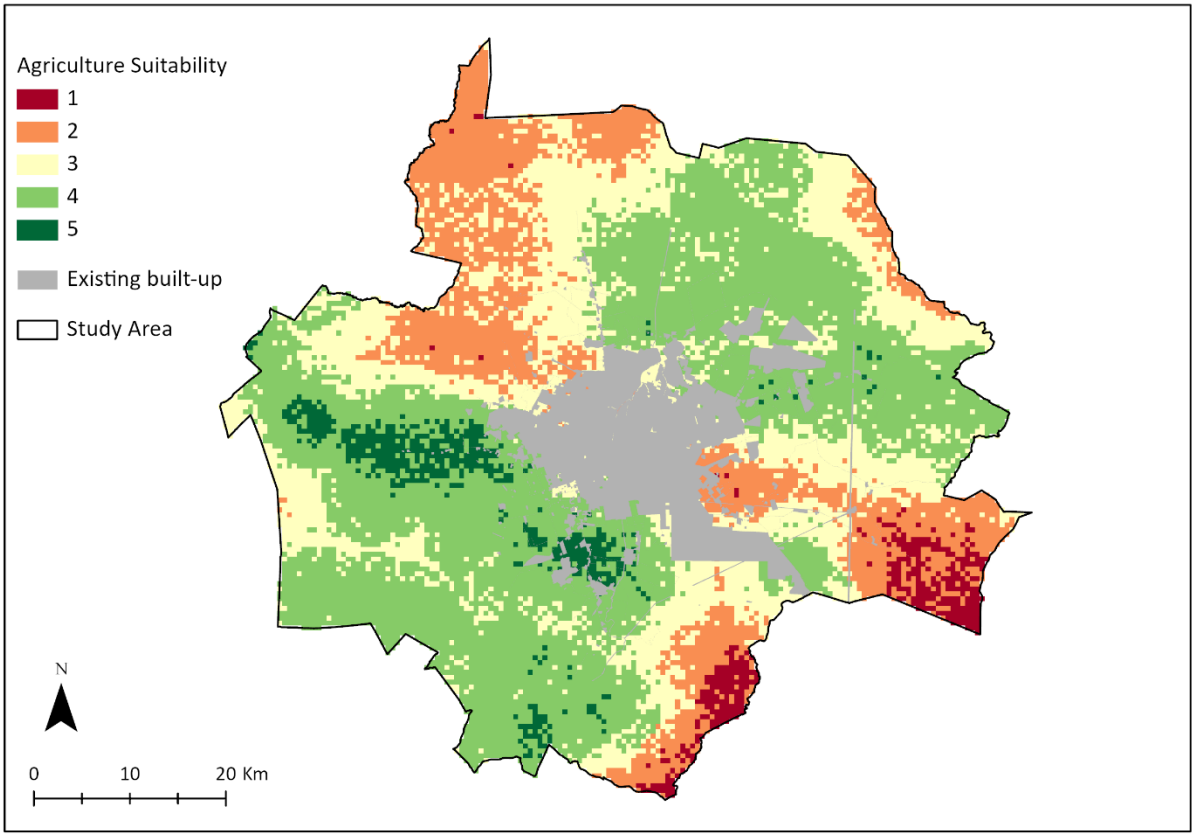
As one of the constraint indicators, area to be preserved for agriculture is identified by a separate MCDA specified for agriculture. While the overall workflow is same as in Figure 4.12.1, different indicators and weights are defined for this analysis. Table 4.12.3 shows the list of indicators for the agricultural suitability analysis and weight of each indicator.

Table 4.12.3 Indicators and Their Weight for Area to be Preserved for Agriculture

Indicator	Weight (%)	Score					Source (Year)
		1	2	3	4	5	
Slope (%)	15	>10	7-10	5-7	2-5	0-2	Produced by JICA Expert

							Team using USGS DEM (2014)
Aspect	10	0-45, 315-360		45-135, 225-315		135-225	Produced by JICA Expert Team using USGS DEM (2014)
Soil Type	20	Lithosols (Orthents)		Ferralsol		Luvisols	Food and Agriculture Organization (FAO) (2003)
Proximity to existing irrigation agriculture	40	>10000	7500-10000	5000-7500	2000-5000	0-2000	Produced by JICA Expert Team using data of Ministry of Agriculture (2023)
Accessibility to Major Roads	15	>5000	3000-5000	2000-3000	1000-2000	0-1000	JICA Expert Team (2024)

Source: JICA Expert Team (2023)



Source: JICA Expert Team (2024)

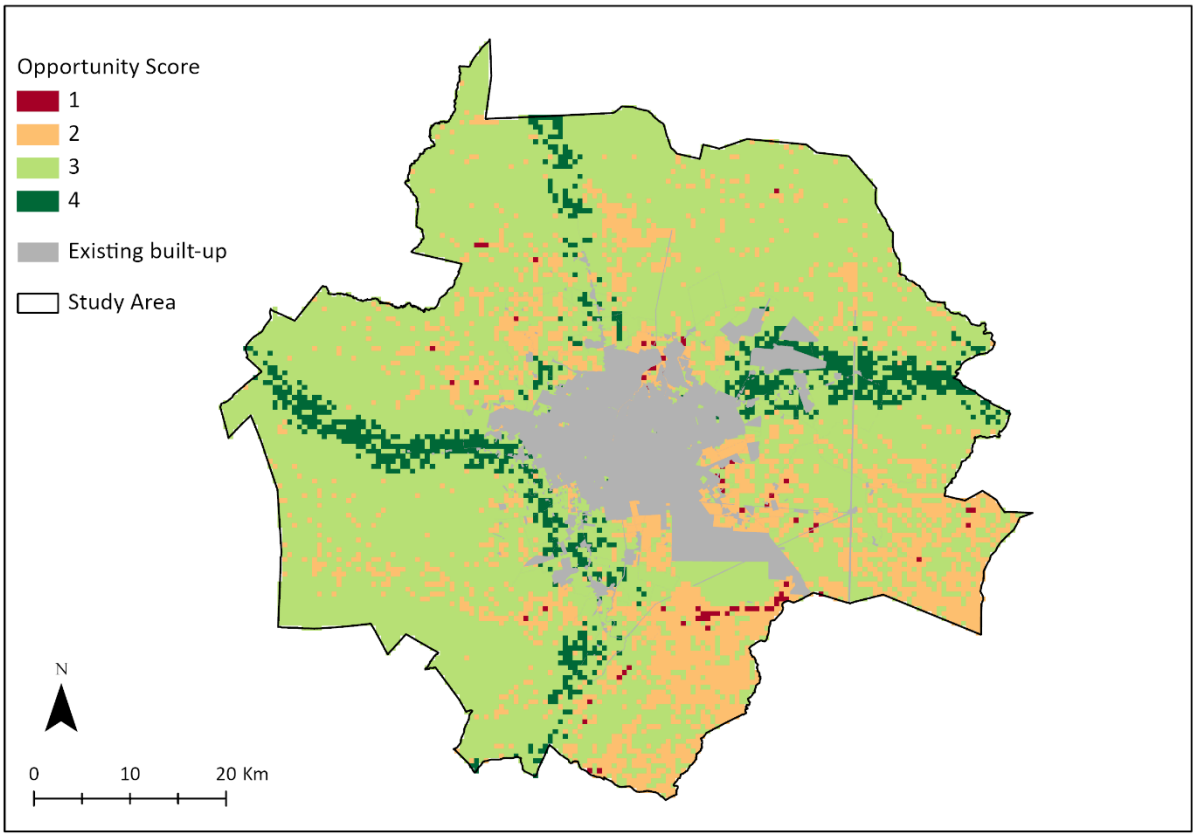
Figure 4.12.3 Suitable Area to be Preserved for Agriculture

The areas with a suitability score of four and higher in Figure 4.12.3 are integrated into the urbanisation potential analysis as a constraint indicator “Area to be preserved for agriculture”.

4.12.2 Result of Potential Analysis

(1) Result of opportunity and constraint area

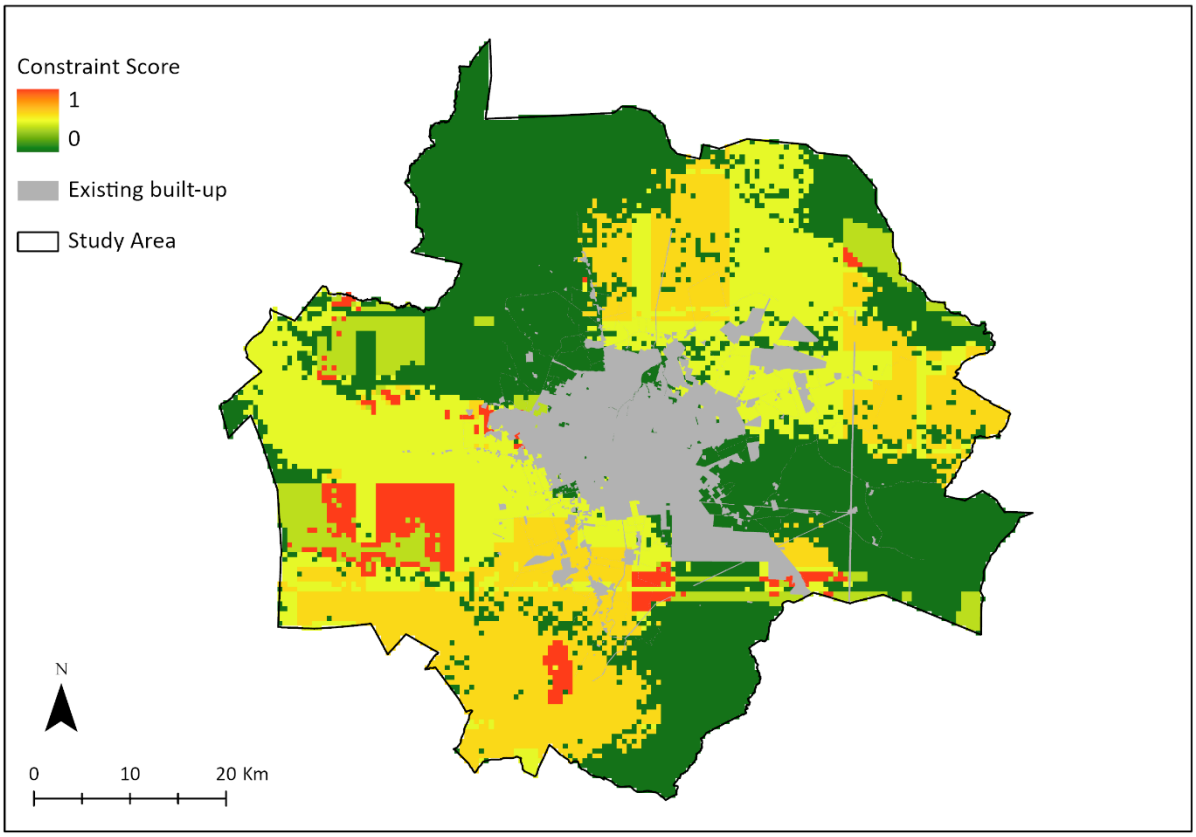
Figures 4.12.4 shows the result overlaid with the opportunities indicators. The areas with a score closer to four indicate more opportunities for future urban development.



Source: JICA Expert Team (2024)

Figure 4.12.4 Opportunity Area

Figure 4.12.5 shows the result overlaid with the constraints indicators. The areas with a score closer to one indicate more limitations to future urban development.



Source: JICA Expert Team (2024)

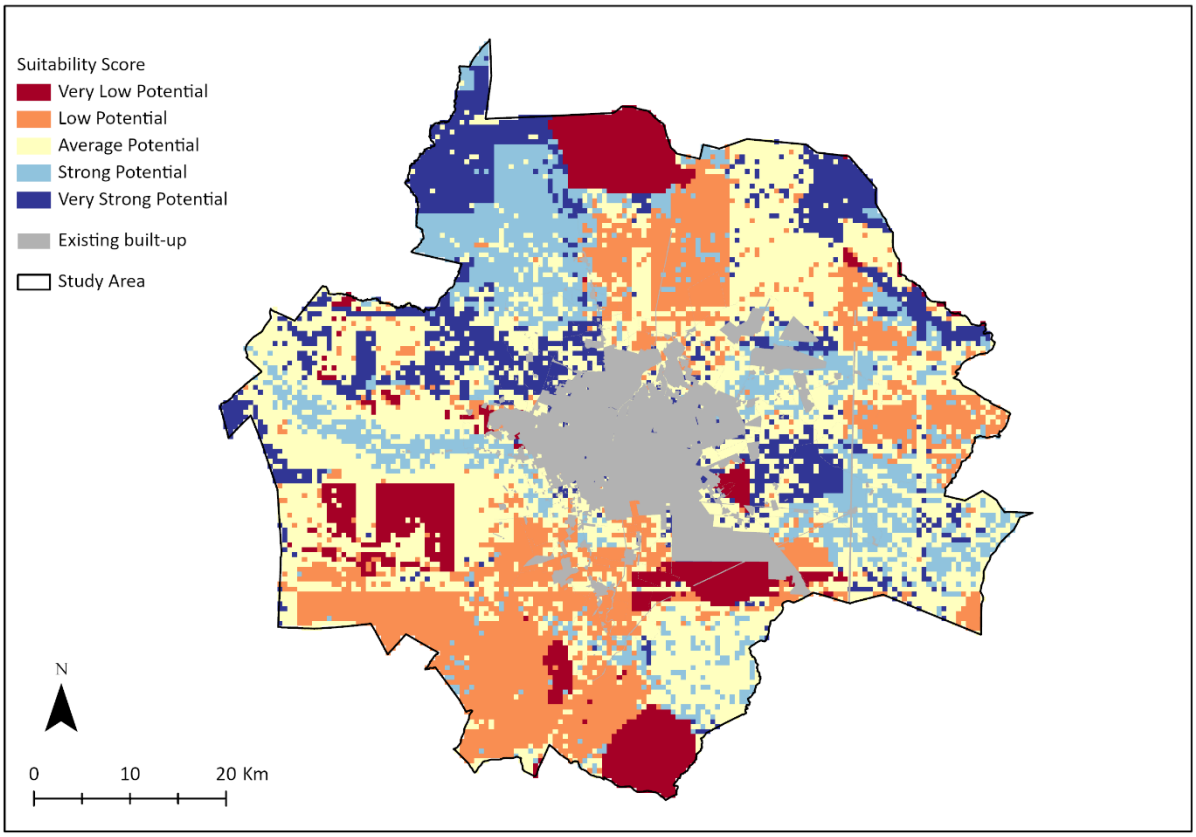
Figure 4.12.5 Constraints Area

(2) Result of suitability analysis

The opportunity score and constraint score are superimposed to calculate a suitability score. As development is prohibited in national parks and forest reserves, the inside areas are given zero (0) regardless of the result of the overlay of opportunity and constraint scores. The formula of the superposition is as follows:

$$Suitability\ Score = Opportunity\ Score \times (1 - Constraint\ Score) \times National\ Park \times Forest\ Reserves$$

Figure 4.12.6 shows the result of the suitable areas, and Table 4.12.4 shows area (km^2) by suitability for wider area than Study Area.



Source: JICA Expert Team (2024)

Figure 4.12.6 Suitable Area for Future Urban Development

Table 4.12.4 Area by Suitability within Study Area

Suitability	Area (km2)	Proportion (%)
Very low potential	360.19	9.44
Low potential	828.64	21.72
Average potential	1445.99	37.91
Strong potential	558.89	14.65
Very strong potential	621.02	16.28
Total	3814.72	100.00

Source: JICA Expert Team (2024)

Areas with very strong potential can be considered as potential sites for future urban expansion to accommodate future population growth, followed by area with strong potential. Areas with average potential are considered for urbanisation with reference to constraints and opportunities when land availability is found out to be insufficient.

4.13 Issues to be Tackled

4.13.1 Land Use and Urban Structure

(1) Necessary spatial integration and sustainable land use for Greater Lusaka

- Required well-organized formulation of urban function and land use in Greater Lusaka, taking into account their broad-based role of urban facilities and public services, and common beneficiary for all districts in the Greater Lusaka in integrated development of Greater Lusaka as a whole.

- Necessary land use harmonisation among competitive uses: through appropriate land use organisation and distribution of competitive land use needs, such as conflicts of competing land use demands in the outskirts of Lusaka City between agriculture land enhancement or natural environment protection and residential land needs.
- Necessary integration of land use and road/transport: taking into account an effective and balanced distribution of uses and their intensity, based on the mobility needs of the land use in association with their necessary road and transport network, towards a sustainable urban structure, such as a compact urban form.

(2) Necessary spatial reorganization toward effective urban function in Lusaka

- Necessary urban function reorganisation toward a low carbon city goal: The concentration of urban functions in the city centre and the expansion of outlying residential areas have accelerated transport emissions and the loss of inefficient economic activities. Appropriate distribution of urban functions, such as the proximity of home and work or of each business chain, in combination with efficient transport measures, could contribute to reducing unnecessary mobility.
- Necessary land use guide for urban functions on major corridors: Four (4) national trunk roads (Greater East, Greater North, Kafue and Mumbwa) have played key roles in socio-economic corridors in Greater Lusaka, both internally (commuter mobility) and internationally (goods trade), where commercial, industrial/logistics facilities have begun to grow rapidly as high convenience locations, and where public transport could be introduced. Well-organised land use would be essential to accommodate these expected urban functions in a harmonious manner.
- Inevitable improvement by adequate reorganization of the city centre function: the city centre with multi-urban functions by traditional industry and logistic facilities, citizen's traditional markets and bus terminals has not been well-organized generating chronic traffic congestion with negative impacts on economic environmental loss.

(3) Critical challenge for settlement management for Greater Lusaka

- Challenges to achieve adequate urban density formulation to be addressed: The majority of urban settlements in Greater Lusaka are low-density (single house and plot), with the exception of unplanned (high-density) settlements in Lusaka City. This tendency to settle on plots of land has continued and resulted in endless urban sprawl on the outskirts of Greater Lusaka. Although the provision of multi-storey housing or mixed-use building with residence, or the reduction of lot sizes could be one of the possible solutions to reduce the demand for land. However, this will require several challenges in parallel such as cheap construction method, affordable price coupled with financial assistance. These challenges also will require strong government initiative.
- Necessary beneficial settlements to the customary land communities: Most of the land in the neighbouring districts of Lusaka City belongs to customary land, where urbanisation requires the consent of their chiefs, but there is a lot of unregulated development due to weak management capacity in the customary lands. An appropriate settlement development mechanism with a certain vision and implementation beneficial to the customary land communities would be essential to gain their consent and cooperation.

- For a long period of time, customary lands remained outside the scope of IDPs and other planning documents, under the authority of chiefs. The Urban and Regional Planning Act of 2015 aimed to address unregulated development on these lands. It introduced a framework enabling IDPs and other planning documents to integrate customary lands into planned areas upon conditions that a planning agreement are concluded with the chiefs. As of now, only a limited number of planning agreements have been formalized. There are a number of challenges to promote planned urbanisation in customary lands.
- Challenge to cope with high-density unplanned settlement: The upgrading of unplanned settlements in Lusaka City has been an issue for several decades where most of the area has the highest density due to congested house distribution without their title registrations and multiple households in one house building. It is necessary to provide compatible solutions to achieve a comfortable living environment and to mitigate over-density together with appropriate land use securing public services provisions.
- Urgent needs to avoid new unplanned settlements expansion: In the last decade after the 2009MP, two distinct unplanned settlements have emerged, one being the Garden Park adjacent to the Chinika industrial area, and the other being a kind of new unplanned settlement in the adjacent area in the northern part of Lusaka City (administratively Chunga Ward of Chibombo District). In particular, the new unplanned settlement is still low-density, but underdeveloped roads and infrastructure are in danger of becoming a neighbourhood similar to the unplanned settlements in Lusaka City. There are still many vacant plots of land with potential for development of roads, infrastructure and public facilities, so immediate action is needed.

4.13.2 Green Infrastructure

Urban expansion and population increase in Lusaka have escalated the need for green infrastructure to cater to citizens' recreational needs. This rapid development has highlighted a social divide in leisure activities, influenced by economic disparities, prompting calls for more varied recreational options. The transformation of farmland to residential and commercial spaces has led to a reduction in agricultural lands, green areas, water resources, and forests. The key challenge lies in creating a cohesive green network amidst these issues.

The Lusaka City and neighbouring councils tasked with tackling these issues face a lack of expertise, methodologies, and regulatory frameworks for the strategic location, design scale, and development guidelines for green infrastructure. The objective is to devise a systematic approach to the development of green infrastructure that minimizes the repurposing of existing green spaces.

4.13.3 Housing Supply

The housing supply and finance in Greater Lusaka Region face the following challenges:

- Deficit in affordable good-quality housing supply: the decades-long absence of public housing provision due to funding shortages has led to a clear deficit in affordable housing supply. New low-standard units are being built in unplanned settlements by informal actors to fulfil the demand. While private developers implement small-scale projects, there is a lack of a clear scheme to provide the annual 222,000 construction of housing units nationally required to fill the gap. Greater Lusaka faces similar challenge in providing the estimated 32,600 units needed on the regional level.
- Inadequate housing finance mechanisms: high mortgage interest rates that do not fit the repayment capacity of many of the citizens and make them unfeasible to low/mid-income citizens.
- Low-density sprawling development: the dominant character of new housing is single-storey units in low-density development. Land parcels are of large sizes as prospective buyers prefer spacious and private plots, and developers find multi-story units costly and less appealing to construct. Such development results in inefficient utilisation of land, pressure for infrastructure provision, and exacerbating urban sprawl through unplanned development among other issues.

4.13.4 Unplanned Settlement

Among many issues that are associated with unplanned development, challenges for the unplanned settlements in Greater Lusaka could be summarized as the following:

- Limited tenure security implementation: securing titles in unplanned settlements while proven beneficial for the local communities, its execution could be lengthy and commonly hindered by land disputes. Furthermore, a clear strategy is needed for integrated and well-collaborated large implementation beyond pilot projects.
- Expansion and densification: in the absence of affordable options and rising demand for housing, the population number in unplanned settlements and the extent of these areas are expected to grow in the absence of tools or mechanisms to tackle this issue.
- Poor living conditions: despite the decades-long efforts for improving and upgrading unplanned settlements, living conditions remain poor with low-quality housing structures, limited or non-existent basic infrastructure and flood-prone character among other issues. Conditions are expected to further deteriorate as more residents move into unplanned settlements.

4.13.5 Social Service

(1) Education

Enhancement of primary and secondary education facilities is the focused point, because one of key strategies in education sector in Zambia is to improve access to education and because higher education is comparatively-well-developed in comparison with other provinces. Primary and secondary schools cover most of Study Area within 5km as the national standard. On the other hand, most schools suffer from lack of infrastructure capacity against increasing demand by migrant and free education policy. Therefore, expansion of school facilities and improvement of in-school infrastructure are key issues to be tackled.

(2) Health

Currently, a lot of hospitals make a referral directly to third level hospitals which are only two

located in the Study Area. Third level hospital should treat severe cases optimally, but moderate cases also need to be treated in third level hospital due to lack of middle-class hospitals (first and second level hospitals). In addition, accessibility to the middle-class hospitals is not provided effectively because most are established near city centre. Therefore, increment of total number of middle-class hospitals and development of middle-class hospitals outside of city centre are the key issues to be tackled.

(3) Public Market

Development of the public market is an important approach to secure social stability with provision of job opportunities and to prevent unplanned urbanization with absorbing business demands. However, number and area of the public market are insufficient currently and it will get severer due to the future population growth. Therefore, a provision of enough booths to satisfy business demand is key issue.to be tackled. Also, improvement of quality of service is needed because to secure comfortable environment and security may maintain sustainability of local business even in a competition with commercial complex with better quality in the city.

CHAPTER 5 REGIONAL TRANSPORT AND LOGISTIC INFRASTRUCTURE

5.1 Major Transport Systems in Zambia

5.1.1 Road Sub-Sector

(1) Road Sector Institutions

The road sector has a complex institutional set up which combines road sector institutions (Road Development Agency (RDA), National Road Fund Agency (NRFA), Road Transport and Safety Agency (RTSA) and Local Road Authorities (LRAs) and Government Ministries (Ministery of Local Government and Rural Development (MLGRD), Ministry of Infrastructure, Housing and Urban Development (MIHUD), Ministry of Finance and National Planning (MFNP) and Ministry of Transport and Logistics (MTL) with other supporting institutions that either provide input into the road sector or assist in the cooperation between the major institutions. All policy issues in the road sector are coordinated and formulated by MTL. Implementation of all road infrastructure projects is undertaken by RDA under MIHUD and LRAs under MLGRD. Financing of the road sector is coordinated and administered by MFNP through NRFA.

(2) Road Conditions

Zambia has a total classified network of 67,671km of public roads comprised of trunk, main, district, primary, secondary and tertiary feeder, and urban and park roads. For the purpose of management of the public roads network, the RDA has delegated some responsibility to LRA in line with the Public Roads Act No. 12 of 2002.

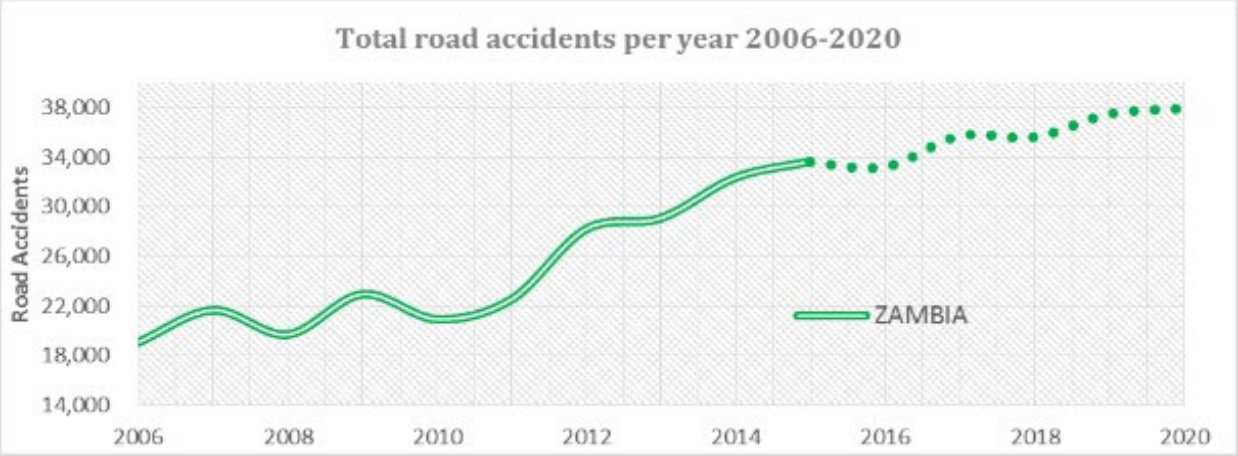
Zambia is ideally located to be a hub for the international transportation of goods and people. According to a recent RDA survey conducted on the Trunk-Main-District (TMD) road network, results of a 2015 RDA Condition Report revealed that – 87% of the paved TMD network was in good condition, while 8% and 5% was in fair and poor condition, respectively. Conversely, for the unpaved TMD network – only 3% was in good condition, while 18% and 79% was revealed to be in fair and poor condition, respectively.

Regarding the condition of the Core Road Network as a whole, 60% requires major rehabilitation and 40% is in a maintainable condition. It is hoped that some of the major rehabilitation, upgrading and maintenance programmes planned from 2015 onwards will improve the overall network condition to create an enabling environment for the movement of people, goods and services.

(3) Road Safety

The RTSA was enacted through the Road Traffic Act. No. 11 (2002) as the lead agency in charge of road transport, road safety and traffic management. The Agency became fully operational in 2006. The Agency's approach to improve road safety in Zambia is in line with the United Nations Decade of Action for Road Safety 2011 - 2020 and the African Road Safety Action Plan. It is based on five pillars: road safety management, safer roads and mobility, safer vehicles, safer road users, and post-crash care. The challenge for road safety in general is the increasing motorization rates, which despite contributing to mobility and access to economic and social facilities, has come at a cost as deaths from road crashes have been on the increase.

In 2016, a total of 32,350 road traffic accidents were recorded in Zambia. Lusaka accounted for 53.5% of all accidents, while the Copperbelt accounted for 17.2% of all accidents. High population and vehicle density are likely to be the main factors contributing to these high figures. The majority of traffic accidents occurs along the T2 and T3 roads connecting Lusaka, Copperbelt and Muchinga Provinces. These roads are all single carriageways with relatively high speeds. In addition, they serve as the main international freight artery through the country connecting Tanzania and DRC to South Africa by road. The mix between different road users including heavy trucks, private vehicles, public transport vehicles, bicycles and pedestrians, create traffic conflicts. This corridor is of particular interest to the National Transport Master Plan (NTMP).



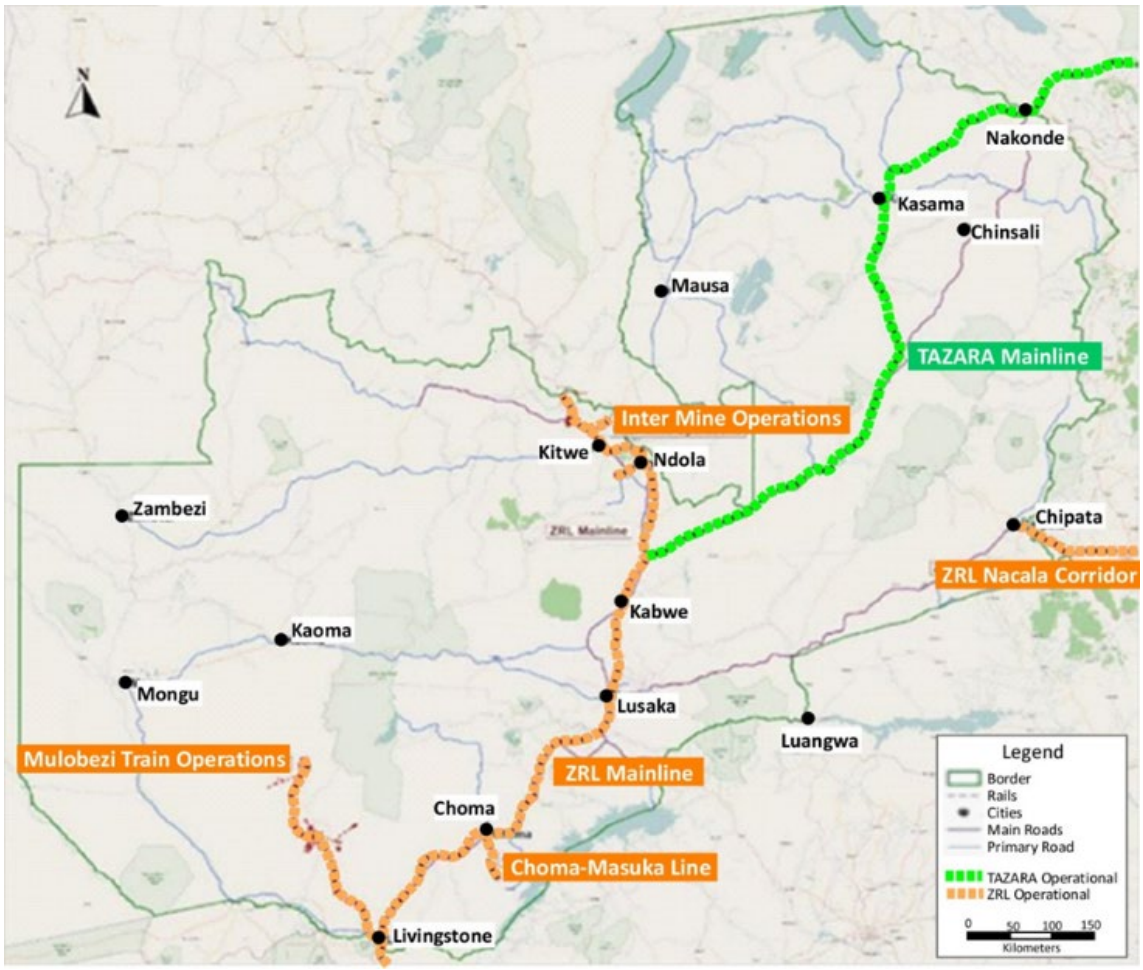
Source: Zambia National Transport Master Plan (2018, ZNTMP)

Figure 5.1.1 Total Road Accidents per Year 2006-2020

5.1.2 Railway Sub-Sector

(1) Railway Sector Institutions

The two major railway operators in Zambia are Zambia Railways Limited (ZRL) and Tanzania-Zambia Railway Authority (TAZARA). ZRL is wholly owned by the Government of the Republic of Zambia, and is mandated under the Railways Act to operate both rail passenger and freight trains. The total ZRL rail network is 1,248 km. At present, ZRL has a total staff of nearly 1,000 with offices dotted throughout the railway network.



Source: Zambia National Transport Master Plan (2018, ZNTMP)

Figure 5.1.2 Railway Network in Zambia

(2) Market Share

Development in Zambia has historically occurred largely along railway lines. However, the share of rail transport for both passengers and freight, has continuously been diminishing in favour of road transport.

It is estimated that at independence (1964), the share of rail in goods movement was approximately 70%, whereas today it is only 10-15%. Investments in the railway sub-sector have been minimal compared to the road sub-sector. This discrepancy in investment levels has resulted in road transport being much faster and more reliable, ultimately leading to a declining market share for rail and an ever-increasing market-share for roads.

(3) Issues

One of the key issues in the rail sector's inability to compete with road borne transport for both passenger and freight transport, is an inadequate track and rolling stock capacity, and poor maintenance. Maintenance is a difficult concept which neither wins elections or new development contracts. Nevertheless, it is the lifeblood of the transport system. The RDA has wholeheartedly accepted the importance of maintenance, as a significant portion of its annual road sector budget is allocated to it. ZRL has acknowledged the importance of maintenance, however significant backlogging of essential upkeep has made rehabilitation the focus of the company's efforts. Maintenance must be made the highest priority of the rail sector.

5.1.3 Public Transport Sub-Sector

(1) Public Transport Sector Institutions

Today there is no official organization or agency regulating and advancing public transportation. The MTL is responsible for this branch of transport in Zambia. In reality, the most influential actors in the sector are local or private. Local actors include municipalities and bus station managers, while private companies include various bus operators. Municipalities working under guidelines from the RTSA are charged with regulating and advancing public transportation. This system has its advantages as local municipalities have the best knowledge as to the needs of their citizens and can therefore define the most accurate service supply. However, this system has two major disadvantages. First, municipalities are limited in their ability to plan public transportation at a national level leading to lopsided supply and second, municipalities may not collect and transfer data at the necessary efficiency. This creates a public transport system which favors local decision making.

(2) Public Bus Routes

Bus operators choose routes based on profitability. This means that buses run based on the individual companies' rationale. From the customer perspective, this makes for an unreliable, unpredictable and infrequent service. This is an important point and one that has a negative correlation with use of public transportation, because as the level of service declines, ridership and use of public transportation also declines. This relationship causes a dangerous cycle where operators lose profitability and cease to provide services at all.

(3) Bus Stations

Intercity bus stations are the focal point for intercity public transport. These stations are run by local municipalities and collect data regarding bus companies, passengers and bus departures. This data is not necessarily used to improve public transportation, but more accurately as a method of charging a fee from the bus operators for using the bus stations.

Bus stations are not organized by any regulator, instead they are set up based on the logic of the market with different operators working out of various spaces in the bus station. Some stations such as Lusaka have a separation of buses based on destination, this set up actually increases healthy competition between buses, as the customer can choose the service based on comfort, price and other variables.

Bus stations are centers of activity in any city and this is the case in Zambia. Buses are used not only to transport people, but also to informally transport goods. This use of vehicles for cargo provides another way for bus operators to profit and stay in business.

5.2 Major Transport Systems in Greater Lusaka

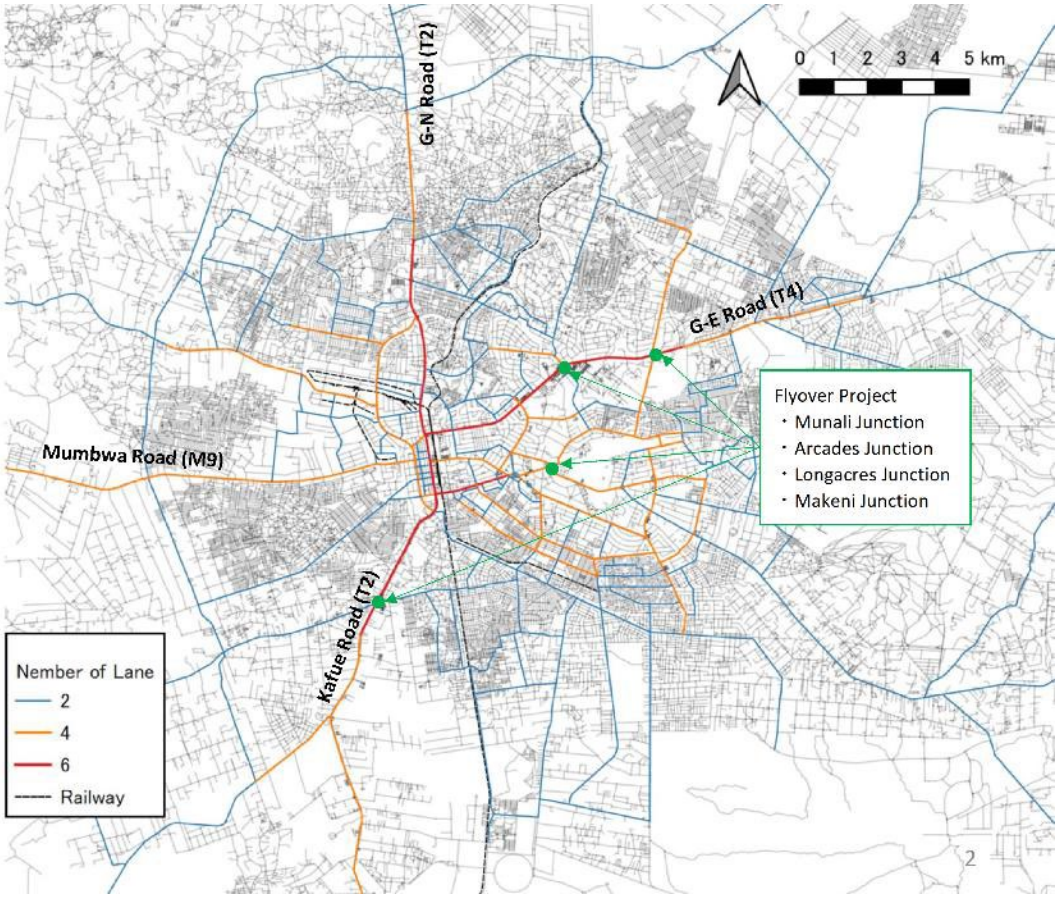
5.2.1 Existing Urban Transportation

Existing transportation in Lusaka is conducted primarily using the following dominant modes; Non-Motorized Traffic (NMT), Private Cars, Minibuses and Taxis. Small amounts of motorcycle traffic can be seen as well, in addition to intercity buses that are larger than standard minibuses. Additionally, truck traffic through the town center and near industrial areas is significant. Train traffic contributes very little to overall travel in Lusaka, although the rail corridor is a central route for many pedestrians.

5.2.2 Road Sector

(1) Road Network of Greater Lusaka

The city of Lusaka has a skeletal road network consisting of the North-South Corridor (T2), the Nacala Corridor (T4), which leads to the port of Nacala in Mozambique, and the Western Corridor (M9), which leads to Angola in the west. This skeletal road network is complemented by a radial network of roads. Four flyovers have been completed on major arterial roads in the city. In addition, there is a railway along the north-south corridor that connects to Dar es Salaam Port in Tanzania and Durban Port in South Africa. In Lusaka City, there are three grade separations at the intersection of roads and railways. The main transportation network of Lusaka City is shown in Figure 5.2.1.

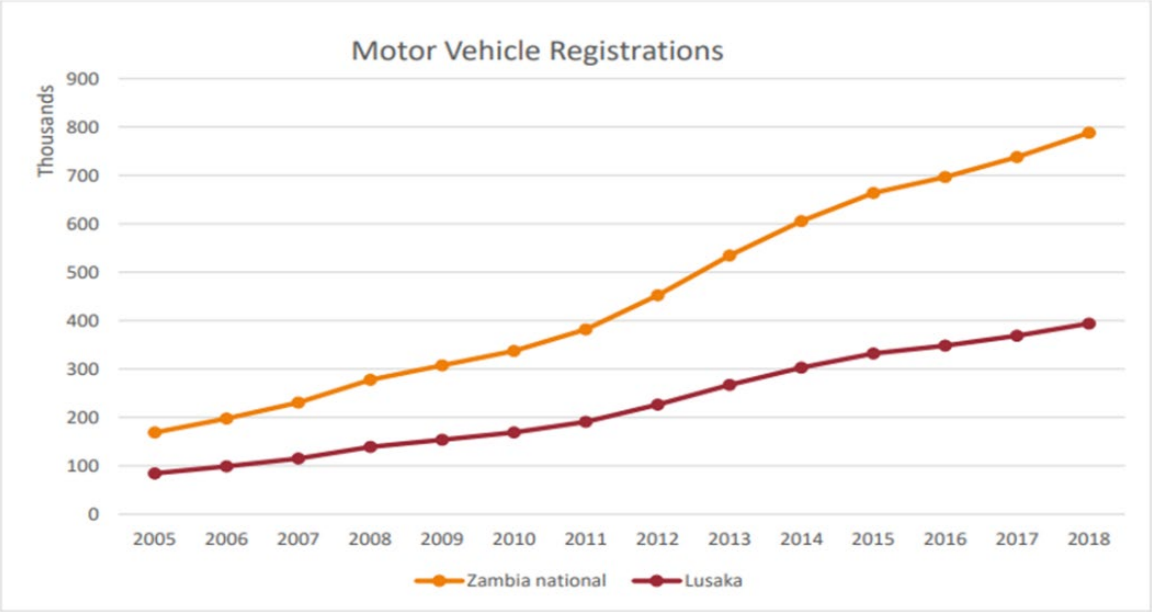


Source: JICA Expert Team (2022)

Figure 5.2.1 Major Roads in Lusaka City

(2) Motor Vehicle Registrations

In 2018, there were approximately 800,000 vehicles registered in Zambia. Lusaka Province accounted for approximately 400,000 (50%) of total vehicles. Since 2005, the number of vehicles increased almost four-fold at an average rate of approximately 11%.



Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

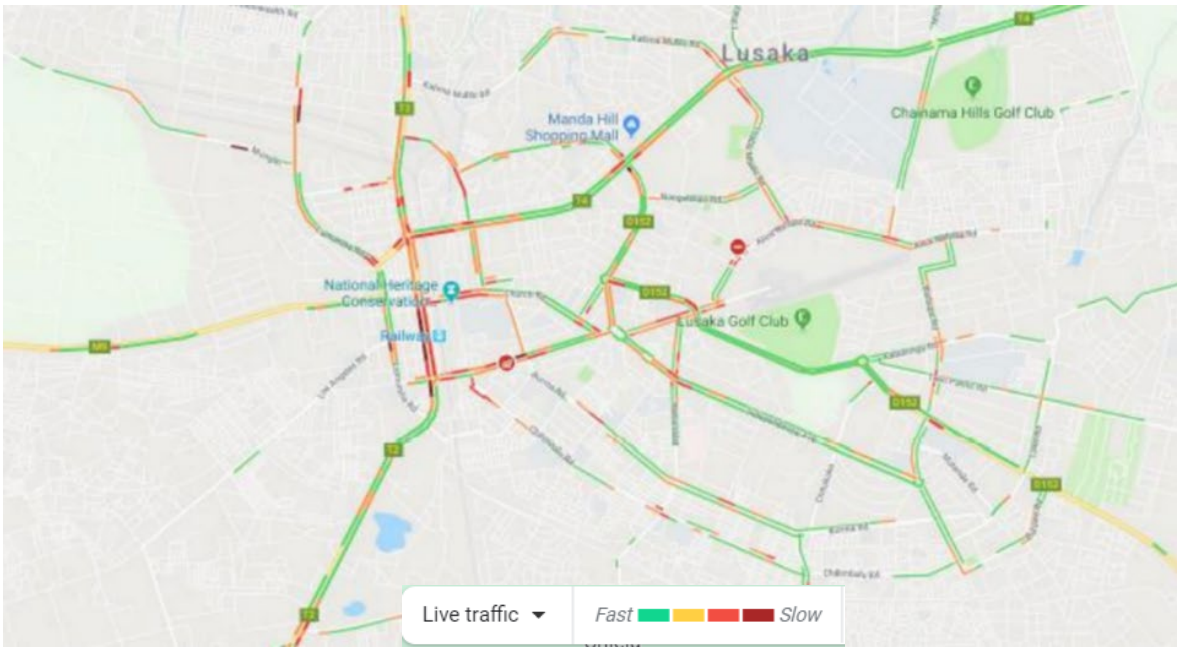
Figure 5.2.2 Number of Motor Vehicle Registrations

(3) Traffic Congestion on Roads

Congestion is a growing challenge for the city of Lusaka, with drivers from more distant residential areas, and large volumes of minibuses and pedestrians converging on the city centre, and the many shopping centres and office districts. Congestion peaks in the morning and in the evening along major roadways and at many intersections.

In the Central Business District (CBD), traffic congestion occurs mostly at the morning and evening peaks on Lumumba Road and Cairo/Kafue Roads. The results of the previous survey[1] also replicate the situation of traffic concentration in the CBD and congestion on the Cairo Road. On these roads, besides concentrated traffic, there are also problems of jaywalking, and on-street and sidewalk illegal parking, reducing the width of the lane for traffic.

[1] Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019

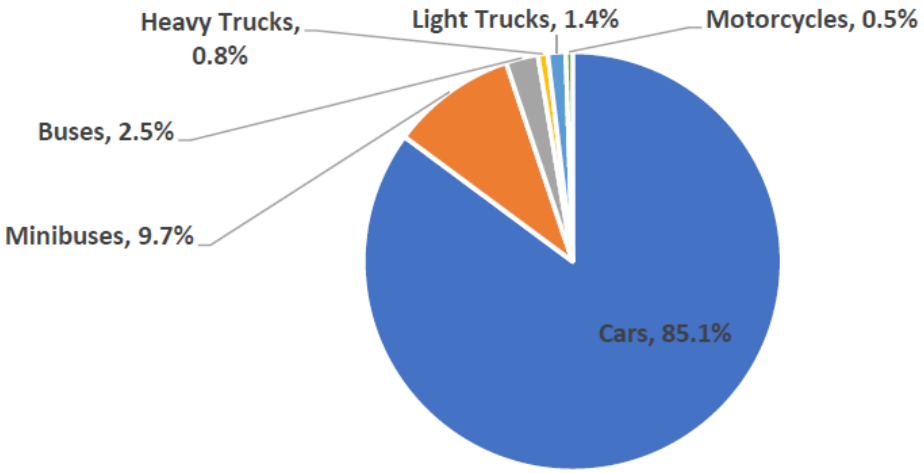


Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

Figure 5.2.3 Visual of Live Traffic in Google Maps for Lusaka City

(4) Vehicle Modal Split

According to a recent traffic count survey in Lusaka, cars dominate all other transport modes accounting for 85% of traffic. Minibuses and buses are the next most popular transport modes with modal split of 10% and 2.5%, respectively. Heavy trucks, light trucks, and motorcycles all have a modal share of less than 2%.

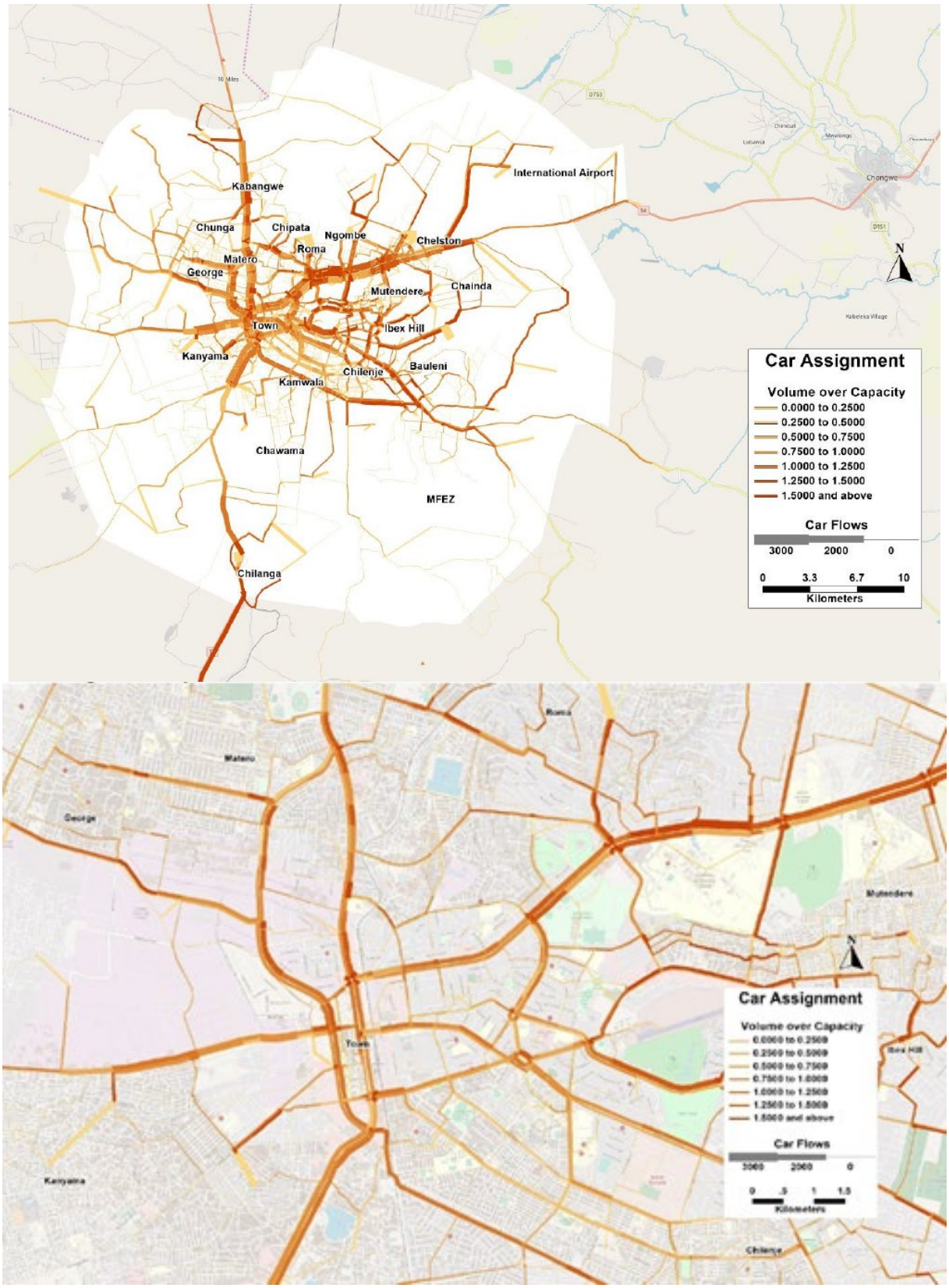


Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

Figure 5.2.4 Vehicle Modal Split in Lusaka

(5) Car Assignment in 2020

Figure 5.2.5 reproduces traffic volumes (excluding Public Transport (PT)) in Lusaka, reported in the "Feasibility Study and Proposed Solutions for Decongestion of Traffic" study conducted by the AfDB in 2020.



Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

Figure 5.2.5 Car Assignment (unit: vehicles)

5.2.3 Public Transport

(1) Public Transportation System

Public Transportation is dominated by a single mode – the minibus, which despite a saturated market and the oversupply of vehicles in the city center at all times of day, is characterized by high prices, unaffordable to many residents of Lusaka, as well as long wait and travel times and limited accessibility. Public transport is loosely managed by a Driver's Association with price controls and a centralized service originating at various city center locations.

ZRL provide limited passenger services. ZRL provide services from the Copperbelt to Lusaka and from Lusaka to Livingstone in the south. Train frequency is extremely low with service once every two days.

(2) Major Bus Stations and Routes

There are four bus terminals in the CBD:

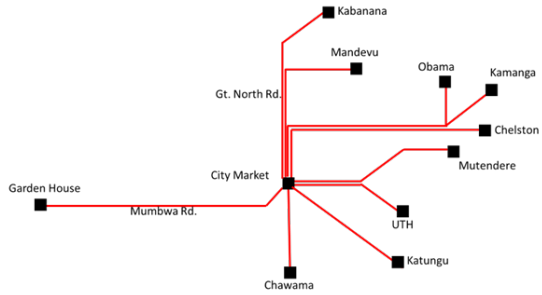
- City Market Bus Station, Lumumba Road
- Lumumba Bus Station, Lumumba Road
- Millenium Bus Station, Chachacha Road
- Kulima Tower Bus station, Chachacha Road

These termini are all in within walking distance (800m) of each other, but pose an obstacle for passengers wishing to interchange between routes at different termini.

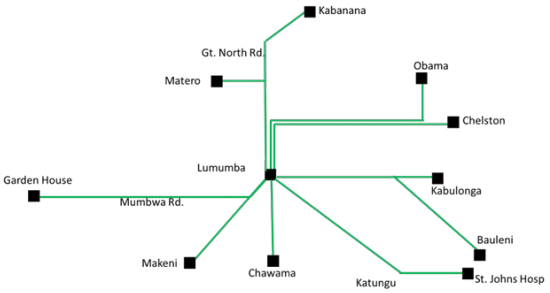
The termini are owned and operated by Lusaka City Council, which charges buses to use them. The exception is Millennium Bus Station, established in 2000 after a serious cleaning of the alley around the station which was mainly used as a dumpsite and toilet. The facility is owned and managed privately by a team under Capital Buses Operations and has an average of 280 buses per day covering routes to Chilenje, Woodlands, Kabulonga, Chawama, Kaunda Square, Chelstone, Kabanana, Mandevu, Zanimuone, Matero, and Zingalume. The facility was well managed and orderly compared to the other facilities under the local authority. The major challenge facing the facility was the political interference and misunderstandings on the provisions of the Markets and Bus Stations Act, No 7 of 2007, on the management of bus stations.

There is an intercity bus terminus located along Dedan Kimathi Road on the west side of Lusaka railway station. This is the terminal for routes to other cities in Zambia, as well as international routes.

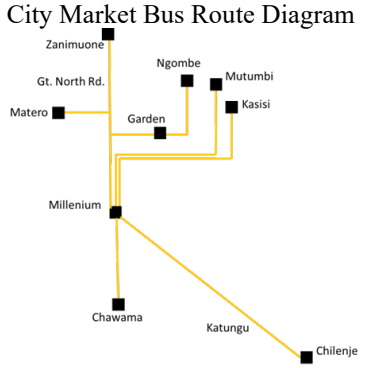
The overall route map for buses in Lusaka is shown in Figure 5.2.6.



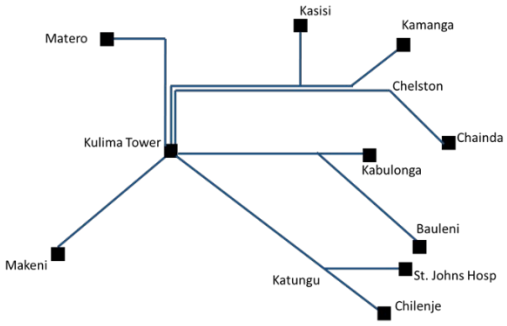
City Market Bus Route Diagram



Lumumba Bus Route Diagram



Millenium Bus Route Diagram



Kulima Tower Bus Route Diagram

Source: JICA Expert Team (2022)

Figure 5.2.6 Overall Bus Route Diagram

(3) Fares

Table 5.2.1 shows typical bus fares in Lusaka. The fares vary by size of bus, but also by direction, in that they are lower for the contra-peak direction than the peak direction in peak hours.

Subsection 12 (d) of Section 108 of the Road Traffic Act No. 11 (2002) states that a person applying for a road service licence, and a holder of such a licence applying for its variation, shall submit to the Director the rate of fares of the proposed services.

In reality, fares are agreed through a consultative mechanism between the Road Transport and Safety Agency (RTSA) and the Bus and Taxi Owners Association of Zambia (BTOAZ). Most often bus operators request to vary their current Road Service Licences (RSL) by making adjustments to bus fares as stipulated under the Act No. 11, in response to fuel price increases. Fare levels are implemented after approval by the Ministry of Transport and Communications.

Table 5.2.1 Bus Fares in Lusaka

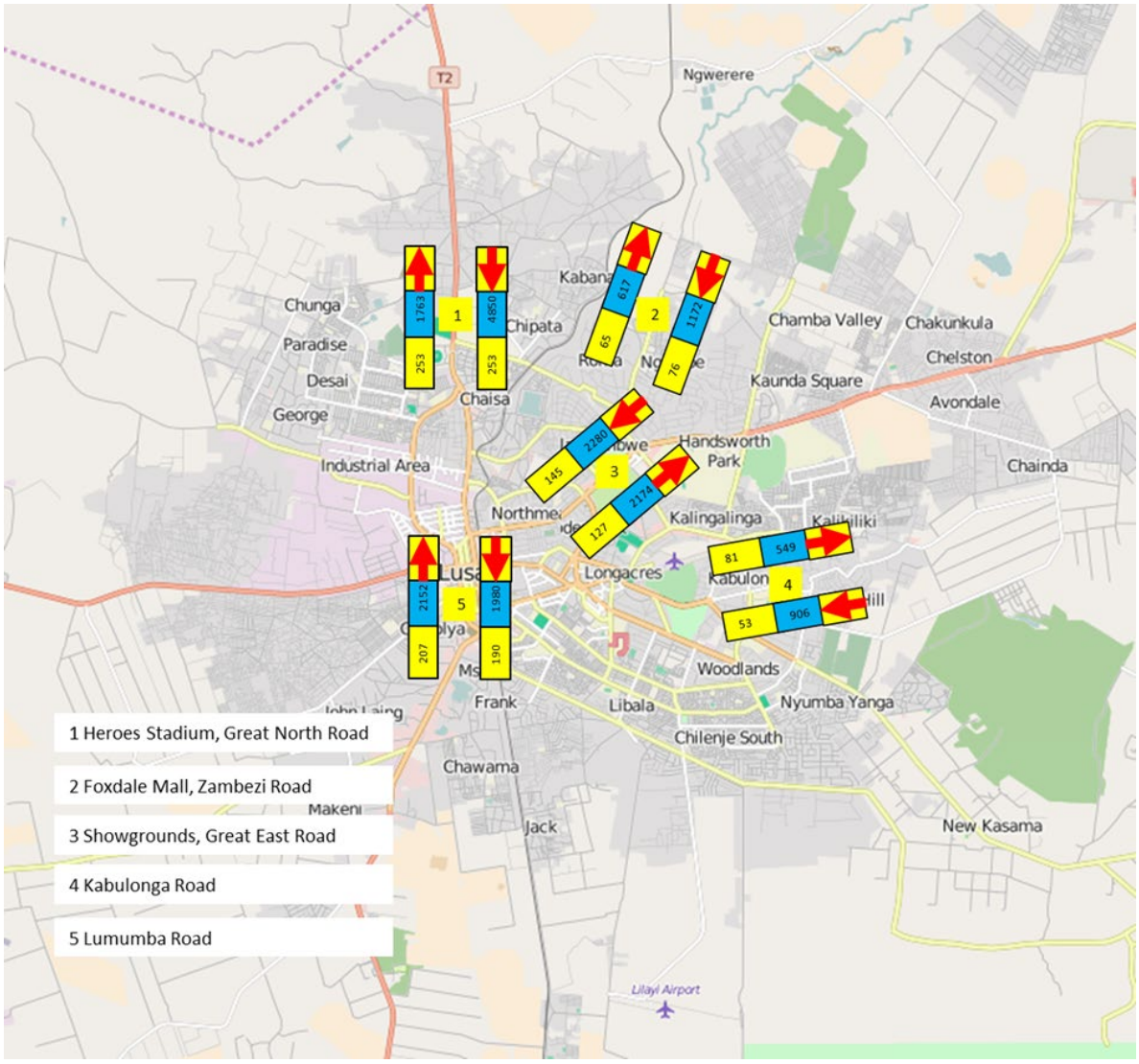
Distance (km)	Typical fare (Kwacha)
Up to 3	5
4 to 7	5 - 7
8	7- 8
9	8-10
10	10-12
12	13- 15

Source: JICA Expert Team (2022)

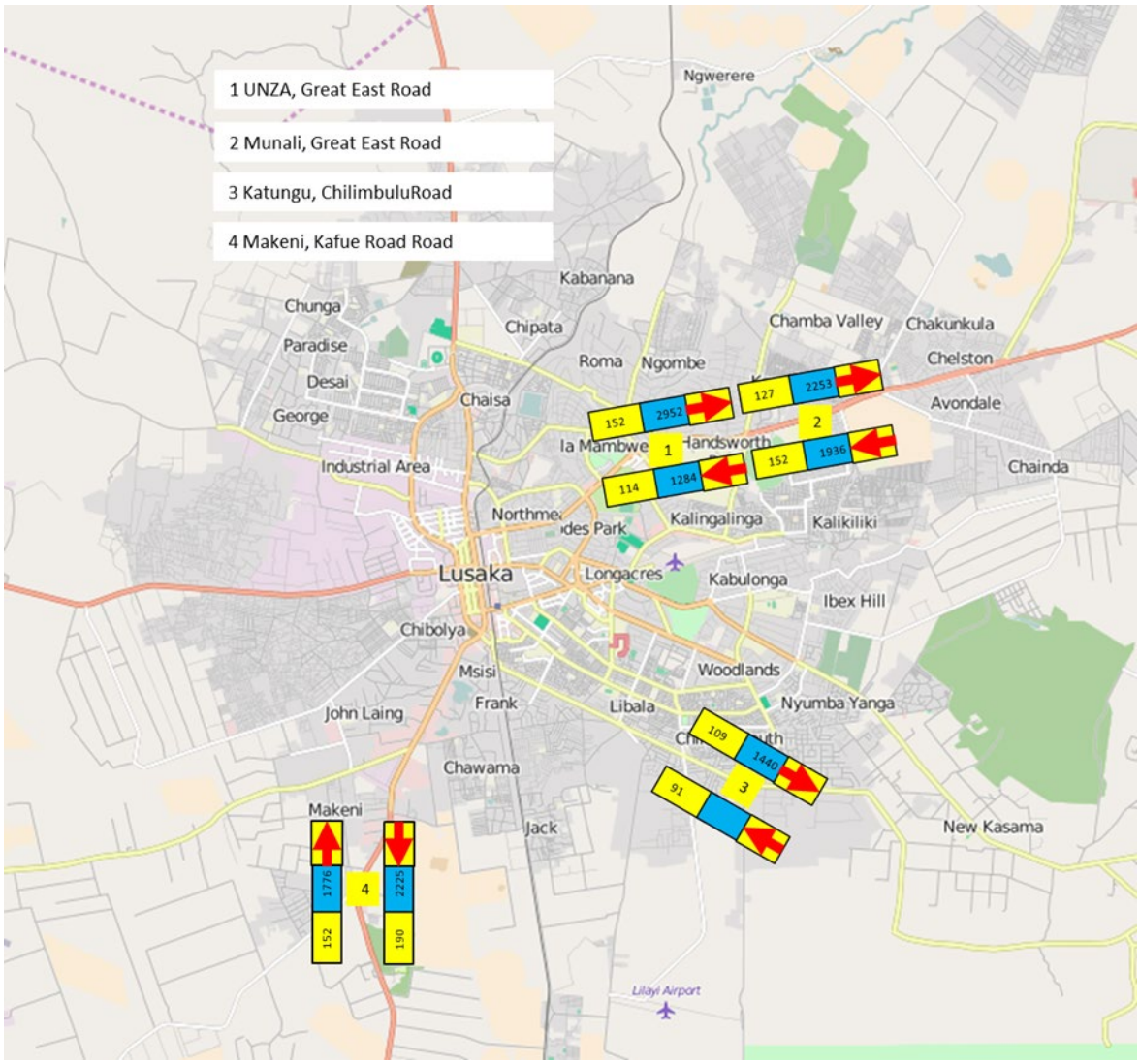
(4) Bus and passenger volumes

Bus and passenger flows for the morning peak and evening peak hours are shown in Figure 5.2.7. The highest observed flow is on the Great North Road, with 4,850 passengers per hour inbound in the morning peak hour, carried on a total of 253 vehicles at an average occupancy of 19 passengers. However, typical volumes are of the order of 2,000 to 3,000 passengers per

hour on the main arterial routes. Whilst these might be more efficiently carried on larger capacity buses, these volumes do not justify investment in Bus Rapid Transit.



Morning Peak



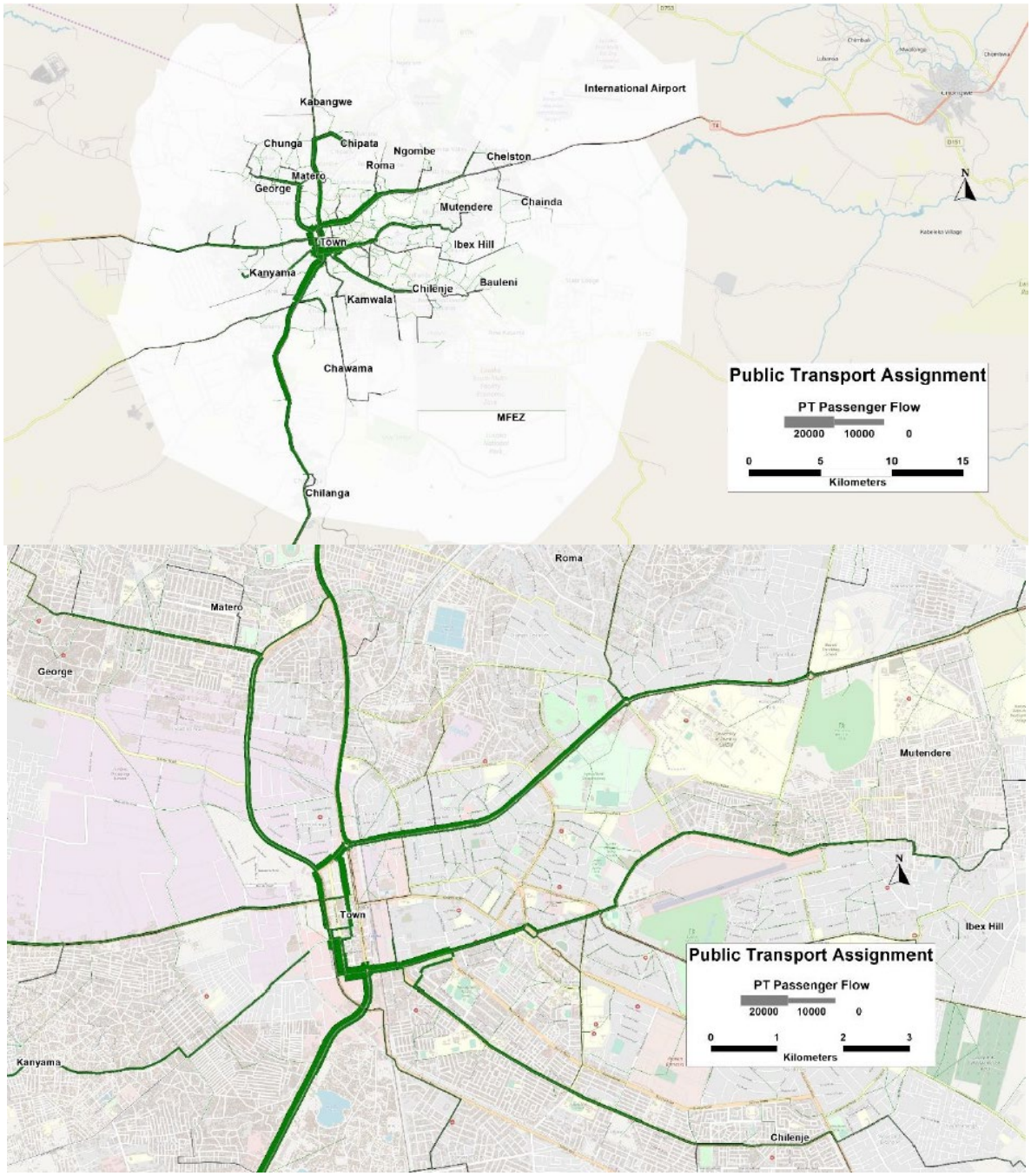
Evening Peak

Source: JICA Expert Team (2022)

Figure 5.2.7 Peak Hour Bus and Passenger Flows

(5) PT Assignment in 2020

Figure 5.2.8 reproduces passenger volumes on public transport in Lusaka, reported in the "Feasibility Study and Proposed Solutions for Decongestion of Traffic" study conducted by the AfDB in 2020.



Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

Figure 5.2.8 PT Passenger Assignment (unit:person)

5.2.4 Non-Motorized Traffic

(1) Non-Motorized Transport Strategy

Due to economic hardship and the low-density character of much of Lusaka, many residents that are unable to afford public transport can be seen walking extremely long distances to reach their workplaces. Therefore, there is a need and opportunity for encouraging bicycle transport in the city, given that it is already a popular mode in rural areas.

Given this background, Zambia's NMT Strategy contains proposals for bus rapid transit (BRT).

The strategy states that local authorities will be encouraged to develop city-wide mass rapid

transit network plans, including bus rapid transit (BRT) corridors that offer high-capacity and high-quality public transport by providing an exclusive right-of-way for BRT buses.

The strategy recommends that BRT be implemented on roads with moderate to high demand for public transport that is over 2,000 passengers per hour per direction (pphpd). It should be noted, however, that a well-designed BRT system can carry up to 45,000 pphpd.

BRT corridors should have dedicated median bus lanes that are physically separated from mixed traffic lanes, to ensure that the buses can move quickly and avoid congestion. The system should have high quality stations with platforms that match the level of the bus so that passengers can enter and exit quickly and easily without climbing steps. Stations should be equipped with smart off-board fare collection to enhance passenger convenience and improve efficiency.

(2) Pedestrians

Sidewalks are missing from about 75 percent of the road network in Lusaka, so pedestrians and motorized vehicles must share the same space. Where sidewalks do exist, they are discontinuous, poorly maintained, contain open drains, and tend to be taken over by expansion of adjoining properties.

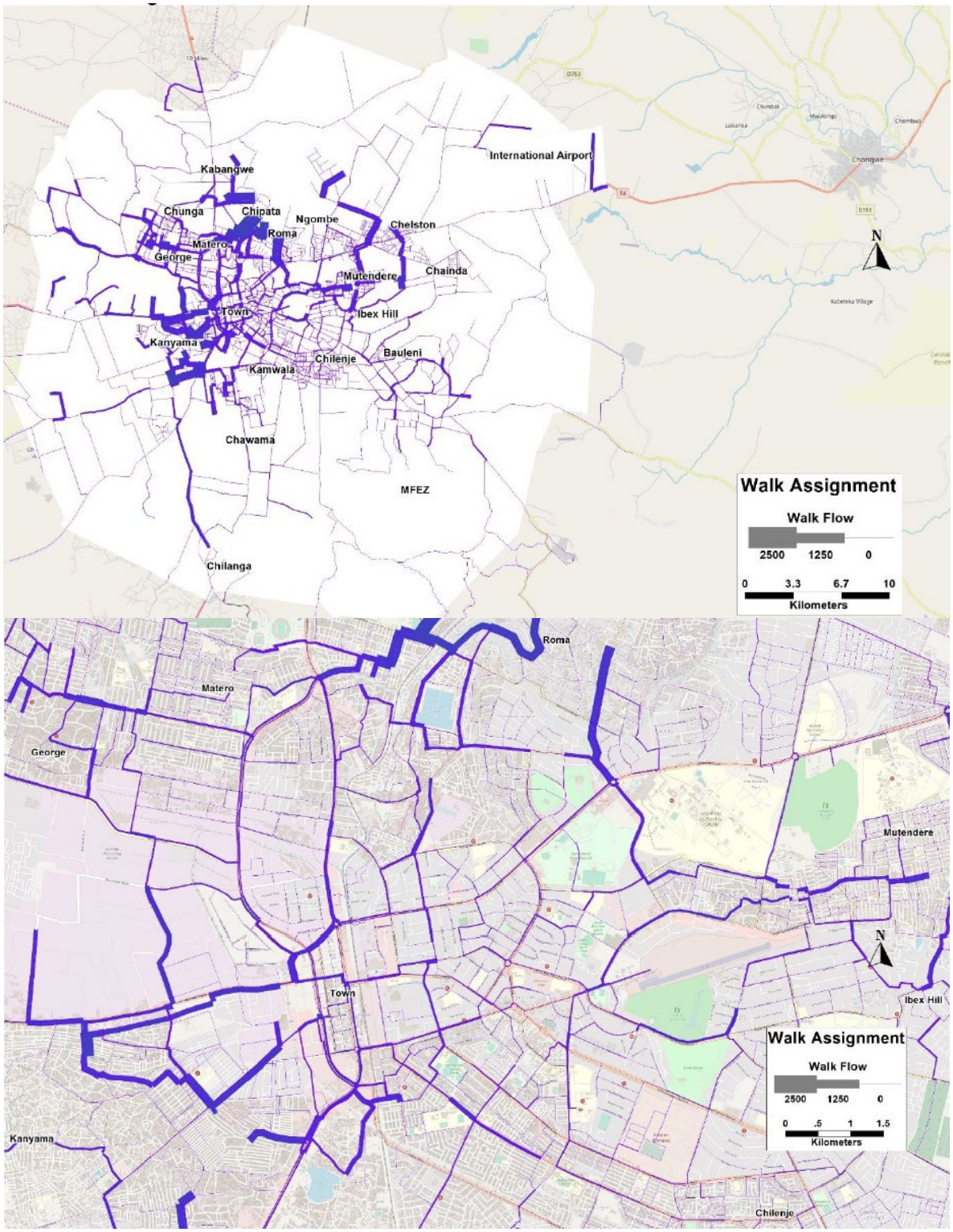
Pedestrian crosswalks and bridges are not provided, except in the city centre. The only facilities afforded to pedestrians are crosswalks without signals. These are rarely respected by motorists or enforced by the police. In locations where there are median strips and barriers in high-traffic areas, it is not uncommon to find pedestrians jumping over the road dividers to cross the road, which is a source of frequent, and serious accidents.

Facilities for bicycles and other forms of non-motorized transport are equally scarce. The few bicycles in the city compete for space with motorized vehicles, making them very unsafe. This is particularly surprising in urban environments where pedestrian traffic is dominant.

According to a household survey conducted as part of the 2009MP, walking is the dominant trip mode (accounting for 65% of daily person trips), followed by public transport (23%) and private vehicles (10%). In 2016, pedestrians accounted for 60% of road traffic accidents in Zambia. Walking conditions are far from adequate despite the large number of pedestrians. There are only a few dedicated sidewalks, all of which are in the city centre. They are generally inadequate in scale, poorly maintained, overgrown, and encroached upon by hawkers and so forth. Intersections are also poorly designed for pedestrians and crossings are unprotected.

(3) Pedestrian Assignment in 2020

Figure 5.2.9 reproduces pedestrian trip assignment results in Lusaka, reported in the "Feasibility Study and Proposed Solutions for Decongestion of Traffic" study conducted by the AfDB in 2020.



Source: Feasibility Study and Proposed Solutions for Decongestion of Traffic in the City of Lusaka, 2019, LCC/ AfDB

Figure 5.2.9 Pedestrian Assignment (unit: person)

5.2.5 Parking in the CBD

(1) Parking System

The Lusaka CBD has severe parking problems that have been exacerbated by the increasing human and vehicle population. The resulting effect of this increase is that it has become very

difficult to find a parking space in the CBD. A lot of time is wasted searching for parking spaces, further worsening congestion. Illegal parking is also a major problem in the CBD. Roadside parking has become a common phenomenon that reduces road capacity to hinder the efficient movement of automobiles. This in turn causes an increase in the cost of travelling.

Given this situation, in light of its mandate to manage traffic flow into and out of the CBD, in 2016 Lusaka City Council embraced the Smart Park Africa initiative and entered into contract with Parkrite Zambia who will manage parking in the CBD on their behalf. This action is in line with the Council's need to sanitise and decongest the CBD to allow for a more efficient and safer parking system.

(2) Parking Capacity

Parking spaces in the CBD have increased by 61% from 1,800 spaces in 2000 to 4,598 spaces in 2016. However, according to a previous survey[2], only 2,800 spaces were functioning as intended and 1,798 spaces were not being used for parking.

One reason for this is that many parking spaces have been turned into bus stations and bus stops. This is the case on Freedom Way near Kulima Tower Bus Station, where buses were found parked in parking spaces for long periods of time as they do not pay for parking. Other parking spaces on Freedom Way were being used as motor vehicle garages. Vehicles are repaired in these parking spaces and mechanics take as long as they need to complete repairs. Parking spaces on Chachacha Road were also found being used as trading places for vegetables, clothes (locally known as salaula), as well as cars. All these uses reduce the capacity of parking in the CBD.

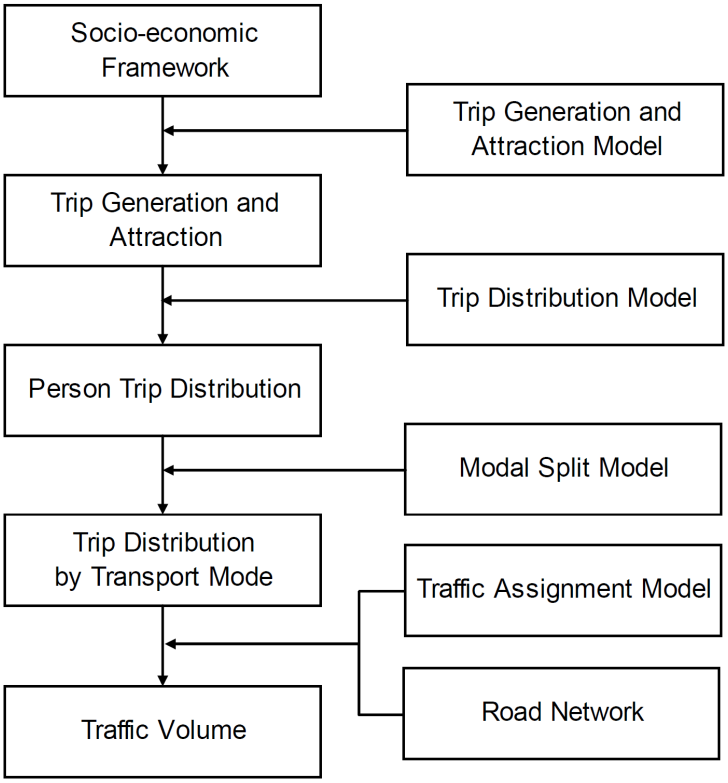
Parking supply is also further reduced during the rainy season due to issues with blocked drainage. This causes motorists to avoid flooded parking areas and they typically resort to parking in illegal places.

5.3 Transport Characteristic

5.3.1 Traffic Demand Forecast

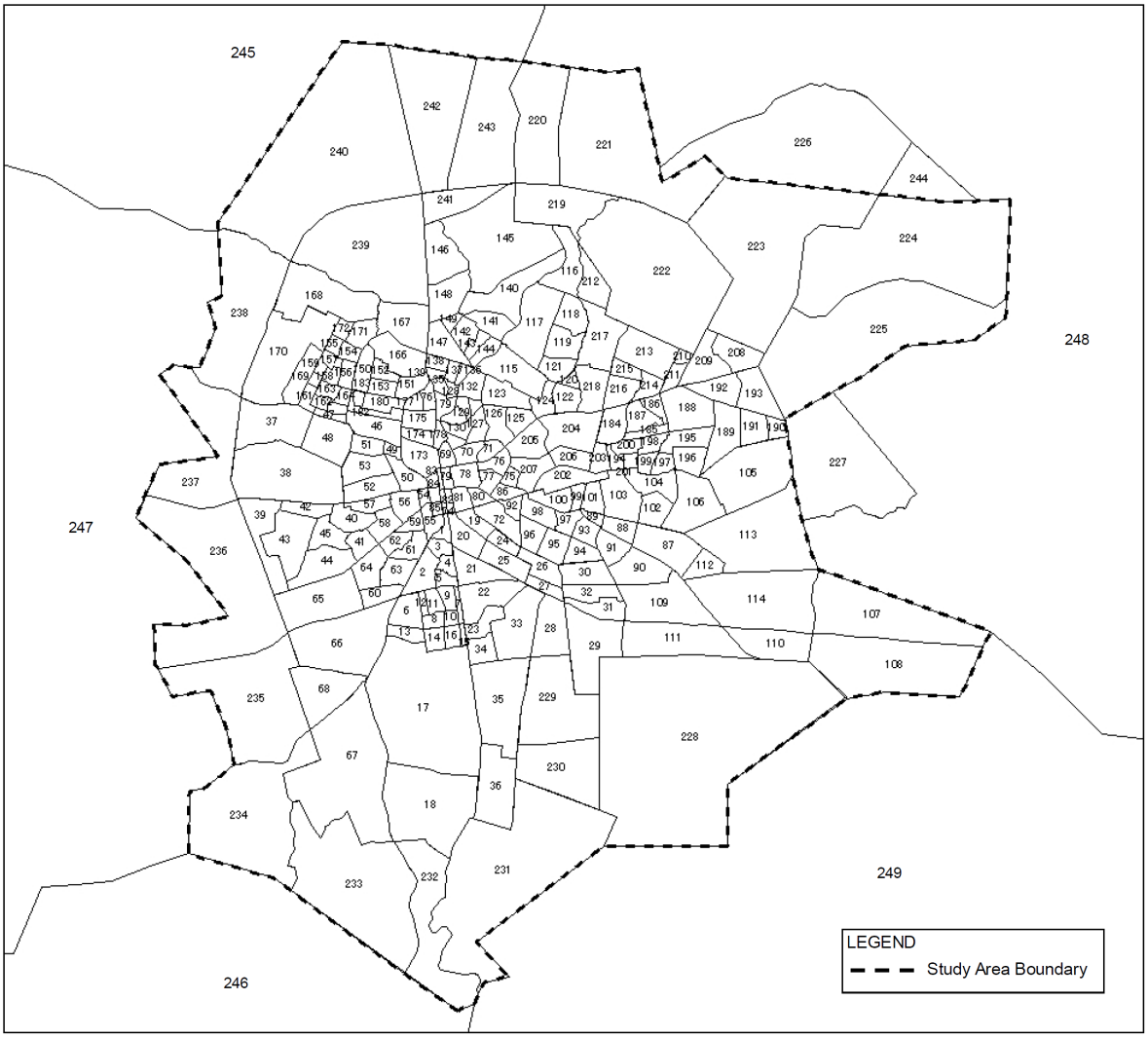
The traffic demand forecast process used in the 2009MP is shown in Figure 5.3.1. Regarding traffic assignment, 249 zones were utilised. Traffic was assigned with 2007 set as the current year, and traffic was forecast for 2015, 2020 and 2030 using OD matrix and network data.

[2] Improving parking spaces in the central business district (CBD) of Lusaka city, Chipili, Sydney (The University of Zambia, 2019)



Source: 2009MP

Figure 5.3.1 Process of Demand Forecast

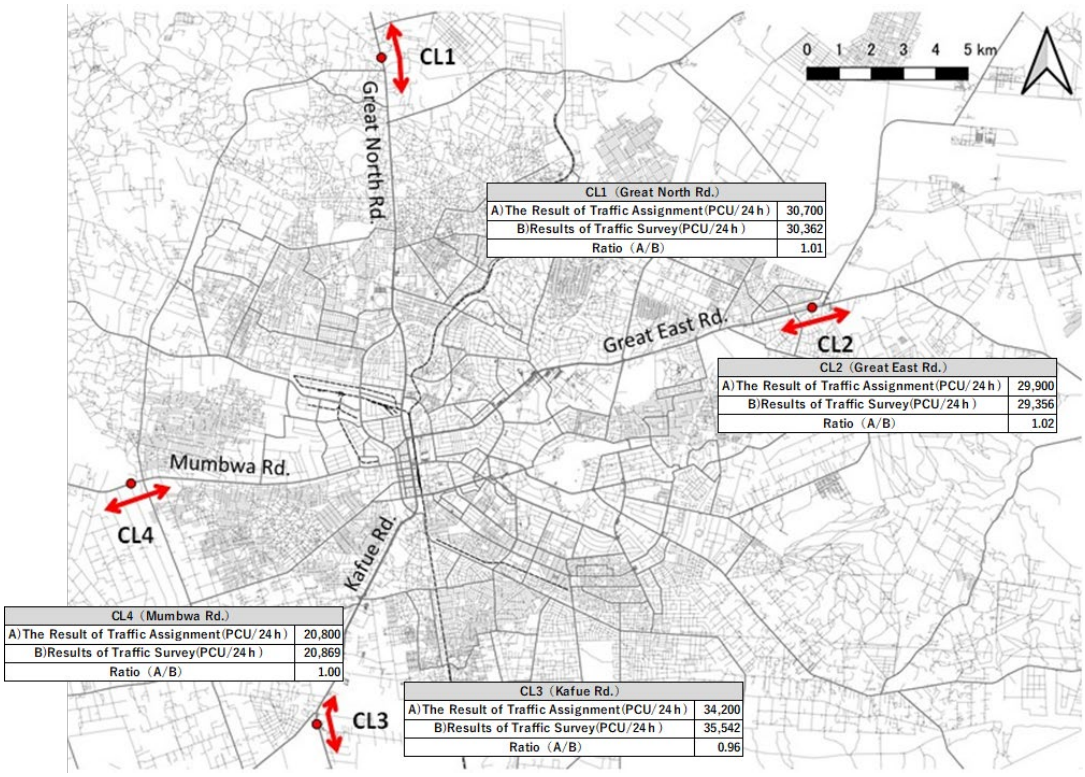


Source: 2009MP

Figure 5.3.2 Traffic Analysis Zone for Traffic Assignment (249 zones)

Updates of the road network and OD matrix were done based on the results of the "Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary)," submitted by JICA in February 2022.

The target year in this traffic demand forecast was 2021. The zone settings followed the settings of used in the 2009MP. The reproducibility of the model was verified by comparing it with the traffic volume survey results conducted in this study.



Source: Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary) February 2022 JICA

Figure 5.3.3 Comparison of Traffic Volume Survey and Traffic Assignment Results

Table 5.3.1 Comparison of Traffic Volume Survey and Traffic Assignment Results on the Cordon Line

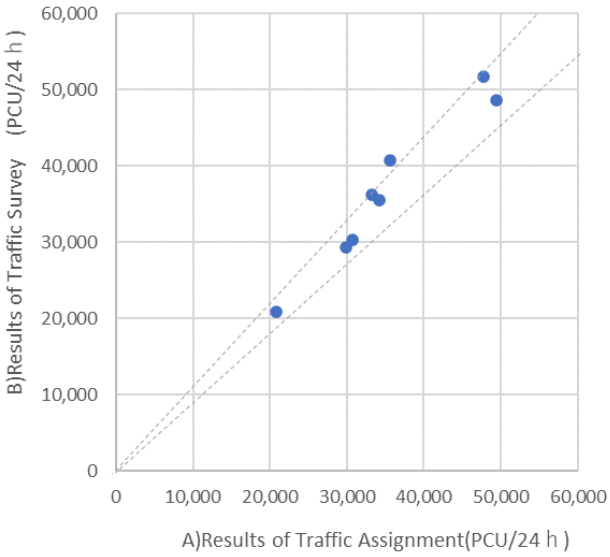
	Results of Traffic Assignment (PCU/24h)	Results of Traffic Survey (PCU/24h)	Ratio (A/B)
CL1 (Great North Road)	30,700	30,362	101%
CL2 (Great East Road)	29,900	29,356	102%
CL3 (Kafue Road)	34,200	35,542	96%
CL4 (Mumbwa Road)	20,800	20,869	100%

Source: Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary) February 2022 JICA

Table 5.3.2 Comparison of Traffic Volume Survey and Traffic Assignment Results on Urban Area (cross-section)

	Results of Traffic Assignment (PCU/24h)	Results of Traffic Survey (PCU/24h)	Ratio (A/B)
TC1 (Lumumba Road North)	49,300	48,608	101%
TC2 (Great North Road)	35,800	40,733	88%
TC3 (Lumumba Road South)	33,100	36,279	91%
TC4 (Cairo Road)	48,200	51,707	93%

Source: Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary) February 2022 JICA



Source: Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary) February 2022 JICA

Figure 5.3.4 Confirmation of Reproducibility of Current Traffic Assignment

The resident opinion survey on urban planning conducted in the Project will be utilised to make the OD matrix and the network data more accurate. This will improve the accuracy of the traffic assignment model.

5.3.2 Trip Distribution Pattern

The current OD matrix will be revised based on the resident opinion survey on urban planning conducted in the Project. Particular attention will be paid to workers who commute by car. The future OD matrix for 2045 will then be created based on the population distribution.

5.3.3 Traffic Assignment and Evaluation

(1) Update of the network data

The current network data for the Project will be updated by incorporating road improvements that have been made since the network data was used in the "Data Collection Survey on Urban Development and Urban Transportation in Lusaka City Final Report (Summary)," submitted by JICA in February 2022 JICA.

The future network data will then be created following in line with the 2009MP and the proposed land use plan in the Project.

(2) Reproducibility of the traffic assignment model

Current traffic assignment will be calculated using the OD matrix and network data in the Project. The reproducibility of the traffic assignment model will be verified by comparison between the results of the traffic assignment and traffic volume survey conducted in the "Data Collection Survey on Urban Development and Urban Transportation In Lusaka City Final Report (Summary)," submitted by JICA in February 2022.

(3) Future traffic assignment and evaluation

Future traffic assignments for 2045 will be calculated by the verified traffic assignment model described in the previous section. Multiple future network patterns supporting land use plans

will be evaluated by volume-km and volume-hour.

(4) Utilization for location data of mobile phone users

By utilizing the location data of mobile phone users, we are able to obtain daytime population data, and trip characteristics in the CBD and Greater Lusaka. Currently, we are continuing to collaborate closely with the Zambia Information and Communication Technology Authority (ZICTA) to obtain this data legally.

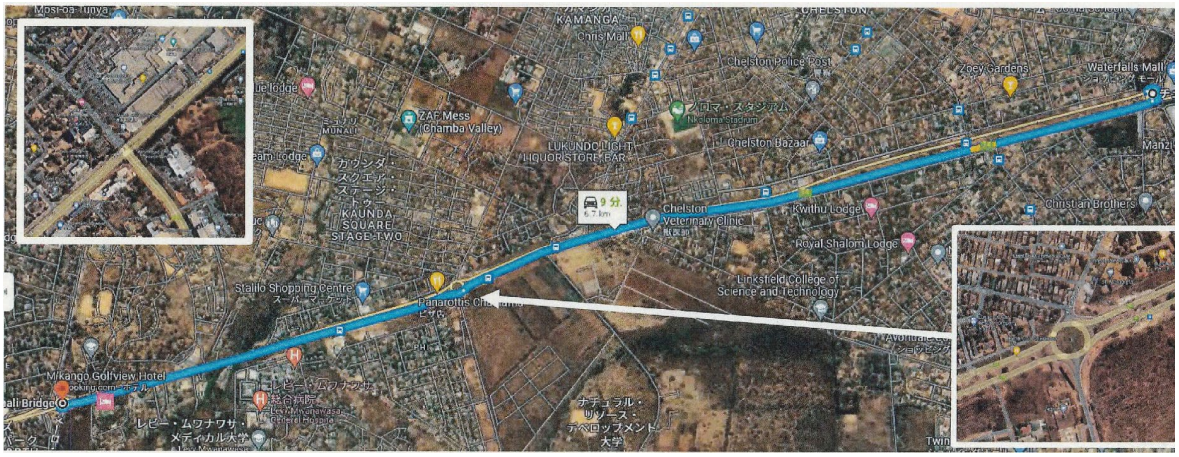
5.4 Issues to be Tackled

5.4.1 Road Network Challenges

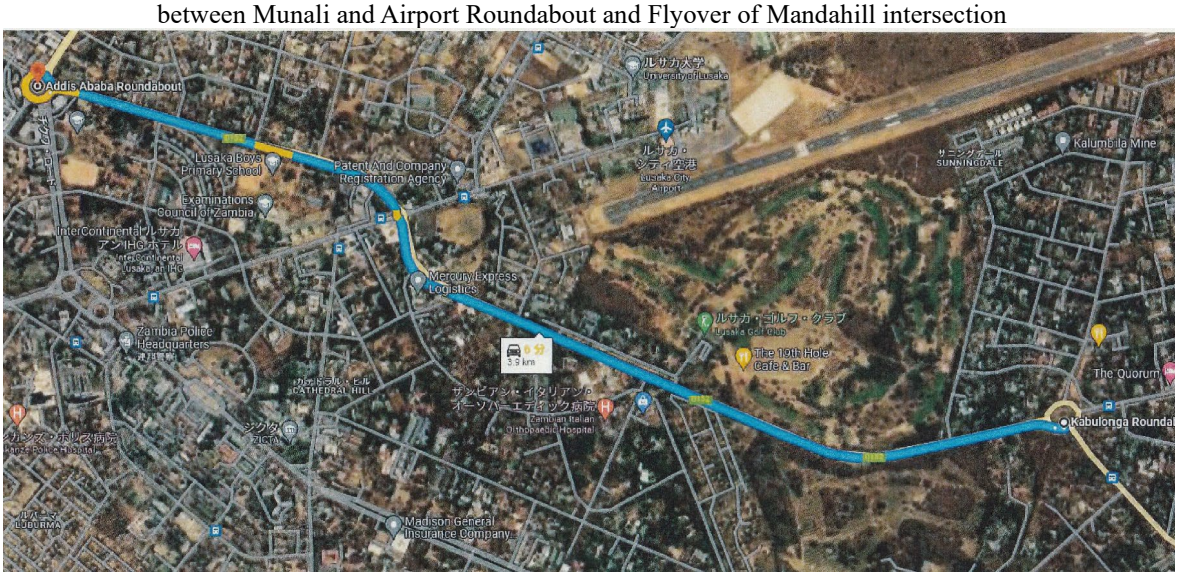
(1) Inefficient Road Network

In Lusaka, road development is being promoted in sequence with the proposals for road network development made in the 2009MP. However, as with the inner/middle ring road, there are issues of relocation of residents, budget problems, and a rapid increase in road traffic demand that exceeds the expectations outlined in the MP, so efficient network formation is insufficient. Therefore, it is necessary to plan an efficient road network in the short to medium term.

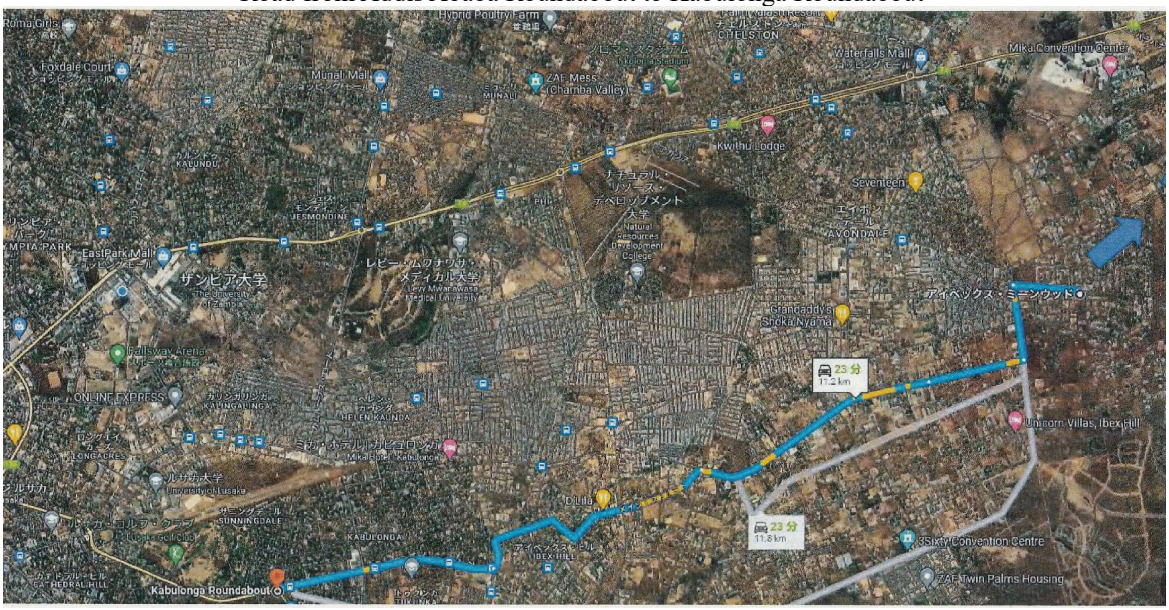
Discussions with MLGRD during the field survey suggested that the following roads need to be enhanced.



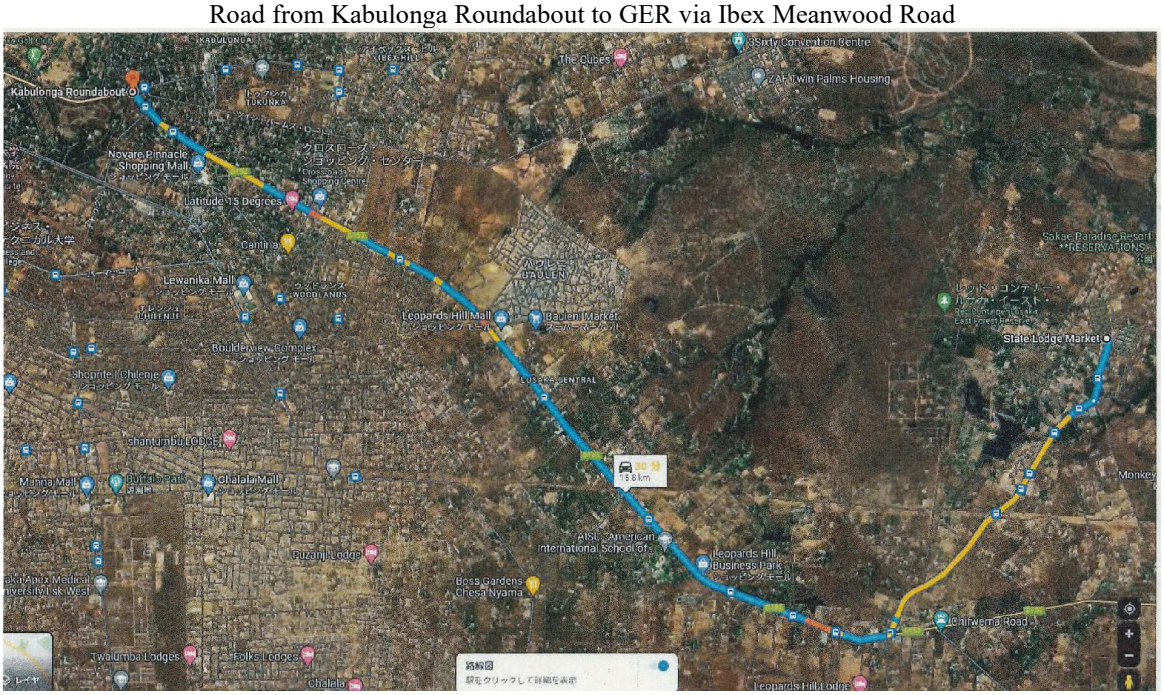
Widening of Great East Road
between Munali and Airport Roundabout and Flyover of Mandahill intersection



Road from Addis Ababa Roundabout to Kabulonga Roundabout

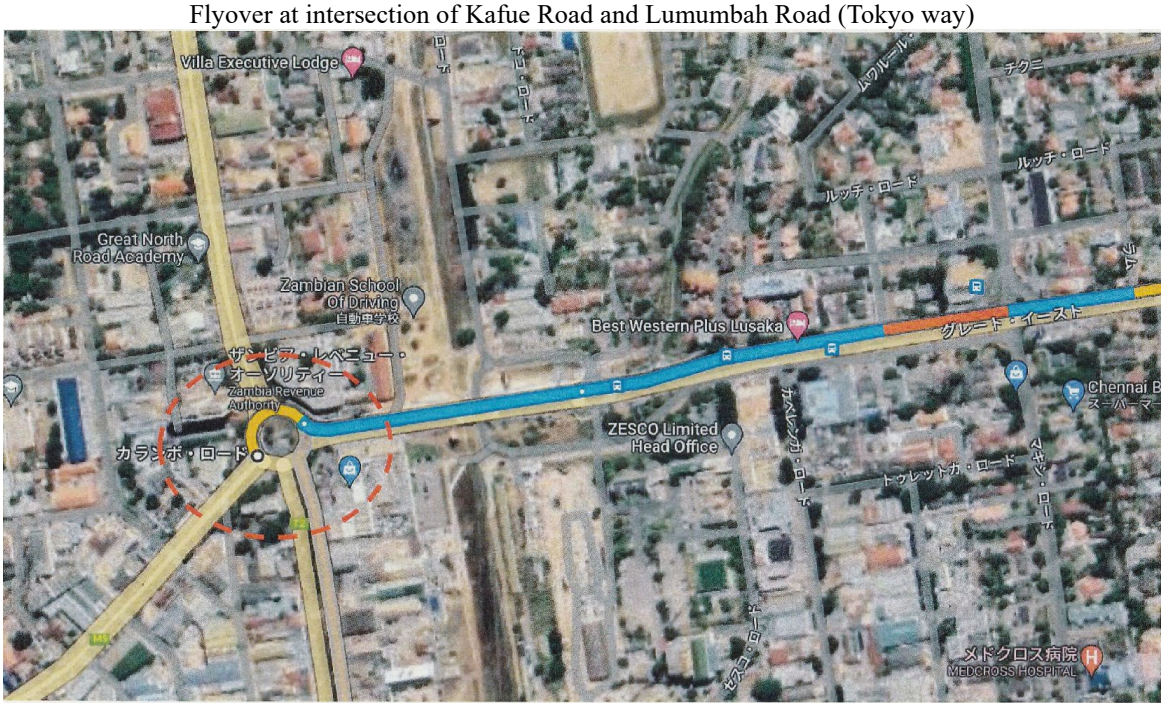


Road from Kabulonga Roundabout to GER via Ibex Meanwood Road



Road from Kabulonga Roundabout to State Lodge via Leopard Hill Road

Flyover at intersection of Kafue Road and Lumumbah Road (Tokyo way)



Flyover at intersection of Great East Road, Great North Road, and Kalambo Road

Flyover from Mumbwa Road to Kalambo Road (2 locations)

Source: JICA Expert Team (2022)

Figure 5.4.1 Roads Proposed to be Enhanced

(2) Inner Ring Road

A part of Inner Ring Road is located through the unplanned settlement and requires a large-scale relocation of residents. The middle ring road also needs to pass through some unplanned settlement, and although the number of affected houses is different, it can be said that early project implementation is difficult. Therefore, as an alternative, improvement of the function of the Lumumba Road is proposed. However, since the inner/middle ring road is an important framework of the urban road network, it is necessary to continue to leave it as a planned route.

(3) NMT Network

More than 60% of the means of transportation in Lusaka is walking (including public transport users), but about 75% of the road network lacks sidewalks, prompting pedestrians and cars to share space. At the same time, there is a shortage of facilities for bicycles and other forms of non-NMT. In an urban environment where pedestrian traffic is dominant, this is an issue that needs improvement.

(4) Insufficient Road Facilities

In Lusaka City, there are no lanes for turning left and right at intersections (insufficient road design), signal systems that do not reflect demand, and lighting facilities installed only in a limited part of the road network. There are few lights in residential areas to ensure safety and security.

5.4.2 Barriers to Public Transport Reform

The key barriers to successful implementation of public transport reforms include institutions with overlapping and uncoordinated institutional mandates, inadequate institutional capacities and complex institutional frameworks.

(1) Coordination of agencies

Responsibility for management of public transport in Zambia is diffused across a few institutions with overlapping mandates, which creates confusion and inertia for change. Improved coordination among the institutions will be instrumental in ensuring successful

implementation of reforms.

(2) Institutional capacities

Public transport institutions not only need to know their roles but must have the institutional capacity to fulfil them. Currently, most councils are inadequately funded or staffed to perform their duties. Successful implementation of reforms will require, among others, adequately resourcing and building capacities within key institutions such as councils in order for them to fulfil their mandates.

(3) Complexity of institutional framework

Zambia's public transport has highly dispersed ownership structures, with most bus owners owning one or two buses at most which in turn are leased to drivers. Further, several associations of drivers, operators and transport brokers have cropped up, further complicating the institutional framework for delivery of public transport services. This situation makes full consultation and consensus building on key issues that affect supply of the services difficult. This presents a major challenge to the reform process as stakeholders must be sufficiently engaged to garner their support for the reforms.

5.4.3 Challenges in CBD

(1) Traffic Congestion on Roads

Based on the results of the speed survey, the most serious congestion occurs on Cairo and Lumumba Roads in the city centre. Large cargo is prohibited on Cairo Road, and all of it flows into Lumumba Road, causing heavy congestion. In addition, the importance of Cairo Road and Lumumba Road in the Lusaka urban transportation system can be confirmed in results from other surveys.

(2) Multiple Challenges

In the CBD, there are issues such as pedestrian safety measures and flooding measures as well as congestion reduction. The Cairo Road and Lumumba Road can be said to have triple burdens of traffic congestion, accidents, and flooding.
Also, programs for traffic signals are not operating properly to meet demands. Therefore, it is necessary to take comprehensive measures to realize efficient traffic flow by combining bus terminal maintenance and parking measures.

CHAPTER 6 INFRASTRUCTURE

6.1 Water Supply

6.1.1 Water Resource

(1) Institutional Framework

1) Legislation relating to water resources management

Water Resources Management Act, 2011

- Establishes a comprehensive framework for water resource management and regulation, aimed at promoting sustainable use, economic growth, and protection of water resources.
- Specifies the establishment of WARMA (Water Resources Management Authority) to oversee water rights management, issue water use permits, regulate water infrastructure development, and monitor legal compliance.

Statutory Instruments

Statutory Instruments (SIs) have been enacted to operationalize the Water Resources Management Act.

(a) SI No.18 Fees and Charges Regulations of 2018
- ✓ Fees and Charges for all economic users of water
- ✓ Exemption for domestic and non-domestic use up to 10 m^3/day
- ✓ Fixed charge of K5.00 for agricultural use of water of up to 100 m^3/day

(b) SI No.19 Licensing of Drillers and Other Construction of 2018
- ✓ Regulation of borehole drillers and constructors

(c) SI No.20 Groundwater and Borehole Regulations of 2018
- ✓ Minimum distances between adjacent boreholes (100 m, Karstic fractured limestone), distance between a borehole and a potential pollution source such as septic tanks (30 m), soakaways (30 m), landfills (500m) and graves (500 m)

Environmental Protection and Pollution Control Act, 1990

- Establishes a legal framework for managing and protecting Zambia's environment and encompasses various aspects of environmental conservation, including air and water quality, waste management, and control of hazardous substances.

Water Pollution Control Regulations, 1993

- Regulations to control and prevent the pollution of water resources, under the Environmental Protection and Pollution Control Act of 1990.

2) Administrative and Regulatory Agencies

Ministry of Water Development and Sanitation (MWDS)

The administrative body responsible for the water sector. The Department of Water Resources Development of MWDS is to provide policy guidance on national water resources related issues

and develop both surface and groundwater resources of inland and transboundary water bodies in order to ensure adequate water resources availability and equitable access by all users for sustainable national socio-economic development. [1]

Water Resources and Management Authority (MARMA)

Under the supervision of MWDS, WARMA has the mandate to regulate, manage, develop, protect, and conserve water resources in Zambia for all users. water rights, conserves surface water and groundwater resources, and regulates intake, allocation, use, development and management.

Zambia Environmental Management Agency (ZEMA)

Under the supervision of Ministry of Green Economy and Environment (MGEE), ZEMA has the mandate to ensure the sustainable management of natural resources and protection of the environment, prevention and control of pollution.

ZEMA is responsible for licensing wastewater discharge (Emission Licence, according to the Environmental Management (Licensing) Regulations, 2013).

(2) Policies and Development Plans

National Water Policy, 2024

The policy provides an integrated and comprehensive framework for the management, development, and regulation of Zambia's water resources, water supply, and sanitation services. Replacing the 2010 policy, it aligns the water sector with the country's development priorities and the Sustainable Development Goals (SDGs).

The policy aims to:

- Ensure universal access to safe, affordable, and sustainable water supply and sanitation services;
- Promote integrated water resources management for the equitable and efficient use of water;
- Strengthen institutional, legal, and regulatory frameworks for effective service delivery;
- Enhance climate resilience, water security, and environmental protection;
- Encourage inclusive participation by communities, the private sector, and local authorities.

The policy emphasises cross-sectoral coordination, improved monitoring and evaluation, and financial sustainability. Implementation is supported by periodic reviews, strategic plans, and alignment with national development plans and decentralised frameworks.

(3) Groundwater

1) Topography and Geology

The Lusaka area, at 1,200 to 1,300 meters above sea level, features a complex terrain with flat-topped hills and diverse geology. It includes flat dolomite and limestone areas, contrasting with rugged, hilly regions of schists and quartzites, marked by steep slopes at their boundaries.

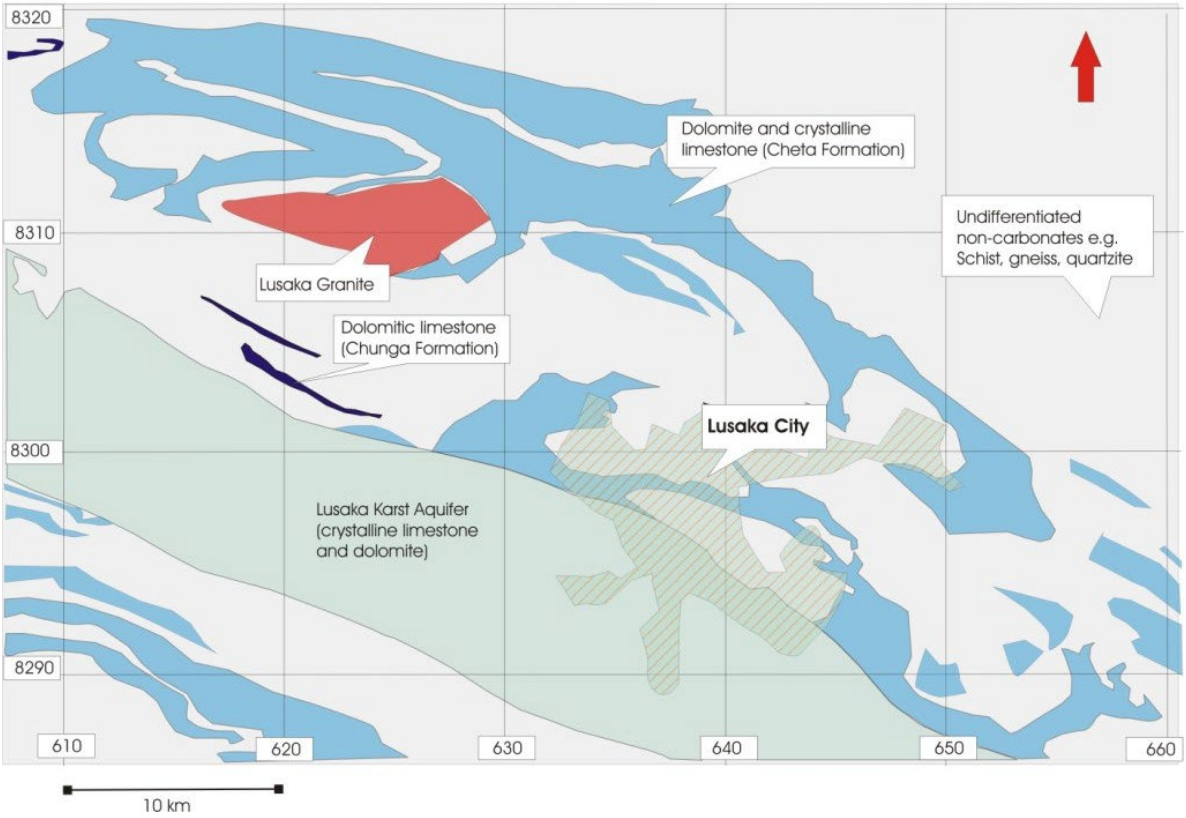
The geology of the Lusaka area is primarily composed of granitic gneisses and quartzites, with layers of calcareous materials. Geological formations have undergone multiple foldings,

[1] WARMA, Strategic Plan 2022-2026

affecting their current complex appearance. The Chunga Formation's schists, overlying the Basement Complex, are of a higher grade than the Cheta Formation's carbonate horizons. The Lusaka Dolomite, an important aquifer, along with other carbonate formations, quartzites, granites, and gneisses, form the region's principal geological and water resources. [2]

2) Hydrogeology

The Lusaka region's groundwater system is predominantly influenced by its karst aquifer, characterized by soluble carbonate rocks with extensive karst features. The aquifer, especially the Lusaka dolomite and Cheta Formation, is crucial for groundwater development, with significant potential due to its unique structural characteristics. The area's tectonic setup, consisting of synclines, anticlines, and a network of faults and joints, plays a vital role in groundwater flow and connectivity between various aquifers. Groundwater potential is high in carbonate rock formations, particularly near the surface where tectonic activities have created fissures and caverns. Overall, the Lusaka Karst Aquifer is a key resource for the region, with its shallow boreholes and elevated flat area offering significant opportunities for sustainable groundwater management and exploitation.



Source: MCC 2011, Water Supply Investment Master Plan Expert Team

Figure 6.1.1 Geology of Lusaka

3) Total Recharge and Exploitable Capacity

The total annual recharge, combining natural and artificial sources, amounts to 110,826,930 m^3, equivalent to about 303,635 m^3/day. [3] Currently, LWSC operates 138 boreholes, extracting 150,000 m^3/day of groundwater. In addition, there are numerous private boreholes[4] in the area

[2] MCC 2011 Lusaka Water Supply Investment Plan Final Master Plan Report
[3] MCC 2011, Lusaka Water Supply Investment Plan Final Master Plan Report, Table 2-3
[4] MCC 2011 Water MP Report references varying figures, indicating a range of 1800 to 3000-4000 private boreholes.

for irrigation and domestic purposes. In the absence of accurate data, the total abstraction volume is estimated to be between 80,000 and 130,000 m^3/day. Based on the aforementioned calculations, there might be potential for an additional exploitation of about 20,000m^3/day. However, for sustainable groundwater use, a comprehensive hydrogeological study should be carried out based on the groundwater monitoring.

4) Water Quality

The groundwater of the Lusaka Carst Aquifer generally complies with WHO and Zambian standards. As the aquifer is essentially unconfined and consequently is vulnerable to artificial pollution. The high levels of Alkalinity (Total hardness) in ground water can be said to stem from the geological sources of a dolomitic marble. High concentrations of nitrates and microbiological parameters have been observed in densely populated areas.[5]

As a result of assessment of groundwater quality of 133 sites of Lusaka city and surrounding areas, the followings were identified:[6]

Table 6.1.1 Key Findings of the Groundwater Assessment of Lusaka

Parameter	Applicable water quality standard (ZS190:2010)	Percentage of samples meeting the standard
pH	6.5-8.0	97%
Electrical Conductivity (EC)	1500 micro S/cm	95%
Total Dissolved Solids (TDS)	1000 mg/L	100%
Nitrates-N (NO3-N)	10 mg/L	78%
Total Coliforms (TC)	10 cfu/mL	13%
Fecal Coliforms (FC)	0 cfu/mL	28%

Source: JICA Expert Team based on the results of "Report on Groundwater Risk Assessment for Lusaka City and Surrounding Areas (WARMA, 2020)"

Accordingly, the following threats to groundwater quality are pointed out:

- Onsite Sanitation – due to limited sewer network, water users opt for the onsite sanitation option. The disposal of waste using this method increases the risk to groundwater quality. The problem is further exacerbated by shallow water tables.
- Intrusion on Production Boreholes- The presence of houses built in close proximity to production boreholes, especially those that use onsite sanitation facilities, significantly increase the risk to the groundwater quality. The proximity of these sanitation facilities to boreholes can result in severe contamination of groundwater resources.
- Cavities - have the potential to bypass groundwater protection cover and thus transmit pollutants to the water source at a very fast rate with no time for attenuation. These cavities pose a serious risk to groundwater quality as observed around Shaft 5 wellfield.

(4) Surface Water

1) Hydrology

Zambia is divided into six river basins, as shown in Table 6.1.2. The hydrology of the Lusaka region is defined by the Kafue River Basin, which is part of the Zambezi River system, as shown in Figure 6.1.2. The Kafue River originates in the Copperbelt Province and initially flows southeast near Kitwe. It then turns southward towards the Itezhi-tezhi Dam reservoir, before veering eastward across the Kafue Flats and ultimately reaching the Kafue Gorge Dam

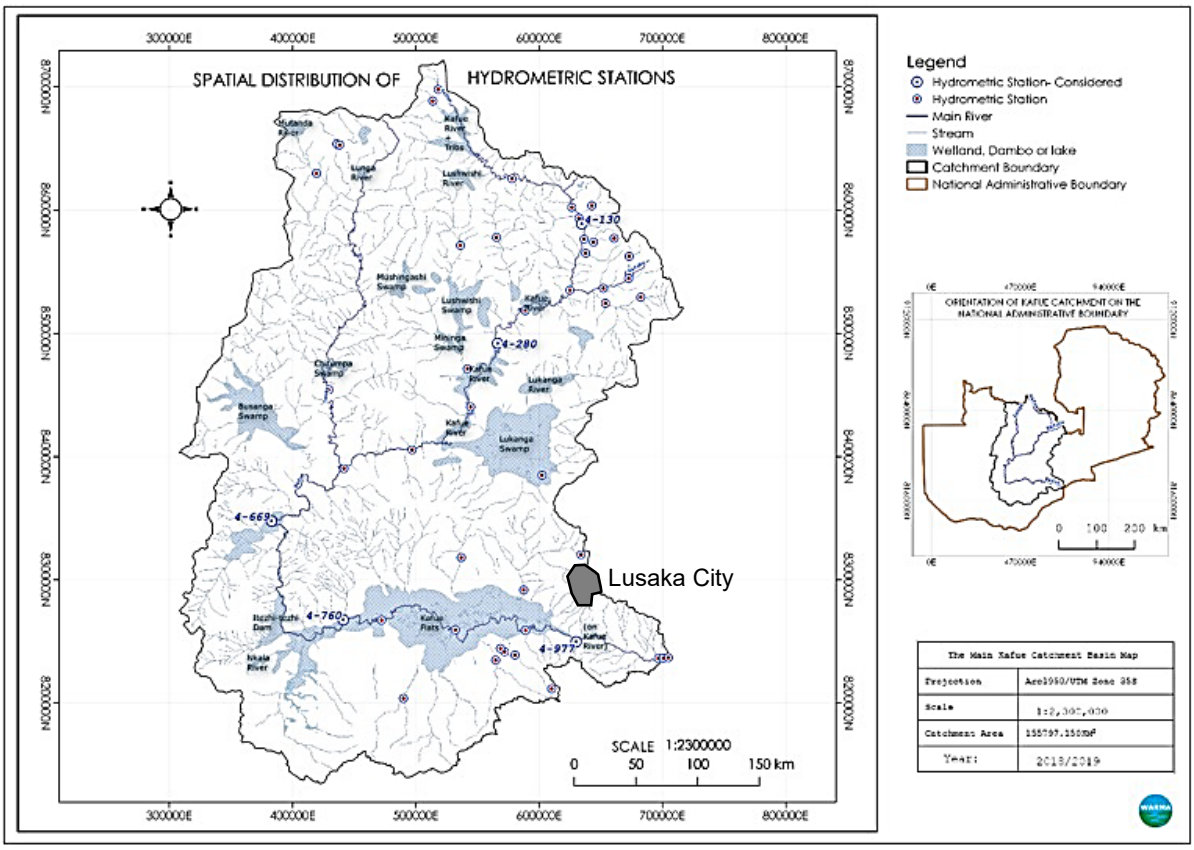
[5] MCC 2011, Lusaka Water Supply Investment Plan Final Master Plan Report
[6] WARMA 2020, Report on Groundwater Risk Assessment for Lusaka City and Surrounding Areas

reservoir.

Table 6.1.2 River Basins of Zambia

River Basin	Area (km^2)	Annual Runoff (x 10^9 m^3)
Zambezi	268,235	41.75
Kafue	156,995	9.88
Luangwa	147,622	11.32
Chambeshi	44,428	8.75
Luapula	113,323	30.14
Tanganyika	15,856	1.99
Total	751,852	114.83

Source: WARMA, "Hydrological Yearbook 2019-2020"



Source: JICA Expert Team based on WARMA "Hydrological Yearbook 2019-2020"

Figure 6.1.2 Kafue Catchment and Hydrometric Stations

River discharges are monitored by WARMA's gauging stations. The daily river flow near the existing Ioranda water treatment plant, which currently supplies water to Lusaka City, is monitored by the Kasaka Station. This station is located approximately 6km upstream of the intake facility. According to the monitoring data (2019/2020), the maximum and minimum flow recorded were 795.7 m^3/s in February 2020 and 451.2 m^3/s in November 2019, respectively. [7]

2) Water Quality

Raw water quality of the existing Ioranda water treatment plant meets the drinking water quality standard (ZS 190: 2010), except turbidity and colour. Turbidity of the raw water is generally low, averaging 3.0 NTU throughout the year, however, increases sharply to beyond 100 NTU

[7] WARMA, Hydrological Yearbook 2019-2020

in January at the peak of the rainy season. Reportedly, colour often exceeds the standard values of 20 TCU.[8]

3) Water Rights

Lusaka Water and Sanitation Company (LWSC) has been granted the water rights by WARMA from Kafue River for a total of 855,750 m^3/day (9.9 m^3/s), for the public water supply. [9]

6.1.2 Water Supply

(1) Institutional Framework

1) Legislation relating to water supply

Water Supply and Sanitation Act, 1997

- A framework for the provision and regulation of water supply and sanitation services.
- Establishes NWASCO (National Water Supply and Sanitation Council) to issue licenses to providers of water supply and sanitation services, promote the development of water and sanitation infrastructure, and oversee legal compliance. NWASCO is also responsible for setting guidelines related to water supply and sanitation services and approving water tariffs.

Drinking Water Quality – Specification, ZS 190: 2010

- Drinking water quality standards consisting of 45 items.

2) Administrative and Regulatory Agencies

Ministry of Water Development and Sanitation (MWDS)

- The lead government ministry responsible for the water sector. The MDWS provides policy direction, strategic planning, and regulatory coordination to ensure the sustainable development, management, and delivery of water supply, sanitation, and water resources services nationwide. The ministry is composed of four departments: Water Resources Development, Water Supply and Sanitation, Planning and Information, as well as Finance and Administration. The Department of Water Supply and Sanitation is responsible for overseeing the development and performance of the water and sanitation sector.

"Ministry of Local Government and Rural Development (MLGRD)"

- Supervises Local Authorities (LA), which are shareholders of the Commercial Utilities (CUs), and provides policy recommendations to each CU.

"National Water and Sanitation Council (NWASCO)"

- Established under the "Water Supply and Sanitation Act, 1997", which designates water and sanitation services to the jurisdiction of Local Authorities (LAs). LAs delegate the operation of water services to publicly-owned Commercial Utilities (CUs), in which they are shareholders. Currently, 11 CUs and 6 private operators manage water services across 10 provinces nationwide.

[8] JICA 2018, "Preparatory Survey on Lusaka City Water Supply Improvement Project"
[9] WARMA, Letter No. WARMA/1446, dated 10th December 2013

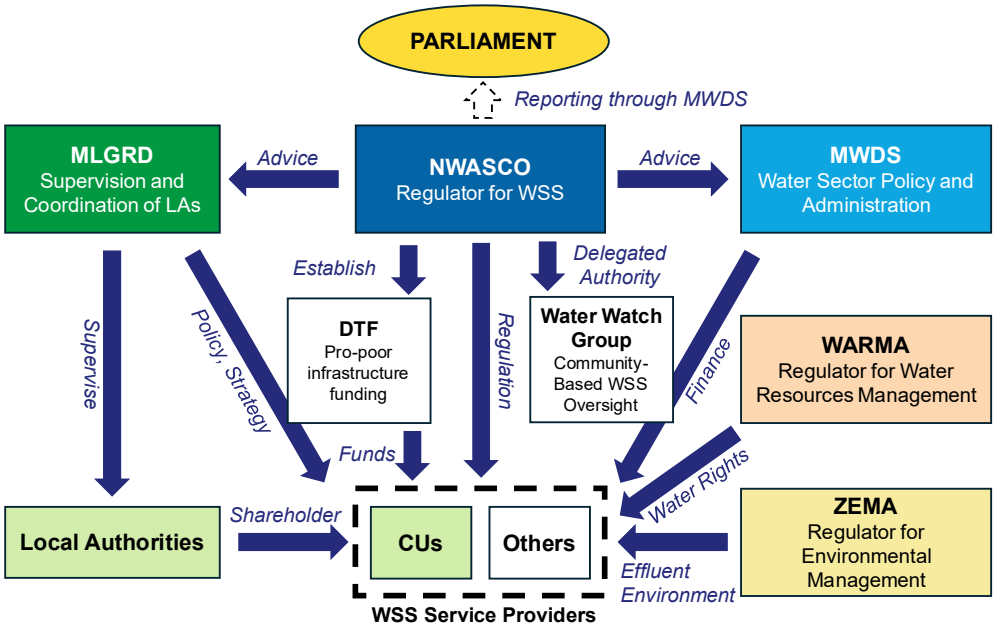
- NWASCO, under the supervision of MWDS, is a regulatory and supervisory body responsible for issuing business licenses to CUs, reviewing and deciding on water and sewerage tariff increases, evaluating and monitoring CU performance, providing training and technical support to CU staff, and conducting public relations activities.

"Water Resources Management Authority (WARMA)"

- Under the supervision of MWDS, WARMA oversees water rights and regulates the conservation, protection, withdrawal, allocation, use, development, and management of surface and groundwater resources.

"Zambia Environmental Management Agency (ZEMA)"

- Under the Ministry of Green Economy and Environment (MGEE), ZEMA is responsible for the sustainable use and management of natural resources, environmental protection, and the prevention and regulation of pollution. ZEMA also issues discharge permits for wastewater to CUs.



Source: JICA Expert Team (2025)

Figure 6.1.3 Administrative Structure of Water Sector in Zambia

3) Water Supply Organizations

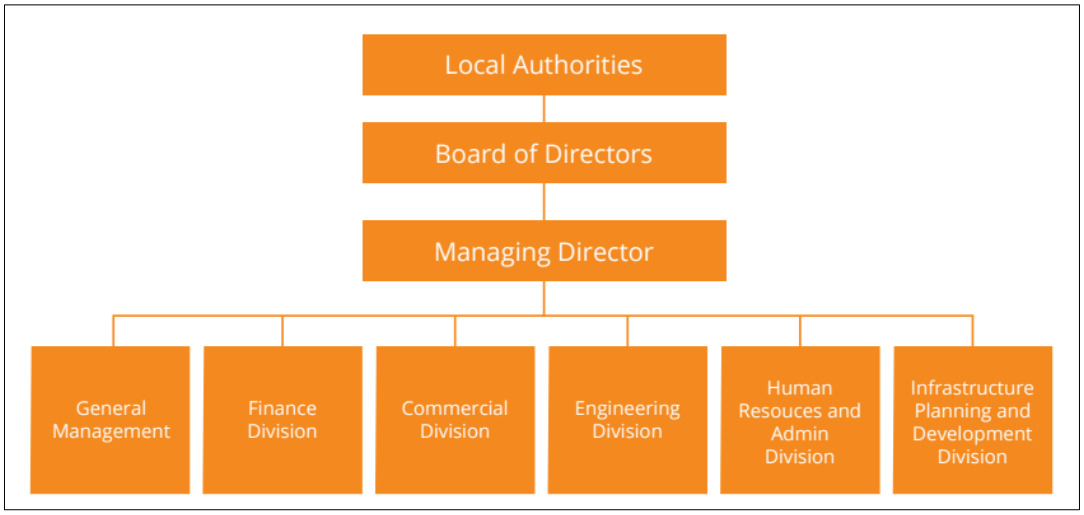
The water and sanitation services in the target area are implemented by the Lusaka Water and Sanitation Company Ltd. (LWSC).

Chibombo District, which forms part of the Greater Lusaka area, belongs to the Central Province. Therefore, water and sanitation services supply falls under the jurisdiction of Lukanga Water Supply and Sanitation Company Ltd. (LgWSC). However, currently, LWSC provides these services through a contracted company named Water Trust.

LWSC is composed of six departments: General Administration, Finance, Commercial, Engineering, Human Resource Management, and Infrastructure Planning and Development, employing 756 staff members. In addition to water supply, it also implements sewerage services.

A significant portion of water and sanitation services in unplanned settlements is outsourced to

a community-based corporate organization named Water Trust, under a licensing agreement. Some small-scale water supply facilities are operated by Community-Based Organizations (CBOs), but according to LWSC, as the scale of operation increases, management by CBOs is leading to issues in transparency, fairness, and quality control. Hence, it is considered preferable to transition to operations managed by the corporatized Water Trust.



Source: LWSC Strategic Plan 2018-2022

Figure 6.1.4 Organization Chart of LWSC

(2) Policies and Development Plans

"National Water Policy 2024"

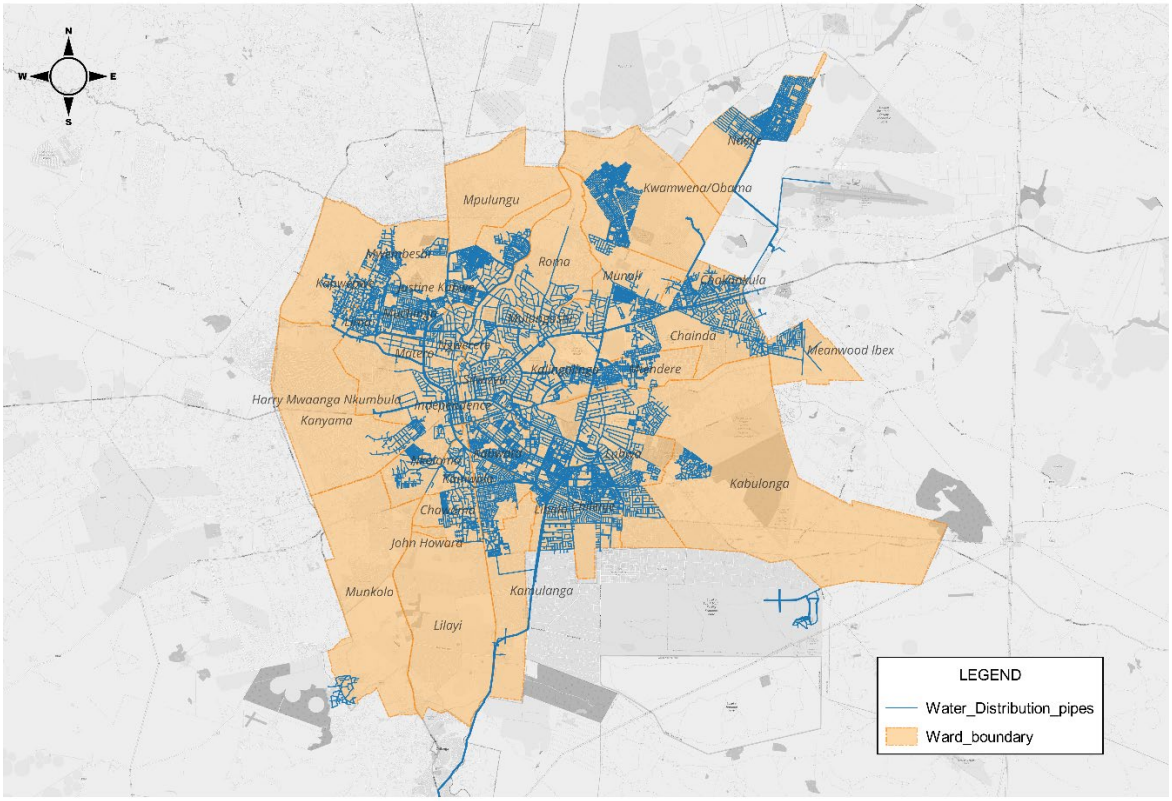
- The policy provides a unified and integrated framework for the management of water resources and the delivery of water supply and sanitation services. It supersedes the previous National Water Policy (2010) and incorporates the objectives of the National Water Supply and Sanitation Policy (2020), thereby consolidating two previously separate policy domains. It also aligns the water sector with the country's development priorities and the Sustainable Development Goals (SDGs).
- The policy aims to:
  - ✓ Ensure universal access to safe, affordable, and sustainable water supply and sanitation services;
  - ✓ Promote integrated water resources management for the equitable and efficient use of water;
  - ✓ Strengthen institutional, legal, and regulatory frameworks for effective service delivery;
  - ✓ Enhance climate resilience, water security, and environmental protection;
  - ✓ Encourage inclusive participation by communities, the private sector, and local authorities.
- The policy emphasises cross-sectoral coordination, improved monitoring and evaluation, and financial sustainability. Implementation is supported by periodic reviews, strategic plans, and alignment with national development plans and decentralised frameworks.

"Water Supply Investment Master Plan, Lusaka, 2011"

- A master plan for the development of water supply in Lusaka, targeting the year 2035, formulated with the support of the Millennium Challenge Corporation (MCC).

(3) Water Service Area

Figure 6.1.5 illustrates the service area of LWSC. Additionally, within some of unplanned settlements lies a Water Trust Area, supplied by local entities known as the Water Trust, responsible for managing water supply projects. [10]



Source: JICA Expert Team, based on LWSC GIS information (2023)

Figure 6.1.5 Existing Service Area of LWSC

(4) Water Supply System

In Lusaka province, the water supply coverage rate is 95% for an urban population of 3.0 million (as of 2022), which covers Lusaka city, Kafue town and Chongwe town. Key Performance Indicators of LWSC as of 2022 is shown in Table 6.1.3.

Table 6.1.3 Key Performance Indicators as of 2022

Water Production Capacity	106,068,280	m^3/year
Water Billed	48,998,374	m^3/year
Water Billed (Metered)	31,103,986	m^3/year
Water Billed (unmetered)	17,894,388	m^3/year
Non Revenue Water Ratio	54	%
Total Connections	134,807	Nos.
Domestic Connections	119,555	Nos.
Metered Connections	87,469	Nos.

[10] JICA 2017, Preparatory Survey on Lusaka City Water Supply Improvement Project

Metering Ratio	65	%
Population Served with Water	2,853,998	People
Water Service Coverage	95	%
Number of Public Water Points	916	Nos.
Population Served by Individual Connections	1,081,298	People
Population Served by Public Stand Points and Kiosks	1,772,700	People
Per Capita Water Consumption	30	L/c/d
Per Capita Water Production	102	L/c/d
Water Quality Compliance (Overall)	79	%
Rate of Complaints Resolved	96	%

Source: LWSC, October 2023

About 70% of the population of Lusaka city resides in unplanned settlements, where water and sanitation facilities are not adequately developed, posing a challenge for service improvement.

The water sources for Lusaka city are 57% groundwater and 43% surface water. With the use of groundwater reaching its limits, LWSC had been advancing a plan to expand water facilities using the Kafue River, located about 50km south of Lusaka city, as a water source. However, the implementation outlook is uncertain due to the deteriorating financial situation of the Zambian government.

The water demand is 495,000m³/day, while the water production is 291,000m³/day, and the non-revenue water rate is 54% (2022). Since early 2022, the new Iolanda Water Treatment Plant (designed capacity: 50,000m³/day, actual capacity: 68,000m³/day) has been operational. However, the total quantity of water supply is still significantly insufficient, making the increase in treated water volume an urgent issue to meet water demand.

There is a discrepancy between the water demand forecast in the 2011 Master Plan and the current water demand estimated by LWSC based on that Master Plan. Reviewing the water demand forecast is also a challenge.

(5) Existing Water Supply Facility

Water Production Facility

Table 6.1.4 Water Production Facility Managed by LWSC

Name of Facility	Water Source	Production Capacity
Iolanda Water Treatment Plant I	Kafue River	100,000 m^3/day
Iolanda Water Treatment Plant II	Kafue River	68,000 m^3/day
Boreholes (138 nos.)	Groundwater	150,000 m^3/day
Total #		318,000 m^3/day

(Note) # Since the Iolanda WTP II commenced operations in the middle of 2022, the total production capacity shown in the table does not align with the actual production records for 2022.
Source: JICA Expert Team based on LWSC, November 2023

Transmission Facility

Treated water of Iolanda WTPs are transmitted by the pumping stations and transmission pipelines to the major reservoirs of Stuart Park Reservoir (90,920m^3), Water Works Reservoir (5,416 m^3), and Lumumba Reservoir (9,090 m^3).

Table 6.1.5 Transmission Facility

System	Name of Facility	Specification
Iolanda WTP I	Iolanda Pumping Station	4 pumps (including 1 stand-by) x Discharge: 25.2 m^3/min x H:242m, 1350kW
	Chilanga Booster Pumping Station	4 pumps (including 1 stand-by) x Discharge: 25.2 m^3/min x H:242m, 1350k

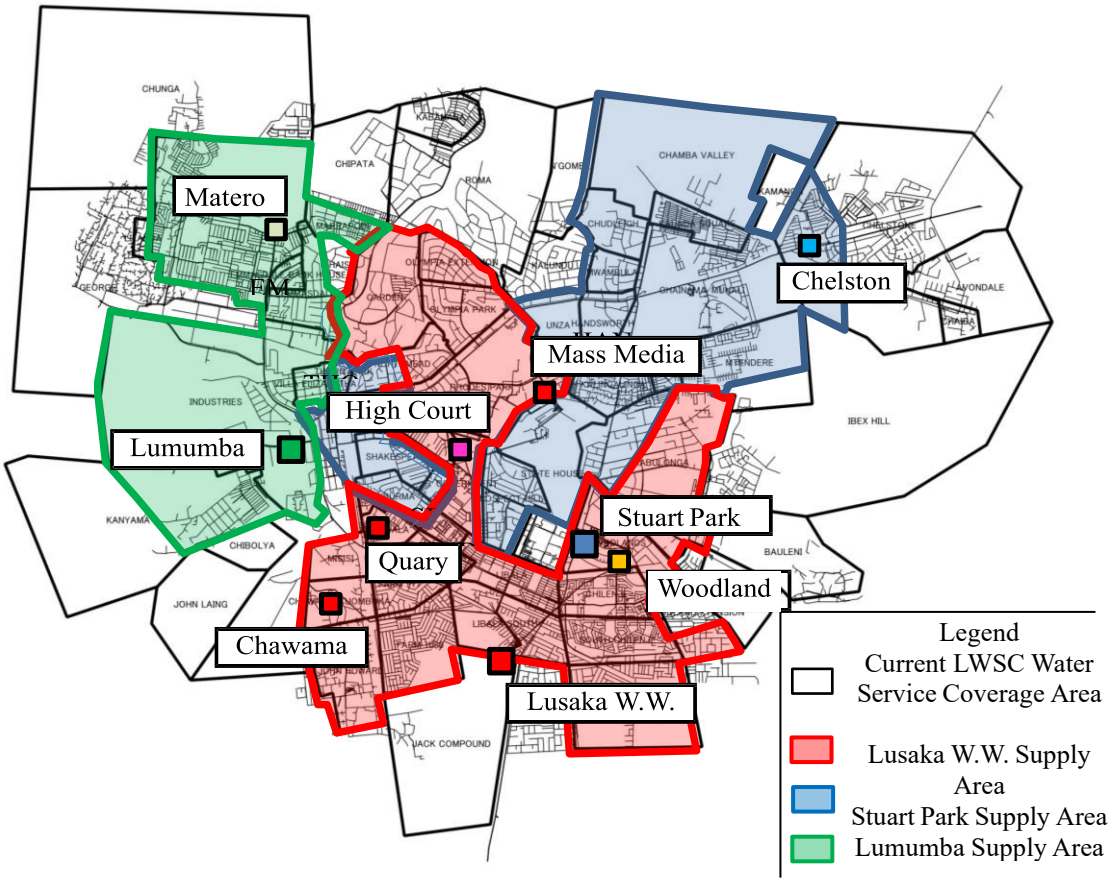
	Transmission Pipeline	Steel Pipe, DN900mm x 48.0km, DN600 x 7.1km
Iolanda WTP II (Kafue Bulk Water Supply Project)	Iolanda Pumping Station Chilanga Booster Pumping Station Transmission Pipeline	(Details unknown) (Details unknown) Steel Pipe, DN800mm x 48.0km

Source: JICA Expert Team

Distribution Facility

As of November 2023, there are 23 distribution reservoirs in operational with a total capacity of 141,459 m^3. According to the daily report of LWSC, 5 reservoirs with a total capacity of 9,092 m^3 are being abandoned. The capacities of these reservoir range from the smallest at 180 m^3 to the largest 22,730 m^3.

As of 2018, Total length of distribution pipe is 1,684m. Pipe types includes: asbestos cement pipe (ACP), galvanized pipe (GP), steel pipe (SP), polyvinyl chloride (PVC), unplasticized polyvinyl chloride(uPVC) and high-density polyethylene (HDPE).



Source: JICA 2018, "Preparatory Survey on Lusaka City Water Supply Improvement Project"

Figure 6.1.6 Pipeline Network

(6) Ongoing Project

"Lusaka West Water Supply Project"[11]

The Project aims to address water insecurity for industries and communities in Lusaka West by sustainably protecting, developing and utilising local groundwater resources in the western part

[11] LWSC, Information as of 2022

of Lusaka City

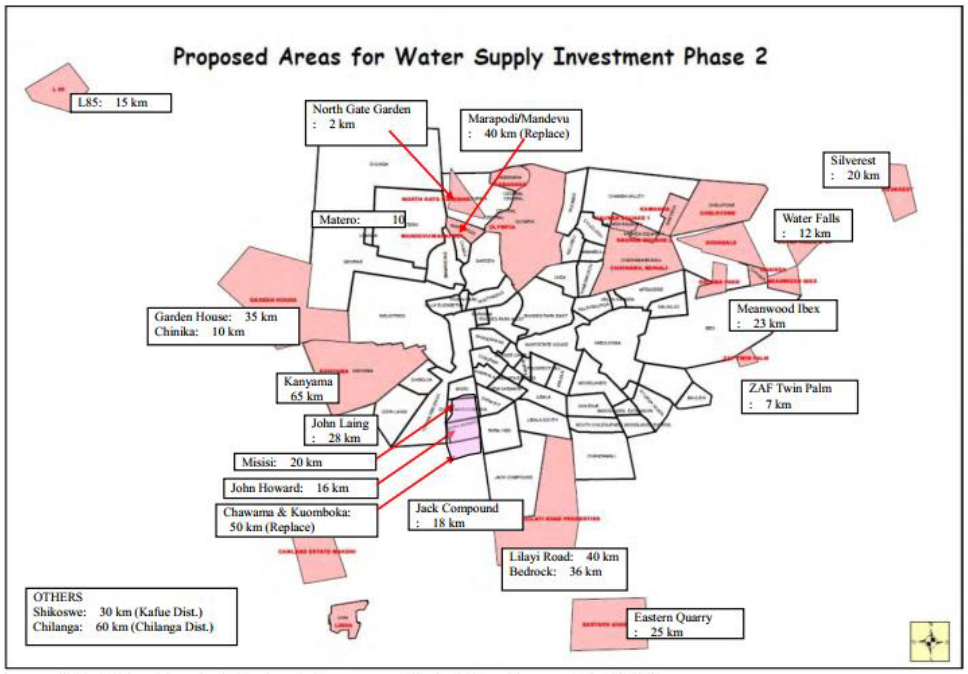
The Project scope includes: Wellfield protection, Development of Water Supply Infrastructure and WASH components

Project period is from January 2020 to December 2024.

"Lusaka City Water Supply Improvement Project (AfDB)"[12]

Objective of the Study is to carry out the feasibility study and prepare a bankable Water Supply Improvement Project with detailed designs, environmental and social impact assessment, construction drawings and tender documents. The outputs will support readiness and preparation of the USD 205 million Project which is planned for 2024.

Study period is from 2023 to December 2024.



Source: AfDB 2022, Project Appraisal Report "Feasibility Study and Detailed Designs for the Lusaka City Water Supply Improvement Project "

Figure 6.1.7 Proposed Areas for Water Supply Improvement Project

6.1.3 Issues to be Tackled

(1) Groundwater Resources Development

While it is observed that the groundwater abstraction is nearing its sustainable yield in Lusaka, it is assumed that many private wells continue to be developed for domestic, industrial, and commercial use. However, there is a lack of a monitoring system for these groundwater extractions. The major issues for groundwater resources development in Lusaka include the necessity of determining the actual extraction of groundwater and managing the water quality due to potential pollution sources such as agriculture, industry, and commercial activities.[13]

(2) Surface Water Development

For the urban water supply in Greater Lusaka, the development of water resources from Kafue

[12] AfDB P-XM-E00-21
[13] JICA 2009MP

River is crucial, as it is regarded as the only source capable of meeting the significant demand gap.

(3) Updating Water Supply Master Plan

Since the current Water Supply Master Plan was formulated in 2011, there is a need to update in line with the RDP for Greater Lusaka 2045. Specifically, it is necessary to update the population forecasts, land use plans, unit water demand, water supply coverage rates, and facility development plans to align with the RDP.

(4) Improving Operational Efficiency

LWSC faces an urgent need to improve key operational efficiency indicators such as high Non-Revenue Water (NRW) rates and electricity consumption per water produced. Measures to address NRW include upgrading ageing pipes and promoting meter installation. There is also a need to the cost of reduce electricity through the introduction of energy saving technology.

(5) Improving Water Supply Services in the Unplanned Settlements

Water supply to residents in unplanned settlements is currently provided by the LWSC, Water Trusts and Community Based Organisations. However, it is reported that these Water Trusts and CBOs often suffer from low staffing levels, leading to generally inadequate service efficiency and quality. This results in poor management of water supply in these unplanned settlements.

6.2 Sewage and Sanitation

6.2.1 Sewage and Sanitation

(1) Institutional Framework

1) Legislation relating to Sanitation

Environmental Management Act, 2011

- Provides a comprehensive legal framework for environmental management, establishing legal bases for the regulation, management, and monitoring of wastewater.
- Designates the Zambia Environmental Management Agency (ZEMA) as the regulatory authority for wastewater management, responsible for issuing permits to dischargers and monitoring compliance with environmental regulations.

Water Supply and Sanitation Act, 1997

- Establishes a framework for the provision and regulation of water supply and sanitation services.

Citywide Inclusive Sanitation (CWIS) Planning and Service Provision Guideline, 2022

- Presents an approach for the planning and implementation of public services, aimed at promoting comprehensive sanitation services by incorporating non-sewered (onsite) sanitation services.
- Aims for a comprehensive approach that ensures fecal sludge is safely managed and treated throughout the entire sanitation service chain, thereby reducing public health risks.

2) Administrative Bodies

In Zambia, the administration of water supply and sanitation is integrated. The administrative body responsible for sewerage and wastewater management is the Ministry of Water Development and Sanitation (MWDS), while NWASCO acts as the regulatory and supervisory body for water supply and sanitation services.

3) Management Organizations

The operational system for sewerage and sanitation services is the same as that for water supply.

Sludge extraction and transportation for onsite sanitation is provided by six service providers, including two Water Trust companies.

Water quality and wastewater standards are monitored by the Zambia Environmental Management Agency (ZEMA) under the "Environmental Management Act, 2011."

(2) Policies and Development Plans

"National Water Supply and Sanitation Policy, 2020"

- A fundamental policy that sets forth a vision for all citizens to have sustainable and equitable access to water supply and sanitation services.

"Lusaka Sanitation Master Plan, 2011"

- A plan, supported by the Millennium Challenge Corporation (MCC), targeting the year 2035, aiming to expand sewerage and onsite sanitation throughout the city.

"National Urban and Peri-urban Sanitation Strategy, 2015-2030"

- A strategy to promote sanitation improvements in urban areas, including unplanned settlement, focusing on enhancing the proliferation of both sewerage and onsite sanitation.

(3) Sewerage System

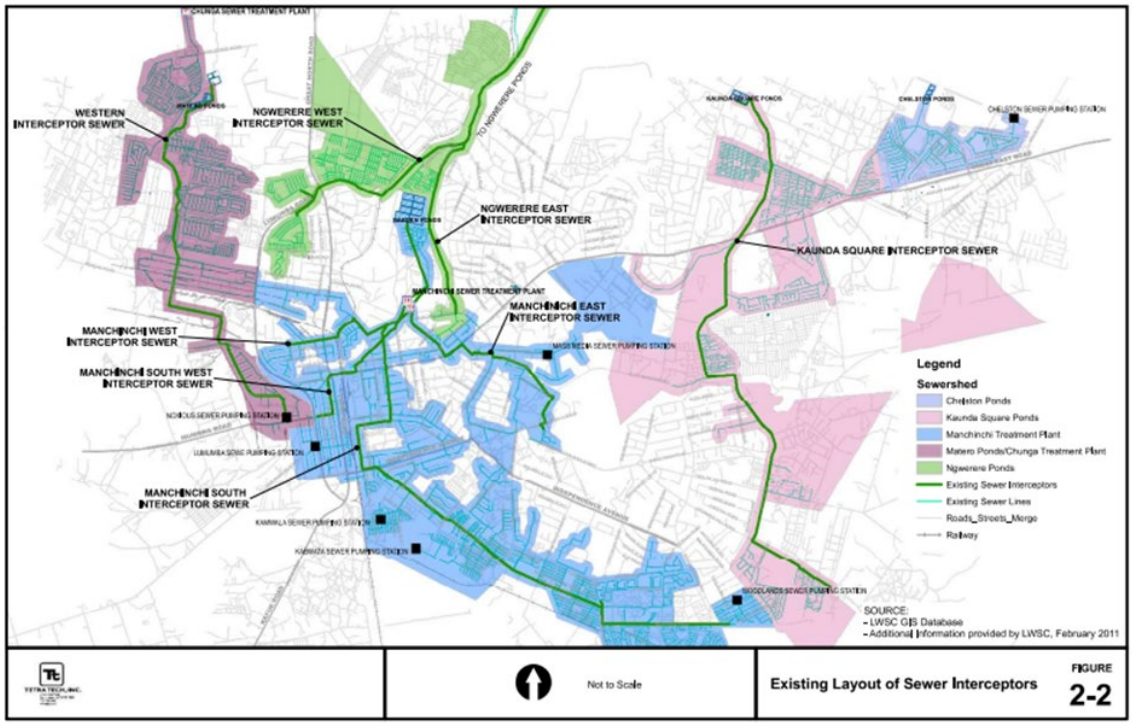
As of 2021, Lusaka city's sewerage network extends to about 560 km, covering approximately 30% of the city area, with 33,000 connections and serving about 300,000 people. There are seven wastewater treatment plants, with a combined approximate treatment capacity of 65,000m³/day.

Table 6.2.1 and Figure 6.2.1 show the list of Wastewater Treatment Plants in Lusaka and Sewerage Facility Layout Map, respectively.

Table 6.2.1 Wastewater Treatment Plants in Lusaka

Plant	Plant Type	Capacity(m^3/d)	Drainage Area	Discharge Stream
Chelston	Stabilization Pond	2,700	Chelston	Kapiriyomba
Matero	Stabilization Pond	7,100	Western	Chunga
Chunga	Trickling Filter	9,100		Mwembeshi
Kaunda	Stabilization Pond	3,600	Kaunda	Ngwerere
Manchinchi	Trickling Filter	36,000	Manchinchi	Ngwerere
Garden	Stabilization Pond			
Ngwerere	Stabilization Pond	8,350	Ngwerere	Ngwerere
Total		66,850		

Source: Millennium Challenge Corporation (MCC), "Republic of Zambia Sanitation Master Plan, 2011, 2.3 Current Sanitation Management Schemes



Source: Millennium Challenge Corporation (MCC), "Republic of Zambia Sanitation Master Plan, 2011 2.3 Current Sanitation Management Schemes"

Figure 6.2.1 Sewerage Facilities Layout Map

According to the previous reports, the water quality data suggest the ponds perform better than the conventional biological treatment plants. The reason Lusaka's ponds perform better is because the conventional biological treatment plants have seriously deteriorated due to lack of maintenance. That said, the ponds have not been well maintained either. It is just that the ponds are more forgiving of poor maintenance than a conventional biological treatment plant.[14]

Due to the aging infrastructure, the existing treatment plants are experiencing reduced capacity. Currently, rehabilitation projects for these plants are underway with support from EIB/KfW, among others.[14]

(4) Sanitation

According to the National Water and Sanitation Policy of 2020, sanitation is the safe collection, containment, transportation, treatment and disposal or reuse of human excreta, domestic liquid waste and industrial effluents.

Sanitation is categorized into two forms on-site and off-site sanitation. On-site sanitation is a system where the treatment of excreta or sewage takes place where it is generated, while off-site sanitation is a system in which excreta are collected from individual households, commerce, institutions, industries and public toilet facilities and carried away for disposal and treatment through pipes.

The Vision 2030 envisages the provision of "secure access to safe, potable, water sources and improved sanitation facilities to 100 percent of the population in both urban and rural areas" with the following targets:

[14] LWSC, "Environmental and Social Management Plan (ESMP) for Faecal Sludge Treatment Facility (FSTP) at Garden Manchinchi Wastewater Treatment Plant in Garden Compound, Lusaka" 2021, Figure 2 Lusaka Sewerage Network

- Improved access to appropriate, environmentally friendly sanitation by all Zambians.
- Universal (100 percent) access to clean and safe water supply by 2030.
- 90 percent access to sanitation by 2030.
- Rehabilitation and reconstruction of sewer treatment facilities in all major towns and cities.

The National Urban Water Supply and Sanitation Programme (NUWSSP) includes a performance-based definition of improved sanitation, and additional criteria stating that a sanitation option is considered "improved". A non-exhaustive list of the available forms of onsite sanitation in Lusaka is given in Table 6.2.2.

Table 6.2.2 Available Forms of Onsite Sanitation in Lusaka

Facility Type	Improved / Unimproved
Open Defecation/" The bush"	Unimproved
Kaveia	Unimproved
Simple Pit Latrines	Unimproved
VIP Latrines	Improved
Flush Toilet Connected to Septic Tank and Leachfields/Soakaways	Improved
Ecosan Toilet	Improved
Composting Toilet	Improved

Source: Millennium Challenge Corporation (MCC), "Republic of Zambia Sanitation Master Plan, 2011, 2.6.1.1 Existing Onsite Sanitation Management in Lusaka"

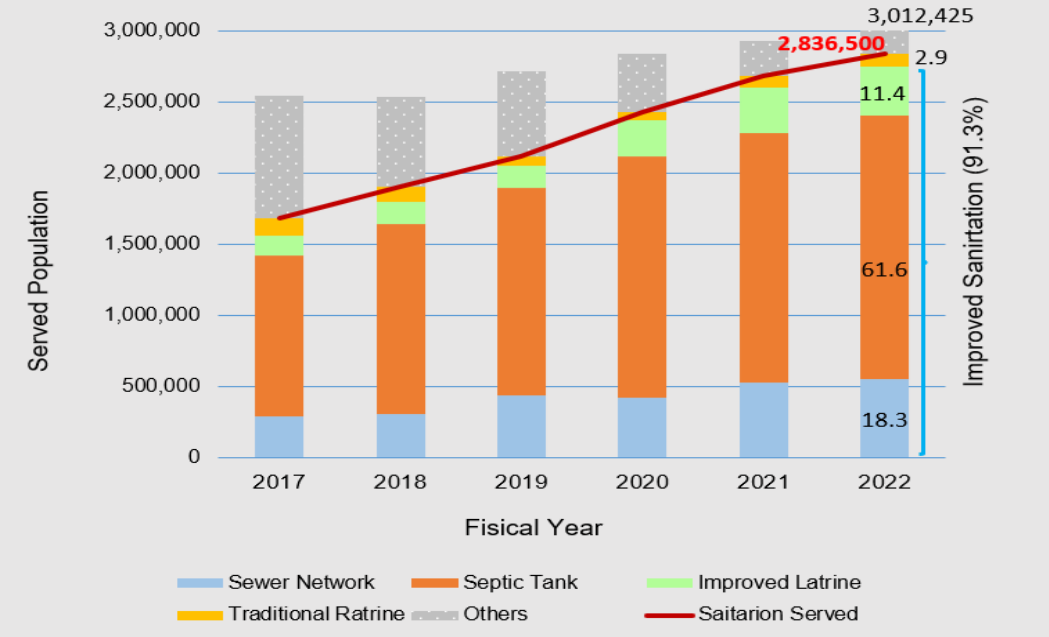
The LWSC was implementing Lusaka Sanitation Programme (2015-2022) which aimed at providing adequate sanitation facilities to all urban citizens of Lusaka Province.

The Figure 6.2.2 shows the changes in the population with various types of sanitation facilities in the LWSC covered area.

Over the past six years, the total population and that with sanitation services in the LWSC covered area increased respectively, as well as did the population with improved sanitation facilities.

As of 2022, about 91.1% of the total population in the LWSC covered area is using improved sanitation facilities, with about 18.3% using sewer networks, about 61.6% using septic tanks, and 11.4% using improved Latrines.

It is reported that around 90% of unplanned settlement areas use pit latrines. To mitigate groundwater contamination from pit latrines, the Lusaka Sanitation Program (LSP) promotes the adoption of onsite sanitation (septic tanks).

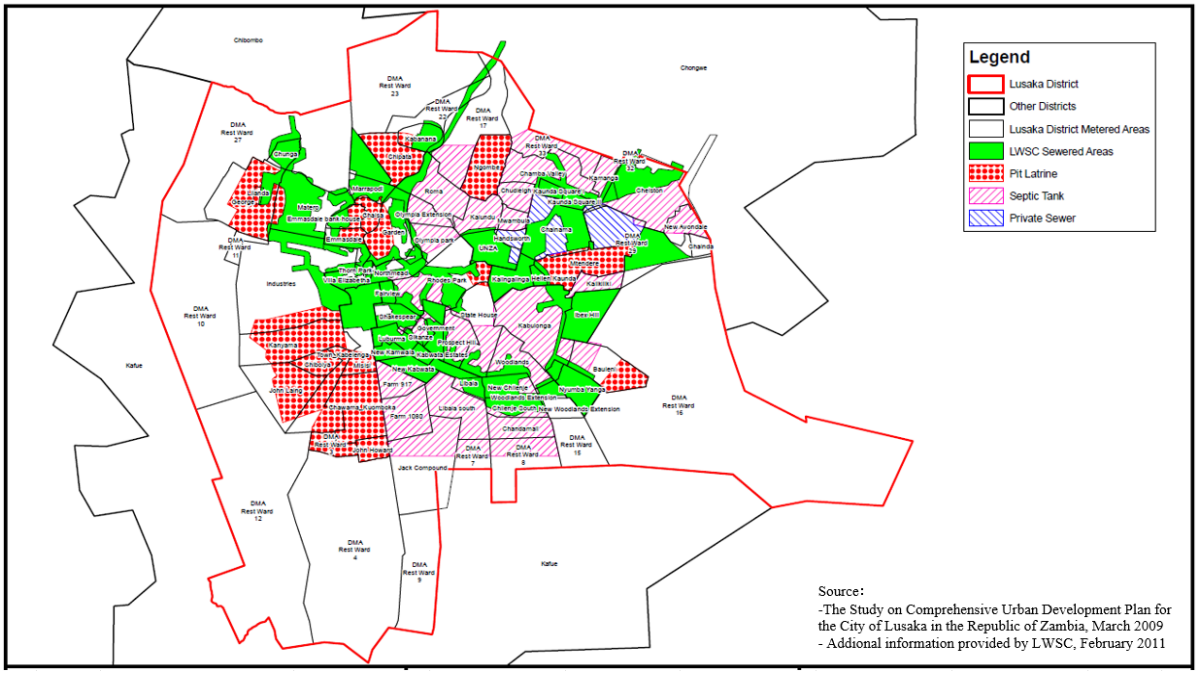


Source: Prepared by JICA Expert Team on LWSC November 2023

Figure 6.2.2 Changes in the Population with Various Types of Sanitation Facilities in the LWSC Covered Area

The LSP provides technical support to improve the sanitation service chain from toilet sludge extraction to collection and treatment.

In the Kalingalinga area, part of the unplanned settlement improvement project, a simplified sewer system (condominial sewerage) with smaller diameter and shallower buried depth than standard sewerage facilities has been introduced. The maintenance and management of these facilities are carried out by community organizations.



Source: AfDB, "Lusaka Sanitation Program, – Climate Resilient Sustainable Infrastructure, Environmental and Social Management Framework Summary", Figure 1 Sanitation Coverage in Lusaka

Figure 6.2.3 Sanitation Coverage in Lusaka

(5) Tariff

The water supply and sanitation sector in Zambia has been guided by the seven sector principles enshrined in the National Water Policy of 1994, which was revised in 2020.

NWASCO is an implementing agency for the Watet Supply and Sanitation(WSS)Act No. 28 of 1997 including all policy matters relating to WSS to ensure efficiency and sustainability of service delivery.

The fourth sector principle states: 'Achievement of full cost recovery for the water supply and sanitation services through user charges in the long run'. This principle implies that the user pays the full cost of service delivery.

Since 2000, NWASCO has approved upwards tariff adjustments for the CUs pursuant to this principle. However, the progress towards full cost recovery has been slow. Full Cost Recovery aims at ensuring that the WSS service providers are able to cover at least the cost of Operation & Maintenance (O&M) and in the long run, cover the cost of capital investments

NWASCO uses a cost plus method to set water supply and sanitation tariffs. The key consideration of cost-plus regulation is that it allows NWASCO to balance the competing objectives of affordability of the service to the customers and financial sustainability of service provision while allowing the utility a degree of flexibility to effectively conduct business.

The LWSC charges a sewerage tariff set at 30% of the water bill for domestic customers and 45% of that for commercial and industrial customers (2016-2019). In accordance with the regulator's tariff setting guideline, tariffs follow a rising block structure, with a below-cost 'lifeline' band of 6m3 /month, added to a fixed meter charge of 10 ZMW.

In 2007, NWASCO introduced an additional sanitation surcharge in an effort to enable CUs to invest in adequate sanitation services. LWSC was allowed to charge an additional 2.5% on all water bills, irrespective of whether a customer was connected to sewerage services or not.

Funds raised from the surcharge are used to implement sanitation projects approved by NWASCO including on-site sanitation(OSS) and fecal sludge management(FSM.)[15]

NWASCO approves comprehensive tariff adjustments for a 3-year period. A tariff setting model is used when setting the tariffs and considers economic fundamentals in the analysis process.

Because of failure to increase tariff in 2020, the average full cost coverage by total revenue across all 11 CUs dropped from 102% in 2019 to 84% in 2022. But LWSC's O&M cost coverage in 2020 was 100%. The absence of cost recovery tariffs for water and sanitation service provision increases the burden on government to cover the deficit.[16]

(6) Ongoing Project

"Lusaka Sanitation Program"[17]

The Project aimed at providing adequate sanitation facilities to all urban citizens of Lusaka Province.

The project scope includes; Component 1 involving improvement of Chungu and Ngwerere Wastewater Treatment Facilities and Component 2 on onsite sanitation and faecal sludge

[15] Towards inclusive, green city sanitation for Lusaka – achievements and way, FOCUS AREA 4: Sustainable financing and funding for OSS and FSM GIZ March 2020
[16] National Water and Sanitation Council (NWASCO) Water and Sanitation SECTOR REPORT 2022 1.3 Overview of Sector Performance, 5.4 Financing Mechanism
[17] National Water Supply and Sanitation Council (NWASCO) Water Supply and Sanitation Sector Report 2022, 4.3.5 Project Implementatio

management.

Project period is from 2015 to 2022.

As for implementation status, Component 1 was at 70%, while component 2 was at 100%.

6.2.2 Issues to be Tackled

(1) Sewerage Development

Through the implementation of the LSP, improvements in sewerage facilities have been made. However, there is a shortfall in investment compared to the funding needs outlined in the master plan, making additional financial cooperation desirable.

The rehabilitation and expansion of sewerage facilities by MCC has not progressed as planned

(2) Onsite Sanitation and Sludge Treatment

It has been reported that most households in the unplanned settlement area use pit latrines, 80% of which are not wall-sealed. This raises concerns about groundwater contamination due to seepage when installed at high densities.

Sludge extraction from on-site treatment plants is not being sufficiently conducted.

Cholera outbreaks occur annually in the unplanned settlement areas. The primary reason has been attributed to limited access to safe water and sanitation facilities and shallow well water contamination by the toilet wastewater overspill during flooding by heavy rain.

It is necessary that facility development (such as construction of fecal sludge treatment plants) and technical support to strengthen the sanitation service chain for promoting onsite sanitation and sludge collection and treatment.

Technologies for the reuse of treated water and sludge should be introduced.

(3) Wastewater Standard Management

ZEMA is responsible for monitoring wastewater standards. However, due to staffing shortages and other issues, the monitoring is not functioning adequately.

6.3 Stormwater Drainage

6.3.1 Urban Flooding Condition

(1) Institutional Framework

1) Legislation relating to stormwater drainage

The legislation concerning stormwater drainage includes the following acts.

Public Health Act,1995

The act mandates local authorities (LAs) to take measures for the prevention and correction of public health hazards.

The Public Roads Act, 2002

This act introduces the Road Development Agency (RDA), granting it powers over the construction, maintenance and control of stormwater drains, among other responsibilities.

The Disaster Management Act, 2010

This act establishes the Disaster Management and Mitigation Unit (DDMU) at both national and local levels. The act also mandates LAs to prepare Emergency Plans by for various disasters, including flooding.

The Environmental Management Act, 2011(Amended, 2023)

This act facilitates the establishment of the Zambia Environmental Management Agency (ZEMA), focusing on environmental management, control and protection.

Local Government Act, 2019

This act delegates the responsibility to LAs to develop and maintain stormwater drainage facilities.

2) Administrative Authority

Under the Local Government Act, Ministry of Local Government and Rural Development (MLGRD) serves as the central government body responsible for overseeing stormwater drainage.

3) Management Organization

As per the Local Government Act (2019), the development and management of stormwater drainage facilities fall under the jurisdiction of local authorities (Local Authority: LA). In the Study Area, the LAs are as below..

Lusaka City Council (LCC)

In LCC, the Department of Engineering Service is responsible for the construction and renovation of drainage channels.

Chongwe Municipal Council (Chongwe District), Kafue Town Council (Kafue District), Chilanga Town Council (Chilanga District), Chibombo Town Council (Chibombo District)

In four surrounding districts, the Department of Works (Engineering Services) is responsible for the provision, supervision, coordination, and management of all engineering works, including stormwater drainage.

4) Development Plans, Strategies and Projects Implemented

The development plans, strategies and projects implemented relating to stormwater drainage are as follows.

The 8th National Development Plan (8NDP, 2022-2026)

The plan explicitly integrates stormwater management into climate-resilient infrastructure and water security goals. Aligns with the ZIP and National Rainwater Harvesting Strategy.

Zambia Water Investment Programme (ZIP, 2022-2030)

The programme focuses on water security and climate resilience, including transboundary cooperation and stormwater infrastructure under the Water-Energy-Food (WEF) nexus.

The National Rainwater Harvesting Strategy (2024)

The strategy directly addresses stormwater management through rainwater capture, urban/rural drainage improvements, and ecosystem-based solutions.

MCC Lusaka Drainage Investment Master Plan (2011)

The plan guided drainage infrastructure upgrades under the MCC Zambia Compact[18].

Lusaka Water Supply, Sanitation, and Drainage Project (2013-2018)

The project was Millennium Challenge Corporation (MCC)-funded initiative to rehabilitate drainage systems, expand water networks, and strengthen institutional capacity. The drainage component of the Lusaka Water Supply, Sanitation, and Drainage (LWSSD) Project, based on the Lusaka Drainage Investment Master Plan, included the following activities:

(a) Construction of primary and secondary drainage infrastructure in select urban and settlements of Lusaka,
(b) Rehabilitation of existing drainage infrastructure in select urban and unplanned settlements of Lusaka,
(c) Strengthening the institutional capacity of LCC responsible for drainage
(d) Improving the quality of drainage services in select urban and unplanned settlements of Lusaka.

Key projects under those initiatives were:

- Bombay Drain Improvements: To mitigate flood damage in central Lusaka, the Bombay Drain was extended and rehabilitated for a total length of 27 km from August 2015. The project cost was US $35 million, benefitting approximately 188,000 residents in the Bombay drainage basin.
- Mazyopa Drain Improvements: Situated downstream of the Bombay Drain, the Mazyopa Drain required rehabilitation due to increased flow from the Bombay Drain. This included 2.6 km of channel rehabilitation and the construction of a rubbish collector. The project cost was US$ 17.2 million, benefitting approximately 3,900 people in the Mazyopa area.
- Kanyama/John Laing/Makeni Drain Improvements: Despite being a high priority, this construction project was cancelled at the early stages of implementation.

MCA Stormwater Management Master Plan (2018)

A master is plan developed by the Millennium Challenge Account Zambia (MCA-Zambia) with the support of the Millennium Challenge Corporation (MCC), targeting the development of stormwater drainage in Lusaka for the year 2035.

(2) Flooding/inundation conditions

1) History of flooding

Large parts of Lusaka City are prone to flooding during the rainy season. This is due to topographical features, urban expansion driven by population growth, increased surface runoff, lack of development in stormwater drainage infrastructure, and poorly designed and maintained stormwater drainage systems. Furthermore, increased rainfall, potentially a result of climate change, exacerbates the flooding situation. Unplanned settlement such as the Kanyama area in the southwest of the city are constantly at risk of flooding, compounded by poor maintenance of roads and drainage facilities.

[18] A five-year grant agreement between the U.S. Millennium Challenge Corporation (MCC) and a partner country to fund large-scale projects aimed at reducing poverty through sustainable economic growth.

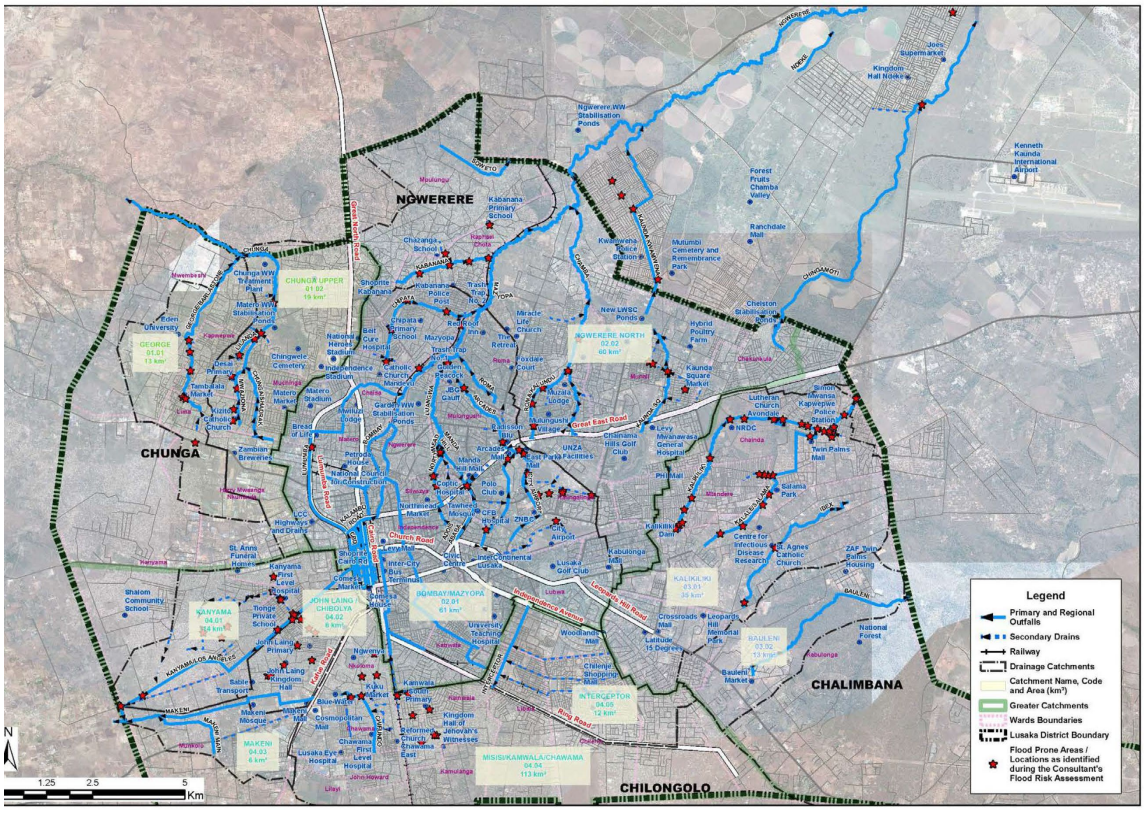
Table 6.3.1 Recent Flooding History in Lusaka

Month / Year		Monthly Precipitation (mm)	Flooded Areas
February	2010	160.8	Chawama, Kanyama, Mandevu, Mtender, Kaunda square, Kalikiliki, some parts of the light industrial area
March	2010	53.9	New Kuku Township
November	2012	28.7	Kamwala shopping area, town center, Kulima tower bus station
January	2013	490.4	Chibolia Compound, Kanyama Township, Mandevu Township, Kuku Township
December	2014	103.5	The CBD, Industrial areas, Kamwala trading area, Kamwala south residential areas, Mass media area
January	2017	167.5	Sikanse camp in Lusaka Central, Kamwala south in Kabwata, Garden house market in Kanyama, Mazyopa in Mandevu, Kuku compound in Chawama
February	2018	169.9	Garden compound
February	2020	342.3	Garden House, Kanyama Compound
January – March	2023	-	Southern and eastern Zambia (in particular the Lusaka Province and the Eastern Province) [19]

Source: Lusaka Times, Zambia - Floods (media, Reliefweb, Zambia Meteorological Department) (ECHO Daily Flash of 09 March 2023) , https://weatherandclimate.com/zambia/lusaka#t2

2) Flooding/Inundation Area

Figure 6.3.1 shows the 128 flood-prone locations/areas in Lusaka city during 2007-2008. This represents flood-prone locations/areas reported by LCC or citizens and recorded by the Consultant, as part of the Flood Risk Assessment under the formulation of Stormwater Management Master Plan 2018.



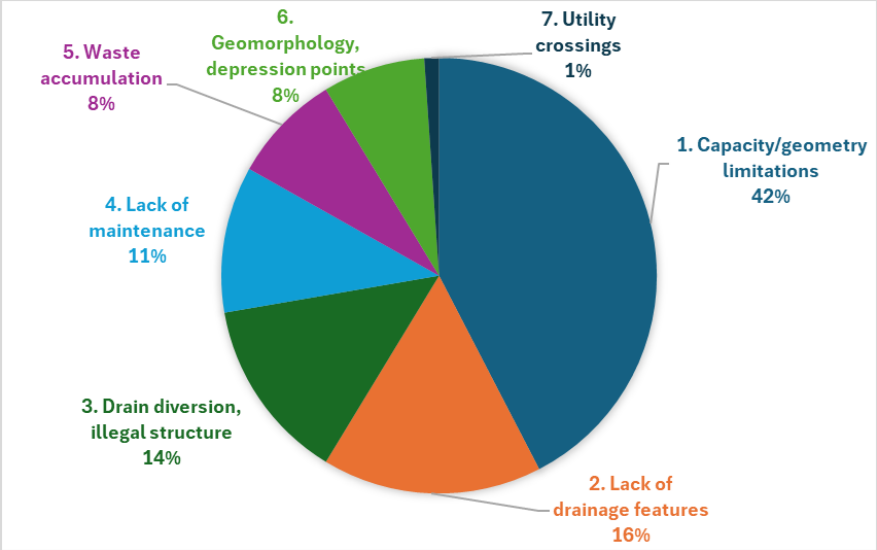
[19] Media report, as of 9 March, eight fatalities, nearly 7,500 evacuated people in 22 evacuation centres and a total of more than 373,500 affected people across the area of the capital city Lusaka and its Province (southern Zambia). In addition, media report tens of thousands flooded houses, nearly 100 damaged roads and a number of damaged bridges across the same area. Moreover, around 500 people were reported evacuated across the Eastern Province.
https://reliefweb.int/report/zambia/zambia-floods-media-reliefweb-zambia-meteorological-department-echo-daily-flash-09-march-2023

Source: Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report

Figure 6.3.1 Map Showing the 128 Flood Prone Locations/Areas

3) Causes of Flooding (data analysis of 128 locations)[20]

The results of the analysis of the causes of 128 flood-prone locations/areas are shown in Figure 6.3.2.



Source: Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report

Figure 6.3.2 Seven Causes of Flooding (data analysis of 128 locations)

Seven primary causes of flooding were identified from the analysis of the causes of 128 flood-prone locations/areas as follows.

(a) Capacity/geometry limitations of storm water drainage system
- ✓ Lack of proper design and poor construction methods, such as reverse or no slope
- ✓ An estimated 75% of the drainage system in unplanned settlements, 30% of the drainage system in planned settlements (may increase further in 25 years).

(b) Lack of drainage facilities
- ✓ Lack of drainage infrastructure and slopes, typically in southern Lusaka and Ndeke/Vorma Valley.
- ✓ Lack of drainage infrastructure in Kamawala South, John Laing/Chibolya.
- ✓ Low drainage coverage (10%) in Kanyama, George, Lilanda, Chipata settlements.

(c) Diversion of drains, illegal structures

(d) Lack of maintenance of drainage infrastructure
- ✓ Sections of drainage infrastructure blocked by debris, sediment, waste, vegetation, etc.

(e) Waste accumulation in drainage infrastructure
- ✓ Illegal waste dumping prevalent in both unplanned and planned areas.

[20] Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report

- ✓ An estimated 90% of circular and 70% of box culverts in unplanned areas are completely or over 50% blocked.
- ✓ Approximately 50% of circular and 20% of box culverts in the planned area are affected.

(f) Geomorphology, depression points

- ✓ Water accumulation in depressions on karst formations and City Airport area.
- ✓ In southern Lusaka, especially in Kamwala South and Misisi/Chawama, it is challenging to develop stormwater infrastructure.

6.3.2 Storm Drainage System[21] [22]

The storm drainage system and issues in the Study Area are outlined below. Table 6.3.2 shows the river basins and stormwater catchments and stormwater drainage channels (primary/regional outfalls) within the catchment area and Lusaka City. Figure 6.3.3 shows the stormwater drainage system and flooded areas that occurred within Lusaka City in 2007-2008.

Lusaka City lies within the catchment areas of the Kafue and Changwe Rivers, which are tributaries of the Zambezi River. The rainwater catchment area of Lusaka is divided into four major catchments: the north-western catchment, the southern and south-western catchment, the northern catchment and the eastern catchment. The north-western and southern/south-western catchments are part of the Kafue River Basin, while the northern and eastern catchments are part of the Changwe River Basin.

The north-western catchment is divided into two catchments - George and Chunga Upper; the southern and south-western catchments into five catchments - Kanyama, John Laing / Chibolya, Makeni, Interceptor and Misisi / Kamwala / Chawama; the northern catchment into Ngwerere North and Bombay / Mazyopa; and the eastern catchment into 11 catchments - Kalikiliki and Bauleni. Each catchment has a storm water drainage channel and rainwater falling within the catchment is discharged from the storm water drainage channel through the main stormwater drainage line to the outside of the catchment. A total of 37 stormwater drains are provided in 11 catchments in Lusaka and drain outside the catchment except for some catchments in Interceptor and Kalikiliki.

Drainage Network and Elements

Lusaka's drainage network comprises approximately 120 km of primary/regional outfalls, 1,300 km of roadside open drains, and 60 km of underground drains in the tertiary system. In particular, there is no comprehensive record of the location, length or dimensions of the drainage infrastructure.

The secondary and tertiary drainage network includes:

(a) Secondary Drains: Open or covered concrete-lined channels along roads, directing runoff to primary/regional outfalls,
(b) Tertiary Drains: Lined/unlined channels along local roads, with some areas featuring underground pipelines to collect surface runoff,
(c) Road Culverts: Box or circular structures where open channels intersect with the transportation network, and
(d) Access Culverts: A variety of structures that provide access to properties where drains run between roads and properties.

[21] JICA (2022). Data Collection Survey on Urban Development and Urban Transport in Lusaka City, Zambia
[22] Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report

The above main components of the drainage system have evolved over the last three decades. Natural drains have served the central and northern parts for decades, although urban development has altered many sections. Southern Lusaka initially lacked a basic drainage system, and rapid unplanned settlements increased runoff and environmental hazards.

A secondary and tertiary drainage network, closely linked to the road infrastructure, developed in parallel with expansion of the city. Until now, the lack of a drainage master plan has resulted in a dense and sometimes chaotic system that lacks hierarchy and proper design.

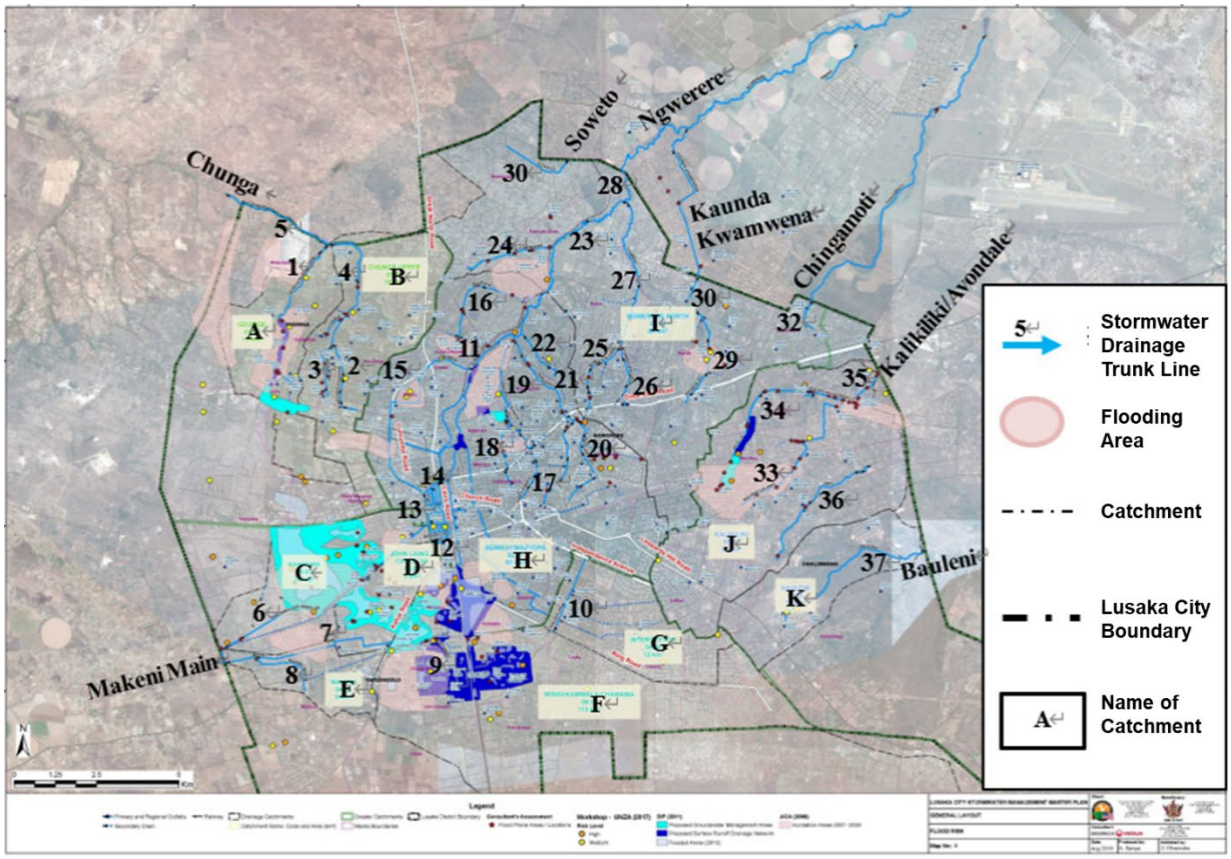
Table 6.3.2 Stormwater Drainage Catchments and Stormwater Drainage

River Basin	Greater Catchments	Catchment Area	Catchment Area (Km^2)	Primary/ Regional Outfalls	Drainage Channels to out-of-areas
Kafue	Northwest	A - George	13	1-George/Barlastone	Chunga
		B - Chunga Upper	19	2-Chunga/Shadrak 3-Mwaziona 4-Lilanda 5- Chunga	
	South, south-west	C - Kanyama	14	6-Kanyama/Los Angeles	Makeni Main
		D - John Laing / Chibolya	6	7-Makeni	
		E - Makeni	6	7-Makeni 8-Makeni Main	
		F - Misisi / Kamwala / Chawama	113	9-Chifundo	
		G - Interceptor	12	10-Interceptor	No Drain
Chongwe	North	H - Bombay / Mazyopa	61	11-Bombay 12-Ben Bella Road 13- CBD 14-Kalambo Road 15-Lumumba 16-Chipata 17-Addis Ababa 18-Manda Hill 19-Luangwa 20-City Airport 21-Arcades 22-Roma 23-Mazyopa	Ngwerere
		I - Ngwerere North	60	24-Kabanana 25-Roma/Kalundu 26-Chamba/Kalundu 27-Chamba 28- Ngwerere	
				29-Kaunda SQ 30-Kaunda Kwamwena	Kaunda Kwamwena
				31-Soweto	Soweto
				32-Chingamoti	Chingamoti
	East	J - Kalikiliki	35	33-Kalale/Salama 34-Kalikiliki 35- Kalikiliki/Avondale	Kalikiliki/Avondale

Source: Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report, JICA (2022). Data Collection Survey on Urban Development and Urban Transport in Lusaka City, Zambia

Note: See Figure 6.3.x for the alphanumeric characters for each catchment and for the Intra-regional Drainage

Trunk Line.



Source: Millennium Challenge Account (MCA) – Zambia Limited (2018). Drainage And Municipal Waste Management Technical Assistance For Lusaka City Council, Task 3: Stormwater Management Master Plan, Final Report, JICA (2022). Data Collection Survey on Urban Development and Urban Transport in Lusaka City, Zambia

Note: See Table 6.3.2 for the alphanumeric characters for each catchment and for the Intra-regional Drainage Trunk Line.

Figure 6.3.3 Storm Drainage System and Flooding Areas that Occurred within Lusaka City in 2007-2008

Challenges related to stormwater drainage system

In planned areas, uncontrolled interventions by various stakeholders have led to problems such as inadequate access culverts, utility crossings, flow diversions, backfilling and poor connection to outfall systems. Legal loopholes in land development contribute to flow obstructions and diversions, especially in unplanned areas.

Rapid urbanization has modified older drains, with changes such as flow diversions, backfilling and waste disposal affecting their natural character. Improper waste disposal by residents, including pit latrines and illegal dumping, further exacerbates environmental problems.

Lack of detailed records underlines the need for comprehensive mapping and documentation of the remaining drainage infrastructure, focusing on primary, secondary and tertiary drains.

6.3.3 Issues to be Tackled

Aging Drainage Infrastructure

The existing drainage infrastructure is old and much of it is in need of repair or replacement. Some of the operational facilities are operating above their design capacity.

Poor Design and Maintenance of Drainage Infrastructure

Poor design and maintenance of drains, not only regulated drains but also unregulated informal drains built by residents. Drains are not large enough to carry the stormwater. Utilities may also block drains.

Poor Solid Waste Management

Indiscriminate waste disposal blocks natural and artificial drains.

Current Status and Challenges of Stormwater Drainage and Flooding in Unplanned Settlements

Stormwater drainage infrastructure in unplanned settlements has not been developed and remains woefully inadequate, resulting in frequent flooding. Most roads in unplanned settlements are unpaved and uneven, and roadside ditches are not maintained in many places. The roadside ditches are full of rubbish and often filled with sand. Even where ditches are present, they are full of rubbish, often filled with sand, not continuously maintained and do not fulfil their drainage function.

Uncoordinated Development Practices

Planning decisions such as building houses on floodplains can affect the vulnerability of urban population to flooding. Unplanned settlements in wetlands, swamps or flood-prone low-lying areas have increased.

Geographical Characteristics and Human Activities Affect the Risk of Flooding

Lusaka, situated on a low-lying limestone plateau with a slope of 0.2%, is naturally prone to flooding due to its high water table and susceptibility to saturation. Originally founded on marshland, the city has inherent flood hotspots. Human activities, such as paving over vegetation and blocking drains with rubbish or unplanned development, further increase the risk of runoff and reduce the land's ability to absorb rainfall.

Adapting to Climate Change

During the rainy season, most parts of Lusaka are prone to flooding due to increased surface runoff from excessive rainfall. This rainfall can raise the groundwater table, increasing the risk of flooding in low-lying areas such as Kanyama. Global climate change is contributing to changing rainfall patterns, with projections of more frequent and intense heavy rainfall across Zambia. In particular, regional climate models suggest an increase in the frequency or intensity of heavy rainfall in the Lusaka region.

6.4 Solid Waste Management

6.4.1 Current Practice of Solid Waste Management

(1) Solid waste management at national level

1) Legal system

Solid Waste Management Regulations and Management Act No.20 of 2018

The current waste management regime has been established in accordance with the Solid Waste Regulation and Management Act No.20 of 2018, which was promulgated in March 2018.

In Zambia, although the authority and responsibility for the provision of waste management services essentially rests with local authorities (e.g., in Lusaka, the Lusaka City Council), the central authority, Ministry of Local Government and Rural Development (hereinafter referred

to as "MLGRD"), also plays an important role, from the financial to the operational level.

The above Solid Waste Regulation and Management Act of 2018 is Zambia's first waste-specific law, and under this Act, the overall waste management administration at the central level was transferred from the Zambia Environmental Management Authority (hereinafter referred to as "ZEMA") to MLGRD.

The Environmental Management Act No. 12 of 2011

The act states requirements for environmental audit and monitoring, and the implementation of international environmental agreements and conventions, to which Zambia is a party. ZEMA has jurisdiction over this act.

Environmental Management (Extended Producer Responsibility) Regulations, Statutory Instrument No. 65 of 2018 (EPR Regulations)

The Environmental Management (Extended Producer Responsibility) Regulations, Statutory Instrument Number 65 of 2018, generally referred to as EPR. The EPR focuses on the prevention and controlling of plastic pollution by compelling producers or manufacturers of plastic bottles and packaging materials to take responsibility of their products from cradle-to-grave. The Regulations require a person or persons whose activities generate waste with the potential to pollute the environment to employ measures essential to minimize waste through treatment, reuse, recovery, or recycling.

2) Policies

The target "80% of waste generated is collected, transported and properly disposed of at final disposal sites", which is the main target of the waste management policy, is set out in Zambia's National Long-Term Strategy (Vision 2030, developed in 2006). The 7th Five Year National Development Plan (2016-2021) also states the need for waste management initiatives based on Vision 2030 and points out the need to strengthen the organisational capacity for waste management, to provide appropriate equipment and facilities, and to educate the public.

3) Institutions concerned

Ministry of Local Government and Rural Development

The Ministry of Local Government and Rural Development (MLGRD) is responsible for promoting a decentralized and sound local governance system, facilitating the delivery of quality municipal services to contribute to sustainable socio-economic development. The Ministry oversees the implementation of delegated functions and responsibilities by the local authorities. The Ministry shall, at the national level:

- Formulate a national policy and strategy on solid waste, solid waste management, and solid waste services that also safeguard the interests of waste generators, other consumers, vulnerable persons, and the environment.
- Support private investment and involvement in the provision of solid waste services.
- Promote public-private partnerships in infrastructure development and other facilities for solid waste.
- Provide technical and other support for the construction of landfills and other disposal facilities.
- Give directions to a local authority or solid waste management company in accordance with the Solid Waste Management Act of 2018 and the Environmental Management Act of 2011.

Zambia Environmental Management Agency (ZEMA)

Zambia Environmental Management Agency (ZEMA) had jurisdiction over all types of wastes. With the enforcement of the Solid Waste Management Act in 2018, ZEMA's scope of jurisdiction at central level has essentially been dedicated and limited to matters related to the "environmental impact of waste". Currently, ZEMA's jurisdiction over waste management is limited to the following two aspects: (i) Environmental impact studies (SEA and EIA), particularly for final disposal sites, and (ii) Matters related to the disposal of hazardous waste, electronic waste and medical waste as defined in the Environmental Management Act 2011.

Ministry of Green Economy and Environment

The ministry is responsible for facilitating and coordinating the development and implementation of policies, programs and projects on the environment to ensure sustainable management and conservation of the environment. The ministry through the department of environmental management is responsible for the following functions:

- Facilitate the development of policies and legislation on environmental management to provide an appropriate framework for the effective management and implementation of programs.
- Conduct research on the environment and related matters in order to facilitate informed decision making.
- Provide technical guidance and support to stakeholder institutions on matters relating to environmental management and protection in order to enhance institutional capacity and ensure socio-economic wellbeing of communities.

Local authorities

The Local authority derives its authority from several Zambian laws. In accordance with the Constitution, the Local Government Act, 2019 and the Solid Waste Management Act of 2018, responsibilities and functions of the local authorities with regard to solid waste management includes the following, but are not limited to:

- The establishment and maintenance of sanitation and drainage systems to facilitate the removal of refuse and effluent.
- Manage solid waste and may undertake solid waste management in partnership or association with another local authority, public body or private body.
- A local authority shall, in consultation with the national authority, construct, operate and maintain landfills and other prescribed disposal facilities.
- A local authority shall, determine the location of landfills and other disposal facilities in accordance with international best practice, in consultation with the national authority.
- Sensitize the public on solid waste disposal.
- Create an enabling environment and appropriate incentives for the delivery of reliable, sustainable and affordable solid waste services.
- Provide for the systematic collection, transportation and disposal of solid waste in service zones falling under its jurisdiction.

(2) Current practice of solid waste management in the Greater Lusaka

This section presents the current practice of solid waste management in each district in the Greater Lusaka.

1) Lusaka City

The information below describes the current situation of solid waste management of the whole district of Lusaka.

Table 6.4.1 Current Practice of Solid Waste Management in Lusaka

Item		Outline
Implementation system		• The Municipality through the Lusaka Integrated Solid Waste Management Company (LISWMC) works in partnership with private waste management companies, franchise contractors and Community Based Organizations that service conventional areas and unplanned settlements in the city. • The approved LISWMC structure has 68 positions with 33 on attachment. An additional 27 positions to be created.
Technical System		
1	Waste generation amount & classification	• Waste generation quantities per day are at 1200 tonnes (data from Lusaka Solid Waste Management Improvement Plan (LSWMIP) 2022-2026). • Waste collection quantities per day are at 660 tonnes. (data from LSWMIP 2022-2026). This figure is based on waste amount disposed of at Chunga Landfill per day. • Waste classification includes domestic, commercial, industrial, hazardous waste, clinical waste and agricultural waste.
2	Storage and discharge/ Collection and transportation/ Road sweeping	• Road sweeping services are provided by Lusaka City Council. • Litter picking is done by Lusaka City Council in line with the 'Keep Zambia Clean Campaign'. • The Council has 24 Waste Management Districts (WMD), and of these, 23 are managed by 16 private sector companies while the other one that covers Central Business District (CBD) and Chunga Landfill is managed by the Lusaka Integrated Solid Waste Management Company. Household waste is usually collected once a week, while commercial waste is collected on an as-needed basis. • In unplanned settlements, Community Based Enterprises (CBEs) have been given the mandate to collect waste within these areas. There are 183 CBEs across the city's unplanned settlements providing waste collection services. • Franchise Companies (FCs) and Community Based Enterprises (CBEs) regularly collect and transport waste based on a contract with each household and business. • Currently, the Lusaka Integrated Solid Waste Management Company doesn't own any waste management equipment as all the equipment they use are owned under LCC.
3	Intermediate treatment/ recycling	• Lusaka has two large companies involved in the metal recycling business, namely Good time Steel and, Universal Mining & Chemical Industries Limited (UMCIL), and a number of relatively small ones such as Chi Steel and Bhavesh metals Ltd. • Book Hut company Ltd and Zambezi Paper Milling Company are the two main paper recycling companies in Lusaka. • Lusaka has an active plastic recycling industry. The main plastic waste recycling companies are mostly located in the Chinika industrial area and they include *Xing Huo company, Habib enterprises ltd*, *Recyclemenia*. *Sang Yuan, Yundar Investment Ltd.* They buy recyclable plastic waste from plastic waste brokers in large quantities from different parts of the city. • Manja Pamodzi has established sorting stations to enhance waste recovery in the city.
4	Final disposal	• Lusaka City only has one Landfill called Chunga Landfill about 9.3km from the CBD 1) Owner: Lusaka City Council 2) Management: LISWMC

Item		Outline
		3) Area: 10 acres 4) Operation hours: 24/7 5) Location: -15.35N, 28.26E 6) Waste disposal amount: 660 tonnes/day 7) Installed facility: Guard house, fence, toilets, office, &weighbridge 8) Operation in practice: Compaction 9) Disposed waste is weighed and disposal fee is at K50 per ton. • Rehabilitation work of the landfill has been conducted. Scope of the work also includes fixing the weighbridge which is currently not working. • The landfill still has room to accept waste. It will be able to operate for another 10 years or so, although the remaining capacity has not been precisely analysed.
Financial System		• The company projects revenue and expenditure as follows. Revenue: K5,477,798.76 Expenditure: K5,001,203.18
Environmental and social consideration		• The Council conducts monthly 'Keep Zambia Clean Campaigns' activities in the CBD and residential areas. • Waste pickers are also allowed to scavenge the landfill for recyclables as source of livelihood and at least over 500 people survive on collecting recyclables at the landfill.
Donor Support		• Currently, only JICA is on board but the following organizations have expressed interest to offer support; UN, UNDP, ILO and USAID.

Source: JICA Expert Team (2023)

2) Chibombo town council

The information below describes the current situation of solid waste management of the whole district of Chibombo.

Table 6.4.2 Current Practice of Solid Waste Management in Chibombo

Item		Outline
Implementation system		• Cleansing unit under Public health section responsible for (street sweeping, collection, final disposal site operation and health & environmental education) and prepares Municipal Waste Management Plans. They have 6 staff for administration and 5 staff for operation. They also have 20 general workers.
Technical System		
1	Waste generation amount & characteristics	• Waste generation amount: Unknown • Waste generation rate in residential area: Unknown • Waste collection amount: 1,000 tons/month (estimated based on number of loads disposed at dumpsite but does not represent actual tonnage generated and disposed). • Waste composition (Waste composition (organic 50%, plastic and paper 5%, glass and metal 2%, miscellaneous 36%) (urban review world bank, 2012)
2	Storage and discharge/ Collection and transportation/ Road sweeping	• Road sweeping service is provided by the Town council at selected sites which include Chibombo highway. • Waste is collected three times a week or more along the highway and once in residential areas. • Waste collection coverage: 3,000 peoples have access to collection service (estimation resulting from daily activity). • There is no separate collection in place. • Number of collection vehicles: two tractors designated for the two constituencies within Chibombo.
3	Intermediate treatment/ Recycling	• There is one Material Recovery Facilities (MRFs) under construction within the district. • There is no composting facility in the district. • There are 4 transfer points in the District.
4	Final disposal	• There is one dump site in the District called Kapopo dump site within the Study Area of the Project. 1) Owner: Chibombo Town Council 2) Area: 0.613 hectares 3) Operation hours: 10hrs 4) Location: -15.27N, 28.18E 5) Waste disposal amount: 33.3tons/day 6) Installed facility: None 7) Operation plan: mid-term plan exists 8) Operation in practice: compaction of waste but no covering with soil.
Financial system		• Total revenue for waste service: K150, 000/month. • Total expenditure for waste service: K182, 500 /month (K150, 000/month is spent for collection and transportation, K22,500/month for sweeping, K10,000/month for dumpsite maintenance).
Environmental and social considerations		• There is a policy or law for supporting the informal sector in provision of job opportunities and training. • There are about 20 waste pickers and 1 recycler in the district. • Community is informed of how to discharge waste such as collection day and time, separation of waste through public consultation meeting. There is also a 'Keep Zambia Clean Campaign' for cleaning the town with community participation.
Donor support		• USAID local impact: technical assistance in preparation of a master plan which includes technical and financial component on SWM.

Source: JICA Expert Team (2023)

3) Chilanga town council

The information below describes the current situation of solid waste management of the whole district of Chilanga.

Table 6.4.3 Current Practice of Solid Waste Management in Chilanga

Item		Outline
Implementation system		• Solid Waste Management Unit under Public health section is responsible for collection and final disposal. • The Solid Waste Management Unit at the Council has 3 staff for administration, 10 garbage collectors and 10 street sweepers.
Technical System		
1	Waste generation amount & classification	• Waste generation quantities per day: No Data • Waste collection quantities per day from 3 markets and 2 compounds by the Council (5 tonnes/day). • Waste classification includes domestic, commercial and industrial waste.
2	Storage and discharge/ Collection and transportation/ Road sweeping	• Road sweeping services are provided by Chilanga Town Council and this is done mostly along Kafue Road • Litter picking is done in the CBD and market by Chilanga Town Council in line with the 'Keep Zambia Clean Campaign'. • The Council collects and transports waste from communal storages in the 3 markets namely Sangalala, Twatasha and Katandabale market and also from illegal dumpsites in Freedom and Mapepe unplanned settlements This waste is collected and transported with a tractor to Kafue dumpsite on a daily basis. • Waste from Zone A, B and C is collected and transported by franchise companies to the final disposal site.
3	Intermediate treatment/ recycling	• There are four companies involved in recycling related operations within the district. • The district is also hosting a number of community waste pickers who collect recyclables from communities, markets and illegal dumpsites which they sell off to recycling companies. • The Council is also planning to have a formalized and a well-structured recycling process within the district to reduce the volume of waste and to recover the value from discarded materials.
4	Final disposal	• Currently, Chilanga district has no dumpsite for its waste disposal. They transport their waste to the dumpsite for Kafue Town Council which is situated almost 18 km from Chilanga Central Business District. 1) Owner: Kafue Town Council 2) Area: 7.5 hectares 3) Operation hours: 9hrs 4) Location: -15.73N, 28.22E 5) Waste disposal amount: 5 tonnes /day 6) Installed facility: No Guard house 7) Operation in practice: No compaction and no landfilling, dumpsite not fenced • Chilanga Town Council is currently in the process of acquiring a minimum of 20 hectares of land for the proposed establishment of a dumpsite in Mwembeshi area within the district.
Financial System		• Total revenue for waste service per year is K45, 000. This comes from payments made by franchise companies for operating in the district. • Expenditure for waste service is as follows: - Fuel 60 litres per week: K1,560 - Toll Fees per week: K500 - Servicing of Tractor: K15, 000 - Dumpsite charges/Tipping fees per day: K200
Environmental and social consideration		• The Council conducts monthly 'Keep Zambia Clean Campaigns' activities in the CBD and residential areas.

Item	Outline
Donor Support	• Chilanga Town Council currently has no donor support.

Source: JICA Expert Team (2023)

4) Chongwe municipal council

The information below describes the current situation of solid waste management of the whole district of Chongwe.

Table 6.4.4 Current Practice of Solid Waste Management in Chongwe

<table>
<tr><td colspan="2">Item</td><td>Outline</td></tr>
<tr><td colspan="2">Implementation system</td><td>Waste in communal storages and public areas collected with tractor and.
Door to door collection in individual households in the townships</td></tr>
<tr><td colspan="3">Technical System</td></tr>
<tr><td>1</td><td>Waste generation amount & classification</td><td>• Waste generation quantities per month: 3, 266.14 tonnes (data from Chongwe municipal council)
• Waste collection quantities per month: 1, 470 tonnes. Note that this figure only represents waste collected from only zone A, C, F and G (data from Chongwe municipal council)
• Waste classification includes domestic, commercial, industrial, hazardous waste, clinical waste and agricultural waste.</td></tr>
<tr><td>2</td><td>Storage and discharge/ Collection and transportation/ Road sweeping</td><td>• Road sweeping services are provided by Chongwe municipal council, and this is done along great east Road.
• Litter picking is done by Chongwe municipal council in line with the ‘Keep Zambia Clean Campaign’.
• The Council and 9 franchise companies are responsible for Solid Waste collection and transportation in the 10 SWM zones as shown below.
<table>
<tr><td>ZONE</td><td>AREAS BEING SERVICED</td></tr>
<tr><td>Zone F</td><td>Chestone extension (Madido), Obama and Ngwerere, Chongwe</td></tr>
<tr><td>Zone C</td><td>Silverest area, Mika hotel op compound, and Meanwood ibex</td></tr>
<tr><td>Zone E1</td><td>Meanwood Ndeke phase 1 and Vorna valley</td></tr>
<tr><td>Zone G</td><td>Kwamwena phase 3 and phase 4</td></tr>
<tr><td>Zone E2</td><td>Meanwood Ndeke phase 2 and phase 3</td></tr>
<tr><td>Zone B</td><td>Chalimbana and all business establishment along great east road from toll plaza to Chalimbana turn off</td></tr>
<tr><td>Zone D</td><td>Airport, commercial establishment along airport road, multi-facility economic zone, waterfalls mall, garden city and commercial establishment along great east road up to pa corner</td></tr>
<tr><td>Zone G</td><td>Kwamwena phase 1, phase 2 and Mutumbi, Chongwe</td></tr>
<tr><td>H</td><td>Palabana, state lodge, Njolwe</td></tr>
<tr><td>Zone A</td><td>All households and business premises within Chongwe CBD starting from chalimbana junction</td></tr>
</table>
• Waste is collected on a daily basis in the CBD and once in a week in residential areas.
• Waste collection coverage: 36, 290 households.
• The Council has two waste collection vehicles.</td></tr>
<tr><td>3</td><td>Intermediate treatment/ recycling</td><td>• UNIDO is conducting a project for establishing a Recycling Collection Centre (RCC) which is already under construction.</td></tr>
</table>

Item		Outline
4	Final disposal	• There is only one waste disposal site called Chikwangala Disposal site about 8km from the CBD. 1) Owner: Chongwe Municipal Council 2) Area: 10 hectares 3) Operation hours: 9hrs 4) Location: -15.30N, 28.72E 5) Waste disposal amount: 1, 470 tonnes/month 6) Installed facility: Guard house 7) Operation in practice: No compaction and landfilling, dumpsite not fenced
Financial System		• Total revenue for waste service per year: K240, 000 • Total expenditure for waste service per year: K233, 000 • Tipping fees are at K50 per load.
Environmental and social consideration		• The Council conducts weekly 'Keep Zambia Clean Campaigns' activities in the CBD and residential areas. • Waste pickers are also allowed to scavenge the dumpsite for recyclables as source of livelihood
Donor Support		• Chongwe Council is partnering UNIDO on a project to reduce indiscriminate dumping by promoting Best Available Technology (BAT) / Best Environmental Practice (BEP) and establishing a Recycling Collection Centre (RCC).

Source: JICA Expert Team (2023)

5) Kafue town council

The information below describes the current situation of solid waste management of the whole district of Kafue.

Table 6.4.5 Current Practice of Solid Waste Management in Kafue

Item		Outline
Implementation system		• Waste removal from communal storages in markets, public areas and illegal dumping sites are conducted by the Council. • In peri-urban or densely populated areas like Zambia Compound, the Council collects waste especially in illegal dumpsites for free. • For franchise, success of garbage collection depends on payment for service provided in their designated zones.
Technical System		
1	Waste generation amount & classification	• No available statistics for waste generation quantities per day • Waste collection quantities per month is estimated at 1, 024 tonnes (data from Kafue Town Council) • Waste classification includes domestic, commercial, industrial, hazardous waste, clinical waste and agricultural waste.
2	Storage and discharge/ Collection and transportation/R oad sweeping	• Road sweeping services are provided by Kafue Town Council. • Litter picking is done by Kafue Town Council in line with the 'Keep Zambia Clean Campaign'. • The Council and 4 franchise companies are responsible for Solid Waste collection and transportation in the 6 SWM zones. • The Council has the 5 waste collection vehicles.
3	Intermediate treatment/	• The district only has a Kafue Steel plant which has a component for recycling. It specifically deals with scrap metal recycling.

Item		Outline
	recycling	• However, waste pickers are allowed to scavenge the dumpsite for recyclables which they later sell to recycling companies in Lusaka with Kafue only hosting the raw material sourcing using pickers at the disposal site.
4	Final disposal	There is only one waste disposal site called Kafue Disposal site about 10km from the CBD 1) Owner: Kafue Town Council 2) Area: 7.5 Acres 3) Operation hours: 9hrs 4) Location: -15.73N, 28.22E 5) Waste disposal amount: 1, 024.00 tonnes per month 6) Installed facility: No Guard house 7) Operation in practice: No compaction and landfilling, dumpsite not fenced
Financial System		• Total revenue from the waste service (Landfill & Community) from March 2022 to August 2023: K80,000 • Expenditure for waste service - Fuel 40 liters per day: K960 - Front end loader for hire per month: K6,500 - Personal Protective Equipment (PPE) per year: K70,000 - Medicals per year for 28 workers: K28, 000 - Maintenance cost for dumpsite per year: K130, 000 • Dumpsite charges/Tipping fees - 1tonne-10 tonnes: K200 - 10tons-20 tonnes: K350 • Operation fees for franchise companies is at K1000 per month which they are made to pay an upfront K12000 for the whole year.
Environmental and social consideration		• The Council conducts weekly 'Keep Zambia Clean Campaigns' activities in the CBD and residential areas. • Waste pickers are also allowed to scavenge the dumpsite for recyclables as source of livelihood
Donor Support		• Kafue Town Council currently has no donor support.

Source: JICA Expert Team (2023)

6.4.2 Solid Waste Management Infrastructure

(1) Current situation

There are 4 official disposal sites operated by the local authorities as follows.

i) Chunga disposal site: Lusaka
ii) Kapopo dump site: Chibombo
iii) Chikwangala disposal site: Chongwe
iv) Kafue disposal site: Kafue and Chilanga

(2) Future plans

Currently, there is no concrete future plan of solid waste management infrastructure. However, all the local authorities mentioned necessity of improvement of the current disposal site or development of new disposal site.

6.4.3 Issues to be Tackled

(1) Each District

This section presents issues to be tackled mentioned by persons in charge of solid waste management from each local authority.

1) Lusaka

- Need more public awareness and sensitization campaigns on solid waste.
- Capacity building through technical support, training, supervisions for both officers and engaged contractors.
- Re-engineer the Chunga landfill by construction of new cells for disposal and procure landfill equipment.
- All markets to be provided with waste storage bins.
- Improve supervision to service providers.
- Implementation of tariff bundling to avoid illegal waste collectors and indiscriminate disposal of waste.
- Increasing the number of recycling companies for different streams of waste.
- Fixing of all non-runner waste collection vehicles and procuring an additional 6 utility vehicles, 2 skip trucks and 2 hook trucks to enhance service delivery.

2) Chibombo town council

- Improve the collection service and its subscription.
- Need capacity building.
- Improve financial resources for acquisition of solid waste equipment and for better functionality of the institution.
- Need equipment; 2 skip trucks, 10 skip bins, front end loader, Tractor Loader Backhoe (TLB).
- Need a proper controlled dumpsite/landfill.

3) Chilanga town council

- Need more Human resource for enhanced monitoring and supervision of waste management activities.
- Need transport to enhance waste collection services and to enable the Council to easily supervise engaged contractors.
- Need a dumpsite within the district.
- Need more waste management equipment that includes 1 Compactor, 1 Front End Loader, 4 Skip bins and 1 Skip truck.
- Need servicing of a non-runner tractor.
- Capacity building through technical support, training, supervisions and exchange visits.

4) Chongwe municipal council

- Need transport to enhance waste collection services and to enable us to easily supervise engaged contractors.
- Need a new dumpsite, current one is small.
- Need funds to improve the current dumpsite.

- Need office space and equipment such as printers and chairs.
- Need cleaning materials and tools such as disinfectants and PPE for workers.
- Capacity building through technical support, training, supervisions and exchange visits.

5) Kafue town council

- It is necessary to improve the collection service.
- Enhanced education, communication and sensitization campaigns on waste management within the district.
- Availability of a vehicle specifically for the waste management section to enhance waste management services to ensure proper monitoring and supervision of engaged contractors.
- There is need for a weighbridge to ensure that all waste disposed is weighed and tipping fees charged accordingly.
- There is need to procure waste management equipment that includes 1 front end loader, 1 TLB, 10 skip bins, 1 skip truck, 1 bulldozer and PPE for workers.
- There is urgent need for construction of a new proper dumpsite that will be fenced, with a guardhouse, sanitary facilities and proper signage. Process for securing land is underway.
- There is need to decommission the current dumpsite as it is in bad state and located close to residential plots which has sparked controversy with the local community.
- More personnel to be allocated to the waste management unit of the section to increase the manpower.
- Need for regular maintenance of all waste collection vehicles.
- Capacity building through technical support, training and supervisions.

(2) Greater Lusaka

1) Improving waste collection rate in Lusaka City

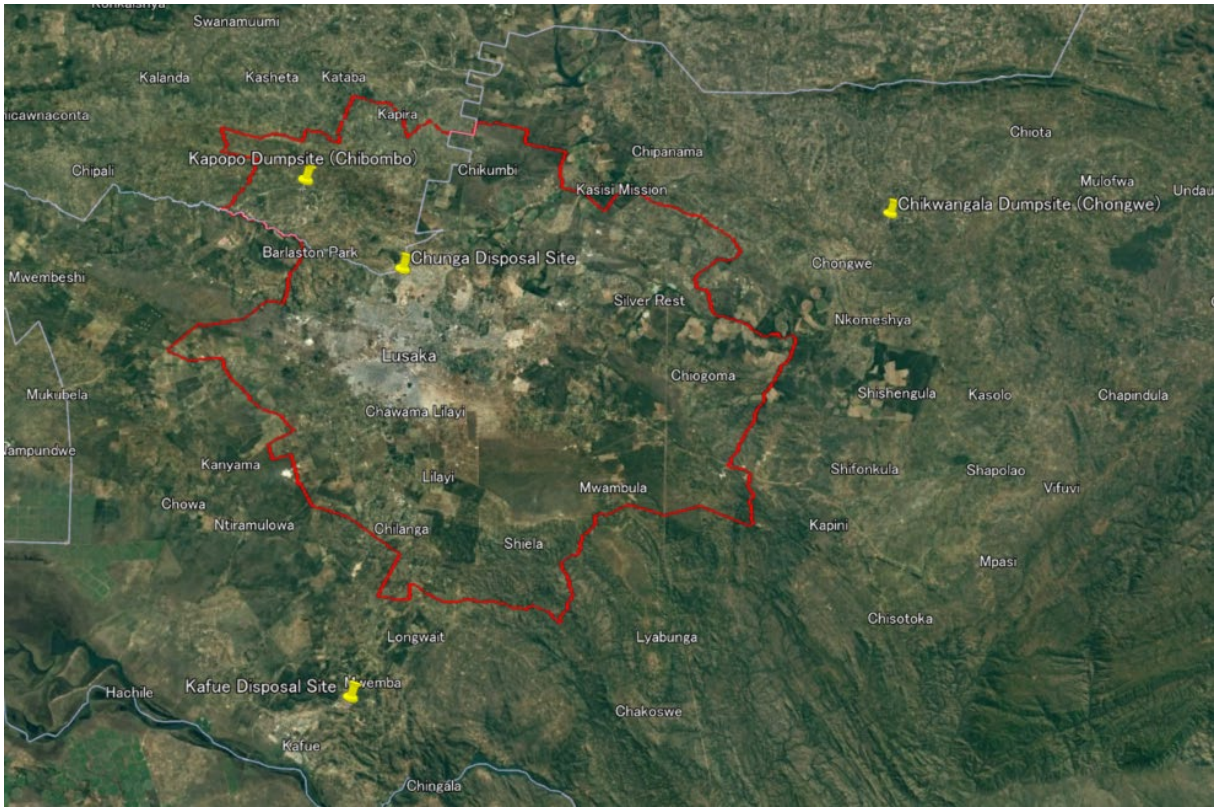
In Lusaka City, where waste generation is estimated at 1,200 tonnes per day, the collection rate is 660 tonnes per day, i.e. a collection rate of 55%. As Lusaka City is entirely urban, a collection rate of 100% is basically required. Waste dumps have sprung up all over the place, especially in the unplanned settlements, and this has led to a deterioration in the sanitation environment. This is said to be the cause of the annual cholera epidemic, which affects not only Lusaka City but other areas as well, so improving the collection rate in Lusaka City is an urgent issue.

There are areas of urbanisation in other districts adjacent to Lusaka City. These areas are far from the centres of the respective local authorities, which do not appear to be able to manage waste properly in these areas. As urbanisation is likely to continue, it is hoped that central ministries will take the lead in initiating coordination on how to promote waste management in these areas.

2) Landfill development

All districts mentioned the need to improve existing dumpsites (please see their locations in the figure below) or build new ones. However, the severity of the problem varies between Lusaka, with a population of over 2 million, and other districts with populations of 200-400,000 and predominantly rural areas. The Chunga landfill in Lusaka could be used for the next 10 years or so if properly managed. Subsequent landfills will not be able to be built within Lusaka City, so it is recommended that two or more new landfills be built outside Lusaka (e.g. north and

south or east and west) in cooperation with neighbouring communities.



Red line: Border of the Study Area
Yellow pins: Existing dumpsites

Source: JICA Expert Team (2023)

Figure 6.4.1 Locations of the Existing Dumpsites

3) Promoting recycling.

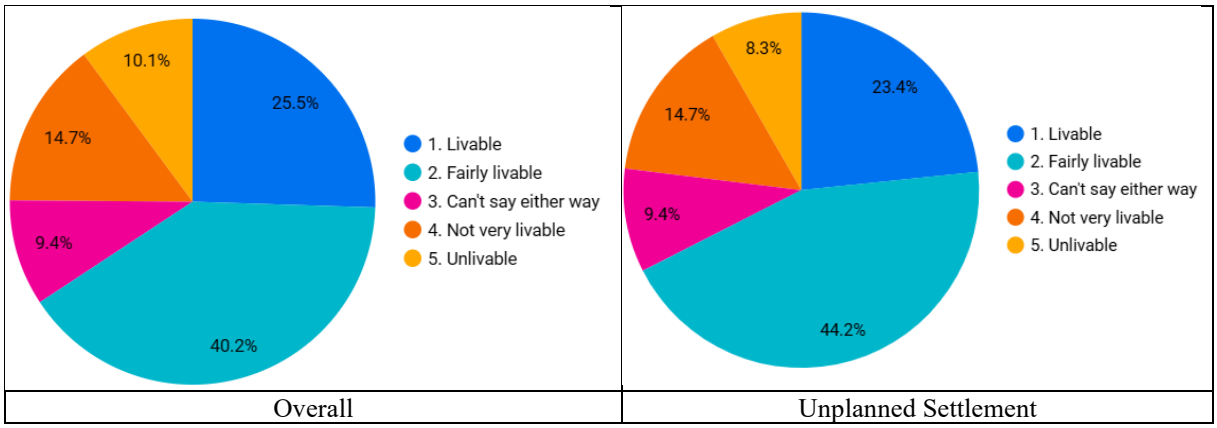
While improving collection rates and proper disposal is a priority in Lusaka and all other districts, it may also be necessary to promote and control recycling activities: when waste pickers collect plastics and other recyclable materials, they often dump other waste inappropriately, creating dumpsites. As recycling is currently mainly done by the private sector, more cooperation with the private sector is recommended to promote and optimize recycling. With regard to organic waste, it is recommended that household composting be promoted, as even in Lusaka City there are houses with large plots of land.

CHAPTER 7 PEOPLE'S PERCEPTION TO THE STUDY AREA

7.1 Major Issues

7.1.1 Major Issues Identified in Household Survey

As part of the Project, a survey of 3,178 households was conducted, which asked about the ease of living and satisfaction with the living environment in Greater Lusaka. Details of the household survey is complied in Appendix C. Over 65% of households stated that it is easy to live in Lusaka (liveable: 25.5% and fairly liveable: 40.2%), as shown in Figure 7.1.1. Households that expressed difficulties regarding living in Lusaka accounted for 24.8% of participants (not very liveable: 14.7% and unliveable: 10.1%). Those who stated that it is easy to live in Lusaka significantly outweighed those who considered it difficult. This pattern is the same when narrowed down to residents of unplanned settlements: more than 65% of respondents from unplanned settlements say it is easy to live in Lusaka, while only 23% say they find it difficult to live in Lusaka.

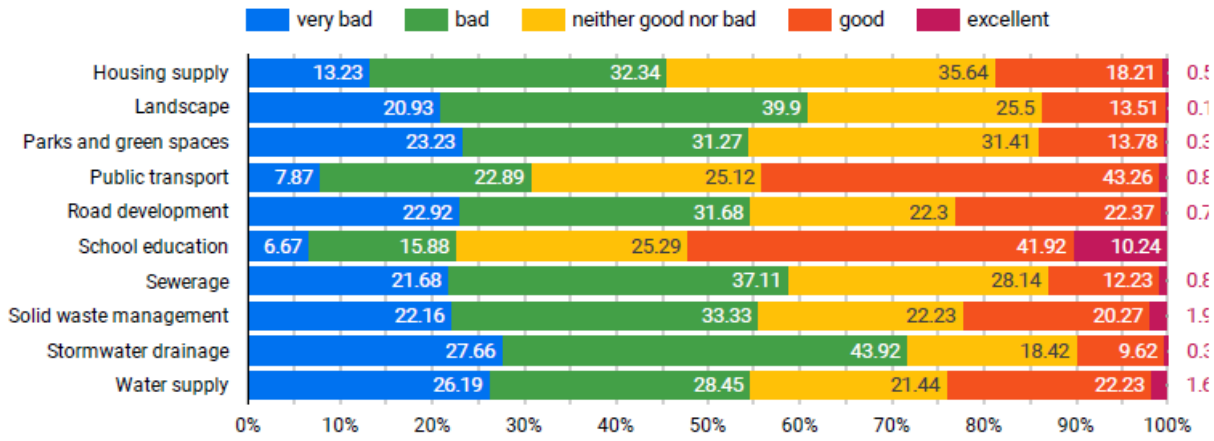


Overall | Unplanned Settlement

Source: JICA Expert Team (2023)

Figure 7.1.1 Results of Household Survey (Do you think Lusaka is a good place to live?)

While many households responded that they feel comfortable living in Lusaka, many expressed dissatisfaction when asked about their individual living conditions. Of the various infrastructures, only in the category of education (good: 41.9% and excellent: 10.2%) did more than 50% of households express satisfaction with the current situation, as shown in Figure 7.1.2. Satisfaction with other types of infrastructure, such as housing supply, landscaping, parks and roads, etc., was low. More than half of the households rated landscaping, parks and green spaces, roads, sewerage, solid waste management, stormwater drainage and water supply as bad or very bad. Dissatisfaction with stormwater drainage was particularly high, with 71.6% of households reporting it as bad (27.7%) or very bad (43.9%). The level of dissatisfaction with public transport was lower than with other infrastructure, with only 30.8% of households rating it as bad or very bad. These patterns are similar when disaggregated within and outside unplanned settlements.



Source: JICA Expert Team (2023)

Figure 7.1.2 Results of Household Survey (How satisfied are you with the current situation in Lusaka?)

7.1.2 Major Issues Identified in SEA Consultation Workshop

The identification of environmental and social problems is essential and pivotal process in the formulation of the objectives of Strategic Environmental Assessment (SEA). This process is based on an examination of the available baseline information, as well as on the results of interviews, surveys, and consultations with relevant agencies and stakeholders. As mentioned in Chapter 11 and Appendix B, within the framework of SEA in the Project, the 1st public consultation had conducted in several venues in Lusaka City and surrounding areas from November 11th, 2023, until November 27th, 2023. The event, which lasted a total of nine days, was attended by 1,171 residents of the Study Area. Of these, 40.6% (475) were female, 54.0% (632) were male and 5.4% (64) were non-respondents.

The public consultation uses a methodology similar to a street survey in an open space, consisting of four questions in order to understand the current environmental issues and the future prospect from point of view of the residents. In the Project, the definition of "environment" is inclusive and broad, including the living environment, rather than only the natural environment. As for details, refer to the items to be mentioned in Appendix B.

Regarding the current issues and problem in the city of the Study Area raised by residents were over 2800 opinions. All opinions are sorted by categories (27 categories) as shown in Figure 7.1.3 and each category has subcategories. The font size indicates the frequency of opinions.

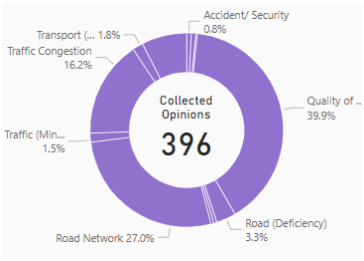
Source: JICA Expert Team (2024)

Figure 7.1.3 Categories of 1st SEA Public Consultation

The main current environmental Problems pointed out by the residents of Study Area are Transportation/ Congestion (14%), followed by Public Hygiene/ Waste Management (12%), Living Cost (11%), Stormwater Drainage (8%), Water Issues and Security (each 7%), Employment Issues, Social Matter/Activities, Urban Planning Issues and Education Issues (each 5%), etc. Table 7.1.1 shows the top five categories of problems currently faced by participants, which account for 50% of the views raised.

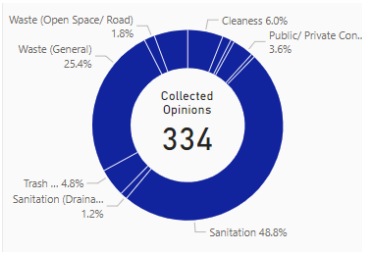
Table 7.1.1 Top Five Categories of Current Problem on 1st SEA Public Consultation

Transportation/ Congestion (ranked 1st Current Problem with 396 opinions)



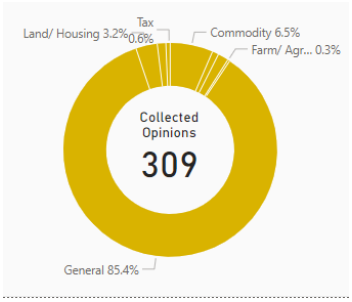
Transport and Congestion of the road concerns primarily the Quality of Road (40%) followed by Transportation/ Road Network (27%), Traffic Congestion (16%), Transport Mode and System (8%), etc.
The Quality of Road includes not only the pavement condition of the road (whether it is paved with asphalt or not), but also the maintenance of the road, such as the presence of potholes. As for "transportation and road network," which is the second most common concern, it is not direct, but it does point to access issues and traffic congestion problems. Some specific comments include traffic congestion caused by minibuses and lack of adequate bus stops. A small number of respondents also mentioned opinions regarding bicycle lanes and sidewalks.

Public Hygiene/ Waste Management (ranked 2nd Current Problem with 334 opinion)



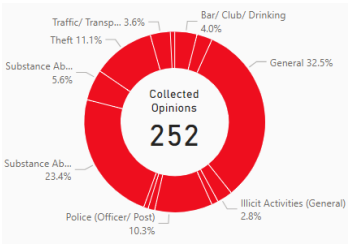
Public Hygiene and Waste Management Problems relate mostly to the Sanitation problem (49%) and Waste problem (25%).
Related to sanitation problem, bad state of cleanliness (6%) and the lack of Public/ Private conveniences (Toilets: 4%). While there was a general consensus on sanitation issues, there were also comments pointing to poor hygiene conditions in the unplanned settlement.
In category of Waste Management, in addition to the general opinion that there is a lot of waste, respondents also mentioned problems with the frequency of waste collection (6%), the lack of waste bins in public places (5%), and opinions about waste dumping sites (1%) etc.

Living Cost (ranked 3rd Current Problem with 309 opinion)



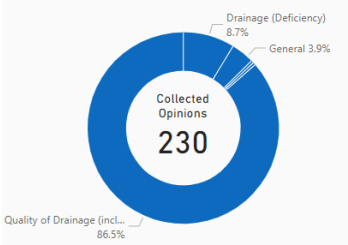
Of the residents of Lusaka City and surrounding who participated, 11% raised issues about the cost of living, the most common of which was the overall high cost of living (89%).
Commodity, such as household goods and food (6%), was the most frequently mentioned item among the individual living costs, followed by Rent/Land (3%) and Energy (2%), Health care/ Medicine costs and Education (approximately 1%).

Security (ranked 4th Current Problem with 252 opinions)



Current Problems in terms of Security issues concern mostly General such as high crime rate and security of area (33%), followed by Substance Abuse (29%) consisting of Drug Abuse (23%) and other substance such as alcohol etc. (6%). Related to high crime, the thefts are specified (11%).
The lack of police station, officers and patrol are pointed out as security concerns (10%). Traffic hazards (e.g. speeding: 4%) Gender based violence (3%) were also mentioned, although in a minority of opinions.

Stormwater Drainage (ranked 5th Current Problem with 230 opinion)



The bad quality of Drainages and its system (86%) is the most common problem pointed out by the residents of Lusaka City and surrounding area. Of responders (199 residents), the most common observations were made by students and university staff (76 participants).
The Deficiency of Drainage (9%), the General Problem of Drainage (4%), and Maintenance and other (1%) are followed.

Source: JICA Expert Team (2024)

Although not high on the list, a variety of concerns were mentioned, some of which were noted as affecting each other or in relation to each other. For example, flooding during the rainy season

is cited as a cause of poor drainage and potential reason of the severe sanitation issues and pollution especially soil and water. In security concerns, the lack of public lightings relates to the security for walking in the night.

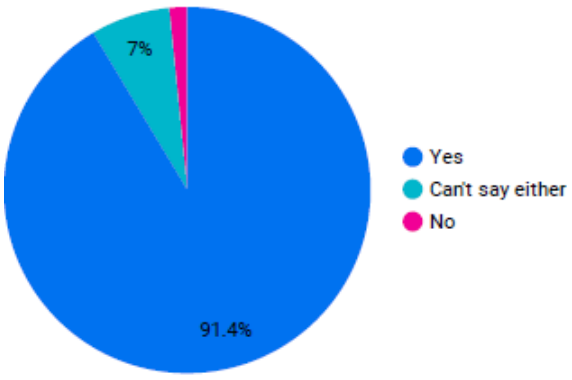
The residents of the Study Area highlight the significance of social services, encompassing Education (4%) and Health (3%), as principal concerns. While categorized as Amenities (2%) for classification purposes, interests and demands regarding social services and its infrastructure extend to the establishment of rehabilitation facilities, libraries, and youth centres. It is not limited that community members express concerns about the limited availability of public spaces, such as play parks for children and green areas (1%) as "Amenity" and "Living Environment" matter. Furthermore, the data shows that there are needs for social activities and events (1%) aimed at empowering young individuals and facilitating their reintegration into society. These perspectives underscore the multifaceted nature of the community's expectations and aspirations for enhanced social well-being and inclusivity.

Through this series of public consultations, a synthesis of the analyses of significant concerns that pose a formidable challenge to the future of the Study Area, and the preservation of important values is obtained. It is imperative to consider the importance of public health, and overall quality of life in addressing these concerns and usage and protection of natural resources.

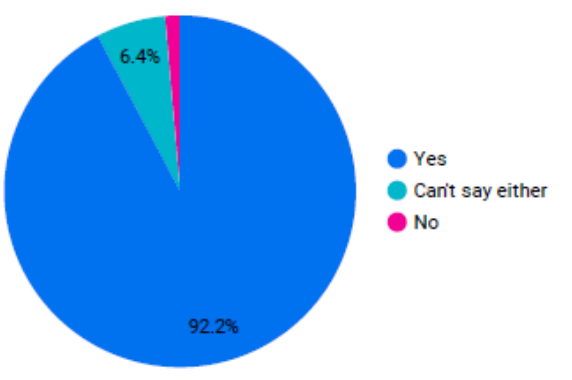
7.2 Future Image of Greater Lusaka to be Pursued

7.2.1 Future Image Suggested in Household Survey

The 2009MP proposes ECHO (Economically strong, Environmentally friendly and Community Hope and Opportunity) as the future vision for Lusaka. It also recommends the Garden City concept as a development approach. The household survey asked whether these visions and development approaches should be carried over to the RDP. With regard to the vision, a large number of households (91.4%) stated that it should be inherited (Figure 7.2.1). In relation to this development approach, more than 90% of households also stated that it should be inherited. The vision and development approach, which has been endorsed by many citizens, should be carried over to the RDP.



Q. Do you think the vision proposed in the 2009MP should be carried forward in the future?



Q. Do you think the garden city concept proposed in the 2009MP should be carried forward?

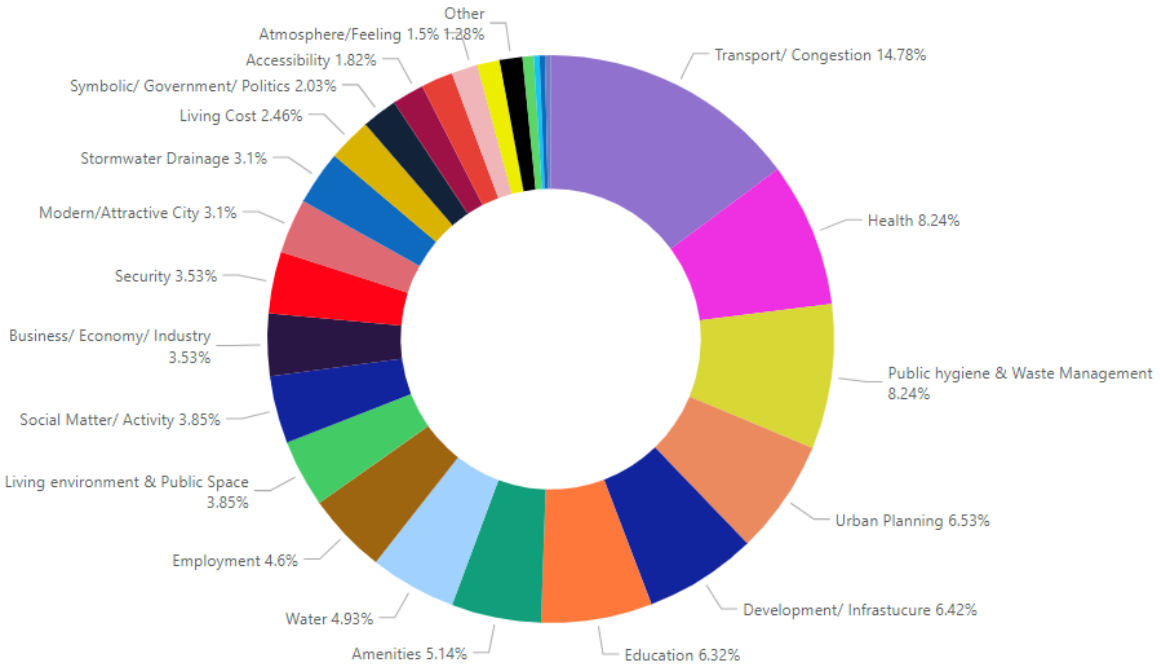
Source: JICA Expert Team (2023)

Figure 7.2.1 Results of Household Survey Related to Vision and Development Approach

7.2.2 Future Image Suggested in SEA Consultation Workshop

During the 1st SEA public consultation workshop, the participants made their views known on

the future prospects for the city of Lusaka in 2045. There were 934 views submitted. The most common of these were the desire to minimise traffic congestion and improve road infrastructure so that by 2045 there would be no obstacles to vehicle travel. Given the challenges around traffic, congestion and transport issues, the predominant view was that the city is prepared to improve its current predicament in these areas. Health and public hygiene considerations continued to emerge as a prevailing theme in charting Lusaka's future trajectory. Particularly noteworthy was the abundance of opinions expressing a desire for a "clean city" or a "clean environment," emphasizing the importance of urban cleanliness. Furthermore, a considerable number of voices advocated for improvements in housing and urban planning.



Source: JICA Expert Team (2024)

Figure 7.2.2 Expectation for the Future of Lusaka City from Residents by Categories

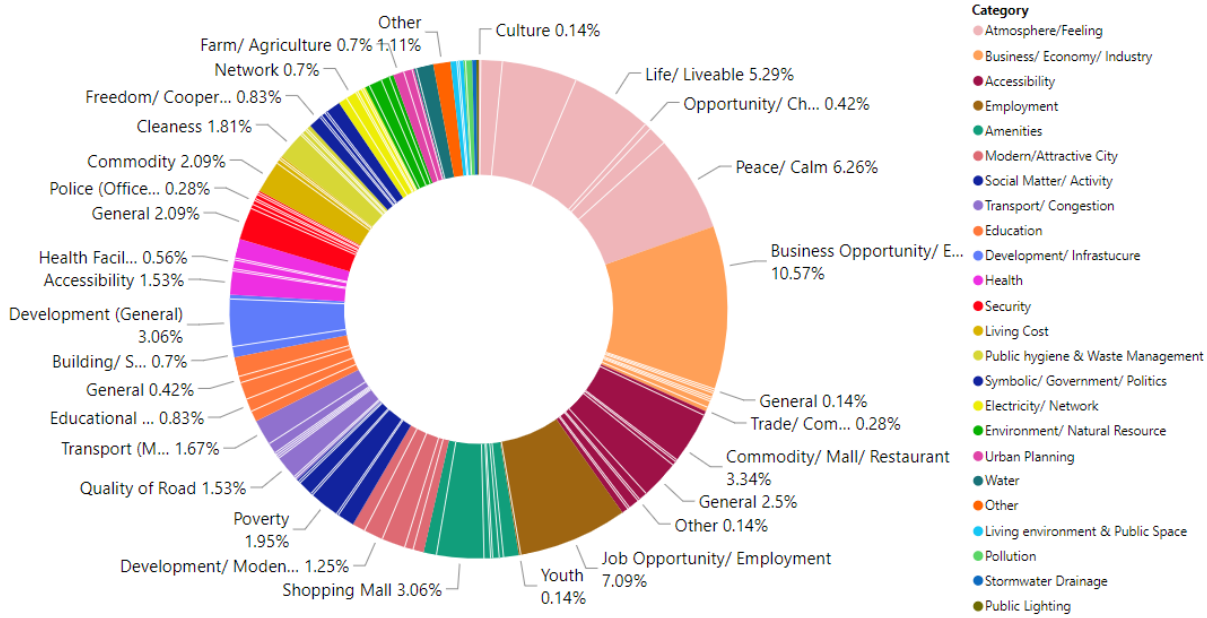
Figure 7.2.3 presents the future perspectives and aspirational visions for Lusaka City as actually recorded by participants. As evident from these data which the font size indicates the frequency of opinions, there is a notable prevalence of opinions related to transportation, such as "Better Road" and "Better Road Network," reflecting a collective desire for improvements in this domain. Additionally, there is a pronounced abundance of sentiments expressing aspirations for urban hygiene and cleanliness, as indicated by phrases like "Clean Lusaka," "Clean Environment," and "Clean City".

There are also numerous aspirations related to development and infrastructure improvement. Many of these hopes are presented in a comprehensive and general manner, such as envisioning a "developed city/ community" or a "good quality of infrastructure." While specific details regarding the fields or types of development and infrastructure are often unspecified, considering the expansion of services in education and other social service sectors (such as the addition and improvement of schools, healthcare facilities, and recreational facilities), along with opinions expressing a desire for an increase in public facilities like parks, it becomes evident that there is a widespread expectation for significant improvements; “A green Vivary City”, “Park Areas where Children to Play around and Learn”, “Park to read and relax”, “Eco-

Friendly (city)", "Peaceful City" etc.

Source: JICA Expert Team (2024)

Figure 7.2.3 Expression of Future Expectations by Participants of the 1st SEA Public Consultation



Source: JICA Expert Team (2024)

Figure 7.2.4 Favourite Aspects of Lusaka City Expressed by Participants of the 1st SEA Public Consultation

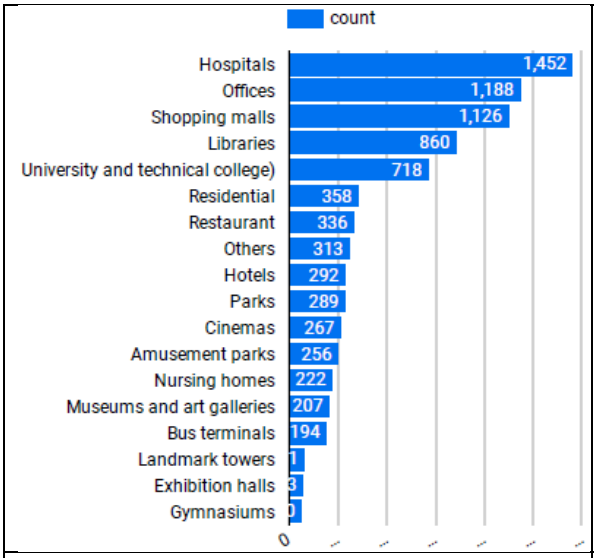
In the public consultation, participants were queried about their preferences and favourite aspects regarding Lusaka City or their residential areas. This inquiry was conducted with the aim of considering elements that should be preserved for the future development planning of Greater Lusaka. According to the collected opinion data, sentiments expressing favourable conditions for conducting business, often associated with the term "business opportunities," as

well as opinions highlighting the abundance of employment opportunities, emerged prominently as top-ranking perspectives. While unemployment issues are acknowledged as a significant concern, constituting 5% of the opinions collected in the first SEA public consultation regarding the current problems in the Study Area, it is presumed that the relatively abundant employment opportunities, compared to other urban areas, contribute to this outcome. Consequently, from the point of view of the accessibility, it is highlighted not only for the tangible accessibility, including access to shops, malls, and purchasing daily necessities, namely reflecting the convenience related to daily activities, but also for the accessibility to opportunities.

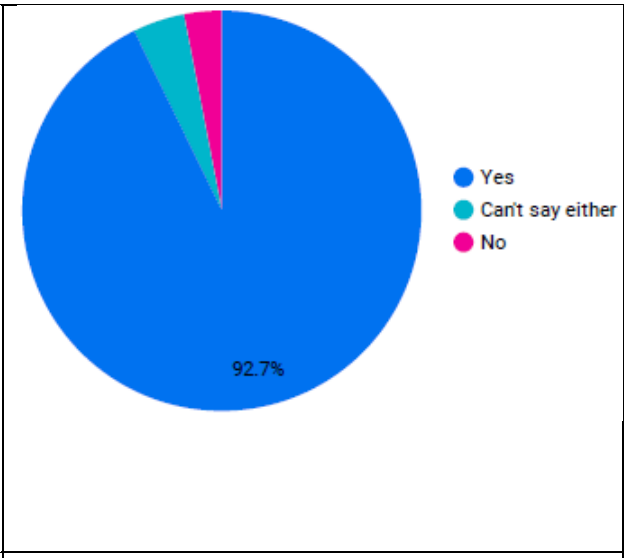
From a perspective of the atmosphere and environment of the city, 6 % of participants also highlight aspects such as "peacefulness" and "calm" as favoured qualities contributing to the overall atmosphere of the city.

7.3 Expected Function of CBD by Urban Regeneration

The household survey asked which facilities the citizens would like to see if the CBD were to be redeveloped. The most desired facility was a hospital (1,452), followed by offices (1,188), shopping malls (1,126), libraries (860) and universities and technical colleges (718), as shown in Figure 7.3.1. While offices and shopping malls are probably the most commonly desired facilities for the city centre, it is worth noting that there were many expectations for facilities related to higher education and social services. Housing was ranked fifth (358), behind the top four functions. However, a high proportion of households (92.7%) stated that they would prefer to live in the CBD if it provided a good living environment, indicating that there are a certain number of households who would prefer to live in the CBD.



Q. If the CBD were to be redeveloped, what are the top three facilities that you would like to see in the CBD?



Q. If the CBD were to be redeveloped to provide a good living environment, would you like to live in the CBD?

Source: JICA Expert Team

Figure 7.3.1 Results of Household Survey Related to CBD Redevelopment

CHAPTER 8 REGIONAL MANAGEMENT SYSTEM

8.1 Regional Governance System

8.1.1 Administrative Bodies Concerned with Urban Management

Zambia is a democratic republic with two spheres of government, national and local. Presently, and after 2018, there are 116 local authorities or District Councils, consist of 5 city councils, 15 municipal councils, 96 town councils[1](LGAZ[2] homepage (hp)), and they are overseen by the Ministry of Local Government and Rural Development (MLGRD). There are also 10 Provinces (NAZ[3] hp), which are administrative branches of the central government headed by Provincial Ministers appointed by the President. (CLGF[4] 2017: OECD/UCLG[5] 2022)

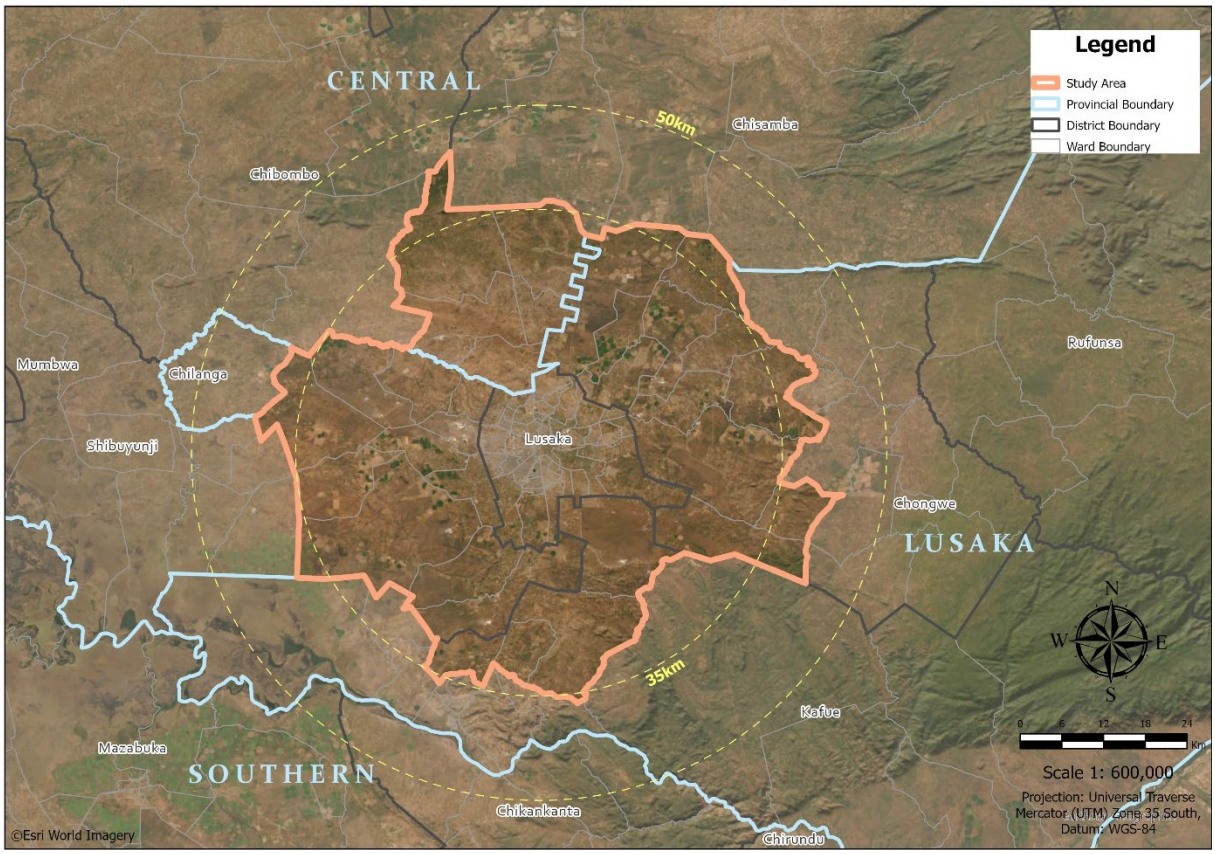
Greater Lusaka, the study area, comprises 5 local governments (Lusaka City Council (LCC), 1 municipal council and 3 town councils) across 2 Provinces. Accordingly, urban management of Greater Lusaka requires the coordination of a number of administrative bodies across three tiers -- i.e., 5 local governments, 2 provincial administrations, MLGRD as the supervising authority of local governments, and several other ministries involved in economic and social infrastructure development and others related.

Table 8.1.1 Administrative Bodies Comprising Greater Lusaka

Local Government (District Council)	Central Government Administrations	
	Province-level	District-level*
Lusaka City Council (LCC)	Lusaka Provincial Administration	Lusaka District Administration
Chongwe Municipal Council		Chongwe District Administration
Kafue Town Council		Kafue District Administration
Chilanga Town Council		Chilanga District Administration
Chibombo Town Council	Central Provincial Administration	Chibombo District Administration

* Administrative area of each district council corresponds to that of a district office of provincial administration.
Source: JICA Expert Team (2024)

1 Classification between (a) city council , (b) municipal council and (c)town council is based on the distinction of (a) population size of 100,000 or more, (b) population size of 30 000 or more, and (c) rural area. (JICA 2022)
[2] Local Government Association of Zambia
[3] National Assembly of Zambia
[4] Commonwealth Local Government Forum
[5] United Cities and Local Governments



Source: JICA (2022)

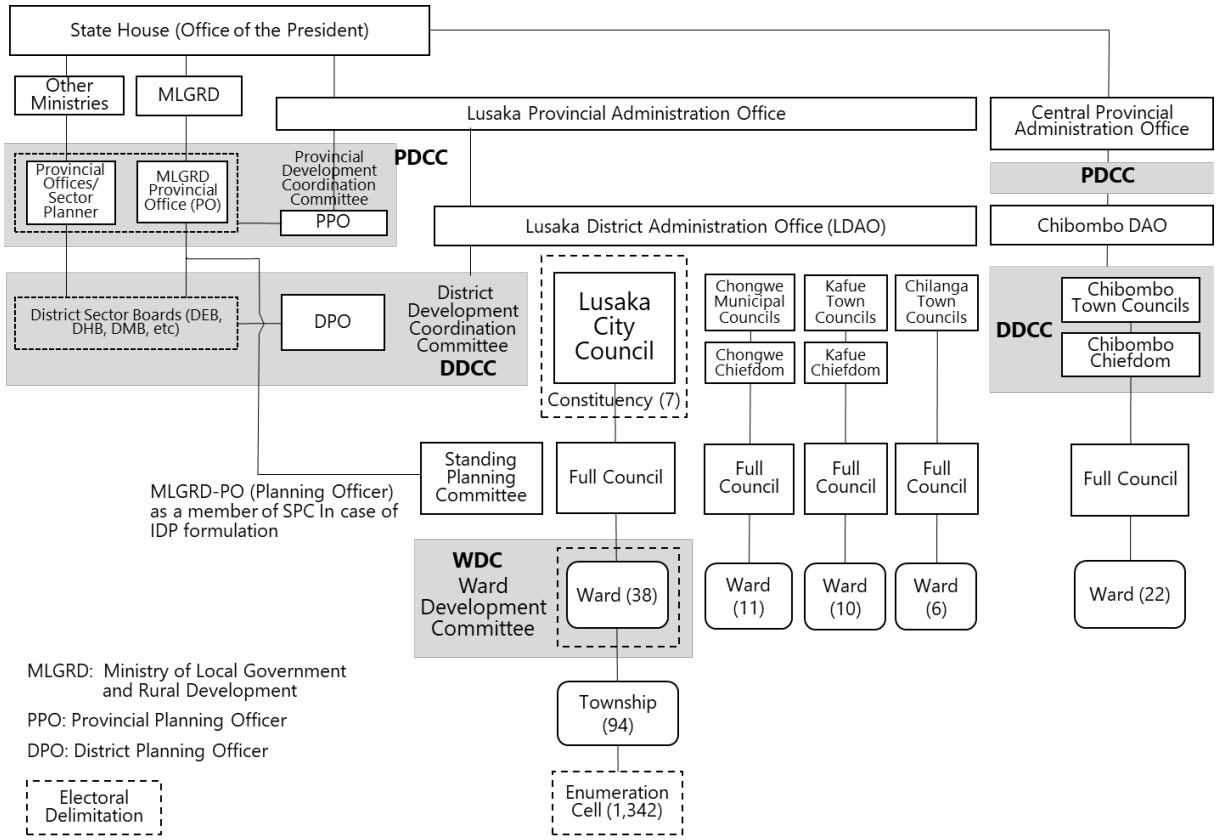
Figure 8.1.1 Location of Lusaka City with Neighbouring Districts in Greater Lusaka

8.1.2 Coordination between Relevant Administrative Bodies

For the coordination of administrative services and management at sub-national level, in addition to vertical coordination between the central and sub-national organs, there are two types of horizontal coordination systems: coordination between sectors in planning and implementation, and coordination between central governmental outlets and local government authorities. At the provincial level, the Provincial Development Coordination committee (PDCC) of provincial office plays the role of coordinator, and at the district[6] level, District Development Coordination Committee (DDCC), chaired by District Commissioner, coordinates between Planning Officers (POs) from various ministries and agencies and local governments. At the local government (or the council[7]) level, in addition to Standing Planning Committee for each council, there are Ward[8] Development Committees (WDCs), functioning to listen to and coordinate the views of the community. (JICA 2022[9])

The following Figure illustrates relationships among relevant local administrations and organizations for planning and management in the case of Lusaka City and its surroundings. Here, it should be noted that there is no statutory organization for cross-provincial coordination.

6 "District " means an administrative unit of a Province. (Constitution of Zambia (Amendment), 2016)
7 "Council" includes a city, municipal or town council. (Constitution of Zambia (Amendment), 2016)
8 "Ward" means a unit into which a district is divided for purposes of electing councillors. (Constitution of Zambia (Amendment), 2016)
9 JICA (2022) *Data Collection Survey on Urban Development and Urban Transport in Lusaka City: Final Report*



Source: : JICA (2022) with additions and updates by JICA Expert Team (2024)

Figure 8.1.2 Administrative Bodies Relevant to the Operation of Greater Lusaka, with Sub-structures of Lusaka City Council and Other Councils

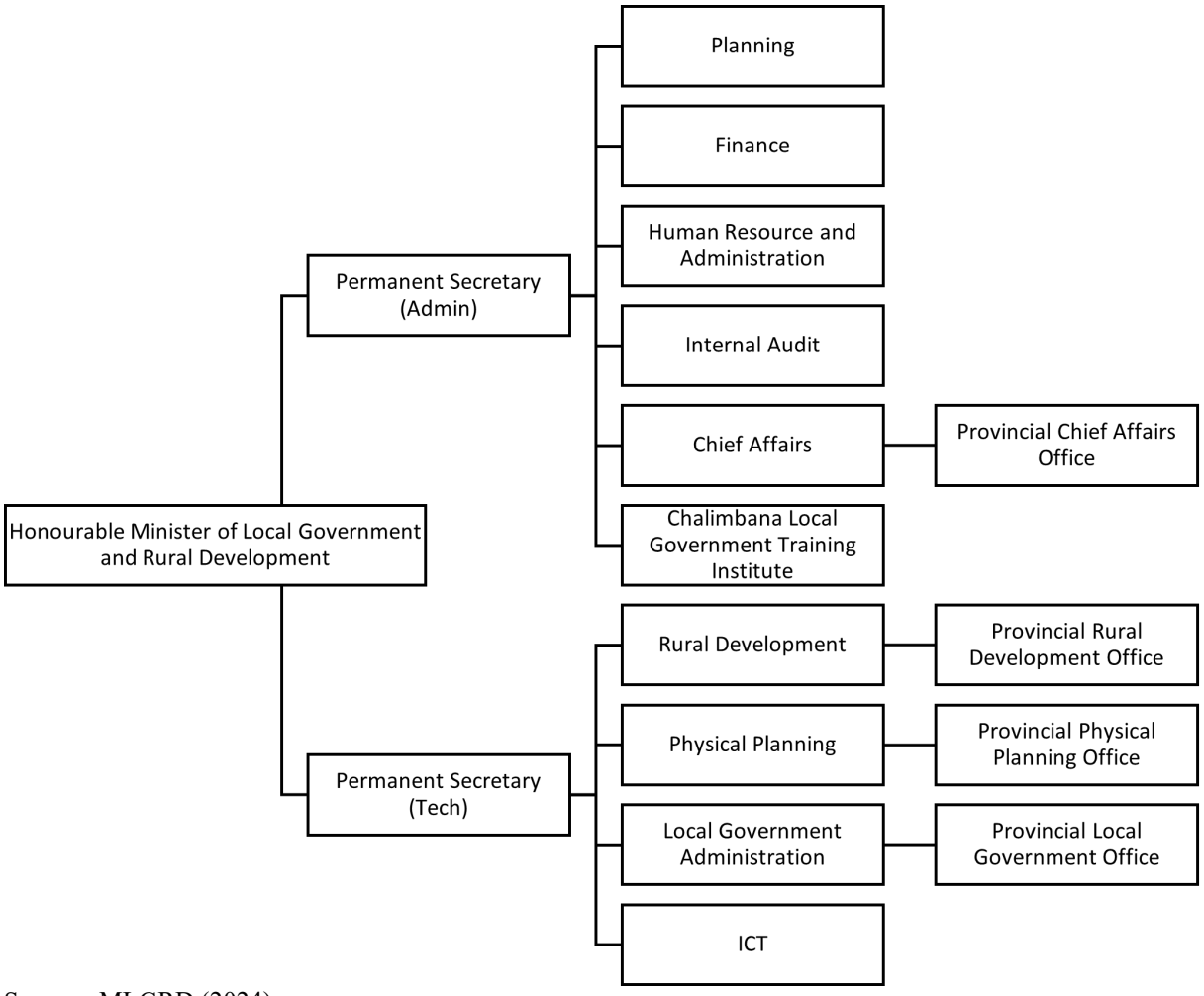
8.1.3 Organisational Outlines of the Main Relevant Administrative Bodies

(1) Ministry of Local Government and Rural Development (MLGRD)

The Ministry of Local Government and Rural Development (MLGRD) is charged with the responsibility of promoting a decentralised and good local governance system, facilitating delivery of quality municipal services in order to contribute to sustainable socio-economic development. The Ministry oversees the implementation of delegated functions and responsibilities by the local authorities[10] (MLGRD hp). Meanwhile, the Ministry does not have direct authority over the appointments and finances of officials belonging to a local authority (JICA 2022).

MLGRD consists of 10 Departments, 6 administrative and 4 technical. As the Figure below shows, 4 Departments, including the Department of Physical Planning, have provincial offices.

10 "local authority" means a council and it's secretariat consisting of persons appointed by the Local Government Service Commission, appoints the Town Clerk and Council Secretary of a local authority (Constitution of Zambia (Amendment), 2016). The Commission has personnel powers over the appointment of higher-level local government officials, while local governments have limited powers over the employment of lower level officials (JICA 2022).

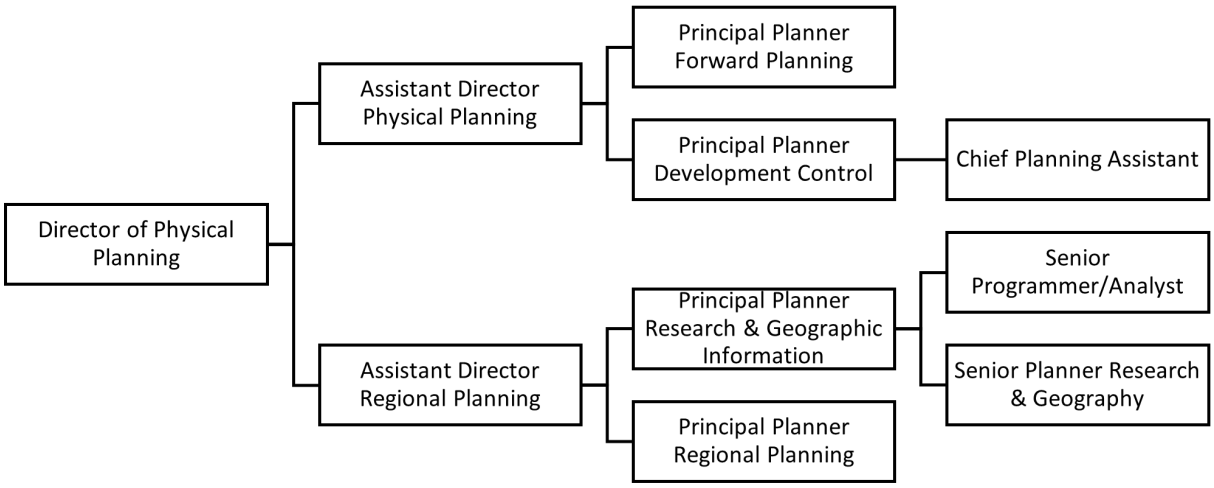


Source: MLGRD (2024)

Figure 8.1.3 Organigram of MLGRD

DPP is responsible for spatial planning in Zambia, and oversees the operations of all Provincial and Local Planning Authorities (DPP hp). In other words, Regional Development Plans, Integrated Development Plans, Local Area Plans, etc., developed by planning authorities[11] in accordance with the provisions of the Urban and Regional Planning Act 2015 (URPA2015). are all under the jurisdiction of DPP (JICA 2022). Accordingly, Great Lusaka's plan to be developed assumed to become a statutory Regional Development Plan should be supervised by DPP. Organisational structure of DPP is shown as follows.

11 "Planning authority" means a regional planning authority, provincial planning authority or local planning authority. Then "regional planning authority" means an authority established on an ad hoc basis to spearhead planning for that region with 12 members appointed by the Minister; "provincial planning authority" means an authority established for each Province with 11 members appointed by the Minister; and "local planning authority" means a local authority (i.e., a city, municipal or district council established under the Local Government Act) designated as a planning authority by the Minister, by statutory instrument. (Urban and Regional Planning Act, 2015)



Source: MLGRD (2024)

Figure 8.1.4 Organigram of Department of Physical Planning

(2) Sub-national Administrative Bodies of the Central Governments

1) Provincial Administration

According to the Constitution of Zambia (Amendment), 2016, "Provincial administration" means the administrative secretariat consist of the Provincial Minister, a Provincial Permanent Secretary and other staff. Provincial administration is an extension of the Central Government (Cabinet Office) at provincial level and is responsible for administration and coordinating effective implementation of national programmes and policies in the province. A provincial administration coordinates, supervises and provides policy guidance on national programmes and initiatives in order to ensure their effective implementation at provincial, district and sub-district levels (Muchinga Provincial Administration hp). The provincial-level administrative services vary according to the characteristics of each province, but in principle there are five service areas: 1) community development and social services; 2) natural resources management; 3) economic development; 4) district administrative services; and 5) general administrative management (JICA 2022).

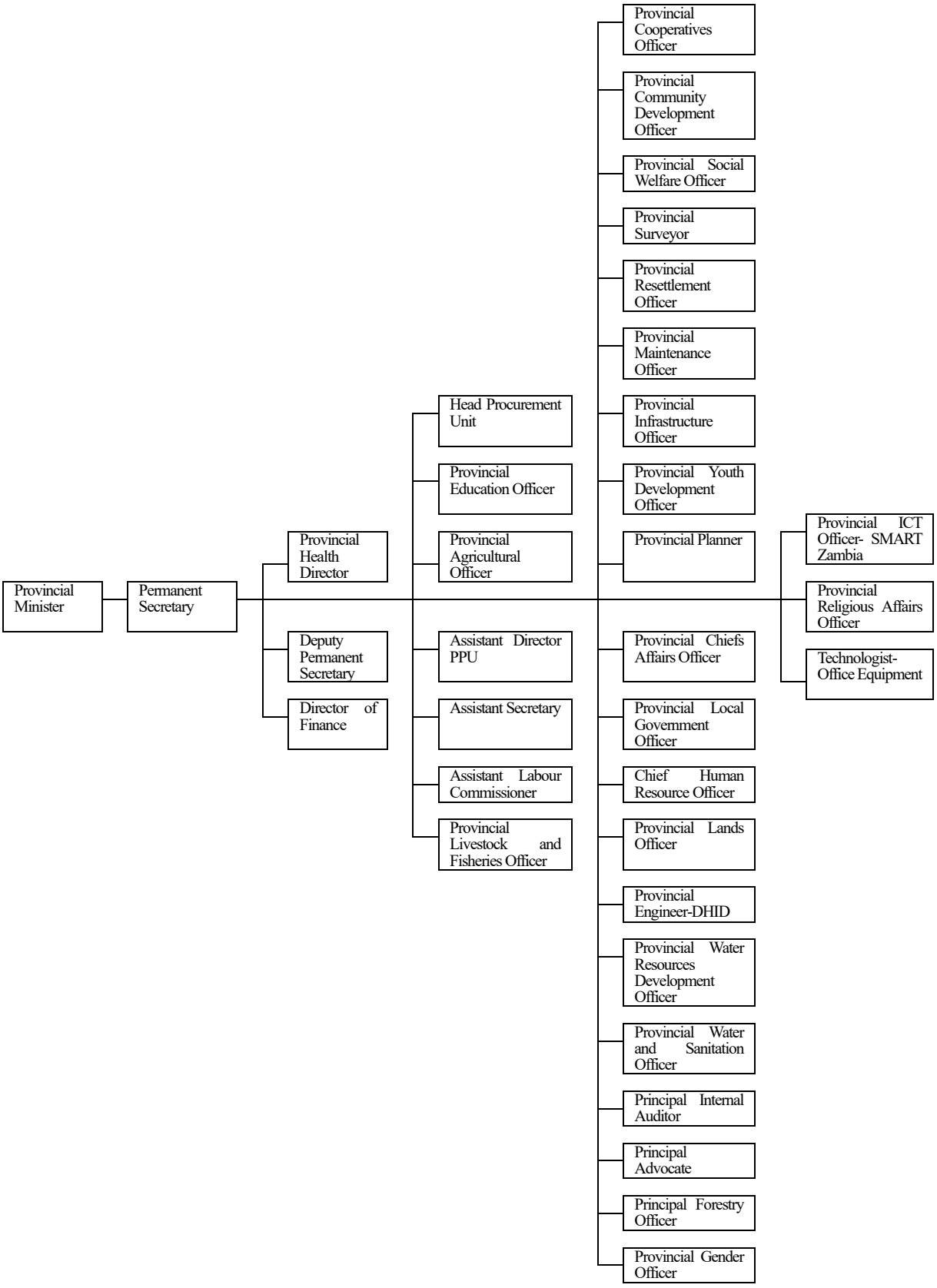
Physical Planning is one of the duties of Provincial Administration prescribed by the URPA2015 (also Town and Country Planning Act (TCPA) formerly), and when performing its duty, the Provincial Administration is referred to as Provincial Planning Authority (URPA2015).

According to URPA2015, responsibilities of Provincial Planning Authorities, which is responsible for all planning activities for the province, include, among others:

(a) To monitor and advise on the planning, drafting, adoption and review of integrated development plans and local area plans;
(b) To facilitate the coordination and alignment of:
    i) the integrated development plans of local planning authorities within the Province; and
    ii) the integrated development plans and local area plans of local planning authorities with the National Planning Framework and regional development plans;
(c) To take appropriate steps to resolve disputes or differences relating to the planning, drafting, adoption or review of integrated development plans and local area plans between local planning authorities in the Province, as may be prescribed, and refer the disputes that are not settled to the Minister;

(d) To assess integrated development plans and local area plans in terms of adherence to the principles, requirements, standards and planning guidelines provided for under this Act;
(e) To oversee all planning activities in the Province.

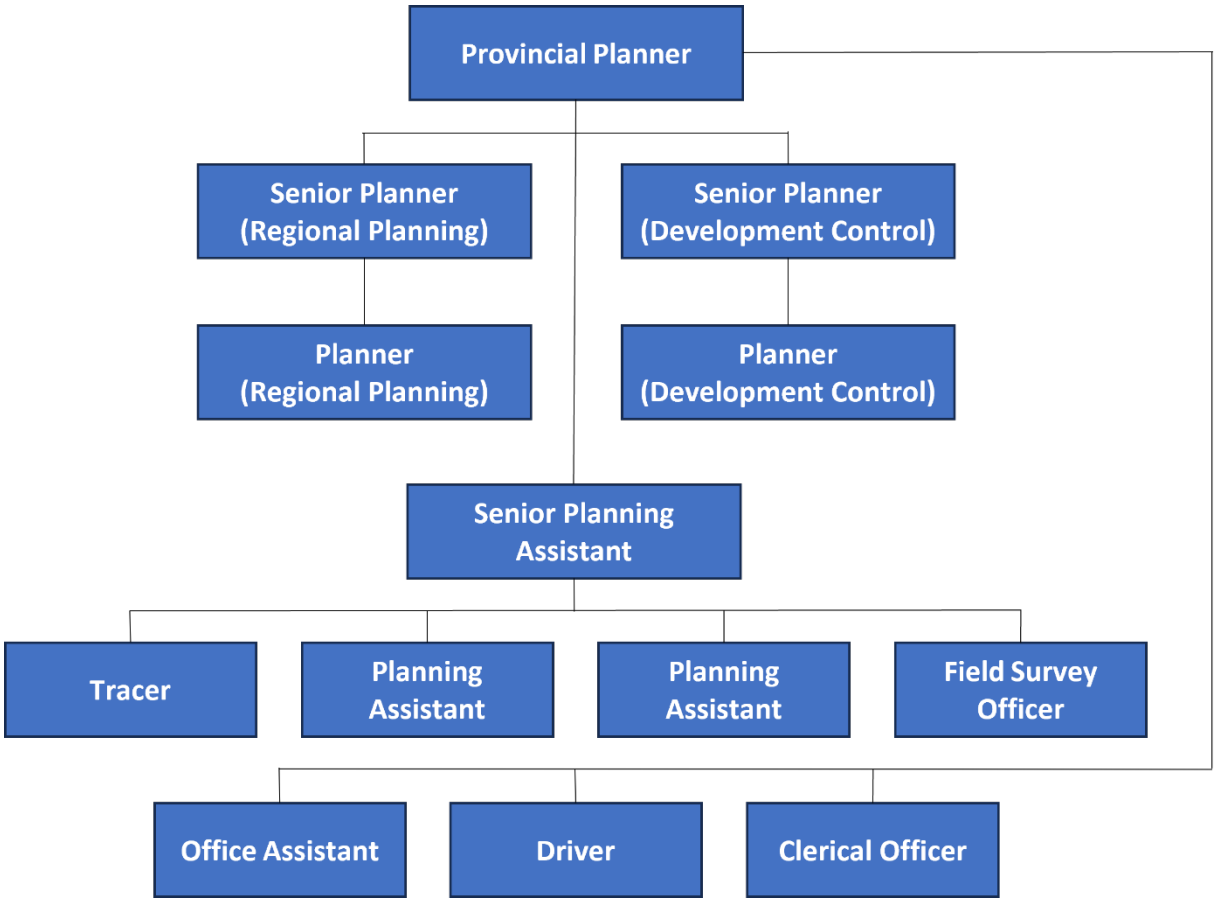
The following Figure is the general organisational structure of Provincial Administrations including Lusaka and Central Provincial Administrations.



Source: Central Province Provincial Administration (CPPA) (2024)

Figure 8.1.5 General Organogram of a Provincial Administration

Including Lusaka and Central Provincial Planning Authorities, general organisational structure of a Physical Planning Department of Provincial Administration can be described as follows.



Source: CPPA (2024)

Figure 8.1.6 General Organogram of a Physical Planning Department of Provincial Administration

Regarding the number of technical staff, inquiries in November 2024 made by JET to Lusaka and Central Provincial Administrations indicated that each Administration has about 30 to 50 technical staff in physical planning department and various engineering works departments/offices, as shown in the Table below.

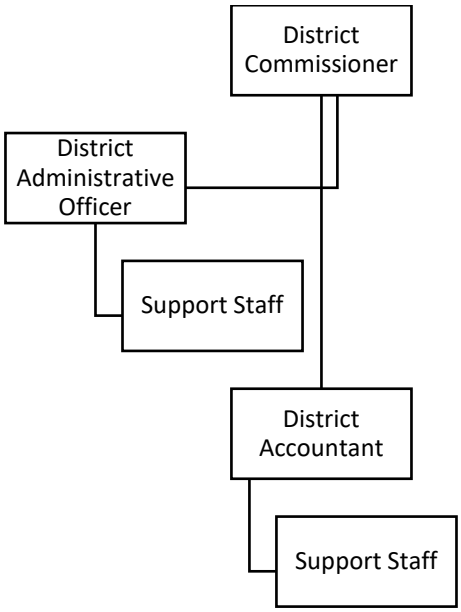
Table 8.1.2 Number[*1] of Technical Staff and Building Inspectors in Urban Planning/Management-Related Departments, Lusaka and Central Provincial Administrations

Public Authority	Division	Technical Staff					Building Inspector
		Total	Planner[*2]	Architect	Engineer	Surveyor	
Lusaka Province Provincial Administration (LPPA)	Department of Physical Planning (DPP)	6	6 (including 1 designated planning inspector)	0	0	0	0
	[DPP and related departments/ offices[*3]]	[49]	[11]	[2]	[30]	[6]	0
Central Province Provincial Administration (CPPA)	DPP	5	5 (including 1 designated planning inspector)	0	0	0	0
	[DPP and related departments/ offices[*3]]	[28]	[5]	[1]	[17]	[7]	0

*1 The numbers of this Table does not include those who are in assistant and part-time positions because both LPPA and CPPA do not employ such staff.
*2 Planners include physical, environmental and socio-economic planners.
*3 The related departments/offices include: Rural Development Provincial Office; Water Resources Development Provincial Office; Water Supply and Sanitation Provincial Office; Public Infrastructure Department/Provincial Office; Preventive Maintenance Service Department/Provincial Office; and Ministry of Lands and Natural Resources/Regional Survey Office.
Source: JICA Expert Team (2024)

2) District Administration

According to the Constitution of Zambia (Amendment), 2016, "district" means an administrative unit of a Province. As a subordinate body of the Provincial Administration, District Administrations (or district offices) are responsible for the management of administrative affairs at the district level (JICA 2022). The general organisational structure of a District Administration can be drawn as the following Figure and, as the Figure shows, District Administration doesn't have any physical planning-related function.



Source: Chibombo Town Council (2024)

Figure 8.1.7 General Organogram of a District Administration

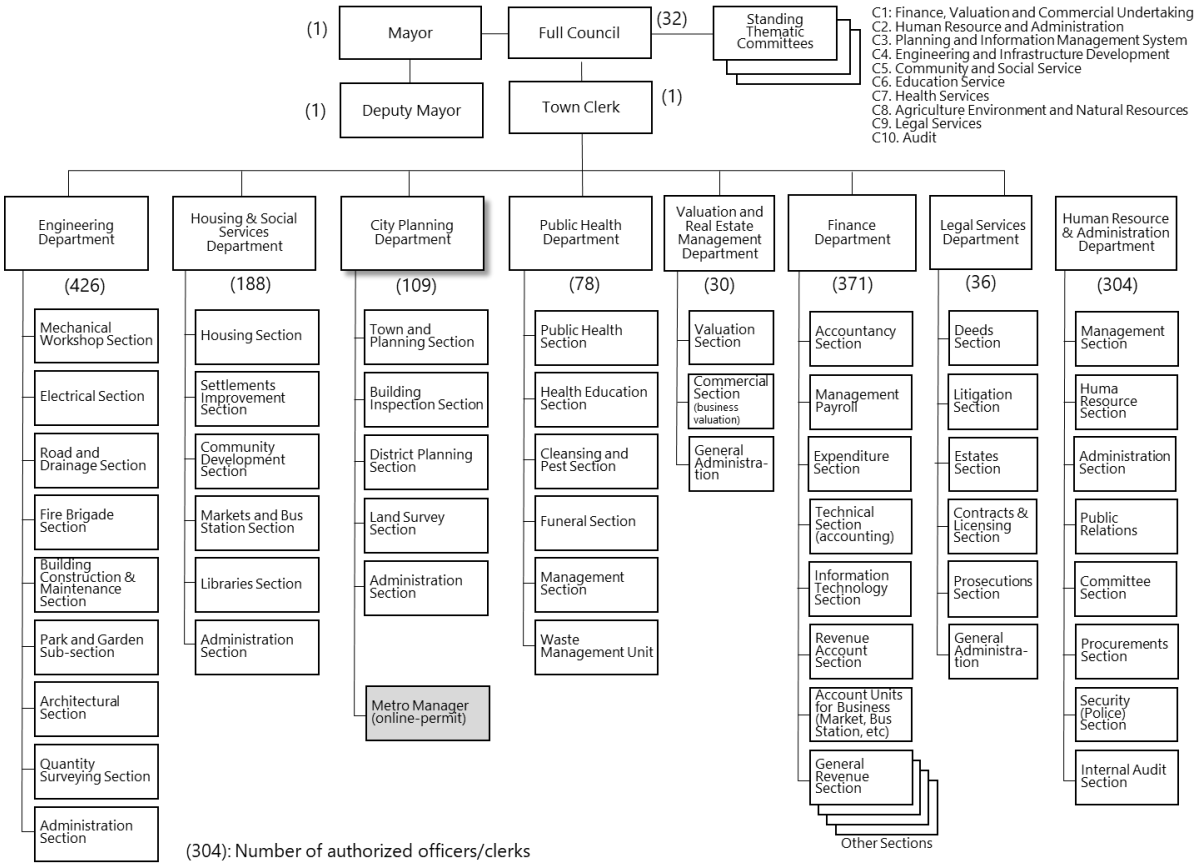
(3) Local Governments

1) Lusaka City Council

Lusaka City Council (LCC) comprises a political and policy making side on one hand, and an administrative arm that executes policy on the other. The political side led by the mayor consists of all the 6 elected members of Parliament from the constituencies in Lusaka and 33 ward councillors as well as 2 representatives appointed by all the chiefs [12] in Lusaka. The administrative part is headed by the Town Clerk who oversees 8 directors representing 8 departments (see organigram in Figure 8.1.5). (Lusakatimes.com 2018)

As a planning authority designated by the Minister (MLGRD) for urban development planning and management of the entity, there are 3 important departments: City Planning Department, Housing and Social Service Department, and Engineering Department. The City Planning Department as an executive office has responsibilities to provide urban development plans including Integrated Development Plan (IDP), manage land developments and constructions, and report to the Full Council through technical approval by a Standing Planning Committee for decision making in development management[13]. (JICA 2022)

12 " chief " means a person bestowed as chief and who derives allegiance from the fact of birth or descent, in accordance with the customs, traditions, usage or consent of the people in a chiefdom.
13 The Full Council is to award approvals for development plans and relevant urban-related decision, while the standing committee for planning and information management appraises technically and report them in case of complicated issues to the Full Council.

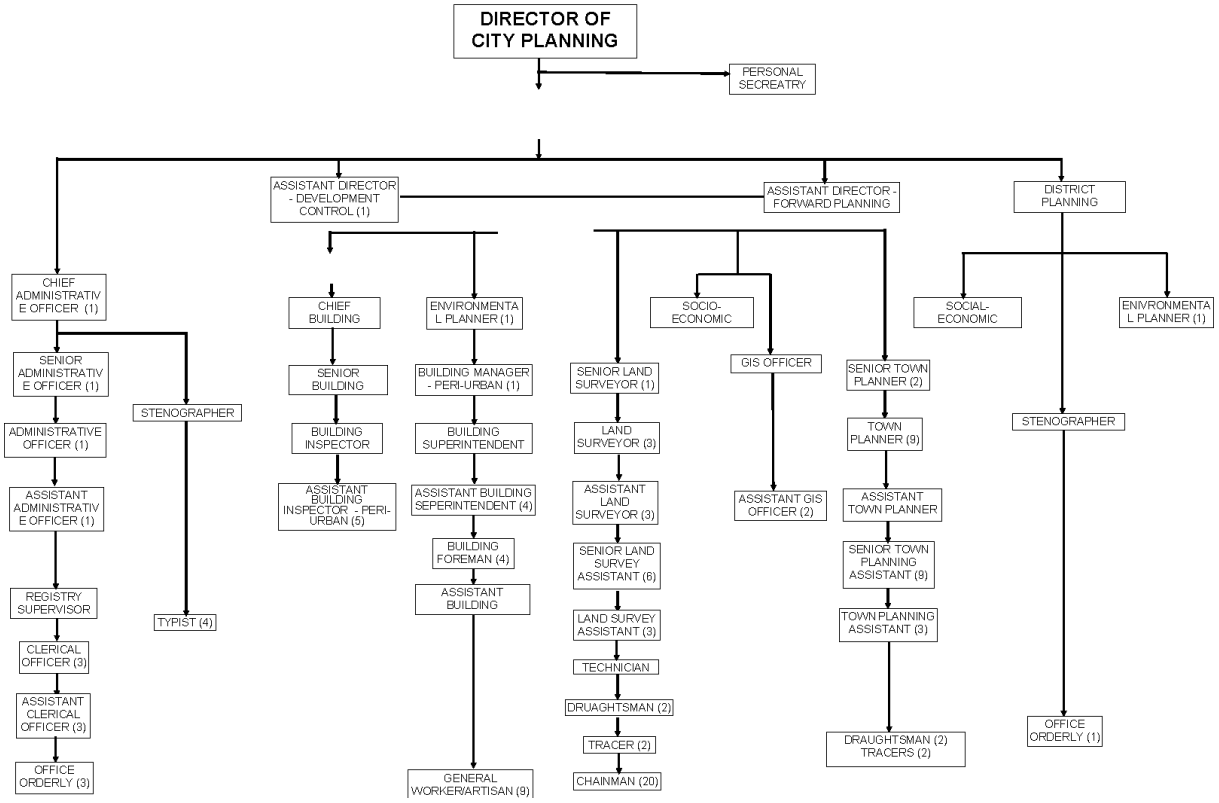


Source: JICA (2022)

Figure 8.1.8 Organigram of Lusaka City Council

The City Planning Department is in charge of permission and approval for land development and building activities, among others, and formulation of Integrated Development Plan. The Department comprises the following 5 sections: Town and Planning Section (24 staff), Building Inspection Section (31 staff), District Planning Section (10 staff), Land Survey Section (17 staff), and Administration Section (27 staff). (JICA 2022)

Detailed staffing of the Department is shown in the Figure below.



Source: Lusaka City Council (Reprinted from JICA (2023)[14])

Figure 8.1.9 Organigram of City Planning Department, LCC

As another statistics, regarding the number of technical staff in departments related to urban planning and management, LCC responded to the JET in November 2024 that there were 60 technical staff under the Department of City Planning and the Department of Engineering Services.

Table 8.1.3 Number*1 of Technical Staff and Building Inspectors in Urban Planning/Management-Related Departments, LCC

Public Authority	Division	Technical Staff					Building Inspector
		Total	Planner*2	Architect	Engineer	Surveyor	
Lusaka City Council	Department of City Planning (DCP)	41	38 (including 3 appointed and 15 part-time planning inspectors)	0	0	3	12
	[DCP and Department of Engineering Services]	[60]	[38]	[6]	[13]	[3]	[12]

*1 The numbers of this Table include those who are in assistant and part-time positions.
*2 Planners include physical, environmental and socio-economic planners.
Source: JICA Expert Team (2024)

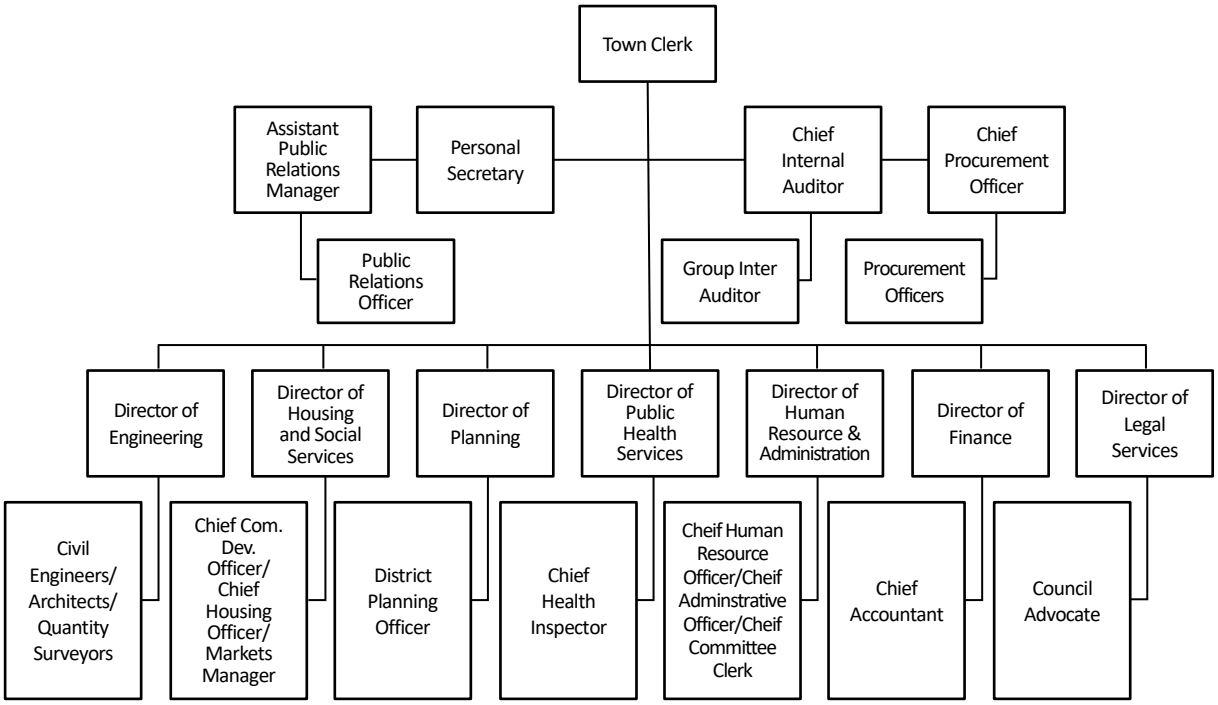
[14] JICA (2023) *Detailed Planning Survey for the Project for the Formulation of Comprehensive Regional Development Plan for Greater Lusaka*

2) Municipal and Town Councils

Chongwe Municipal Council (Lusaka Province)

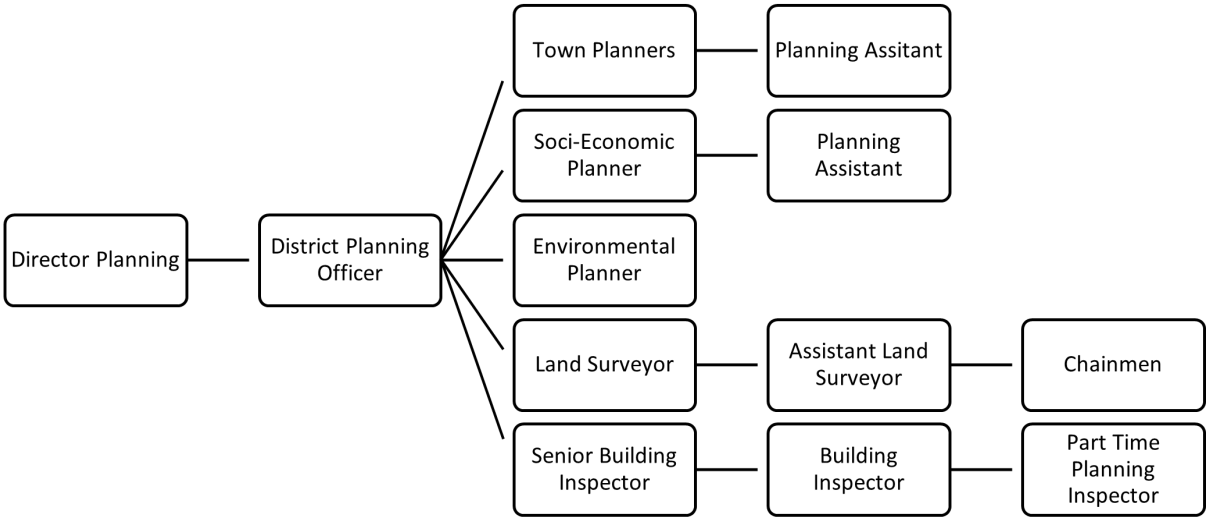
This local government, which belongs to the category of Municipal Council (having a population size between 30,000 and 100,000) under Zambia's 3 local government categories, has 7 departments headed by directors. Planning Department headed by the Director of Planning is one of them.

Organisational structure of a municipal council and its Planning Department are shown in the following two Figures respectively.



Source: Chongwe Municipal Council (2024)

Figure 8.1.10 General Organigram of a Municipal Council



Source: Chongwe Municipal Council (2024)

Figure 8.1.11 General Organigram of Planning Department, a Municipal Council

As for the number of technical staff, Chongwe Municipal Council responded to JET in November 2024 that there were 18 technical staff in the Department of Planning and the Department of Engineering Services as shown in the Table below. The staff number of the Municipal Council of the two Departments is about one quarter of the corresponding two Departments of LCC.

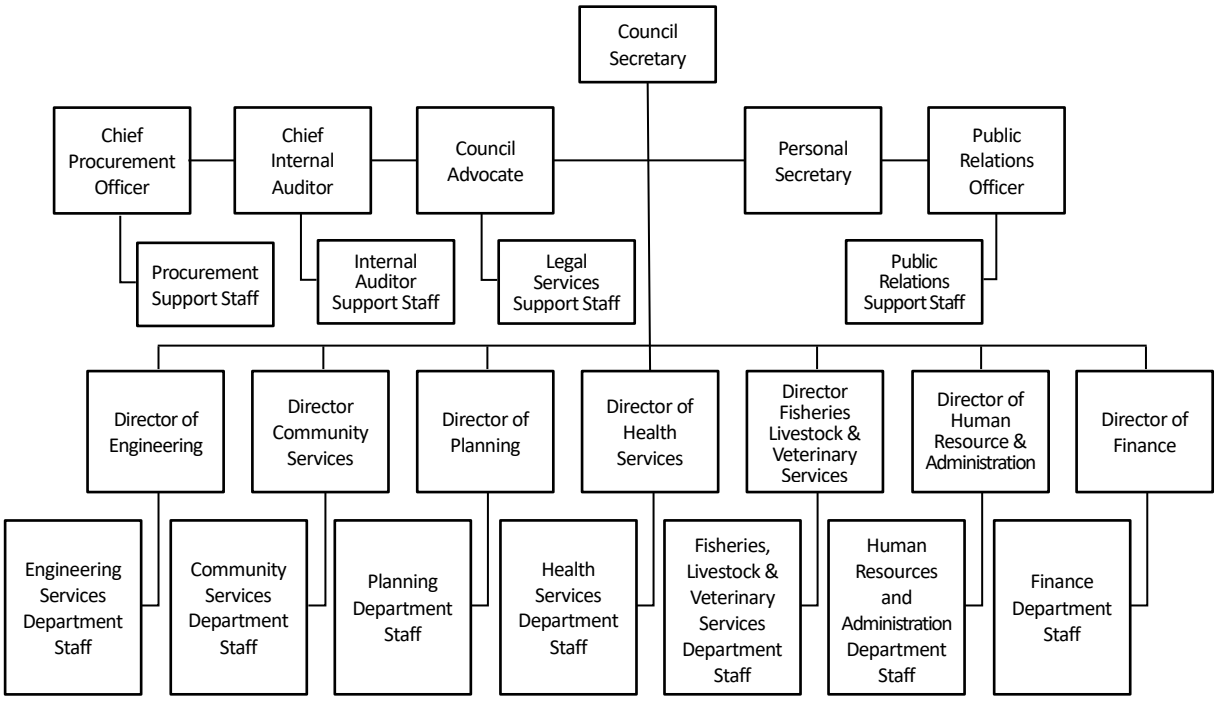
Table 8.1.4 Number*1 of Technical Staff and Building Inspectors in Urban Planning/Management-Related Departments, Chongwe Municipal Council

Public Authority	Division	Technical Staff					Building Inspector
		Total	Planner*2	Architect	Engineer	Surveyor	
Chongwe Municipal Council	Department of Planning (DP)	14	10 (no planning inspector)	0	0	2	2
	[DP and Department of Engineering Services]	[18]	[10]	[1]	[5]	[2]	[2]

*1 The numbers of this Table include those who are in assistant and part-time positions.
*2 Planners include physical, environmental and socio-economic planners.
Source: JICA Expert Team (2024)

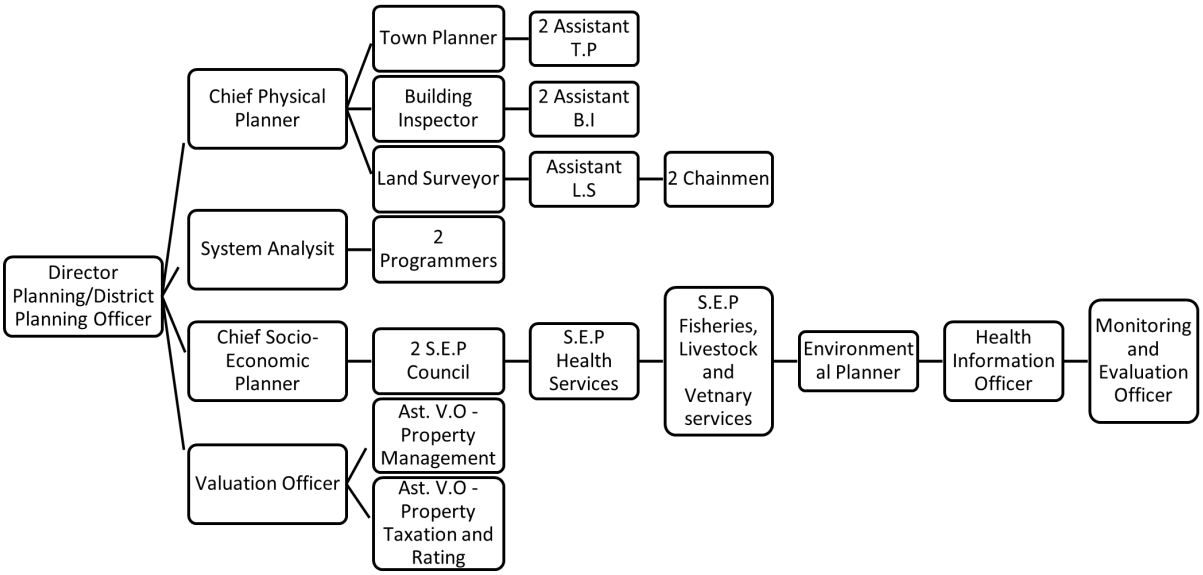
Kafue, Chilanga and Chibombo Town Councils

Local governments, which belong the category of Town Council (locating in rural area) under Zambia's 3 local government categories have generally the following organisational structure, including planning department.



Source: Cabinet Office and Local Government Service Commission (2023) "Approved Final Restructuring Report for Town Council"

Figure 8.1.12 General Organigram of a Town Council



Source: Cabinet Office and Local Government Service Commission (2023)

Figure 8.1.13 General Organigram of Planning Department of a Town Council

As for the number of technical staff, Kafue, Chilanga and Chibombo Town Councils responded to JET as shown in the following Table. In short, each Town Council has 10 to 15 technical staff, which is slightly smaller than Chongwe Municipal Council.

Table 8.1.5 Number*1 of Technical Staff and building inspectors in Urban Planning/Management-Related Departments, Kafue, Chilanga and Chimombo Town Councils

Public Authority	Division	Technical Staff					Building Inspector
		Total	Planner*2	Architect	Engineer	Surveyor	
Kafue Town Council	Physical Planning Department (PPD)	8	6 (no planning inspector)	0	0	1	1
	[PPD and Department of Engineering Services (DES)]	[11]	[6]	[1]	[2]	[1]	[1]
Chilanga Town Council	PPD	8	4 (4 appointed planning inspectors)	0	0	1	3
	[PPD and DES]	[13]	[4]	[0]	[5]	[1]	[3]
Chibombo Town Council	PPD	7	5 (no planning inspector)	0	0	1	1
	[PPD and DES]	[16]	[5]	[0]	[9]	[1]	[1]

*1 The numbers of this Table include those who are in assistant and part-time positions.
*2 Planners include physical, environmental and socio-economic planners.
Source: JICA Expert Team (2024)

8.2 Legal System for Regional Governance

8.2.1 Constitution of Zambia (Amendment), 2016

Governance system of Zambia, composed of national, provincial, and local governments is defined in the Constitution of Zambia (Amendment), 2016. The following are the summary of sub-national governance systems stipulated in the Constitution:

- A provincial government shall be managed by an administrative secretariat, consisting of: a Provincial Minister; a provincial Permanent Secretary; and other staff. The Permanent Secretary shall be appointed by the President and the person has overall responsibility of the Province and perform other functions.
- A Province shall consist of number of districts, and a district shall consist of number of wards.
- The local government system shall be based on democratically elected councils, and there shall be a council for each local authority. A council shall consist of the councillors and a councillor shall be elected by registered voters resident within the district.
- A council shall consist of: persons elected; a mayor (a elected mayor of a city or municipal council) or council chairperson; and not more than three chiefs elected by the chiefs in the district.
- A local authority shall administer the district and oversee programmes and projects in the district. There shall be a Town Clerk or Council Secretary for each local authority and other staff of the local authority.

As the Annex to the Constitution, there is a list entitled "National, Provincial and Local Levels of Devolved Government" and "A. Exclusive national functions", "B. Concurrent national and provincial functions", and "C. Local Authorities" are enumerated.

Also, the Constitution states that “functions, responsibilities and resources from the national Government and provincial administration are transferred to the local authorities in a co-ordinated manner”.

8.2.2 Local Government Act, 2019

The law defines the three types of local authorities stating that "The Minister may, by statutory order, establish for any district, a city council, municipal council or town council" (Local Government Act, 2019). Each of the 116 districts covering the whole country has a local authority with administrative area covering each district[15]. All the local authorities were established in accordance with statutory orders entitled “Local Government (Establishment of Council(s)) Order” (OECD/UCLG 2022: Blackhole Publishing hp).

According to the Act, while the basic principle is that "A local authority shall discharge functions conferred on it by this Act within the area of that local authority", but a local authority "may, with the approval of the Minister discharge that function outside the area of that local authority". The latter part could be worthy of attention when considering the role of LCC, central or mother city of Greater Lusaka, in urban management of Greater Lusaka as a whole, while more than half of the local governments within Greater Lusaka, including LCC itself, showed negative opinions about such a spearheading role of LCC in the basic survey conducted

15 “t(T)he name of the council shall include the name of the district”. (Local Government Act, 2019)

by JET in August 2023 (i.e., the same survey stated in the previous section 8.1).

"Without prejudice to the Constitution, the functions of a local authority within an area" are set out in the First Schedule of the Act. Those functions span: general administration, advertisements, agriculture, public street and street, community development, public amenities, public health, public order, registration, sanitation and drainage, and additional devolved functions of a local authority.

The Table below summarises the division of roles between central government, local governments, and parastate organisations in the provision of public urban services, including recent further devolution from central to local governments by the Government Gazette No. 7039 in September 2021. It is observed that, as a result of increased devolution of powers in areas traditionally handled by central government, local governments nowadays bear heavy responsibilities for the provision of diverse services including: public health; housing and urban planning, control; road and motor transport; environment and public sanitation; culture, sports and leisure; and water supply and sewerage system.

As challenges or difficulties in fulfilling the responsibility to provide diversified urban services, the local governments in the Project areas mentioned variously, in the basic survey conducted by JET in August 2023: financial problems; technical problems; human resource problems, including number of staff; lack of equipment and facilities; lack of land for public works; governance system problems such as ineffective top-down planning and budgeting system; rapidly growing population as service target; rapid growth of informal settlements and urban sprawl and associated weak local governments' authority to control urban development; lack of coordination between local authorities and service providing entities (e.g., in water supply); and impacts of environmental/climate changes.

Table 8.2.1 Urban Service Delivery and Responsibility by Relevant Administrations

Category	Urban Service	CG	LG	PO	Category	Urban Service	CG	LG	PO
General Administration	Police	●			Road and Transport	Roads	○	○	●
	Fire protection		●			Transport	○	○	●
	Civil protection	●				Traffic control/parking	○	◎	○
	Criminal justice	●				Urban roads	○	○	○
	Civil status register	●				Railways	○		●
	Statistical office	●				Port (inland water)	○		●
	Electoral register		●	○		Airport	○		●
Education	Pre-school		●		Environment and Public Sanitation	Public sanitation		●	
	Primary school	●				Waste management		●	
	Secondary school	●				Cemetery		●	
	Technical vocation	●		○		Slaughterhouse	○	○	
	Higher education	●		○		Environment protection	○	○	○
	Adult education	●		○	Culture, Sports and Leisure	Theater and concerts	○	○	
Social Welfare	Family welfare	●		○		Museums, libraries	○	●	
	Social welfare home	●		○		Parks and open spaces	○	○	
	Social security	●		○		Recreation and sports	○	●	
Public Health	Primary health care		◎		Infrastructure	Energy and electricity	○		●
	Hospital	●	◎			Water supply, sanitation		○	●
	Caregiving service	○	○			Sewerage system		○	●
	Health protection	○	○			Stormwater drainage		◎	
Housing and Urban Planning, Control	Housing	○	○		Economic Development	Agriculture, forestry, etc	●	△	○
	Urban planning	○	○				●	△	○
	District planning		◎			Trade and industry	●	△	○
	Development control		◎			Tourism	●	△	○

Legend: ●= Main service、○= Common or sharing service、△=discretionary service、◎=service devolution by the Gazette 7039, CG = Central Government, LG = Local Government, PO = Parastatal Organization
Source: JST arranged based on the Country Profile 2017-18 / The Local Government System in Zambia, / Commonwealth Local Government Forum

Note: This Table includes common or sharing services on District Planning and Development Control as the Provincial Planner do perform these functions at District level for Local Authorities (under CG).
Source: JICA (2022)

8.2.3 Urban and Regional Planning Act, 2015

Urban and Regional Planning Act, 2015 (URPA2015) was enacted incorporating and repealing two acts: Town and Country Planning Act 1962 (TCPA1962) and Housing (Statutory Improvement Area) Act, 1975 (HSIA1975).

URPA2015 is composed of 9 Parts, specifically: Preliminary (Part I), Planning Management and Administration (Part II), Planning Framework and System (Part III), Improvement Areas (Part IV), The Planning Process (Part V), Planning Applications and Permission (Part VI), Planning Appeals Tribunals (Part VII), Planning Controls and Compensation (Part VIII), and General Provisions (Part IX).

Among the Parts, Part II defines the role of the Minister (MLGRD) and the functions of the Director of Planning in the Ministry (MLGRD) and planning authorities -- composed of regional planning authorities, provincial planning authorities and local planning authorities: Part III defines the system of development plans – composed of National Planning Framework, regional development plans, provincial development plans, integrated development plans, local area plans and sectoral plans: Part VI specifies the system of planning permission by way of development permits.

Comparing with TCPA 1962, the key features of URPA2015 can be summarised as follows.

Table 8.2.2 Key Features of Urban and Regional Planning Act, 2015 (UPRA2015)

Fundamental basis
- Pursuant to decentralisation, less central government intervention in planning and much greater devolution of planning and management to local authorities

Plan content
- Inclusion of customary area into Integrated Development Plan (IDP) area from the perspective of preventing disorderly land development, while requiring planning agreements with chiefs
- Incorporation of improvement areas for informal settlements, which were previously designated by the Ministry and dealt with by HSIA1975 – i.e., a law with specific purpose "to provide for the control and improvement of housing in certain areas" – separate from TCPA1962, into ordinary planning target areas under the jurisdiction of local authorities for the promotion of improvement
- Integration of Strategic Plan (5-year socio-economic plan) and Development Plan (physical plan) into IDP from the perspective of the coordination of physical plan with economic development and public finance, etc.
- Introduction of two-tiered development plan system of Integrated Development Plan and Local Area Plan, at the local government level, instead of previous single-tiered development plan
- Addition of environmental and social considerations such as environmental assessment, gender equality as the necessary planning responses to address

Operation of plans
- Establishment of provisions for the implementation of Integrated Development Plan and Local Area Plan based on the increased recognition on the importance of plan implementation
- Inclusion of requirement of proposing monitoring and review mechanism, including key performance indicators, as a part of implementation programme for an IDP
- Introduction of provisions on public consultation and participatory approaches in planning process

Plan approval process
- Change in planning process of development plan at local level: from the approval by the Minister after preparation by a planning authority; to the approval by the Minister through multiple seps of preparation by a local/provincial planning authority, public consultation and participation, and adoption by the local authority

Source: JICA (2022): TCPA1962: URPA2015

The Table below is the excerpt of what URPA2015 states about regional development plan. In implementing this Project, the following stipulations of URPA2015, at least, should be taken into account:

- Coordination body for plan preparation, or regional planning authority, is an ad hoc body and no clear stipulation is made in the Act about the management body of formulated plan -- while MLGRD interprets that the Minister of Local Government and Rural Development, using the powers given to the person, a management entity for the execution of an approved plans can be established by the Minister's statutory instrument;
- Core plan contents (matters which may be dealt with) are perceived as the matters of national interest rather than region-specific interest.
- The National Planning Framework should be a guideline for plan preparation, but it has not yet been published;
- Provincial planning authority, not regional planning authority, is given the role of coordinating regional development plan and development plans of local authorities.

The membership of the Regional Planning Authority is not much different from that of the Provincial Planning Authority -- i.e., the difference being the addition of 'a representative of each of the planning authorities in the region' and the participation of an environmental management specialist in place of a public health specialist. Thus, experience of operating Provincial Planning Authority seems to be able to utilise for the operation of Regional Planning Authority.

Table 8.2.3 Statements about Regional Development Plan in URPA2015

Definition	"regional development plan " means a plan for two or more districts, two or more provinces or parts of different provinces for coordinating and facilitating the synergy of transportation and the institutional, environmental, infrastructural and socioeconomic activities for the attainment of sustainable development. [Section 2]
Approval body	the Minister (of Local Government and Rural Development) [Section 7(2)(j)]
Coordination body for plan preparation	An ad hoc regional planning authority, constituted by the Minister to spearhead planning for that region and consist of the following members appointed by the Minister: (a) five members qualified in planning, environmental management, law, land surveying, architecture or any other related or relevant field, nominated by the provincial planning authorities in the region; (b) a representative of each of the planning authorities in the region; (c) two representatives of the chiefs in the region, nominated by the Chiefs in the region; (d) two representatives of business organisations operating in the region; and (e) two representatives of the civil society organisations operating in the region [Section 9(2)]
Plan content (matters which may be dealt with)	(a) the use and development of land that is within a prescribed distance from international borders; (b) the use and development of land within National Parks, heritage sites and areas of cultural significance; (c) the use and development of land reserved for national defence and security; (d) the use and development of land of strategic importance for biodiversity or food security; (e) the use and development of land contaminated as a result of industrial or mining operations; (f) he use and development of land in support of transportation infrastructure such as railway stations, airports and harbours; (g) the use and development of land for multifacility economic zones or industrial parks; (h) the use of land with natural resources of national interest and importance; and (i) any other matter the Minister may prescribe by statutory instrument. [Section 17]
Planning guideline for preparation	Included in the National Planning Framework [Section 15(3)], prepared by a Director of Planning in the Ministry [Section 16(3)], and approved by the Minister [Section 8(3)]
Body to deal with public consultation and participation process to draft plan	A regional planning authority [Section 40]
Coordination with the development plans of local authorities	A provincial planning authority shall facilitate the coordination and alignment of integrated development plans and local area plans with regional development plans: An integrated development plan shall be compatible with regional development plan. [Section 12(b)]
Coordination and management for implementing an approved plan*	The two bulletins on the coordination and management of an approved plan shall be dealt with by statutory instrument issued by the Minister. [Sections 7(2)(a) and 74(2)(h)]

* Interpretation by MLGRD
Source: JICA Expert Team (2024)

8.3 Urban Development Control System

8.3.1 Planning Permission and Development Permit

URPA2015 defines the system of planning permission, which is required to gain before carrying out development. Here, 'development' means, under the Act, the carrying out of any building, rebuilding, mining or other works or operations on or under land, including the subdivision of land or a change in the use of land. Planning permission shall be granted by way of development permits, which are granted for the development of land subject to such terms, conditions and limitations as may be specified, for such period as may be specified and for any part of the site.

Here, it is necessary to pay attention to the relationship between 'planning permission' and 'development permit'. URPA2015 stipulates that "planning permission" means permission granted to carry out development under section 49 of the Act and 'development permit' means a planning permission granted for the development of land under section 55. However, even referring to the 2 sections, exact relationship between planning permission and development permit does not become completely clear. In fact, the perception of the relationship between the two by the public bodies targeted by this Project varies, as follows. The latest Urban and Regional Planning (Development Plans Guidelines and Exempted Development Classes) Regulations, 2023 (URPR2023) uses another term 'building permission' in addition to 'planning permission' and 'development permit', adding complication in the use of terms. Accordingly, it seems necessary to standardise the definition of these terms when considering urban development management system for Greater Lusaka.

Table 8.3.1 District Councils' views on the Relationship between 'Planning Permission' and 'Development Permit'

Organisation	Planning Permission	Development Permit
LCC	• wider in terms of scope as it covers all permission relating to planning activities such as change of land use, sub-divisions, creation of plots	• exclusive to building and development only
Kafue Town Council	• permission that is received from the LPPA when a Local Authority recommends for an area to be approved for a certain proposed development	• permission given to a developer to allow him/her to develop a building after building plans meet all building standards at each stage
Chilanga Town Council	• a general terminology for all developments • may also include siting of temporal structures such as booths, containers, carwashes etc. which have conditions attached	• specific to buildings, change of land use and subdivisions

Source: JICA Expert Team (2024) (referring to answers to the JET-conducted basic survey in August 2023)

Referring to the articles of URPA2015 and its pursuant Urban and Regional Planning (General) Regulations, 2020 (URPR2020), procedures to gain a planning permission for a development permit is summarised in the following Table. As the Table shows, procedure for 'a major development or change of land use' and 'any other development' are not same, and application for the former requires additional steps related to 'notice of the intention to make the application for development permit'. The Second Schedule of URPR2020 set out 27 categories of 'major developments', which were prescribed by the Minister. Similarly, the Third Schedule of URPR2020 set out 16 categories of land use change which are exempted from planning permission in accordance with the prescription by the Minister. In addition, the Fourth Schedule of Urban and Regional Planning (Development Plans Guidelines and Exempted Development Classes) Regulations, 2023 (URPR2023) set out 6 development class groups (i.e., minors works; temporary buildings, structures and uses; development for industrial or commercial

purpose; agriculture; railways, aerodromes and communications; and utility providers), as well as certain level of internal/external alteration to a residential dwelling, which are exempted from obtaining development permit.

Table 8.3.2 Procedure of Planning Permission for a Development Permit

Process	Performer	In case of a major development or change of land use	In case of any other development
Application for determination whether development require planning permission	Applicant	✓ Not mandatory*	✓ Not mandatory*
Notice of the intention to make the application for development permit	Applicant	✓ At least 14 days before application	n.a.
Publication of the notice on receipt of the notice from the applicant	Planning authority	✓ 14 days	n.a.
Notice of intention to object for the grant of development permit	Any person	✓ not later than 30 days from the date of the publication of the notice	n.a.
Application for development permit	Applicant	✓	✓
Consideration of application for development permit	Planning authority	✓ within 90 days of receipt of an application	✓ within 28 days of receipt of an application
Grant or refusal of development permit (grant / conditional approval / deferment / rejection)	Planning authority	✓ within 90 days of receipt of application	✓ within 28 days of receipt of an application

* URPR2020 states that "A person who intends to develop a particular land may apply to a planning authority for a determination on whether or not a development of that land, building or structure requires a grant of planning permission".

Source: JICA Expert Team (2024) (referring to URPA2015 and URPR2020)

URPA2015 stipulates that a planning authority consider an application for a development permit taking into account:

- the social and welfare consequences which the development to be undertaken in terms of the development permits shall have for the residents of the district or local authority concerned;
- likelihood of the development to be undertaken to create a public nuisance or annoyance in the area;
- the suitability of the premises upon which the development is to be undertaken relating to the safety health and planning requirements in respect of accommodation and sanitary facilities; and
- likelihood of the proposed development to have adverse environmental effects – being assessed through consultation with the Environmental Agency.

In line with the consideration stated above, a planning authority may, when granting a development permit, impose conditions which:

- require the applicant to effect alterations or improvements to the premises relating to the standard of accommodation, facilities or amenities, the sanitary or safety arrangements or any other aspect of public convenience or health or police supervision of the premises concerned; or

- are necessary or desirable to protect public health and safety.

When considering applications for development permits, a planning authority is required to comply with the integrated development plan (IDP) and the local area plan (LAP). Then, concerning the consistency of the land use of a proposed development with the land use designation in IDP or local development plans, URPA2015 stipulates that:

- A planning authority may, where a person changes the use of land contrary to its designated use as provided in an IDP or LAP approved under this Act, charge such fees in respect of the changed use as it may determine and direct that the land be restored to its original use; or, alternatively.
- A planning authority shall, where the grant of a development permit for the change of land use requires a change to the land use designation provided for in an IDP or LAP, review or amend the IDP or LAP in accordance with the provisions of this Act.

Where planning permission is granted for the erection of a building, the grant of planning permission has to specify the purposes for which the building may be used.

8.3.2 Land Use Zoning

According to URPA2015, an IDP has to include, as content: a) a planning survey and issues report; b) a development framework report; c) an implementation programme; d) a report on public consultation; and e) appropriate diagrams and plans. Then as a part of the planning survey and issuer report, an IDP has to state the policy and proposals of the local authority in respect of 'the manner in which land in the area shall be used'. According to URPA2015 as well, a LAP has to provide for 'distinct land use standards and controls to be applied in different categories of areas' and 'the manner in which the land in the area is proposed to be used'.

As such, URPA2015 does not directly use or define the term of 'zoning' as a mechanism for land use regulation, but the terms 'the manner in which the land … to be used' and 'distinct land use standards and control …' implies the relationship with 'zoning'.

Seemingly responding to this implication, 'Guidelines for Integrated Development Planning', which were published in 2019 and comprise a part of National Planning Framework, directly use the term of 'zoning' in plural parts stating like:

- "The IDP must put in place a spatial or land use management framework which supports the achievement of the objectives and strategies. The Spatial Development Strategy will guide decisions in the IDP area that involve the use and development of land, or planning for future use and development of land. These decisions include:
  - ✓ Land use management decisions on applications for change of land use, such as rezoning and subdivision applications", etc.; and
- One of "Issues To Be Considered In Aligning Spatial Strategy With IDP Objectives, Strategies and Projects" is to "Develop land use management strategies which clearly reserve nodes for higher order uses" and "This may include the zoning of land for higher order activities". (Volume 3 of the Guidelines)

It should be noted here that, there is one exceptional use of the term 'zoning' in the 'saving and transitional provisions' of the URPA2015 stating that:

"Any acts, orders and conditions lawfully done, given or imposed under the provisions of the Town and Country Planning Act, the Housing (Statutory and Improvement Areas) Act or under

the provisions of any planning scheme, zoning scheme or zoning plan prepared under those Acts before the commencement of this Act shall remain in force and be deemed to have been lawfully done, given or imposed under this Act ...".

In the actual process of development permit, the term 'zoning' is still in use as seen in the plural forms[16] designated by URPR2020, which require to write "a description of the existing land use zoning and the proposed new land use zoning".

This mixed situation of using application forms seemingly reflecting the transitional status from the previous Act to the new Act (URPA 2015) was clearly remedied by the issuance of URPR2023.

URPR2023 states that 'an integrated development plan and a local area plan shall contain a land use map indicating the manner in which land is proposed to be used or developed ... in accordance with the zones specified in the Second Schedule', followed by stating that:

(a) a planning authority may grant a development permit for development comprising one or more of the uses set out in column I of the Second Schedule;
(b) a planning authority may grant a development permit for development comprising one or more of the uses set out in column II of the Second Schedule by way of an application for a change of land use; and
(c) a planning authority shall not grant a development permit for any of the uses set out in column III of the Second Schedule.

Table 8.3.3 Outline of Second Schedule, Regional Planning (Development Plans Guidelines and Exempted Development Classes) Regulations, 2023

Zone	Column I	Column II	Column III
1 Residential 2 Local commercial centre 3 Commercial (General) 4 Business and light industrial development 5 Local industrial cluster 6 Heavy industrial development 7 Open space 8 Mines and mineral development 9 Agricultural development 10 Water protection area 11 Forestry 12 Tourism development 13 Game protection area 14 Nature conservation 15 Heritage conservation	Uses for which planning authority may grant a development permit and which are not classed as being a change of land use or major development	Uses for which planning authority may grant a development permit and which are classed as a change of land use or major development	Uses for which a planning authority is prohibited from granting a development permit

Source: JICA Expert Team (2024)

As for LCC area, according to the observations of previous JICA studies (JICA 2009: JICA 2022), while zoning regulation system exists and governs there, the system is an old-dated one, which was introduced in 1985 (1985-Doxiades Plan), its coverage area is limited to the central area of LCC, and the administration of the system has not been effective enough to adequately manage land use and urban development. Also JICA (2022) observes that the zoning system

16 Those which are contained in the First Schedule of Urban and Regional Planning (General) Regulations, 2020 (URPG2020) are: Form IV (Notice of Intention to Apply for Permit for a Major Development/Change of Land Use); Form VI (Notification of Determination); Form VIII (Acknowledgement of Valid Application for Planning Permission or Determination); Form IX (Notice of Non-Compliance for Planning Permission), Form X (Notification of Grant/Rejection of Development Permit); Form XII (Notification of Grant/Refusal to Very or Amend the Terms and Conditions of Planning Remission/Development Permit); Form XIII (Notice of Intention to Amend/Revoke a Development Permit); and Form XIV (Notice of Amendment/Revocation of a Development Permit).

applied in LCC is not the one having a clear/precise binding (or self-executing) power to approve/disapprove developments virtually without 'interpretation' (or without discretion to consider the merits of developments). In other words, JICA (2022) implies that the zoning system in LCC is not like American system but is rather in tune with British development control (planning permission) system.

According to the basic survey conducted in this Project, the degree of the accuracy of the previous JICA studies' observation is "to some extent, it is true" (LCC), but "not all of them are true" (Kafue).

According to one response to the basic survey, the revision of the current zoning, including geographic expansion of coverage area, is ongoing (LCC). It would be beneficial, based on the true understanding of the present situation, to discuss with the public agencies involved in this Project on how to properly operate the zoning system, when considering land use planning and urban development management in this Project.

8.3.3 Development Control Mechanism for Informal Settlement Area and Customary Area

(1) Informal Settlement Area

In the URPA2015, “informal settlement” is defined as follows, and it is not limited to "unplanned settlement" which is used as the synonym of "compound" in this Project:

(a) groups of people living on land they have no legal claim to;
(b) houses of a temporary, semipermanent or permanent nature erected on land that have not formally been permitted by the planning authority and serviced for residential use under this Act or any other written law;
(c) clusters of housing and other structures built without the formal permission of the planning authorities under this Act, any other written law or the repealed Acts; or
(d) settlements that have only temporary permission from the planning authority to occupy the settled land.

An IDP is required to:

(a) indicate priority areas for informal settlement upgrading and improvement, and identify the priority areas to be incorporated into the local area plans; and
(b) in the IDP’s survey report, "the delineation of informal settlements with a description of improvement inputs or other management responses required and the appropriate building and land use controls to be applied in those areas", as a part of an integrated development framework which states the policy and proposals for the use of land.

Also, the URPA2015 stipulates that the Minister may, by statutory instrument:

(a) prescribe specific requirements for planning permission and development control in informal settlements where a local area plan exists (Section 49: Planning permission); and
(b) make regulations for the better carrying out of the provisions of this Act, including provision for upgrading of informal settlements (Section 74: Regulations).

However, at the time of writing this report, no statutory instrument has been created that falls under either (a) or (b).

(2) Customary Area

As for the land falling under customary tenure, an integrated plan can include the land in line

with a 'planning agreement' drawn up, and a local area plan also can be prepared for the development of areas within the land falling under customary tenure.

Here, 'planning agreement' means an agreement entered into between a local authority and one or more chiefs to facilitate the implementation of an integrated development plan or local area plan, and the agreement contains:

(a) the identification of customary land to which the application of special planning standards and approval requirements shall apply;
(b) the identification of types of applications for the land identified that shall require special planning procedures to be complied with by applicants for land;
(c) the identification of areas falling under customary land for which a local area plan shall be made and of any special procedures that might be applied to that planning process;
(d) the identification of customary land which a local authority considers should be—
    i) designated an 'Improvement Area' under this Act; or
    ii) used to facilitate the expansion of a settlement as designated in an integrated development plan;
(e) the identification of built areas, buildings and other assets of cultural or historical value that need protection and management, and other areas as may be prescribed, etc.

A planning authority can declare an area of land an Improvement Area, and If in the case of customary land, the declaration is subject to a planning agreement.

When an Improvement Area is declared, a local area plan will be prepared for the Area, and in the Area, a local authority can subdivide the land, among others, erect building, and construct infrastructures such as road, waterworks, sewerage, etc., for the purposes of the local area plan. Concerning the use of land and the construction of building, any person cannot, without obtaining a 30-year occupancy license issued by a local authority, build, use, let, sell, create a lien or security or in any way deal with any dwelling or building erected on any piece or parcel of land.

In the capacity development needs survey conducted by the JET for this Project (combination of questionnaire and interview surveys), several public organisations in Greater Lusaka pointed out the practical difficulty in entering into planning agreements. One representative response of them was that there was a necessity of "learning from failed experiences to enter into a planning agreement for the successful application of the RDP to customary areas" (Central Provincial Planning Authority).

8.4 Capacity Assessment

8.4.1 Issues for Capacity Development Identified by the Existing Documents

(1) Institutional Issues

1) Establishment of a Regional Planning and Management Organisation for Greater Lusaka

The 2009 Master Plan suggested the establishment of a Regional Planning and Management Organisation, as an example of inter-district joint planning initiative which spans Lusaka Province and Central Province. After the suggestion, URPA2015 was enacted, and the Act prescribed the establishment of Regional Planning Authorities that serve for two or more provinces or parts of a province or different provinces.

However, a Regional Planning Authority defined by URPA2015 is different from the Organisation proposed by the 2009 Master Plan in that the Authority is to be established on an

ad hoc basis to spearhead 'planning for the region' but not on a permanent basis to do 'management for the region', while the Act leaves certain room for flexible interpretation by stating that a function of the Authority is to 'carry out such other functions as are incidental and necessary to regional planning'. Thus, an issue for the establishment of a wide-area organisation for the management of a Regional Plan remains a challenge.

2) Establishment of Regulatory Mechanism for Urban Growth Management of Greater Lusaka

The 2009 Master Plan proposed the following two land development control mechanisms to realize adequate urban growth management in Greater Lusaka:

- Urban Development Promotion Zone to guide, in the Zone, effective urban growth control and intensive infrastructure provision against inadequate urban sprawl, while strictly control development activities outside the Zone, which was termed as Urban Development Control Zone; and
- Density formulation, with gradual lowering of densification from the centre to outer area of Greater Lusaka, to maximize efficient land utilization in urban areas through guiding the private sector development by land use control measure in combination of floor area ratio (FAR) and building coverage ratio (BCR) and economic development incentives. (JICA 2022)

However, the introduction of Urban Development Promotion Zones and Urban Development Control Zone has not been realised (JICA 2022). Also, the expansion of zoning coverage and a gradual reduction of the floor-area ratio from the city centre towards the suburbs have not been realised. Therefore, there still remains a need for the establishment of regulatory instruments for proper urban growth management.

The 2009 Master Plan identified then institutional gaps as shown in the following Table. As an assessment as of 2009, the Master Plan stated, "Lusaka's urban planning administration, based on the City Planning Act enacted 30 years ago, is not appropriate due to the gaps in statutory regulations and standards from the current situation, and the required institutional gaps in the inspection and enforcement system for land development and building activities, wide-area/regional administrative coordination powers and security of independent financial resources are significant, and enforcement capacity is limited." While 14 years have elapsed since then, and the new URPA2015 was enacted, most of the identified gaps are likely to have remained to the present, and thus need to be re-evaluated for the purpose of capacity development in this Project. For this reason, the issues listed in the Table below, which were identified by the Master Plan, are appropriate to be dealt with as institutional issues for improvement in this Project insofar as they relate to the formulation and management of Regional Development Plan.

Table 8.4.1 Institutional Gap Assessment Conducted by the 2009 Master Plan

Development Goal	Criteria	Assessment	Note
Achieve effective and efficient urban growth management	Planning /Coordination	Incomplete/ Inadequate	Multi-provincial cooperation is not available in the new TCPA.
	Planning Permission	Inefficient	A zoning regulation is old and vaguely defined.
	Enforcement /Inspection	Inadequate	Building standard is obsolete while administration capacity is below the current requirements.
Achieve desirable management for living environment improvement	Land Registration	Incomplete/ Inadequate	Low administration capacity; illegal rental units in Improvement Areas.
	Urban Renewal Management	Not established	Unplanned Urban Settlement facing very poor living conditions for decades needs effective renewal measures.
	Efficient public service	Insufficient	Social enterprises (e.g. CBE) are necessary to be strengthen by establishment of partnership for social services in communities.
Establish effective implementation mechanism	Coordination	Incomplete	Roles of road administration are not clearly defined in the Public Road Act.
	Funds	Incomplete	Funding mechanism for district councils is not established.
	Monitoring	Inefficient	The rules of project monitoring have not been established due to vaguely defined roles of government organizations.
Achieve effective and sufficient public administration	Professional Skill	Insufficient	No institutional mechanism for providing licensed professional for urban management planners
	Administrative Role sharing	Inefficient	Very limited role sharing against public service demand in Ward level (permission, others).
	New administration	No action	No establishment of Satellite Cities' management administration.

Source: JICA (2009)

Related to regional/metropolitan growth management of Greater Lusaka, JICA (2022) identified issues relating to the surrounding districts of Lusaka City, referring to: a) the progress in the implementation or application of proposals made by the 2009 Master Plan; and b) more intensified or newly emerged planning issues after the formulation of MP formulation (e.g., higher population growth beyond the MP estimation, the spread of residential land beyond the MP planning boundary, increased recognition on the importance of managing customary land, and new Governmental policies such as Smart Zambia). As the result, as the following Table shows, JICA (2022) indicates that there are a number of planning issues that need to be addressed on a regional/metropolitan wide basis. Based on these identified issues for improvement, it is appropriate for this Project to address capacity development of the target public bodies for what can be addressed within the framework of technical cooperation project.

Table 8.4.2 Interlocking Development Issues between Lusaka City and Surrounding Districts Based on the Review of the 2009 Master Plan

Basic Development Issues	Development Issues in conjunction with Lessons from the Progress of Planned Components in LCDUP2009		Issues relating to	
		New Issues added	LCC	Surrounding Area
A. Critical insufficiency of infrastructure and services in UUSs to be solved immediately	Increased urgency for improvement of UUSs due to worsened urban hygiene (communicable disease) conditions by the delay of improvements	--	●	○
	Further urbanization than the plan of LCDUP with insufficient infrastructure and services in the surroundings of Lusaka City on housing	✔	○	●
B. Coping with further supply-demand by increased population amid current insufficient infrastructure and services	Necessary review and update of the supply side of infrastructure due to increased population than LCDUP demand frameworks	✔	◎	◎
	Necessary enhancement of weak public transportation operation and management against commuting demand increase	--	◎	◎
	Necessary sufficient road network and effective public transportation system coping with the expansion of peri-urban settlements	--	◎	◎
C . Inevitable approach for sustainable urban development against inadequate development	Necessary densification of settlements by collecting housing and land-use efficiency against dominant low-rise houses and insufficient land utilization	--	●	◎
	Necessary effective distribution of urban functions coping with the inconvenient business environment, especially CBD of Lusaka City due to insufficient access and network	--	●	◎
	Necessary measures to retain green areas for climate change mitigation measures and water source cultivation	--	○	●
D. Workable urban management mechanism and institutional capacity	Necessary enhancement of coordination mechanism for Lusaka City and surrounding areas in an integrated manner, straddling two Provinces (Lusaka and Central)	--	○	●
	Necessary enhancement of land management in peri-urban areas coping with difficulties of customary land management	✔	--	●
	Necessary enhancement of effective implementation measures of the land use plan such as zoning with land-use controls and guidelines of development controls	--	◎	◎
	The necessary development of monitoring and improvement action plan for planned components for sustainable implementation	--	◎	◎
	The necessity of strengthening financial capacity through improvement and increase of own financial resources	✔	●	●
E. Coping with global development issues	Necessary enhancement of urban information management for on-target analyses and planning through ICT development	✔	◎	◎
	Necessary enhancement of incorporation of technologies or measures of Smart City solution and Green Infrastructure development into planning	✔	◎	◎

Legend: ●= Main issue, ◎= Interlocking issue, ○= partial issue, -- = a few or not corresponded

Source: JICA (2022)

(2) Organisational Capacity Issues

1) Improvement in the operation of planning permission system

The planning permission system of Zambia follows the UK system. While the process of the permission process defer between Development Councils with the status of Local Planning Authority and the other Development Councils[17], in the case of LCC, as a Local Planning

[17] Difference in the process of planning permission by way of development permit between District Councils with the status of Planning Anthorities and the other District Councils is as follows:
(a) In the case of City/Municipal Councils with the status of Planning Authority
Once an application for development permit is submitted to the district council (Planning Authority), the Planning Department (secretariat to the Planning Authority) receives the application and commences to process it for approval.

Authority, the Department of City Planning and the Department of Engineering consider development applications to make LCC's planning decisions -- grant, conditional grant, deferral, or refusal of planning permission -- and report the results of all planning decisions to the Planning Committee once in every quarter of a year.

JICA's Detailed Planning Survey Report for this Project points out the following issues, including some speculation, in relation to the consideration of planning applications. (JICA 2023[18]):

- No guidelines have been prepared as a standard for considering planning applications, although a checklist for the applications exists;
- Insufficient number of LCC staff for smooth consideration of applications -- being assumed from the obviously small number of whole city officials compared to that of Japanese city authorities[19];
- Delays in final approval process due to the frequency of Planning Committee meetings, which are held only four times a year; and
- Insufficient human resources for the discretional consideration of planning applications, whereas the persons in charge of consideration have such discretional authority.

Hence, it is necessary to check the actual operational status of the planning permission system in detail and make necessary suggestions for organisational capacity building for better urban development management.

The 2009 Master Plan identified then organisational gaps as shown in the following Table. As an assessment as of 2009, the Master Plan stated, "In particular, the gaps between the organisational goals of the urban planning department, which is tasked with the effective management of appropriate urban development and urban sprawl, are very large and require immediate organisational reinforcement." While 14 years have elapsed since then, most of the identified gaps are likely to have remained to the present. For this reason, the issues listed in

While in receipt of the application for development permit, the Scrutiny Committee comprising of technical management staff will sit and scrutinize the received application and make recommendations for the approval or reject of the submitted application. Once the Scrutiny Committee concludes the process, the Director of Planning (Executive Secretary of the Planning Committee) presents a report to the Planning Committee (standing committee of a district council responsible for planning) for their consideration. Once the submission is received and decision is made by the Planning Committee, the report is subsequently adopted by the Full Council for final approval.

(b) In the case of Town Councils without the status of Planning Authority
Once an application for development permit is submitted to the district council (non-Planning Authority), the Planning Department (secretariat to the Planning Authority) receives the application and commences to process it for approval. While in receipt of the application for development permit, the building inspector, a technical management staff, will sit and scrutinize the received application and submits the application to the District Planning Officer/Director Planning for onwards procession. Once in receipt of the application for development permit, the application is forwarded to the Provincial Physical Planning Office (Provincial Planning Authority) for onwards procession. Once the Provincial Physical Planning Office receives the application for development permits, the Scrutiny Committee/technical management staff will sit and scrutinize the received application and make their recommendations for the approval or rejection. Once the Scrutiny Committee concludes the process, the Provincial Planner (Executive Secretary of the Provincial Planning Committee) presents a report to the Provincial Planning Committee (standing committee of a Provincial Planning Authority responsible for planning) for their consideration. Once the decision is made by the Provincial Planning Committee, the Provincial Planner, through the notice of approval/rejection, grants the development permit accordingly. Thereafter the applications are taken back to the District Planning Officer/Director of Planning of the local authority. Once the application is received, the District Planning Officer/Director of Planning (Executive Secretary of the Planning Committee) will report to the Planning Committee (standing committee of a district council responsible for planning) the decision of the Provincial Planning Authority of the development permit approved or rejected for their information. The report is subsequently adopted by the Full Council.

[18] Information source is the same with that of the footnote 14

[19] The number of LCC officials per 1,000 population is 0.6, compared to 14.1 for Osaka City (Japan), which has similar population size with LCC. (JICA 2022)

the Table below are appropriate to be dealt with as organisational issues for improvement in this Project insofar as they relate to the formulation and management of Regional Development Plan.

Table 8.4.3 Organisational Gap Assessment Conducted by the 2009 Master Plan

Development Goal	Assessment Criteria	Gap Assessment					
		City Planning		Engineering Services		HSS	
		Role	Gap	Role	Gap	Role	Gap
Achieve effective and efficient urban growth management	Planning/Coordination	●	●	○	○	○	○
	Planning Permission*	●	●	-	-	-	-
	Enforcement/Inspection	●	●	-	-	-	-
Achieve desirable management for living environment improvement	Land Registration	○	○	-	-	●	●
	Urban Renewal Management	●	●	○	○	●	●
	Efficient public service	○	○	○	○	●	●
Establish effective implementation mechanism	Coordination	○	●	●	●	○	○
	Implementation	○	●	●	●	○	●
	Monitoring	●	●	●	●	○	○
Achieve effective and sufficient public administration	Communication/Coordination	●	●	○	○	○	○
	Staff allocation	●	●	●	●	○	○

● Major role / Large gap; ○ Minor role / Medium gap; - Small role / Small gap, * = Department of Public Health has a partial responsibility for allocation documents appraisal.

* HSS: Housing and Social Services

Source: JICA (2009)

(3) Capacity Issues of Individual Technical Staff

The 2009 Master Plan identified technical capacity gaps at the individual technical staff level. The assessed technical staff were planners, architects, engineers and surveyors, and result of the gap assessment is shown in the following Table. As an assessment as of 2009, the Master Plan stated, " Strengthening capacity of urban planning professionals for proper urban development, urban sprawl and for effective management of public transport is of particular importance. It is also necessary to strengthen the capacity of technical staff in the various fields involved in the implementation of projects to realise urban plans." While 14 years have elapsed since then, most of the identified gaps are likely to have remained to the present. For this reason, the issues listed in the Table below are appropriate to be dealt with as technical issues for improvement in this Project insofar as they relate to the formulation and management of Regional Development Plan.

Table 8.4.4 Individual Gap Assessment Conducted by the 2009 Master Plan

Development Goal	Assessment Criteria	Gap Assessment for Skill							
		Planner		Architect		Engineer		Surveyor	
		Role	Gap	Role	Gap	Role	Gap	Role	Gap
Achieve effective and efficient urban growth management	Planning/Coordination	●	●	○	○	○	○	-	-
	Planning Permission	●	●	●	○	●	●	-	-
	Enforcement/Inspection	●	●	●	●	●	●	●	●
Achieve desirable management for living environment improvement	Land Registration	○	○	-	-	○	○	●	●
	Urban Renewal Management	●	●	○	○	○	○	●	●
	Efficient public service	○	○	-	-	○	○	●	●
Establish effective implementation mechanism	Coordination	○	○	○	○	○	●	○	○
	Implementation	-	-	●	●	●	●	○	○
	Monitoring	●	●	●	●	○	●	-	-
Achieve effective and sufficient public administration	Planning/analysis skill	●	●	●	○	●	○	-	-
	Professional/functional skill	●	●	●	○	●	○	●	-
	Coordination skill	●	●	●	○	●	○	○	-

● Major role / Large gap; ○ Minor role / Medium gap; - Small role / Small gap

Source: JICA (2009)

8.4.2 Issues for Capacity Development Identified by the Needs Survey in this Project

(1) Outline of the Survey

In October 2023, a questionnaire was sent to all target public organisations for capacity development in this Project to ascertain their needs.

The target organizations and the questions asked in the questionnaire are shown in the two Tables below.

Table 8.4.5 Target Organisations for Capacity Development in this Project

Name of Organisation	Remarks
1. Ministry of Logal Government and Rural Development (Department of Physical Planning)	
2. Lusaka Province Planning Authority (Department of Physical Planning)	
3. Central Province Planning Authority (Department of Physical Planning)	
4. Lusaka City Council (City Planning Department)	Local Planning Authority (LPA)
5. Chongwe Municipal Council (Planning Department)	LPA
6. Chilanga Town Council (Planning Department)	Non-LPA*
7. Kafue Town Council (Planning Department)	Non-LPA*
8. Chibombo Town Council (Planning Department)	Non-LPA*

* Planning works and development control of the council are jointly handled by the council and the Provincial Planning Authority, which differs from the case of the Local Planning Authority who performs those tasks independently.[20]

Source: JICA Expert Team (2024)

[20] The details of the joint handling are as follows:

(a) How planning work is handled at the Town Councils (Non-Local Planning Authorities)
For planning works in the jurisdiction of the district, the Local Authority through the Department of Planning engages the Provincial Physical Planning Office to jointly plan a areas which are identified for development on state land or areas in which there is a planning agreement. This in principle is in respect to the land which the state through the Ministry of Lands and Natural Resources has given to the Local Authority for planning or an area where the local authority has entered into a planning agreement with a traditional authority. All these planning works and applications are presented to the Provincial Planning Committee for their consideration and subsequently to the Local Authority Planning Committee for their information. For privately owned areas, the landowners are at liberty to engage private planning firms to handle the matters of planning but these firm will have to submit the planning works to the Local Authority who intern submits these planning works to the Provincial Physical Planning Office and once they are considered by the Provincial Planning Committee, the Director of City Planning/Planning will present the planning applications decisions to the Local Authority Planning Committee for their information.

(b) How development control is managed at the Town Councils (Non-Local Planning Authorities)
The Local Authority through the Department of Planning has an established section in charge of building inspections that monitors the construction of approved building infrastructure in the district. In situation where the building inspectorate team encounters an illegal building activity, they inform the planning inspectors (both at the Provincial Physical Planning Office and the Local Authority) who in turn issue stop orders to the illegal developers and subsequently the appropriate course of action is determined once the Local Authority in liaison with the Provincial Physical Planning Office review the matter.
To conduct effective development control, the Town Clerk appoints Planning Inspectors from the Department of City Planning/Planning. To enhance effective outreach to identified developing areas, the Local Authority is also allowed to employ part time planning inspectors whose mandate is to monitor developments of areas if they have obtained planning permission.

Table 8.4.6 Structure of Questionnaire

Question	Subject	Specific Capacity Development Needs *(Please write freely)**
1. Capacity Development Needs on Land Use Planning at Regional level (Regional Development Planning)	1.1. Management of Planning coordination organisation (e.g., authority, committee) for Greater Lusaka after the approval of RDP	✓
	1.2. Skills to review, update and revise RDP	✓
	1.3. Role of RDP as a higher-level plan of IDP (e.g., guiding and/or binding role for spatial vision, land use and other planning components of IDP)	✓
	1.4. Others *(Please add freely)*	✓
2. Capacity Development Needs on Operation of Development Control System at Regional level (Regulation/Guidance)	2.1. Development of regional/national development control standards/guideline (zoning, building permission, etc.)	✓
	2.2. Practical application of development control mechanism (zoning, building permission, etc.)	✓
	2.3. Others *(Please add freely)*	✓
3. Capacity Development Needs on Implementation of Public-led Projects with Regional Perspective (Land/Infrastructure Development)	3.1. Implementation scheme of unplanned urban settlements improvement project	✓
	3.2. Implementation scheme of urban redevelopment project	✓
	3.3. implementation of infrastructure development projects	✓
	3.4. Implementation/ management of wide-area public service delivery	✓
	3.5. Others *(Pease add freely)*	✓
4. Capacity Development Needs on Other Themes (which relate to RDP formulation/implementation and JET members can handle)	*4.1. (Please add freely)*	✓

* all the answers are open-ended.
Source: JICA Expert Team (2024)

All the target organisations answered the questionnaire.

In November 2023, based on the collected answers, all target organisations were interviewed by the JICA Expert responsible for Capacity Development in this Project for about 1.5 to 2 hours each to confirm the details of their responses to the questionnaire.

Note that there were several responses which mentioned that there are capacity development needs to address: the shortage of equipment (vehicles, PCs, etc.), personnel, funds, etc.; and the reorganization of internal administrative structure (e.g., establishment of GIS section). Therefore, the explanation was made from the JICA Expert on necessity that this Project does not cover direct support for those requirements, and those responses were excluded at the time of the compilation of capacity development needs.

(2) Sorted Out Capacity Development Needs

Based on the results of questionnaires and interviews with all 8 target organisations, their capacity development needs were classified into 9 themes and 22 subjects as shown in the Table below.

Table 8.4.7 Capacity Development Needs Expressed by the 8 Organisations

Theme	Subject	Capacity Development Needs
Planning framework	Position of RDP in a dual system of physical and socioeconomic planning	• Legal knowledge • Clear legal framework for the management of RDP • Formulation of Spatial Development Frameworks
	Salient roles of RDP	• Regional transformation method • Planning coordination between Districts • Guide for harmonising IDPs • Platform for joint action planning between Districts • Joint platform for collaboration between sectoral plans] • Sustainable land use management -- balancing agricultural and other uses • Sensitization of the importance of the RDP to all officers • Systematic coordination of RDP to manage its planning and implementation
Preparation and monitoring & evaluation (M&E) of plan	Identification of planning issues	• Skills for deeper understanding of urban planning issues
	Formulation of RDP	• Policy formulation • RDP preparation process
	M&E of RDP	• Policy review • M&E (review and update) of the plan • M&E programs with respect to RDP and IDP • Monitoring and reviewing technical skills of RDP, management of land use, participatory land use planning and urban plan policies
Development control	Urban development management	• Planning standards/guidelines to help in: providing policy formulation, interpretation and direction; preparing LAP; and implementing control • Development control guidelines and management mechanism for RDP addressing land use changes and major development • Practical determinants in the preparation of regional development control standards • Strategic M&E of development controls • Knowledge building for planning and building inspectors • Revision of Act, guidelines and regulations related for practical development control • Understanding of WDCs on the importance of development control and rightful construction procedures • Learning from failure to enter into a planning agreement for the successful application of RDP
	Digital management of applications	• Digital development management mechanism • Inter-District common database on development approval information
Urban development	Improvement of unplanned settlements	• Urban renewal policies and strategies • Stakeholder engagement • Social data collection strategies and data collection methods • Financing mechanisms of urban settlement improvement scheme • M&E tools (e.g., satellite imaginary) • Incentives (e.g., compensation) for implementing RDP to target community
	Urban redevelopment	• Redevelopment guidelines and strategies • Roles and procedure for urban redevelopment projects • Practical Urban Redevelopment and implementation mechanisms • Stakeholder engagement strategies and knowledge building of settlers • Financing mechanisms of urban redevelopment projects
Infrastructure and social services delivery	Infrastructure development (general)	• Practical methods of implementing sustainable infrastructure development projects (e.g., PPP and better access to Land Development Fund)
	Road and transport	• Sustainable transportation and infrastructure planning • Access roads to settlements in RDP area
	Waste management	• Systems which promote sorting at household, institution and industrial level • Creation of planned solid waste zones and identification of suitable land for land fill

Theme	Subject	Capacity Development Needs
		• Reserving land use for setting up recyclable plant • Incorporation of solid waste management in development control • Digitalization for monitoring the collection system • Clean up campaigns • Skills in solid waste management land use and sustainable solid waste management • Community-based solid waste management in unplanned settlements • Stakeholders committee for Greater Lusaka to coordinate solid waste management activities
	Green Infrastructure	• Sensitization on green infrastructure
	Social infrastructure	• Strategies to improve and manage service delivery • implementation/ management of wide-area public service delivery • Stakeholder consultation and sensitisation • Behaviour change utilizing television, radio, billboards, posters, brochures, public meetings, etc.
Awareness of stakeholders/ communities	Awareness about RDP	• Sensitisation of stakeholders (NGOs, CBOs, FBOs, WDCs, Councillors, Traditional Leaders, Community members, etc) on the role of RDP
	Awareness about development control and development projects	• Stakeholder consultation/sensitisation • Sensitization on the rightful procedures of land acquisition, development, green infrastructure, and Acts/Regulations
	Awareness raising of traditional leaders	• The explaining of benefits (e.g., economic) of planned settlements and the offering of concessions from a local authority to a chief
	Stakeholder engagement/ sensitisation technique	• Effective stakeholder engagement/sensitisation techniques
Data management	Common database	• Common database between Districts for decision making and reference • Interconnected Geodatabase with land agencies (e.g., of Province and Districts)
	Spatial data	• Spatial data acquisition/ processing/analysis/use/dissemination methods • Planning software to enhance spatial development (SD) and new SD model • Update of GIS/Mapping/ICT skills • GIS database creation/update • Remote sensing and earth observation techniques • Real time monitoring system (e.g., using drone)
Strategic Environmental Assessment (SEA) / Environmental Impact Assessment (EIA)		• Natural resource management and formulation of EIA • SEA for unplanned settlements • Strategic M & E on environmental and social assessments of RDP
Public relations		• Creation of dashboards concerning RDP • Creation of RDP promotion video content for publicity (e.g., YouTube)

Source: JICA Expert Team (2024)

8.5 Issues to be Tackled

Related to the Urban Governance System of the Greater Lusaka, the following situations should be taken into account for considering adequate urban planning and development management system for the area:

- Urban management of Greater Lusaka, where no statutory organization for cross-provincial coordination exists presently, requires the coordination of a number of administrative bodies across three tiers -- i.e., local governments, provincial administrations, and ministries concerned.

- The 2 Provincials and 5 Local Authorities comprising Greater Lusaka all have a Physical Planning Department or its equivalent. However, the number of technical staff of the public organisations are small, at least other than LCC, and it is likely that the number of technical staff is insufficient for proper urban planning and development management operations. It should also be noted that except for Lusaka and Chongwe, the other local government have weakness in urban planning and urban development management in that they are not Local Planning Authorities.

Related to Zambian local governance system, the following matters need to be taken into account:

- According to an article of Local Government Act, 2019, it may be possible to consider a spearheading role of LCC, central or mother city of Greater Lusaka, in urban management of Greater Lusaka as a whole, but more than half of the local governments within Greater Lusaka, including LCC, showed negative view on the spearheading role of LCC.
- With regard to the provision of public and social infrastructures, the roles of which has increased in the progress of devolution, local governments in Greater Lusaka face challenges and difficulties in fulfilling their roles in various aspects, including financial, technical, and human resources.

The following stipulations of URPA2015 should also be taken into account for the urban development management of Greater Lusaka:

- Coordination body for plan preparation, regional planning authority is an ad hoc body and no stipulation is made in the Act about the management body of formulated plan;
- Core plan contents (matters which may be dealt with) are perceived as the matters of national interest rather than region-specific interest;
- The National Planning Framework should be a guideline for plan preparation, but it has not yet been published.

Regarding urban development control systems, the following situations should be considered for the improvement of the systems applied in Greater Lusaka:

- The perception of the relationship between Planning Permission and Development Permit by the public organisations related to this Project varies, and thus, it seems necessary to standardise the definition of them to start with the discussion for better systems.
- According to the observation of previous JICA studies, zoning regulation system exists and governs in LCC, but the system is old-dated, its coverage area is limited, and the administration of the system has not been effective enough. But the observation is recognised that "to some extent, it is true" (LCC) but "not all of them are true" (Kafue). Thus, it would be beneficial, based on the true understanding of the present situation, to discuss with the public organisations concerned on how to properly operate the zoning system.

- As for the land falling under customary tenure, an integrated plan can include the land in line with a 'planning agreement' entered into between the local government authority and one or more chiefs, and a local area plan can be prepared for the development of areas within the land. However, in reality, several public organisations in Greater Lusaka point out the difficulty in entering into planning agreements, like, among others, stating that "learning from failed experiences to enter into a planning agreement for the successful application of the RDP to customary areas".

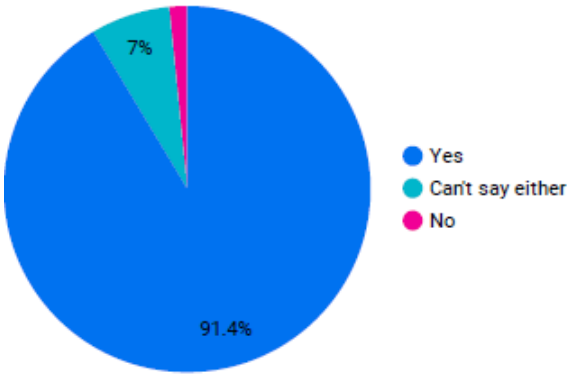
In relation to the proposals and findings of 2009 Master Plan, especially those related to institutional improvements and organisational and staff capacity development, the following should be noted.

- 'Demarcation of Urban Development Promotion Zone and Urban Development Control Area' and 'Gradual lowering of densification from the center to outer area', which were proposed as 'Mechanisms for Urban Growth Management of Greater Lusaka,' have not been realised yet. Thus, there remains a need to examine regulatory instruments for appropriate urban growth management, including an assessment of the relevance of those proposed by 2009 Master Plan under contemporary circumstances.
- Many of the issues identified in the 2009 Master Plan for capacity development of the organisations and staffs are likely to remain as the relevant capacity development issues today. This is evidenced by the similarities between the result of capacity development needs survey for this Project (Table 8.4.6) and action plans for capacity development proposed by the 2009 Master Plan (see Table 9.6.1 posted later in this report). Therefore, it is important to continue to work on capacity development, taking into account the findings at the time of the 2009 Master Plan, as well as the reflection on the subsequent failure to achieve expected capacity development.

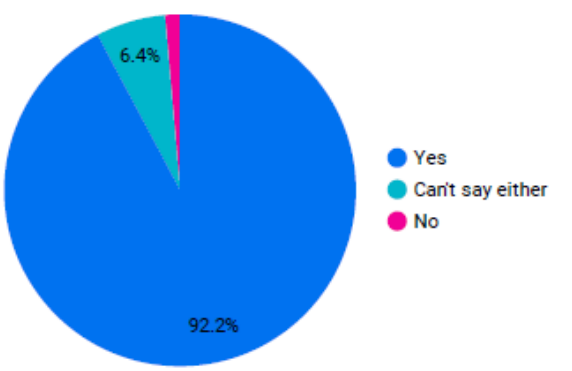
CHAPTER 9 REVIEW OF THE 2009 MASTER PLAN

9.1 Vision and Development Approach

The 2009MP proposes "Economically strong, Environmentally friendly and Community Hope and Opportunity (ECHO)" as its vision. Should this vision be carried forward in the RDP? The answer to this question is yes. As mentioned in Section 7.2.1, the household survey asked whether the people would like to inherit this vision in the RDP. Its results show that 91.4% of respondents expressed positive views regarding this vision (Figure 9.1.1), therefore, this vision should be pursued. However, the components of the vision include planning requirements such as the economy and the environment, but these are general matters and lack elements from the perspective of Lusaka's distinctiveness. This concept should be continued, but the vision should be improved by supplementing the components.



Q. Do you think the vision proposed in the 2009MP should be carried forward in the future?



Q. Do you think the Garden City concept proposed in the 2009MP should be carried forward?

Source: JICA Expert Team

Figure 9.1.1 Results of Household Survey Related to Vision and Development Approach

The 2009MP also proposes the Garden City concept as a development approach. Should this development approach be incorporated into the RDP? The answer to this question is also yes. According to the household survey, 92.2% of respondents would like to carry forward the Garden City concept. When revising the RDP, proposals for the realization of the Garden City concept should be included.

9.2 Planning Framework and Socio-economic Development Plan

The planned population of Lusaka is set as 2.9 million for the year 2030 in 2009MP, which is twofold of the existing number of approximately 1.45 million in 2007.

According to the 2010 and 2020 Census, however, the population of Lusaka Province was 2.2 million in 2010 and 3.1 million in 2022. Since the predicted value for 2030 in 2009MP, which was 2.9 million, has already been exceeded, a reassessment including methodology and assumptions is necessary.

In 2009 MP, GDP is forecasted to increase with the rate of 6.2 % between 2005 and 2015, 7.1 % between 2016 and 2020, 8.2 % between 2021 and 2030. This growth path would make it for

Lusaka to achieve GDP of ZMK 8.6 trillion in 2030, which is six times more of GDP in 2005 in real term.

In fact, the annual average GDP growth rate from 2016 to 2020 was approximately 2% (with a negative growth in 2020). Despite the potential for recovery considering the impact of the COVID-19 pandemic from 2019 onwards, the growth has not reached the levels anticipated in 2009MP. At the provincial level, Lusaka had a GDP of ZMK13.2 trillion at current price in 2021. This figure is approximately 2 times more of GDP in 2010 in real term. In any case, due to the differing figures, a reassessment is necessary.

In line with the economic growth, the 2009MP estimates that the employment structure will be improved accordingly. Formal sector employment will increase gradually until 2015 and sharply improve to 60% in 2030 from 40% in 2005, due to formal industrial development.

According to 2009MP, the formal employment proportion was projected to be 60% by 2030. However, as of 2021, the formal employment stands at 35 percent, while informal employment is at 65 percent. This ratio is nearly the same as it was five years ago in 2017. Achieving the 60 percent target by 2030 seems challenging. It is worth noting that at the provincial level, the informal employment proportion in Lusaka in 2021 is the lowest nationwide at 54 percent. Taking into account this particular region, there may be a possibility of reaching the 60% target. Nonetheless, a reassessment is advisable due to the significant disparities in the figures.

9.3 Spatial and Urban Development Plan

9.3.1 Land Use Plan

(1) Achievement and relevance of the proposed urban structure of 2009MP

Achievement of the future urban structure

The 2009 Master Plan (2009MP) proposed the urban structure for 2030 of "Lusaka City and peripheral satellite cities" and a "hierarchical density distribution (from high-density centre to low-density suburbs/fringe)." However, 15 years after the 2009MP, the unregulated urban sprawl in the surroundings of Lusaka City has significantly expanded, deviating from the envisioned urban structure. The existing Chilanga District Centre that was originally one of the colonial urban areas, has been positioned as only one of the three proposed satellite cities in the envisioned urban structure of Lusaka, through administrative reorganisation from the former branch office of Kafue, when Kafue District was divided into two districts of Kafue and Chilanga in 2012. And the three proposed industrial zones along the outer ring road in the fringes at northern, western, and southern parts of Lusaka City have not realized.

Moreover, the attempt to develop medium and high-density settlements for a compact city concept has not proven successful. Single-storey and detached housing dominates both the existing built-up area and new settlements on the city's outskirts. The exception is found in very high-density unplanned settlements within Lusaka City, lacking adequate infrastructure and urban services.

Relevance toward future urban structure (RDP)

Although this proposed future urban structure as a compact urban formation would be desirable to be achieved to address contemporary urban development challenges such as low carbon city, climate resilience and equitable development opportunities for neighbouring districts (Chongwe, Kafue, Chilanga and Chibombo), it would be a major challenge to succeed this concept to further the future urban structure for the RDP due to the unsuccessful results over the past 15 years. Therefore, alternative concepts should be considered to reorder and modify

the proposed urban structure of the 2009MP or to develop new and practical approaches to address various factors behind this unachieved result.

Table 9.3.1 Current Status of the Proposed Urban Structure in 2009MP

Spatial Structure Element			2009MP Target	Current Status (2022 Census)	Relevance toward Future Urban Structure Applicability
Multi-urban cores (satellite cities)	Chongwe Satellite City		Proposed in Meanwood	Mono-tone residential without urban centre facilities	Further possibility to reorganize adding a new urban centre or not needs to be considered as potential areas surrounding International Airport and China MFEZ.
	Kafue Satellite City (becoming a part of Chillanga District)		Proposed in Chilanga town	Formulated as a New Chilanga District Center with settlements	There will be one of the possibilities to enhance urban function of Chilanga urban centre
	Chibombo Satellite City		Proposed in Chunga	Not formulated	Inevitable urban center formulation with public services for increased settlements in the adjacent area to Lusaka City far from Chibombo District Centre
Gross Density distribution	Lusaka City	Urban Core	53 p/ha	25 p/ha (47% achieved)	Despite higher population growth than the 2009MP (2022 pop reaching to 85% already of the target pop 2030), the densities are still lower, therefore, other practical measures need to be introduced.
		Sub Core	106 p/ha	71 p/ha (67% achieved)	
		Others	53 p/ha	53 p/ha (same)	
	Adjacent Areas including Satellite Cities		9 p/ha	5 p/ha (56% achieved)	
	average		32 p/ha	27 p/ha	
Urban Growth Management	Urbanisation Promotion Area (UPA)		34,800 ha to be promoted	Current urbanisation in the UPA achieved around 70 %, and some agriculture lands have remained in the UPA	In the UPA, a lot of inappropriate settlements without infrastructure are observed. The advantage of UPA should be enhanced institutionally to guide adequate settlements, if this measure can apply to RDP.
	Urban Development Control Area (UDCA)		7,530 ha to be controlled	Agriculture lands and green areas to be protected have been deteriorated and decreased.	Development control has not been effective because a lot of agriculture lands and natural areas were converted to lands for urban use. More effective measures need to be considered in RDP.

Source: JICA Expert Team

(2) Achievement and relevance of the proposed land use plan of 2009MP

The land use plan was prepared based on the following key principles. These land use principles are assessed in terms of achievement of the plan and relevance toward future land use of RDP.

1) Economic sector land use by urban centre's formulation and industrial developments

Achievement of the future hierarchical urban centers and industrial cluster formulation

The old master plan (1965) proposed a hierarchical development of urban centres, and sub-centres were developed with public services and commercial facilities at the local level. Traditional markets in each township have played a key role in serving communities. However, the sub-centres proposed by the 2009MP to enhance convenient urban service formulation have not yet been formulated, rather than current developments for commercial and business facilities along the main roads or corridors often seen todays. On the other hand, the proposed extended CBD in combination with the western (old) core and eastern (new) urban area has been gradually realised. The eastern area is characterised by modern commercial business area and the western core as the old CBD with traditional markets, general industries logistic facilities where heavy mobility concentration has led to chronic traffic congestion on weak road

network system.

The proposed industrial development was aimed at improving the supply chain mechanism for existing industries in combination with FDI-domestic partners-local industries at the time, in conjunction with spatial reorganisation, including relocation of the old industrial centre in the CBD to new industrial zones along the outer ring road. The proposed spatial plan of two industrial zones in Kafue and Chibombo has not been implemented, and two MFEZs (LS-MFEZ1 and LE-MFEZ2) in the south and east of Lusaka have been occupied by limited investment, although it is not yet confirmed whether the supply chain system has been established among enterprises in Lusaka and is working well or not.

Relevance toward future residential area formulation (RDP)

In the 8th NDP, "Industrialised and Diversified Economy" is one of the national development strategies, which includes agricultural production, mining, value-added manufacturing and tourism in relation to the Study Area. Taking into account the unachieved spatial development for industries of the 2009MP, more practical (market-oriented) or institutional approaches need to be considered, such as the promotion of small and medium enterprises contributing to local communities through innovative technical support.

2) Environment protection and green network development

Achievement of the protection of green and environmental areas and green network formulation

This plan consists of four strategic programmes: 1) Protection of vulnerable environment, 2) Securing and promotion of environmental amenities, 3) Participatory programme in environmental protection and 4) Local environmental action. In line with these strategies, the spatial system has been proposed by green networks along rivers, recreational links, footpaths linked to area-wide forest protection, hierarchical park system, open spaces and agricultural land. In terms of spatial development for green environment, this proposed plan has not achieved by further deterioration of green areas mainly by subdivisions and agricultural land decrease. These results also imply that the environmental programmes for citizens or local communities may not have been effectively promoted.

Relevance toward future green area protection and promotion (RDP)

Protecting the environment and promoting the creation of green spaces will be one of the most difficult challenges without the cooperation of society in the urban sector, where the understanding and support of the local community would be indispensable. From this point of view, the two-sided approach of public sector and private or citizen side should be strengthened in line with the same approach of the 2009MP. However, the protection and creation of green spaces in the public sector should be enhanced by a multi-effect approach, such as natural disaster risk prevention or climate resilience.

9.3.2 Living Environment Improvement Plan for Compound

(1) Priority-based gradual service provision

Regarding living environment improvement, the 2009MP proposals suggest gradual improvement efforts that are based on priorities and are divided into short-term, mid-term, and long-term phases. Proposals suggest that priority should be given to projects that ensure the provision of minimum living infrastructure (water supply, sanitation, rainwater drainage, etc.)

[1] LS-MFEZ: Lusaka South Multi-Facility Economic Zone developed by the Special Purpose Vehicle (SVP) of Zambia
[2] LE-MFEZ: Lusaka East Multi-Facility Economic Zone developed by the Chinese Overseas Economic & Trade Cooperation

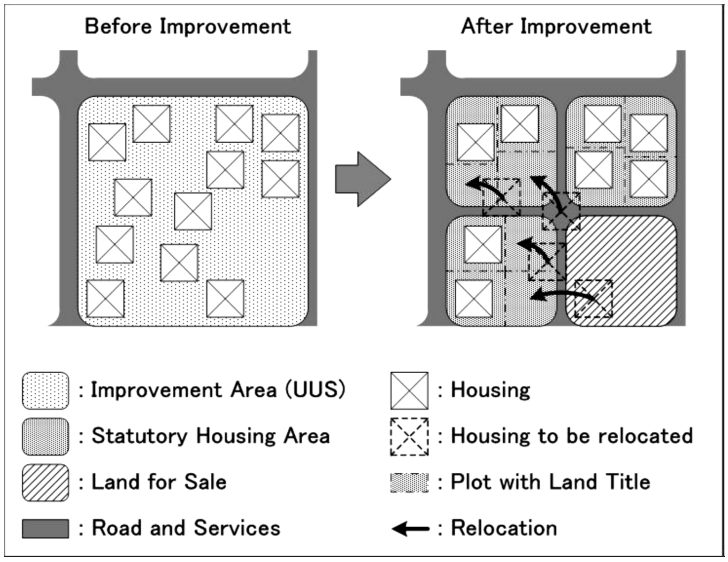
for short- and medium-term development. The development of facilities and provision of urban services that meet normal living standards is set as a long-term target.

As the living conditions in unplanned settlements are still poor with either absent or inadequate infrastructure remaining as a dominant characteristic, this priority-based gradual service provision approach should be inherited in the Lusaka RDP as well. Priority should be given to living infrastructure projects as they significantly enhance the quality of life of the citizens. It is important for planned improvements to consider priorities provided by the citizens through Local Area Plans (LAP) or community-driven planning documentation. The phase-based approach is also beneficial for long-term planning and funding allocations.

(2) Implementation of comprehensive urban renewal

The 2009MP proposes to promote a comprehensive renewal of unplanned settlements around the city centre through the method of land readjustment (Figure 9.3.1). After that, this method is to be adapted for the renewal of other neighbourhoods. Since the formulation of the 2009MP, little implementation has been done in terms of land readjustment in the unplanned settlements as various challenges could hinder its implementation such as acquiring the necessary funding, property rights and land acquisition, reaching residents' consensus, formulation relocation plans among others.

Nonetheless, the concept of comprehensive urban renewal should be inherited in Lusaka RDP as improving the living conditions in the unplanned settlements and the overall road network structure in the Study Area necessitates its implementation. The implementation of urban renewal measures will improve circulation and quality of life as they open room for establishing roads and constructing facilities. Nonetheless, enough consideration should be given to mechanisms and strategies to tackle the above-mentioned issues towards implementation.



Source: JICA Study Team, 2009MP

Figure 9.3.1 Conceptual Diagram for Land Readjustment Measure in Urban Renewal

9.4 Urban Transport Plan

9.4.1 Road Network

Regarding the development status of the road network proposed in the 2009MP, the development status up to the medium-term target (2020) was reviewed. The results are shown in Table 9.1.1. The progress of the Inner Ring Road, 12 radial roads, and other major roads

exceed 50%. The development programs of the 12 radial roads is particularly high at 66%. Thus, since the Zambian government has been steadily improving roads in line with the 2009MP, the road network proposed in the 2009MP will be used as the basis for the Project as well.

Conversely, the development of the Middle Ring Road has been significantly delayed due to the difficulty of land acquisition caused by urban overcrowding. On the other hand, considering the importance of the Outer Ring Road in strengthening the connectivity of the cities that form the Greater Lusaka, it is necessary to reconsider the planning of both this and the Middle Ring Road.

Table 9.4.1 Progress of Road Development

Road	Short-term: 2015		Mid-term: 2020		Progress	Long-term: 2030
	Plan	Actual	Plan	Actual		Plan
Outer Ring Road	9.4km	0.0km	58.7km	30.6km	45%	85.7km
Middle Ring Road	5.1km	0.0km	29.1km	11.3km	33%	16.3km
Inner Ring Road	18.1km	10.2km	4.6km	2.0km	54%	15.7km
12 Radial Roads	58.7km	47.3km	51.9km	26.0km	66%	77.4km
Other Major Roads	44.2km	28.2km	13.9km	5.0km	57%	142.0km

Source: Data Collection Survey on Urban Development and Urban Transport in Lusaka City, Zambia

9.4.2 Public Transport

There is a need for a paradigm shift in the cities' approach to addressing growing transport-related problems. The traditional focus on increasing the supply of roadway infrastructure and services in response to growing demand is unlikely to be sustainable. The congestion is the "effect" of a multitude of "causes" related to unplanned spatial growth, insufficient quality and quantity of public transport, weak traffic management enforcement, poor road network coverage, capacity, condition, and so forth. To address these issues, it would require the development of hierarchical roadway and public transport networks, with different functional elements that complement each other to produce seamless transport networks.

The Project continues the policy of introducing public transportation proposed in the 2009 Master Plan. However, taking into account changes in traffic conditions, the plans in the table below will be studied.

Table 9.4.2 Strategy for Urban Transportation Facility Development in 2009MP

Public Transport	The modal shift from car to public transport will be necessary for 2030. **Bus transit**: The introduction of Bus Rapid Transport (BRT) is to provide a foundation for the public transport system in Lusaka on high demand corridors where buses will be able to bypass some of the congestion that can prevent efficient and scheduled services. **Rail transit**: Implement a mass transit system to move passengers from Lusaka's densely populated areas to the CBD, airport, Ridgeway District/University Teaching Hospital (UTH), and industrial areas. The first stage will involve bringing traffic from peripheral areas into the Lusaka CBD all the way to the airport. The second stage will see the train covering all areas of Lusaka and up to Kafue.

Source: JICA Expert Team

9.5 Utilities Plan

9.5.1 Water Supply

(1) Water Demand Forecast

In the 2009MP, a water supply plan was developed for the target population of 2.89 million

people (2030). Subsequently, the Water Supply Investment Master Plan was developed in 2011. In addition, a JICA study for the Lusaka Water Supply Improvement Project was implemented in 2018. Water demand forecast of these studies are outlined in Table 9.5.1. In the Project, the water demand forecast will be reviewed by appropriately reviewing the planning parameters such as the service areas, population projections, unit water demand by service level, coverage ratio and service level by DMA[3], etc.

Table 9.5.1 Comparison of Water Demand Forecast

Item	2009MP	MCC 2011[4]	JICA 2018 Study[5]
Project Area	822km^2	822km^2	263 km^2
Design Horizon	Year 2030	Year 2035	Year 2030
Population Forecast	2.89 million (2030)	4.20 million (2030) 5.95 million (2035)	2.59 million (2030) 3.01 million (2035)
Unit Demand (Domestic use)	Urban: 189 L/c/d Unplanned: 40 L/c/d Subdivision: 100 L/c/d	High cost: 280 L/c/d Medium cost: 150 L/c/d Low cost: 100 L/c/d Unplanned: 40 L/c/d	Individual: 150 L/c/d Public tap/kiosk: 40 L/c/d
NRW	(Unspecified)	20% (2030) 15% (2035)	25% (as NRW, 2025-) 20% (as leakage, 2025-)
Average Daily Demand	605,800 m^3/day (2030)	1,012949 m^3/day (2030) 1,102,231 m^3/day (2035)	397,460 m^3/day (2030) 462,923 m^3/day (2035)
Maximum Daily Demand	757,300 m^3/day (2030)	(Not calculated)	477,000 m^3/day (2030) 556,000 m^3/day (2035)

Source: 2009MP, MCC Water MP (2011), JICA Study (2018)

(2) Water Resources Development Plan

In the 2009MP, due to a declining trend in groundwater levels, large-scale groundwater development was not planned. Instead, the development of surface water resources was proposed. The MCC Water MP also concluded that while groundwater should be a priority source, its usage should be limited to a maximum of 180,000 m³/day. Conversely, large-scale development of the Kafue River's surface water was planned to meet future demand. In the Project, the water resources development plan will generally adhere to the MCC Water MP's plan. However, development capacities will be reviewed based on water demand forecasts.

(3) Facility Plan

While a specific facility plan was not presented in the 2009MP, the MCC Water MP directs a vision for facility development plans up to 2035. Furthermore, in the JICA 2018 Study, a facility plan including the construction of a water purification plant with a capacity of 200,000 m³/day was studied. In the Project, these existing surveys and facility plans will be reviewed to ensure they are aligned with urban planning.

9.5.2 Sewage and Sanitation

(1) Sewerage

The 2009MP provided a comprehensive overview of the status and challenges of the sewer system in Lusaka. Subsequently, the Sanitation Master Plan was developed in 2011 by MCC. Key aspects of these master plans are outlined in Table 9.5.2.

According to the MCC Plan, it is projected that by 2035, with a served population of

[3] DMA: District Metered Area
[4] Millenium Challenge Corporation, 2011, "Water Supply Investment Master Plan, Lusaka, Zambia"
[5] JICA, 2018, "Preparatory Survey on Lusaka Water Supply Improvement Project"

approximately 2.82 million, 57 percent will be served by sewer reticulation. While the 2009MP focuses on renewing and expanding the existing treatment plant, the MCC's Sanitation MP proposed a complete reconstruction of the existing treatment plant alongside the renewal of the existing stabilization ponds.

In the Project, the forecast of wastewater volume will be re-evaluated. This revision will be based on a thorough review of planning parameters, including service areas, service population projections, unit wastewater volume by service level, coverage ratio and service level by DMA[6], among others.

Table 9.5.2 Comparison of Sewerage Plan

Item	2009MP	MCC 2011
Project Area	(Unspecified)	20,896 ha
Design Horizon	Year 2030	Year 2035
Population Forecast	(Unspecified)	2,82million
Sewerd Area	(Unspecified)	20,896 ha
Sewer Network Coverage	47%	57%
Wastewater Treatment Plant Capacity	137,575 m^3/d	447,000 m^3/d
Treatment Plant outline	Rehabilitation & Expansion 2 Trickling Filter Plants 5 Stabilization Pond Plants	Newly Constructed 4 Conventional Activated Sludge Plant Rehabilitation 5 Stabilization Pond

Source: 2009MP, MCC Water MP (2011), JICA Study (2018)

(2) Sanitation

Efforts are underway to enhance sanitation conditions in the unplanned settlements. These plans include converting conventional pit latrines to improved pit latrines and septic tanks, as well as strengthening the management of fecal sludge in terms of its emptying, transportation, treatment and disposal (FSM).

While 2009MP did not present a specific sanitation plan, LWSC is implementing the Lusaka Sanitation Program based on the results of the MCC Sanitation MP. This program involves mapping of the current status of on-site system in unplanned settlement areas and the converting pit latrines to improved on-site systems, including improved pit latrines and septic tanks.

As part of the Project, the existing sanitation initiatives will be reviewed to ensure they align with the broader urban planning objectives.

9.5.3 Stormwater Drainage

The JICA 2009MP presented a comprehensive development concept, along with short, medium and long term strategies for the drainage sector. This included proposed priority improvement areas and methods. The priority programmes and projects identified were as follows:

- Short-term: Installation of mobile pumping stations, emergency rehabilitation of existing facilities, and development of a comprehensive drainage master plan.
- Medium-term: Improvement of rivers and drainage systems.

Subsequent to this plan, the emergency rehabilitation of existing facilities and the development of a comprehensive drainage master plan, based on the proposed priority areas by JICA 2009MP,

[6] DMA: District Metered Area

were executed as described in Chapter 6. However, no mobile pumping stations were identified.

Project evaluations revealed significant improvements:[7], Houses near drainage channels were about 40% less likely to experience flooding, residents saved travel time and children's school attendance improved. Despite these advancements, approximately 30% of houses still face annual flooding. The sustainability of the drainage infrastructure is challenged by inadequate waste collection clogged with rubbish and silt, posing future funding challenges for maintenance.

Subsequently, the MCA Stormwater Management 2018 (MP) has been prepared as a comprehensive stormwater management master plan. In this MP, the following aspects are delineated:

Goals and Objectives

The MP aims to fulfil its objective by illustrating the current drainage conditions in Lusaka, offering estimates for runoff volume and peak flow estimates through one-dimensional (1D) and two-dimensional (2D) modelling across all city outfalls, and performing a comprehensive Flood Risk Assessment. This presupposes the execution of the 2009MP without significant modifications.

Stormwater Management Strategies

In line with the 25-Year Vision (Target year 2043), the MP introduces Best Practices and specifies the requisites for the Stormwater Program, proposing interventions, and addressing both current and potential flooding challenges. It explores Low Impact Development (LID) and Best Management Practice (BMP) alternatives, evaluates prospective financing mechanisms, and proposes Service Levels for Lusaka.

Implementation Plan

The MP extends beyond mere summarisation by expounding on the Stormwater Programme's environmental, resettlement, social inclusion/gender, community involvement, and technical aspects. Additionally, the MP estimates implementation costs and annual maintenance costs, and proposes a 3-Year Drainage Infrastructure Investment Plan through multi-criteria analysis.

The Project's stormwater drainage strategy is principally in accordance with the MCA Stormwater Management MP 2018, ensuring alignment with regulatory modifications, future development plans, land use changes and integration with other sectors.

9.6 Urban Management Improvement Plan including Capacity Development

The 2009 Master Plan proposed urban growth management mechanism and capacity development plan, to adequately manage the next 20 years' spatial, economic and population growth of Greater Lusaka.

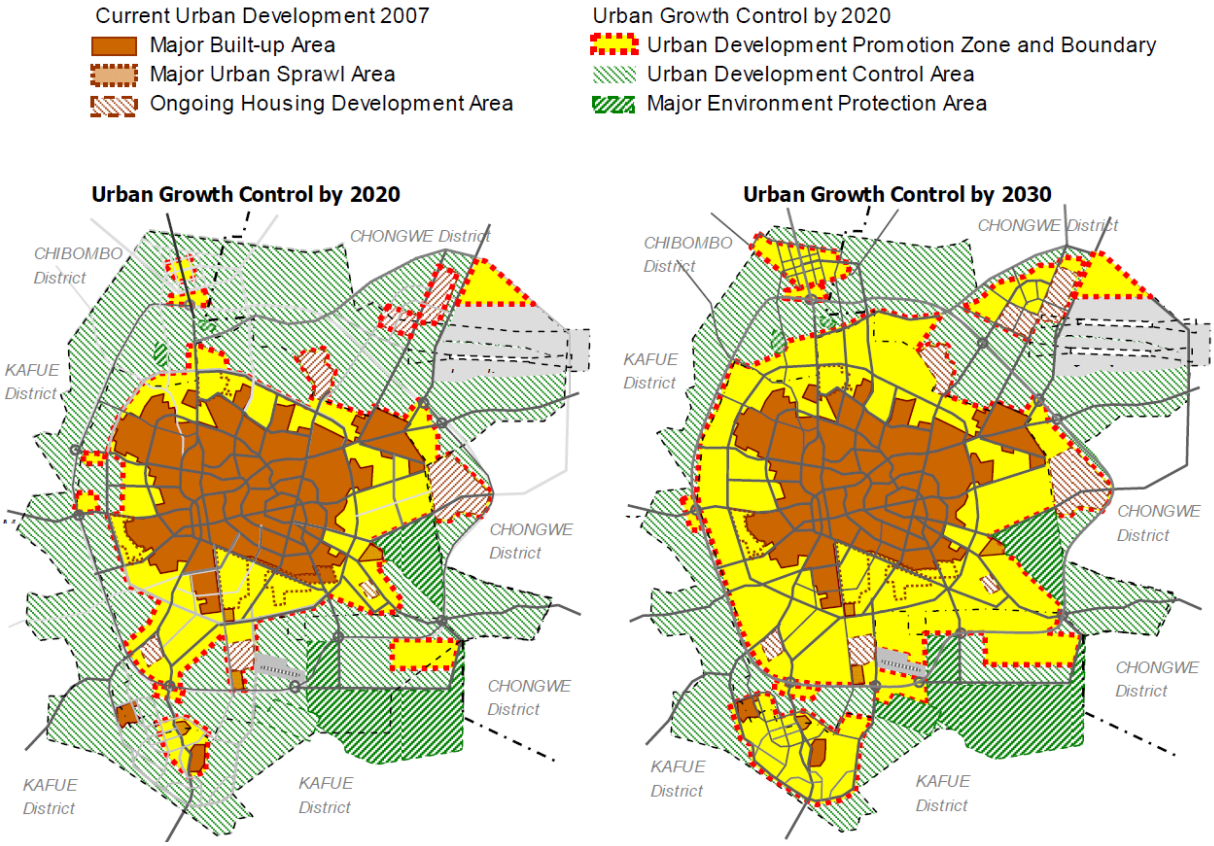
9.6.1 Proposed Mechanism for Urban Growth Management of Greater Lusaka

As a set of land development control mechanisms, the following two were proposed:

- Urban Development Promotion Zone to guide, in the Zone, effective urban growth control and intensive infrastructure provision against inadequate urban sprawl, while strictly control development activities outside the Zone; and

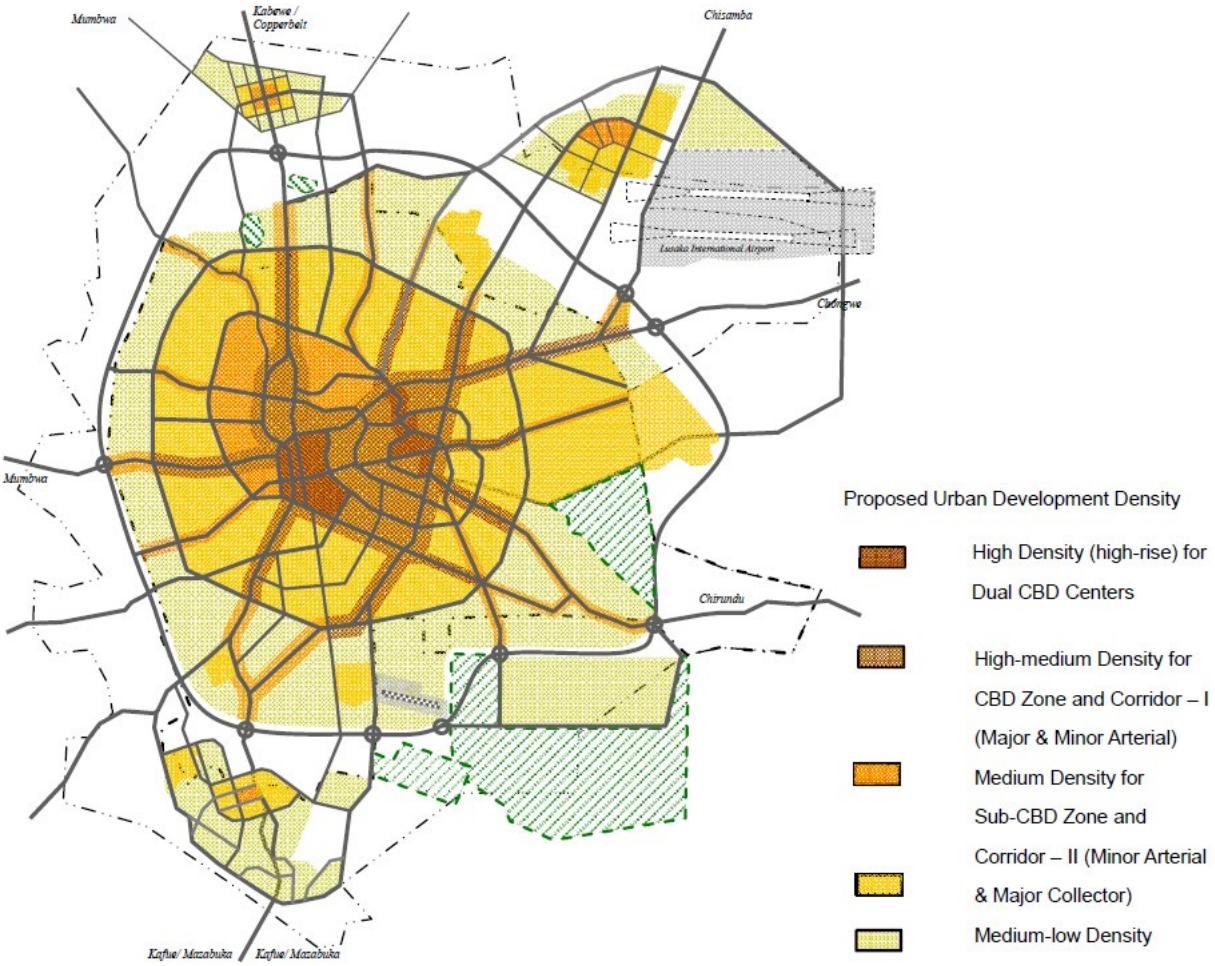
[7] Lusaka Water Supply, Sanitation, and Drainage Project (2013-2018)

- Density formulation, with gradual lowering of densification from the centre to outer area of Greater Lusaka, to maximize efficient land utilization in urban areas through guiding the private sector development by land use control measure in combination of floor area ratio (FAR) and building coverage ratio (BCR) and economic development incentives.



Source: JICA (2009)

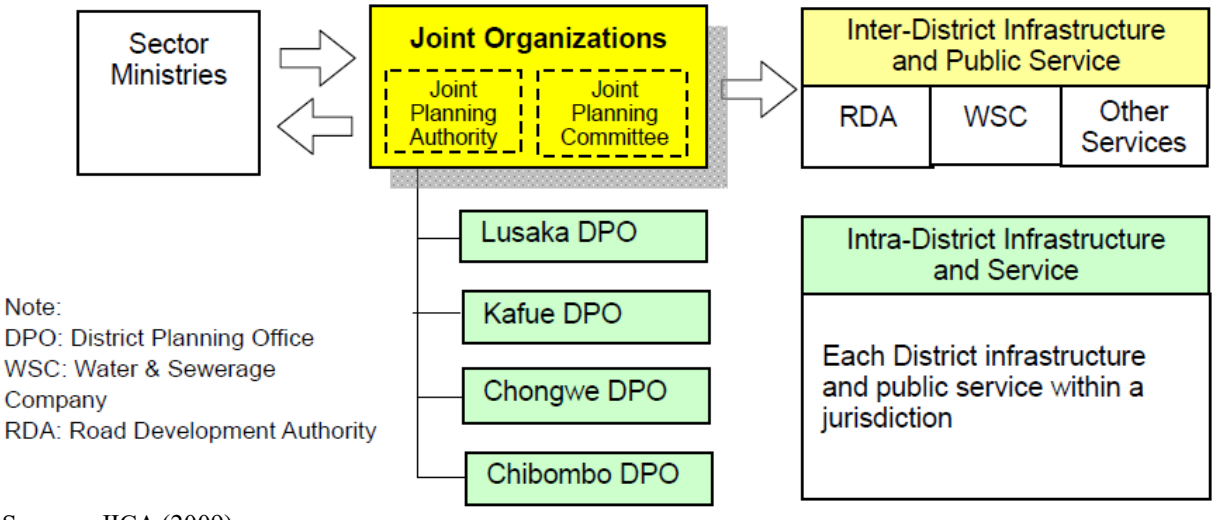
Figure 9.6.1 Proposed Conceptual Diagram of Urban Growth Management Areas



Source: JICA (2009)

Figure 9.6.2 Development Density Guideline for Greater Lusaka

Also, as an inter-district joint planning initiative exemplified in the following Figure was proposed for effectively controlling land development and providing infrastructures and public urban services. The proposed initiative encompasses 4 Districts expanding to two Provinces of Lusaka and Central.



Source: JICA (2009)

Figure 9.6.3 Example of Urban Growth Management Authority for Greater Lusaka

9.6.2 Proposed Capacity Development Plan

2009 Master Plan identified four issues for capacity development to improve urban management administration. Those were:

(a) strengthening development control;
(b) improving land management mechanism for better living environment;
(c) infrastructure project implementation; and
(d) improving public administration.

Based on the recognition of the above-mentioned capacity development issues, the 2009 Master Plan proceeded to propose capacity development projects/programs bundled by the following 4 pillars:

(a) least cost programs for basic and thematic programs (corresponding to the issue (d)),
(b) basic capacity development (same as the above),
(c) capacity formulation for Master Plan implementation (corresponding to the issues (a) and (c)), and
(d) capacity building for urban and living environment improvement (corresponding to the issue (b)).

Detailed programs/projects proposed for the capacity development are listed in the following Table. Those ticked in the rightmost column of the Table are proposed ones as 'action plans (priority projects and programs) for capacity development' to be implemented in the short term (by 2025).

Table 9.6.1 Capacity Development Pillars and Key Projects and Programs

Development Pillars		Key Projects and Program for Capacity Development		CAPDEV Focused Area			Target	Action Plan
				Individual	Org	Institution		
Least Cost Capacity Development	Basic CD (LB Group)	1) Installation of Operational Improvement Mechanism		○	●	–	S	✓
		2) Basic Information Management		●	●	–	S	✓
	Thematic CD (LT Group)	3) Knowledge Sharing		●	○	–	S	✓
		4) Use of the Internet		●	○	–	S	✓
		5) Accelerating the Basic IT skills by using free software		○	●	–	S	✓
Basic Administrative Capacity Development (BC group)		6) Data management, communication, basic skill, no. of staff		●	●	–	S	✓
		7) Empowerment of Ward role and function in urban management		●	●	○	S/M	–
		8) Establishment of urban management administration for Satellite Cities		●	●	–	M	–
		9) Accreditation of qualified Planner by organization		●	–	●	S	✓
Formulation of Capacity for Master Plan Implementation (MC group)		10) Establishment of statutory zoning and development control by guideline		●	●	○	S	✓
		11) Empowerment of building permission, inspection, penalty enforcement		○	●	○	S/M	–
		12) Reinforcement of infrastructure project implementation		●	●	–	S	✓
		13) Formulation of urban transportation planning section in CPD		●	●	–	S	✓
		14) Planning coordination organization (authority, committee) for G- Lusaka		○	●	○	S	✓
		15) Skill development for review, update and revision of the plan		●	●	–	S	✓
Capacity for Urban & Living Environment Improvement (IC group)		16) Land management enhancement	a) land registration promotion	○	●	○	S/M	✓
			b) promotion of public asset management	○	●	○	S/M	✓
			c) Chibolya pilot project implementation	○	●	○	S	✓
		17) Formulation of regional public service (water, waste, ambulance, etc)		○	●	–	S/M	–
		18) Establishment of Condominium Law for dense development		○	○	●	M/L	–
		19) Reinforcement of planning standards and building codes		●	○	●	S/M	–
		20) Empowerment of local communities (CBO/CBE) for public services		○	●	○	S	✓

Legend : ●= priority, ○ =partial, – = not applicable
Source: JICA (2009)

9.6.3 Adequacy of Succeeding the 2009 Master Plan's Key Proposals for Urban Management Improvement into This Project

Firstly, 'Demarcation of Urban Development Promotion Zone and Urban Development Control Area' and 'Gradual lowering of densification from the center to outer area of Greater Lusaka', which were proposed as 'Mechanisms for Urban Growth Management of Greater Lusaka,' are adequate to succeed to this Project as part of basic concept for urban management improvement, while it is necessary to paying attention to the influence of a possible discussion to introduce multi-polar urban centre system in this Project (i.e., composition of urban centre and single/multiple sub-urban centre(s)) different from single-polar urban centre system proposed by the 2009 Master Plan.

Secondly, the items for capacity development listed in Table 9.6.1 (see the second column from the left in the Table), especially those selected as the projects/programs for the Action Plan, which was proposed to conduct in a short term period, show considerable similarities to the capacity development needs identified for this Project (see Section 8.4). In other words, even today, 1.5 decades after the preparation time of the 2009Master Plan, the major capacity development needs of the relevant government agencies remain almost the same, and there is much need to continue working on them.

9.7 Reason Why the 2009 MP Has Not Been Implemented Well

The 2009MP was approved in accordance with Town and Country Planning Act 1965 and obtained the cabinet approval. The 2009MP was given the official status of statutory planning document. However, some projects, such as road development, have been implemented, but many have not. In particular, the current urban structure and land use plans differ significantly from those envisaged in the 2009MP. Reasons why the 2009 MP has not been realised include the followings.

(a) Reasons for general perspective
- ✓ An organization or a mechanism to supervise and monitor the implementation of the 2009 MP does not exist.
- ✓ Due to periodical personnel transfers, the officials reinforced by the 2009MP project have been transferred. There is no one (central role officers) to carry forward the concept of the 2009MP in the government office.

(b) Reasons for urban structure and land use.
- ✓ The lack of resources to carryout activities, especially relating to development control, this was exacerbated by sporadic land use change mostly private driven by surrounding farm owners and land speculators. The challenge to plan for land under the fringes of the planning area, which falls under customary tenure was another reason.
- ✓ Poor enforcement of planning regulations also played a role. There was a lot of compromise when effecting planning regulation mostly by people who were influential at local level and disregarded and challenged provisions of the plans in one way or another, additionally, 2009MP did not have biding power especially to private sector development.

- ✓ In urban structure, satellite cities were proposed but they have not been realised. Because the organization to implement the satellite cities concept has not been identified. Plus, local authorities is inadequate in fiscal capacity to drive effective implementation of the 2009MP, due to low municipal revenues. Central authorities (sector ministries) have not supported to realize the plan for satellite cities.

CHAPTER 10 MAJOR DEVELOPMENT ISSUES

The Project pursues the sustainable development of Greater Lusaka. The United Nations Sustainable Development Goals (SDGs) consist of 17 goals for a sustainable society. Goal 11 defines the following as necessary conditions for sustainable cities and communities: creating career and business opportunities, providing safe and affordable housing and building resilient societies and economies. This involves investment in public transport, creating green public spaces and improving urban planning and management in participatory and inclusive ways. Based on the current situation regarding these planning requirements, the major planning issues have been identified as follows:

(1) Economic diversification to create decent job opportunities

Zambia's economic activity is heavily reliant on the mining industry, represented by copper. In order to achieve stable economic growth, it is essential to diversify the economy by developing agriculture, manufacturing and tourism, as set out in the Eighth National Development Plan. In addition, Zambia trades closely with the neighbouring countries of COMESA and SADC. To diversify the economy, the potential for economic contribution in intra-regional trade with neighbouring countries should be examined.

Population growth in Greater Lusaka is below the national average but is expected to remain strong. On the other hand, informal employment accounts for a large proportion of employment, particularly among young people. The creation of formal and stable employment opportunities is an urgent issue in order to provide a better living environment in Greater Lusaka.

(2) Well-ordered infrastructure provision including public transport, water supply, storm drainage and solid waste management

An analysis of the current situation and challenges related to urban transport, utilities and social infrastructure have been carried out as part of the Project. In general, there are challenges in terms of quality and quantity across all infrastructures. In the household survey, residents expressed low levels of satisfaction with all infrastructures, with the exception of education. Furthermore, in the first workshop, inadequate infrastructure was mentioned as a current major problem, while the future vision also calls for the creation of a city with a well-developed infrastructure. Based on these findings, a comprehensive infrastructure improvement plan needs to be developed and implemented.

(3) Affordable housing supply

As indicated in the National Housing Policy, the housing supply across Zambia lags far behind demand. The population of Greater Lusaka will continue to grow and, therefore, requires a supply of affordable and good-quality housing. The lack of housing may also be a cause of the expansion of unplanned settlements, and efforts to improve it are required.

(4) Improvement of unplanned settlements

More than 70% of Lusaka's population live in unplanned settlements. The living conditions in these areas are poor and cholera outbreaks are frequent, therefore, significant improvements are needed. The government of Zambia has designated the unplanned settlements as improvement areas and is keenly aware of the need to improve them, Measures to improve the unplanned settlements need to be considered in the formulation of the RDP.

(5) Regional governance in Greater Lusaka

The population of Greater Lusaka is expected to continue to grow. Although population growth in Lusaka City has slowed down, high population growth is continuing in the four surrounding districts, and this trend is expected to continue. Population growth is likely to lead to urban expansion beyond Lusaka City. The Urban and Regional Planning Act requires the establishment of a Regional Planning Authority on an ad hoc basis when developing RDPs, but does not provide for a permanent, multi-jurisdictional mechanism for the implementation of RDPs. The following are some of the key issues that need to be addressed. A permanent mechanism to manage Greater Lusaka is needed to implement the RDP and provide an appropriate living environment in Greater Lusaka.

(6) Urban agriculture and creation of greenery

As shown in the results of the household survey, people in Greater Lusaka have shown considerable interest in the Garden City concept, proposed in the 2009MP. Furthermore, in the first workshop, participants also expected the creation of a clean city. In the latest current land use map, agricultural land dominates but urbanization pressures are leading to the conversion of agricultural land into other types of land use such as residential areas. The formation of green spaces and green infrastructure, including agricultural land, is an important issue for Greater Lusaka in order to create a sustainable and attractive city.