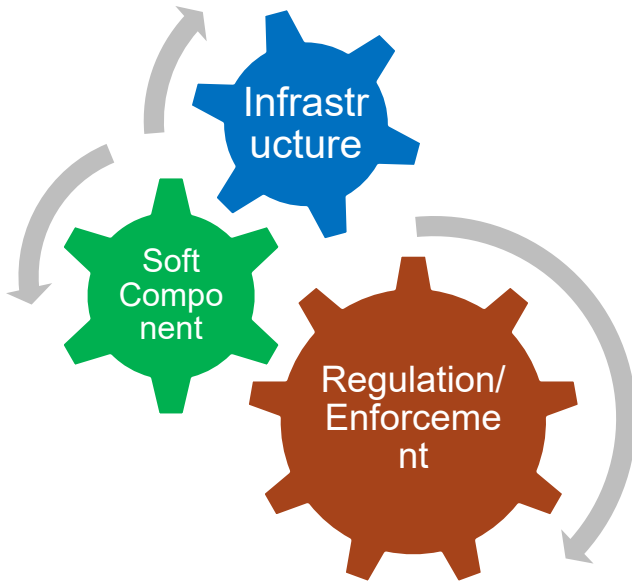


# Package Approach

- ◆ Without good public transport service, enforcement can't be tightened.
- ◆ Without tightened enforcement, good public transport service can't be achieved.
- ◆ Before the BRT opens, in-depth discussions on how to strengthen enforcement are needed.



Infrastructure

- ✓ **BRT/Bus Network**
- ✓ **Road Network**



Soft Component

- ✓ **Parking Management**
- ✓ **Mobility Management**



Regulation/Enforcement

- ✓ **Illegal Parking**
- ✓ **Drink and Drive**



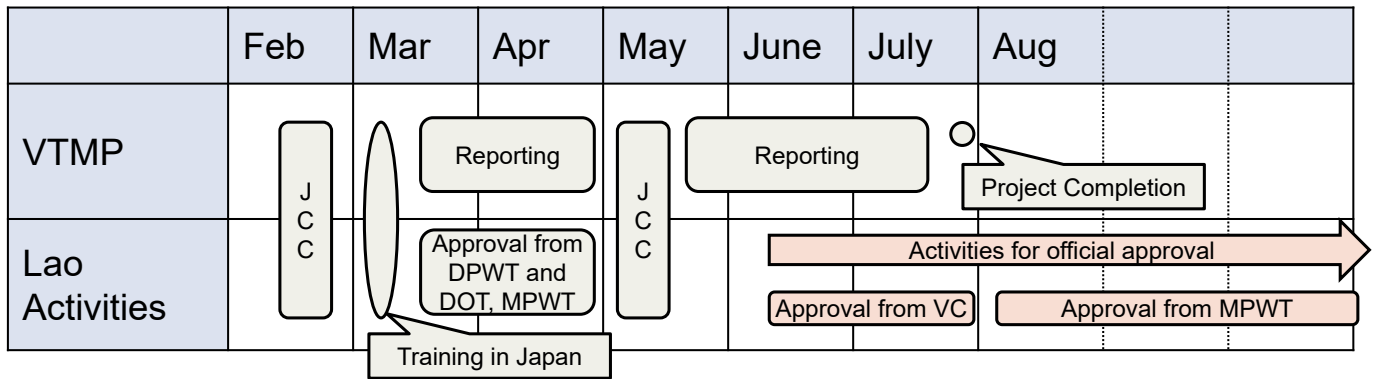
Success!

**Sustainable  
Public Transport System**

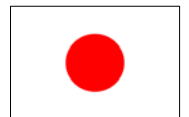
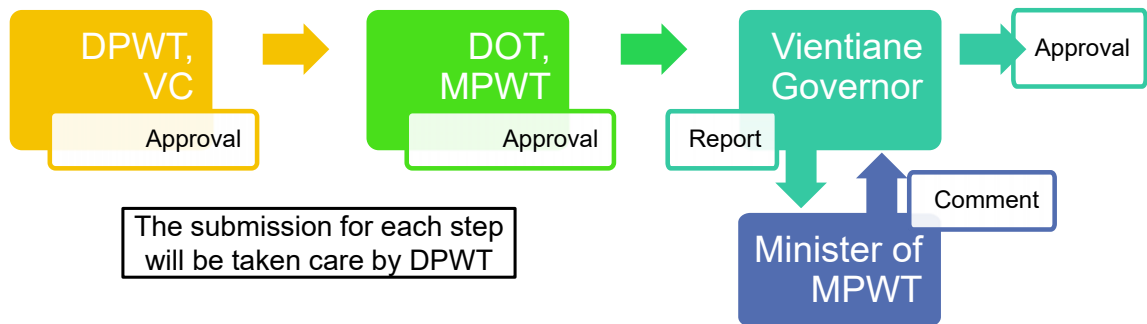
## Schedule

# Schedule

## 1. Schedule



## 2. Approval Procedure



Thank you

# Road Network and Traffic management

## 1. Approaches to Road Network

### Action plan

- Missing link connection
- Road widening
- Signalization of intersections
- Flyover construction



### Expected effect

- Strong & smooth road network (S1)
- Increase road capacity (S3)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 2. Approaches to Road Maintenance & Management

### Action plan

- Pavement maintenance & management
- Road marking maintenance & management
- Road drainage maintenance & management



### Expected effect

- Improve existing road services and road safety (S2)
- Increase road capacity (S3)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 3. Approaches to Traffic Control and Demand Management

### Action plan

- Traffic control for road safety enhancement
- Traffic demand management
- Road capacity management
- Legislation for demand responsive transport



### Expected effect

- Improve existing road services and road safety (S2)
- Increase road capacity & reduce traffic demand (S3)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 4.1 Approaches to Pedestrian facilities

### Action plan

- Sidewalk development & improvement
- Sheds and tree plantings to block sun & rain



### Expected effect

- Comfortable and safe walking space on the road (S4)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone



# Road Network and Traffic management

## 4.2 Approaches to Pedestrian environment

### Action plan

- Pedestrian-only streets
- Automobile speed control
- Control of on-street parking



### Expected effect

- Comfortable and safe walking space on the road (S4)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 5.1 Approaches to NMT “Non-motorized Transport” facilities

### Action plan

- Bicycle lanes/paths
- Bicycle parking space in the city center & working place
- Bicycle & Ride parking space/system



### Expected effect

- Safe and comfortable traffic for everyone (S4)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 5.2 Approaches to NMT “Non-motorized Transport” use promotion

### Action plan

- Educational activities
- Preferential policies for bicycle commuting
- Bike share system + MaaS

### Expected effect

- Safe and comfortable traffic for everyone (S4)

### Strategies

1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Road Network and Traffic management

## 6. Approaches to People with transport difficulties

### Action plan

- Barrier-free access around major transport hubs
- Securing necessary width of sidewalks
- Non-step bus recommended
- Legislation for barrier-free access

### Expected effect

- Safe and comfortable traffic for everyone (S4)

### Strategies

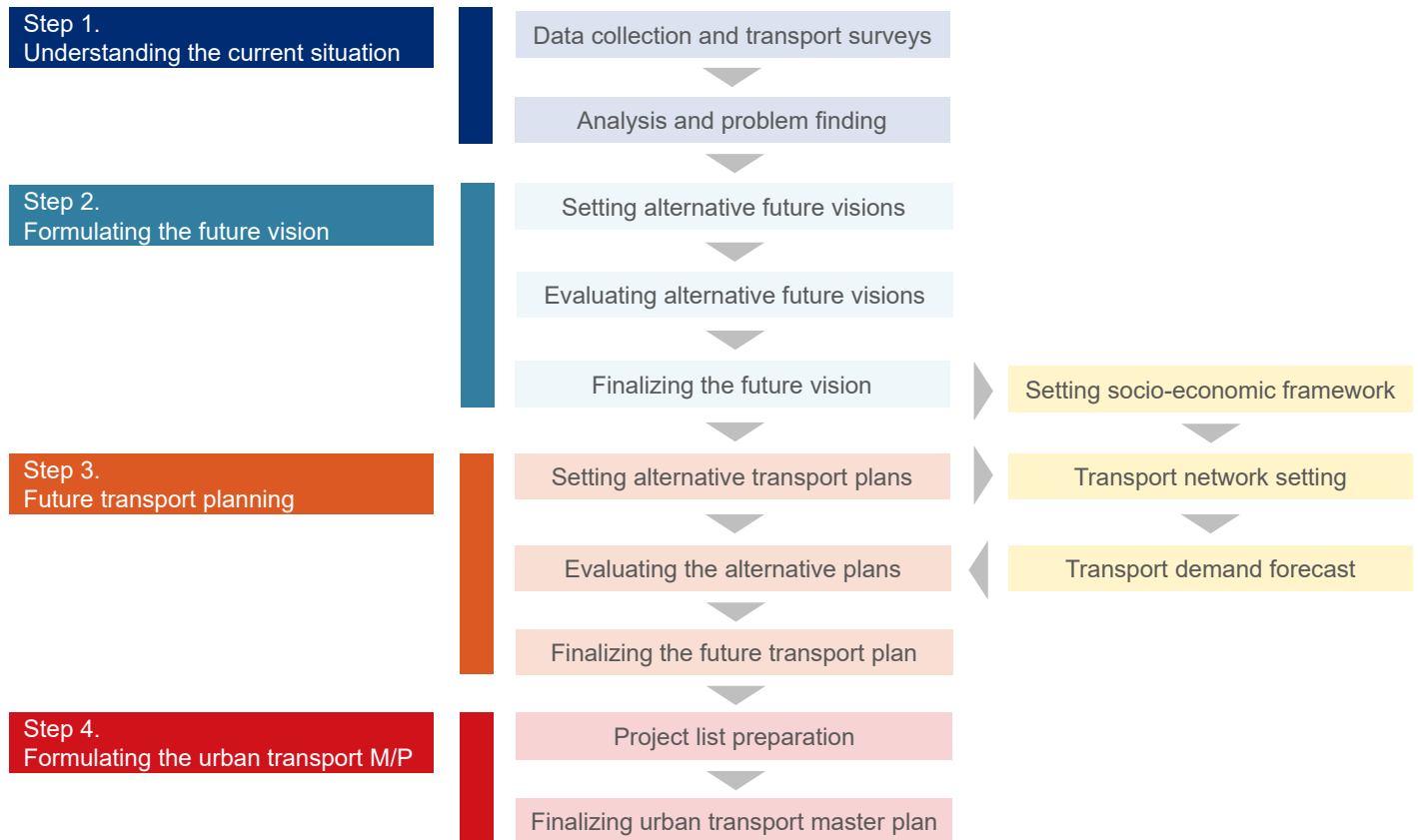
1. Hierarchical road networks and service integration with public transport

2. Existing transport service improvement through proper maintenance and management

3. Congestion mitigation by appropriate traffic management

4. Safe, secure, and comfortable traffic environment for everyone

# Master Plan Formulation Flow



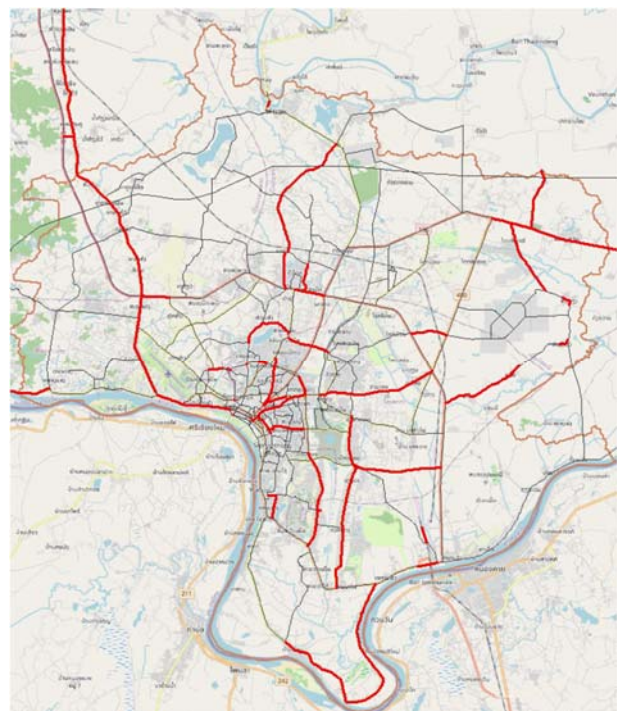
## 4. Action Plan for Scenario 2

### 3.1 Strong and smooth road network

New Construction



Road Widening



# 1. Review of the Last JCC

## Vision

Towards an accessible, livable and sustainable city for everybody in 2040

*What kind of city do we envision Vientiane to be in the future?*

## Mission

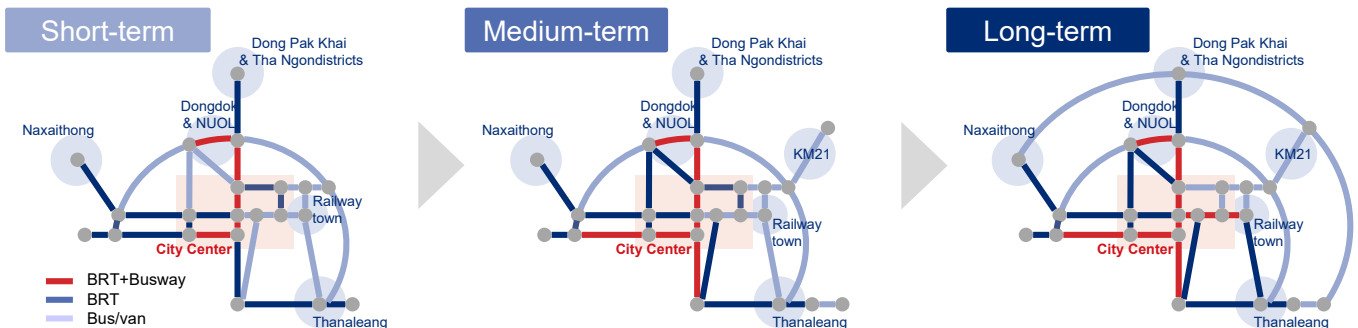
Create an inclusive, sustainable and modern urban transport system along with a joyful walkable environment

*What is the role of the transport master plan in making the vision a reality?*



## Basic Concept of PT Network in the PIS

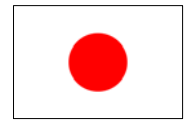
“Connective \* Dense \* Hierarchical” Vientiane (CDH-V Concept)



- Radial corridors to connect the city center and sub-centers
- 1<sup>st</sup> circular route to connect some of the sub-centers and surrounding area of the city center
- Feeder routes to expand the service coverage

- Enhanced radial corridors to connect the city center and sub-centers
- Feeder routes to expand the service coverage

- Enhanced radial corridors to connect the city center and sub-centers
- Grid-shaped network of trunk routes in the city center
- 2<sup>nd</sup> circular lines to connect between the sub-centers



# The Project for Institutional Capacity Building for Sustainable Urban Transport System in Lao People's Democratic Republic

## 6<sup>th</sup> Joint Coordination Committee (JCC) Meeting

21<sup>th</sup> February 2022



JAPAN INTERNATIONAL COOPERATION AGENCY  
KATAHIRA & ENGINEERS INTERNATIONAL  
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN  
ORIENTAL CONSULTANTS GLOBAL



## Project Design Matrix

### Project Purpose

The capacities of relevant institutions in charge of formulating the urban transport MP of Vientiane are upgraded, and their administrative and managing capacities for implementing urban transport policies from the MP are strengthened.

1. C/Ps who attended serial training sessions on urban transport MP formulation improve their understandings on the issues, and achieve over 70% on the post-training test scores

→**Achieved**

2. C/Ps who attended training (s) on the project implementation manual improve their understandings, and achieve over 70% on the post-training test scores

→**Achieved**

3. MPWT, DOT or any other relevant institution officially approves the urban transport MP and action plan ("any other relevant institution" which is responsible for approving the MP and action plan" to be identified, if any).

→**Expected to be achieved within the Project period.**

# Project Design Matrix

## Output 1

The mechanism for discussing and sharing the views on the issues of urban transport is established.

1. More than 3 issues identified during the initial stage of in the Project are discussed in the meetings of the CTMC

→**Within the Project's control: Achieved**

2. More than 3 issues identified during the initial stage of in the Project and discussed in the meetings of the CTMC are dealt by related institutions with follow-up activities

→**Within the Project's control: Achieved**

# Project Design Matrix

## Output 2

Urban transport MP is formulated and trainings (including OJT) are offered to C/Ps for their capacity building.

1. More than 70% of the C/Ps receive training on formulating the urban transport master plan

→**Achieved**

2. An urban transport MP for Vientiane Capital is formulated by updating the year 2008 version

→**On-going**

3. An action plan is formulated to implement the contents of the master plan.

→**On-going**



# Project Design Matrix

## Output 3

Pilot project(s) are implemented and the targeted issues are mitigated.

1. More than 3 C/Ps play specific roles in the planning and implementation of the pilot projects  
→**Achieved**

2. More than 18 C/Ps receive training on the project implementation manual  
More than 70% of the C/Ps receive training on the project implementation manual  
→**Achieved**

3. Urban traffic-related indicators improve on average travel speed +5 km/h in pilot project areas.  
→**Partially Achieved**

# Project Design Matrix

## Overall Goal

Institutional measures and priority projects proposed in the urban transport master plan are implemented in Vientiane Capital under the leadership of GOL.

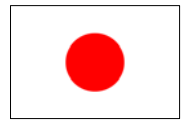
1. More than 3 projects and/or policies proposed in the master plan are reflected in the annual plans of MPWT, DOT, or other related agencies with budget allocations.

2. More than 2 projects and/or policies proposed in the master plan are discussed and considered with donors for implementation.

3. More than 5 projects and/or policies proposed in the master plan are implemented (under implementation or completed).

4. Urban traffic related indicator, bus passenger number, in Vientiane Capital improve by 370% or more.

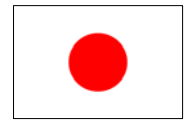
5. The roles of “Steering Committee to Solve Congestion and Traffic-Management in Traffic Routes in the City of Vientiane Capital” (CTMC) are established and more than 2 issues regarding the implementation of the master plan are discussed annually in the CTMC meetings.



Thank you







# The Project for Institutional Capacity Building for Sustainable Urban Transport System in Lao People's Democratic Republic

## 7<sup>th</sup> Joint Coordination Committee (JCC) Meeting Master Plan Report

October 2023



JAPAN INTERNATIONAL COOPERATION AGENCY  
KATAHIRA & ENGINEERS INTERNATIONAL  
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN  
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## 1. Master Plan Report

### What is the Urban Transport Master Plan?

"Urban Transportation Master Plan" is a vision for the future of the urban transport system developed by related organizations based on the results of a PT survey and other data, in addition to integrating the input from citizens and transportation operators to address current and future transport issues in the metropolitan area.

#### Target of the Master Plan

- Cover Area:  
Urbanized area in Vientiane Capital (780 km<sup>2</sup>)
- Population: 648,976 (2015 Census)

#### Target Year

- 2040

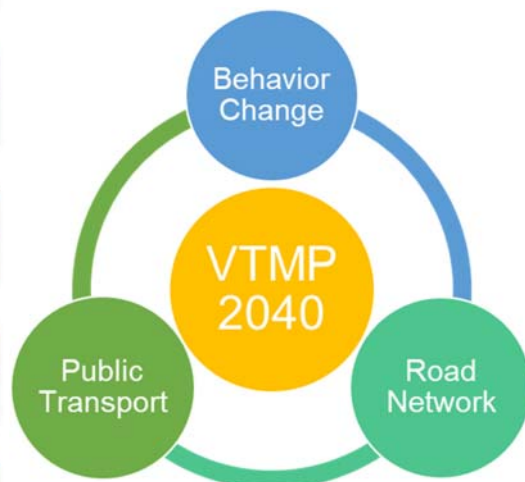
#### Responsible Organizations

- Vientiane Capital
- Ministry of Public Works and Transport



# 1. Master Plan Report

## Master Plan Development Flow



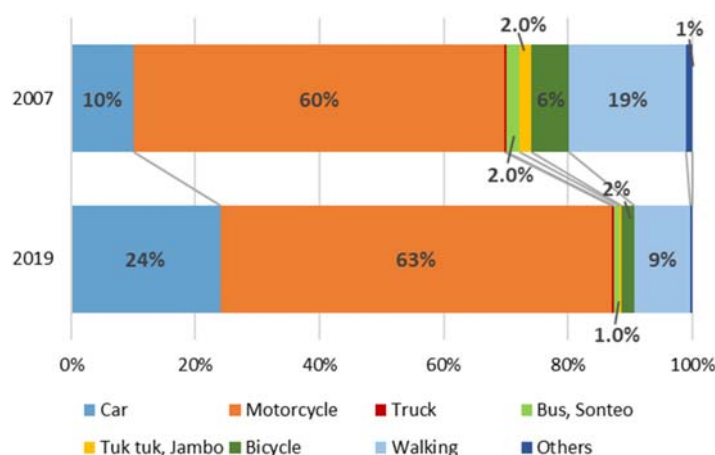
# 1. Master Plan Report

## Urban Transport Conditions & Challenges in Vientiane

Vientiane Capital is experiencing rapid motorization. Private vehicles have become the dominant mode of transport, while public transport share has decreased from 4.0% in 2007 to a mere 1.4% in 2019, resulting in traffic congestion occurring throughout the city.



**Traffic Congestion in Vientiane**

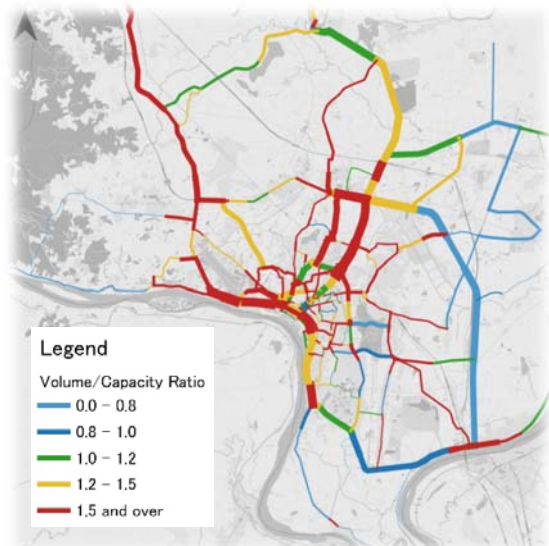


**Low Share of Public Transport (Target Area)**

# 1. Master Plan Report

## Future Traffic Conditions in Vientiane

If nothing is done to address the challenges of public transportation, public transport share is projected to decline further, and traffic congestion will significantly worsen by 2040, as seen in other ASEAN cities.



**Future Traffic Condition in Vientiane (2040 in Do-Nothing Scenario)**



**Consequences of Excessive Motorization without Proper Public Transport (Jakarta, Indonesia)**

# 1. Master Plan Report

## Vientiane Capital Urban Transport Master Plan 2040 (VTMP2040)

### Vision

Towards an Accessible, Livable and Sustainable City for Everybody in 2040

### Mission

Create an Inclusive, Sustainable and Modern Urban Transport System along with a Joyful Walkable Environment

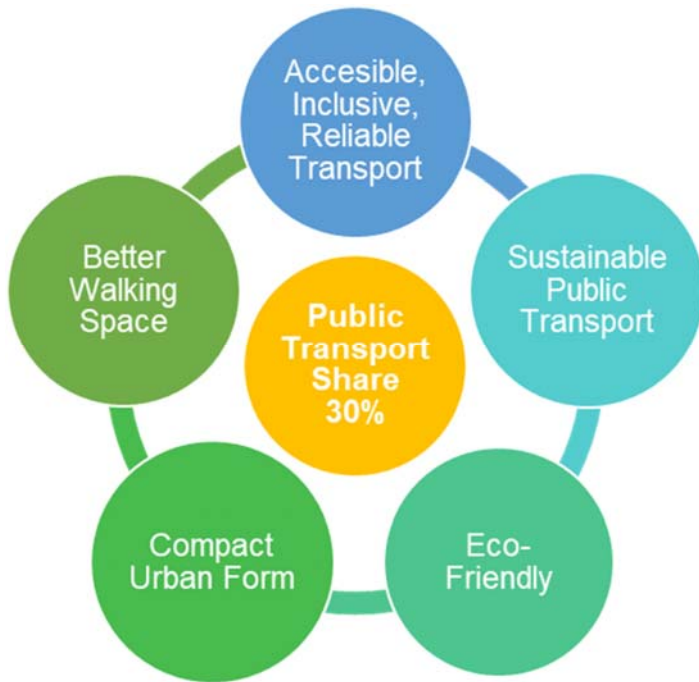




# 1. Master Plan Report

## Vientiane Capital Urban Transport Master Plan 2040 (VTMP2040)

### Goals



# 1. Master Plan Report

## Vientiane Capital Urban Transport Master Plan 2040 (VTMP2040)

### Strategies

The pillar of Vientiane's urban transport strategy is restructuring the “**Public Transport**”. To support this, strategies for “**Road Network and Traffic Management**” were developed. The most important key to the sustainability of the new urban transport system is “**Behavior Change**”.



# 1. Master Plan Report

## BRT Development for Revival of Public Transport System

### Hierarchical Public Transport Network

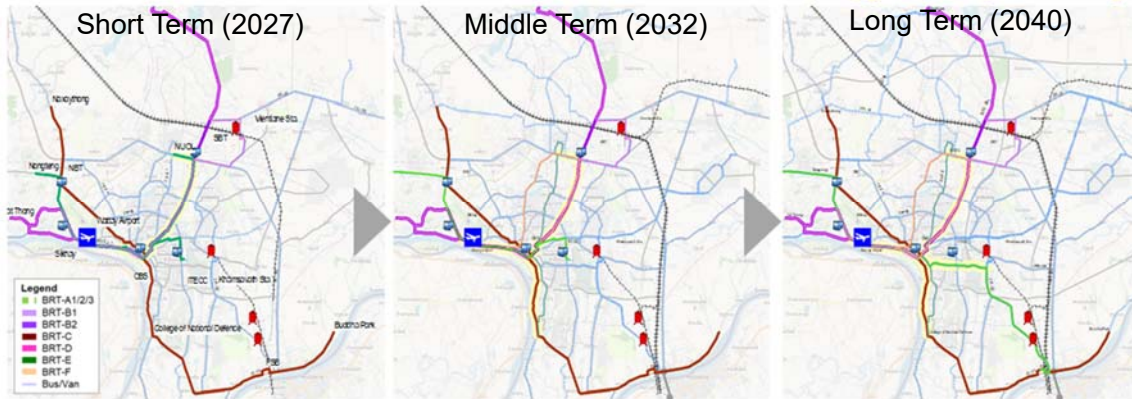
Future public transport will form a hierarchical network consisting of multiple service types based on the BRT system, which will be the trunk transport system.

### Priority Project Package A: Public Transport System with BRT as Main Transport Axis

A group of projects aiming at reconfiguring the public transport network with BRT and feeder buses is positioned as Priority Project Package A.



### Hierarchical Public Transport Network (2040)



# 1. Master Plan Report

## BRT Development for Revival of Public Transport System

### Project Package A

Projects/Activities	Short Term (up to 2027)	
	Establishment	Capacity Development
Capacity development program of Management Entity (UTMS)	Establishment	Capacity Development
Regulation revision of new public transport operation		
Procurement of BRT/Bus/Minibus vehicle	BRT Line A1, B1, B2, D and Minibus	BRT Line C and Bus
Rearrangement of Bus/Songteo lines for BRT		
Development of depot & maintenance facilities and the Control Center		
Bus driver training		
Installation of Busway and transit facilities	Transit mall (Sams-enthai)	Fa Ngum Park to NUOL, CBS
PTPS, station service, fare system development		
Enhancement of traffic management/enforcement (Capacity development)	Preparation announcement	Implementation
Improvement of walking environment (barrier free)	Improvement of the existing including the transit mall	New installation (start from lane configuration re-arrangement)
Mobility management programs		
Branding public transport services Projects		
Modal shift programs with MM		



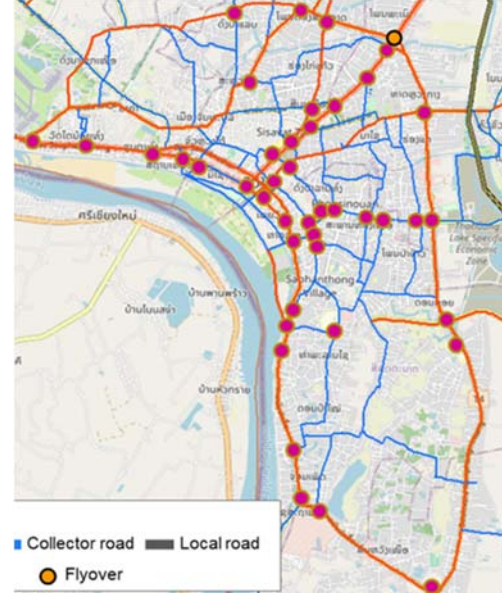
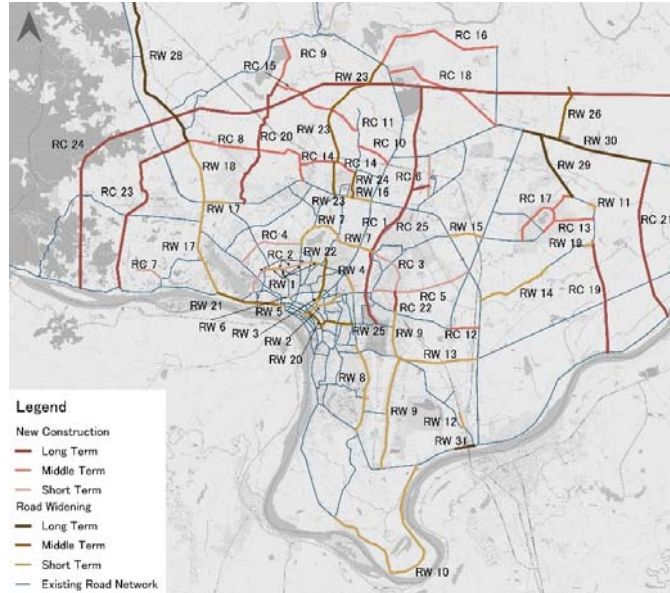


# 1. Master Plan Report

## Road Network Development to Support Public Transport

### Addressing Infrastructure Gaps for Public Transport

The road network development was planned to establishing a hierarchical public transport network. It includes missing link connection (new construction), existing road widening, and intersection improvement.



Development of Road Network

Location of Intersection Improvements

# 1. Master Plan Report

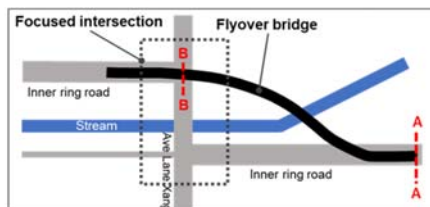
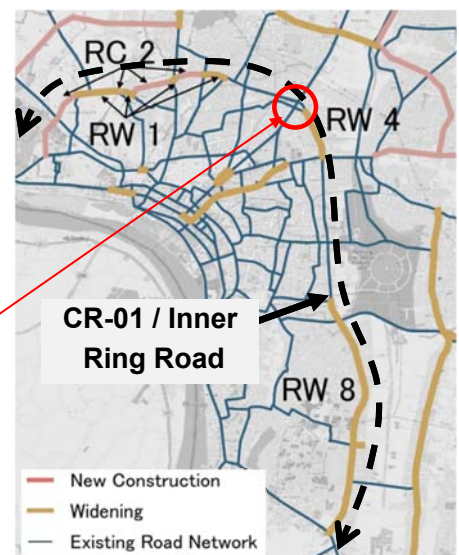
## Road Network Development to Support Public Transport

### Priority Project Package B: Circular Bus Route along Inner Ring Road

Priority Project Package B is a road network development package to create a circular bus route along the Inner Ring Road including missing link development, widening, and intersection improvement.

### Schedule of Package B

Projects/activities	Short term (up to 2027)	
	▼ BRT opening year	
New construction of Inner Ring Road (missing link connection)	[Green bar spanning from start to end of short term]	
Widening of Inner Ring Road (West side)	[Green bar spanning from start to end of short term]	
Widening of Inner Ring Road (ASEAN Rd., Riverside Rd. South)	[Green bar spanning from start to end of short term]	
Flyover bridge construction (Inner Ring Road and Kaysone Phomvihane Avenue)	[Green bar spanning from start to end of short term]	

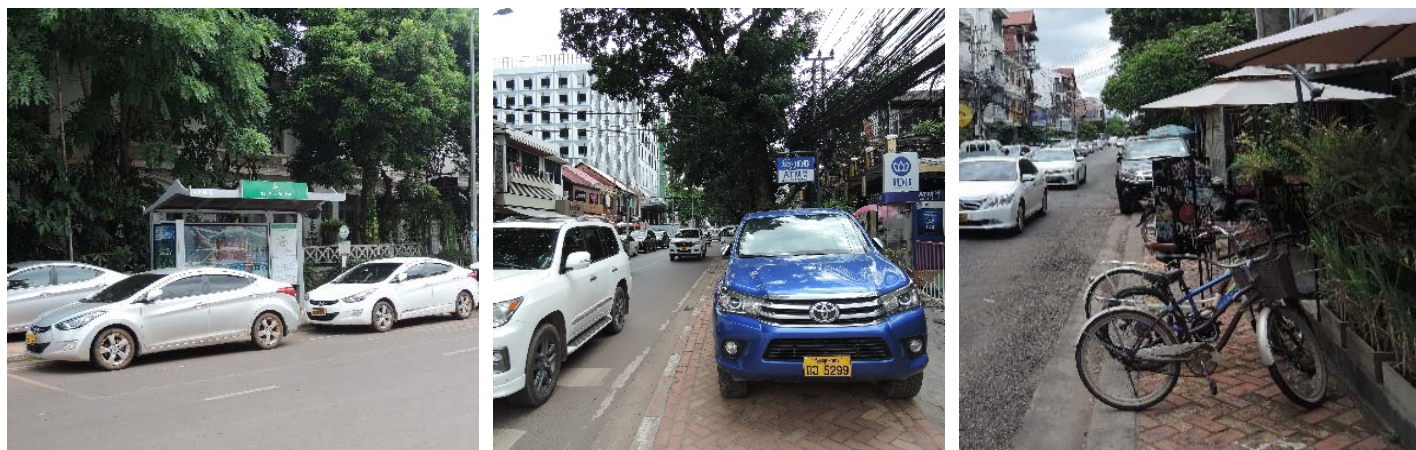


# 1. Master Plan Report

## Traffic Management for Better Life

### Quick Feasible Measures for Better Traffic Environment for Both Drivers and Pedestrians

- Increase road capacity by eliminating on-street parking
- Improve public transport accessibility by eliminating parking around bus stops
- Create better walking environment by eliminating parking on sidewalks



# 1. Master Plan Report

## Traffic Management for Better Life

### Eliminate Drunk Driving to Protect Lives of Vientiane Citizen

- Enforcement by traffic police
- Education or campaign to raise awareness among citizens
- Extend operation hour of public transportation services



Source: LOCA website

### **PUSH & PULL Approach**

To promote the use of public transport more efficiently, a PUSH & PULL approach should be employed.

**Pull factors** concern making public transport better by running buses more frequently, reducing fares, etc.

**Push factors** concern making driving harder through parking restrictions, congestion pricing, etc.

It is essential to implement a smart combination of these measures.



#### **PUSH**

Getting people out of cars  
e.g., parking restriction

#### **PULL**

Getting people into public transport  
e.g., high service frequency



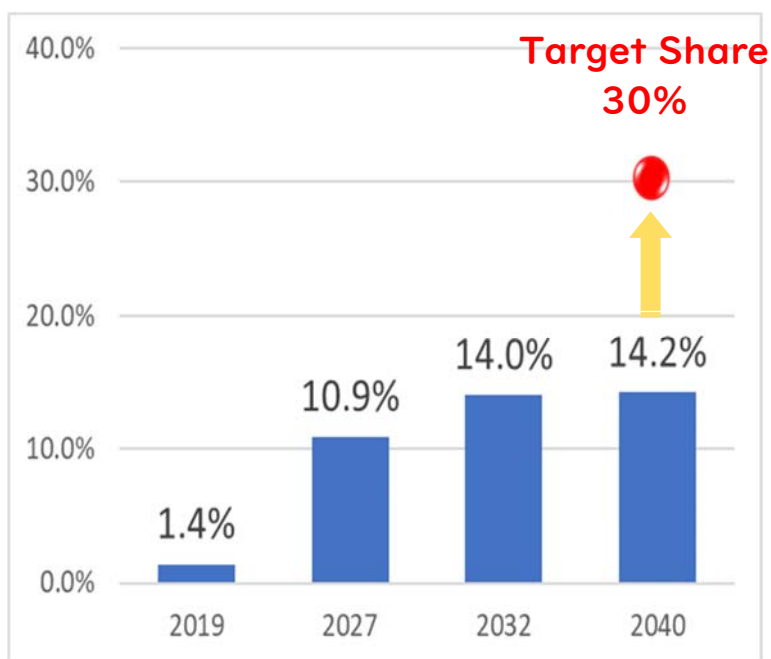
# 1. Master Plan Report

## Behavior Change as a Key to Success

### Importance of Behavior Change

With proper implementation of VTMP 2040, the vision of an accessible, livable, and sustainable Vientiane can be achieved in 2040.

However, without behavior change, the public transport share will remain at 14.2% in 2040, consequently, the target of 30% will not be achieved. Behavioral change is required from all of us to achieve the goal.



Projected Public Transport Share

# 1. Master Plan Report

## Behavior Change as a Key to Success

### Importance of Behavior Change

The significance of behavioral change lies in ensuring their sustained utilization. Even with well-developed infrastructure, without active participation, these systems could fade away. Hence, it is crucial to recognize the role of both administrative leadership and community support.



Leaders and New Buses



Bus Users' Behavior Survey



Educational Campaign for Students

#### Leadership Exemplification:

- ✓ Administrative bodies and leaders setting a good example for citizens by using public transport and ending on-street parking.

#### Ongoing Assessment and Improvements:

- ✓ Gather user feedback and continually enhance services.

#### Information and Education Campaigns:

- ✓ Launch campaigns to educate about the usage and benefits of public transport.
- ✓ Organize events that offer a fun experience using public transport.

#### Fare Incentives:

- ✓ Provide discounts and perks to encourage public transport use.

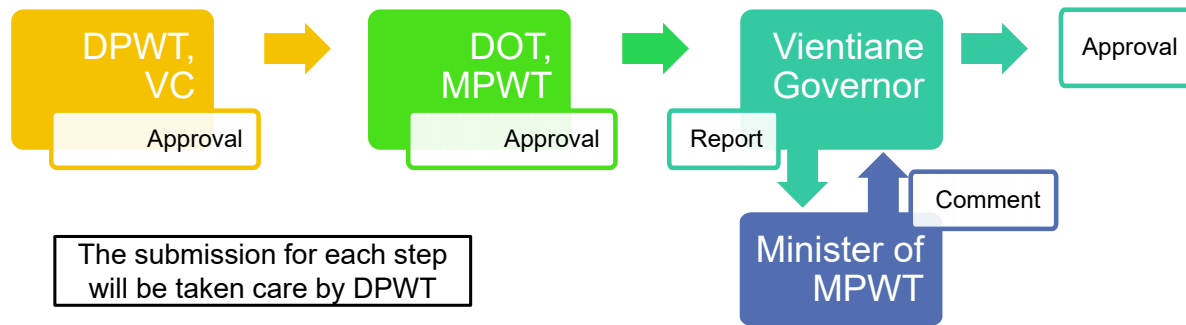
#### Quality Enhancement and Last-Mile Solutions:

- ✓ Offer comfortable and reliable services, in addition to improving accessibility from nearby stations.



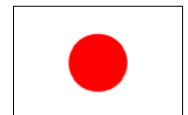
# 1. Master Plan Report

## Approval Procedure

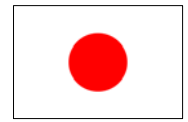


## Schedule

	October	November	December	January
VTMP	J C C		Project Completion	
Lao Activities	Approval from DPWT and DOT, MPWT		Activities for official approval	
				Approval from VC



Thank you



# The Project for Institutional Capacity Building for Sustainable Urban Transport System in Lao People’s Democratic Republic

## 7<sup>th</sup> Joint Coordination Committee (JCC) Meeting Project Activities | Project Design Matrix

October 2023

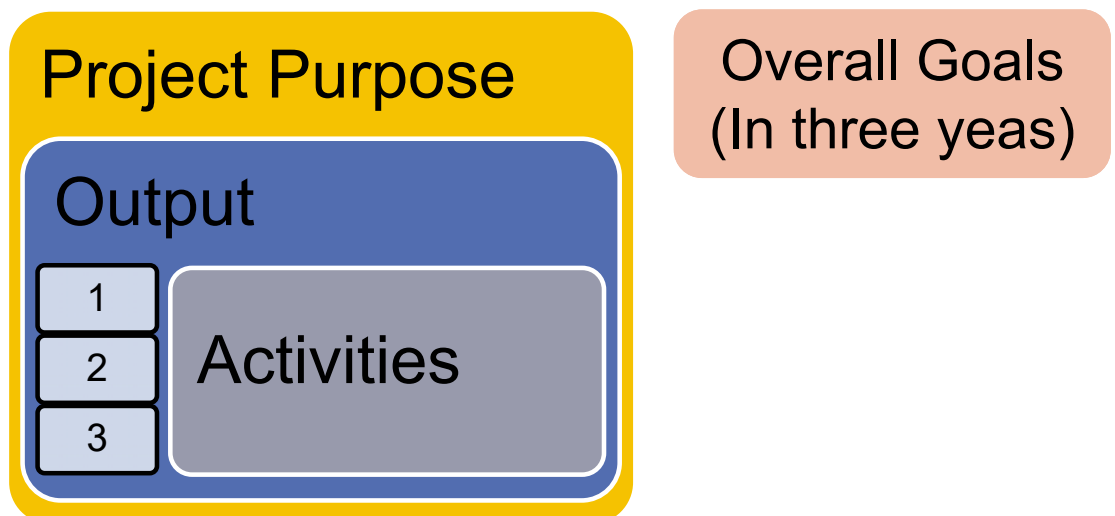


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## 2. Project Activities | Project Design Matrix

**Project Design Matrix consist of;**



**There are Objectively Verifiable Indicators (OVI) on Project Purpose and Outputs to evaluate the Project.**

## 2. Project Activities | Project Design Matrix

### Project Purpose

The capacities of relevant institutions in charge of formulating the urban transport MP of Vientiane are upgraded, and their administrative and managing capacities for implementing urban transport policies from the MP are strengthened.

1. C/Ps who attended serial training sessions on urban transport MP formulation improve their understandings on the issues, and achieve over 70% on the post-training test scores

→ **Achieved (76.0%)**

2. C/Ps who attended training (s) on the project implementation manual improve their understandings, and achieve over 70% on the post-training test scores

→ **Achieved (88.2%)**

3. MPWT, DOT or any other relevant institution officially approves the urban transport MP and action plan ("any other relevant institution" which is responsible for approving the MP and action plan" to be identified, if any).

→ **Expected to be achieved within the Project period.**

## 2. Project Activities | Project Design Matrix

### Project Purpose | Implementation of Working Groups

**12** Working Groups (WG) covering different areas reflected in the MP:

- Each WG was led by a DPWT member and integrated by C/Ps with related backgrounds





# 2. Project Activities | Project Design Matrix

## Project Purpose | Implementation of Working Groups

**120** Working Groups meetings conducted in the project:

- Close collaboration with C/Ps in MP elaboration
- Technical transfer through site surveys and trainings

# 2. Project Activities | Project Design Matrix

## Project Purpose | Implementation of Working Groups: Skill Tests



### Conceptual Skills

3) Please choose proper intersection shape.

4) Please choose proper pedestrian crossing location.

Q1. Raise some of study items in the land-use working group which are needed for formulation of transportation master plan? Please select suitable activity for green arrows A) to C), you can select from 1) to 6).

Master plan formulation flow Activities of Land-use

Answer A) B) C)

### Analysis Skills

3) Please look at the graph below.

FIGURE 1: Population and Vehicle Ownership in Vientiane, and GDP per capita of Lao PDR

Please indicate if the statement is TRUE or FALSE.

1. Vehicle ownership in Vientiane is increasing as population in Vientiane and Laos' GDP per capita increase.

2. The population in Vientiane is increasing because of high vehicle ownership.

### Software Skills

1. In the image below, which option lets the user modify the road capacity? (Slide 10)

**76%** Average score on post-training tests for MP formulation

**88.2%** Average score on project implementation manual

## 2. Project Activities | Project Design Matrix

### Output 1

The mechanism for discussing and sharing the views on the issues of urban transport is established.

1. More than 3 issues identified during the initial stage in the Project are discussed in the meetings of the CTMC

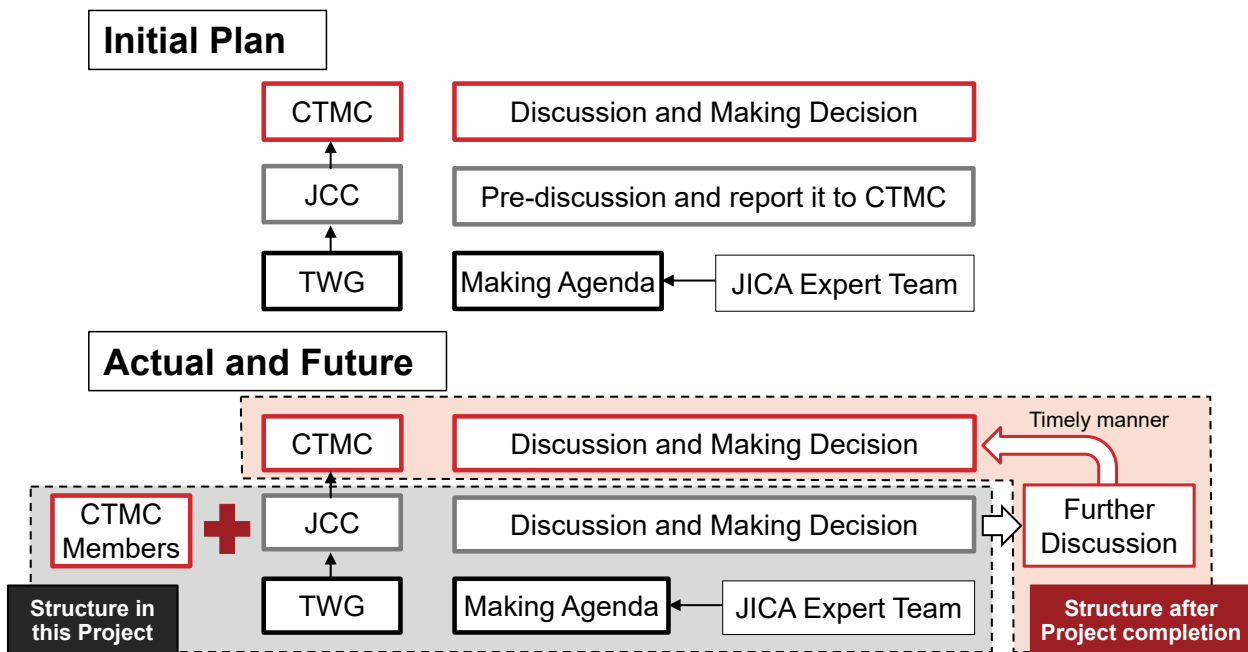
→ **JCC with CTMC members have discussed the issues: Achieved**

2. More than 3 issues identified during the initial stage in the Project and discussed in the meetings of the CTMC are dealt by related institutions with follow-up activities

→ **The activities discussed in the JCC were carried out: Achieved**

## 2. Project Activities | Project Design Matrix

### Output 1 | Structure of Decision Making



- In this project, JCC with CTMC members have discussed the issues and the activities from the discussion were carried out.

**Key Issues:** Sustainability of the Discussion Platform;  
Which organization will Chair the discussions? How often will discussions be hold?

## 2. Project Activities | Project Design Matrix

### Output 2

Urban transport MP is formulated and trainings (including OJT) are offered to C/Ps for their capacity building.

1. More than 70% of the C/Ps receive training on formulating the urban transport master plan  
→**Achieved (75.3%)**

2. An urban transport MP for Vientiane Capital is formulated by updating the year 2008 version  
→**Achieved**

3. An action plan is formulated to implement the contents of the master plan.  
→**Achieved**

## 2. Project Activities | Project Design Matrix

### Output 2 | Attendance Rate to Working Group Meetings



		Attendance Rate for Working Group (WG) Sessions						Weighted Average (%)	
Group No.	Group Name	Year							
		2018	2019	2020	2021	2022	2023		
Individual Sessions (One group only)	1	Transportation Policy/Organization				100.0		100.0	
	2	Urban Transport Plan							
	3	Public Transport Plan		100.0	100.0	77.8	83.3	66.7	85.2
	4	Road Network Plan/ Traffic Management Plan		66.7	100.0	100.0	88.9	66.7	90.9
	5	Traffic Survey/Traffic Demand Forecast		68.3	56.0	52.7	52.2	20.0	53.8
	6	Socio-Economic Analysis (SEA)		66.7	66.7	90.5	100.0		86.7
	7	Financial Analysis/Investment Plan					66.7	50.0	62.5
	8	Geospatial Analysis (GIS)/Database		83.3	91.7	80.0	83.3		83.7
	9	Environmental and Social Considerations			66.7	91.7	33.3		63.0
	10	Urban Development/Land Use Plan/Legislation System			80.0	82.9			82.2
	11	Pilot Project Plan/Implementation Supervision		100.0		100.0	66.7		80.0
	12	Safety Management/Traffic Facilities/IoT				87.5	100.0		91.7
Joint Sessions (Multiple Groups)	1,2	Transport Policy				81.7	83.0	82.4	
	1,2,3	Mobility Management			64.3			64.3	
	2,5	Urban Transport/Traffic Surveys			75.0			75.0	
	3,4	COVID-19 Impact Analysis on Public Transport				100.0		100.0	
	4,5	Road Network/Traffic Demand Forecast				66.7		66.7	
	11,12	Pilot Project Plan/Safety Management		100.0				100.0	
	4,11	Road Network/Pilot Project		60.0				60.0	
	4,11,12	Road Network/Pilot Project/Safety Management		60.0				60.0	
6,8,10	SEA/GIS/Urban Development		40.0				40.0		
8,10	GIS/Urban Development		93.8				93.8		
<b>Attendance Rate for WG Sessions</b>							<b>75.3</b>		

**75.3%** Attendance Rate to Project Working Groups

- Successfully achieving the target of more than 70% of the C/Ps receiving training on MP formulation.



## 2. Project Activities | Project Design Matrix

### Output 2 | Formulation of MP & Action Plan



Gradual formulation and discussion with C/Ps and other relevant stakeholders through:

- 120** Working Group Meetings
- 3** Technical Working Group Meetings
- 8** SEA Sector-Wide Stakeholder Meetings
- 7** Joint Coordination Meetings

## Project Design Matrix

### Output 3

Pilot project(s) are implemented and the targeted issues are mitigated.

1. More than 3 C/Ps play specific roles in the planning and implementation of the pilot projects  
→ **Achieved**

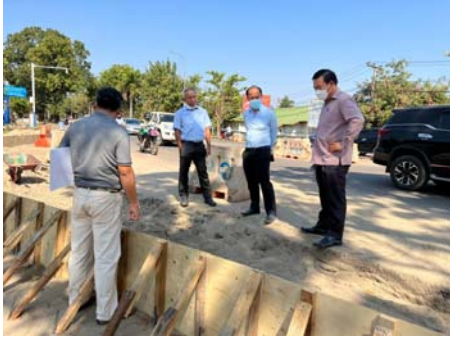
2. More than 18 C/Ps receive training on the project implementation manual  
More than 70% of the C/Ps receive training on the project implementation manual  
→ **Achieved (72.7%)**

3. Urban traffic-related indicators improve on average travel speed +5 km/h in pilot project areas.  
→ **Partially Achieved**

## 2. Project Activities | Project Design Matrix

### Output 3

#### Active Participation of C/Ps in Pilot Project Implementation



#### Training on Project Implementation Manual



**72.7%** Attendance rate to training on project implementation

## 2. Project Activities | Project Design Matrix

### Output 3 | Pilot Project Results

Savang Circus | Chao Anou Rd.



**+18.6 km/h** Increase to travel speed for North-South flow at AM peak  
**+4.2 km/h** Increase to travel speed for North-South flow at PM peak

Savang Circus | Chao Anou Rd to Savang Rd.



**+18.7 km/h** Increase to travel speed for North-East flow at AM peak  
**-5.8 km/h** Increase to travel speed for North-East flow at PM peak

Khouvieng Roundabout at Comcenter



**-2.4 km/h** Decrease to travel speed for West-East flow at AM peak  
**+2.6 km/h** Increase to travel speed for West-East flow at PM peak

Khouvieng Roundabout at 109 Hospital



**-3.2 km/h** Decrease to travel speed for West-East flow at AM peak  
**+6.6 km/h** Increase to travel speed for West-East flow at PM peak



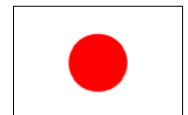
# Project Design Matrix

## Overall Goal (Target in Three Years)

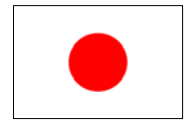
Evaluation Project will come in three years to assess the progress on this target.

Institutional measures and priority projects proposed in the urban transport master plan are implemented in Vientiane Capital under the leadership of GOL.

1. More than 3 projects and/or policies proposed in the master plan are reflected in the annual plans of MPWT, DOT, or other related agencies with budget allocations.
2. More than 2 projects and/or policies proposed in the master plan are discussed and considered with donors for implementation.
3. More than 5 projects and/or policies proposed in the master plan are implemented (under implementation or completed).
4. Urban traffic related indicator, bus passenger number, in Vientiane Capital improve by 370% or more.
5. The roles of “Steering Committee to Solve Congestion and Traffic-Management in Traffic Routes in the City of Vientiane Capital” (CTMC) are established and more than 2 issues regarding the implementation of the master plan are discussed annually in the CTMC meetings.



**Thank you**



# The Project for Institutional Capacity Building for Sustainable Urban Transport System in Lao People’s Democratic Republic

## 7<sup>th</sup> Joint Coordination Committee (JCC) Meeting

October 2023



JAPAN INTERNATIONAL COOPERATION AGENCY  
KATAHIRA & ENGINEERS INTERNATIONAL  
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN  
ORIENTAL CONSULTANTS GLOBAL



### 3. Project Evaluation

#### Evaluation Indicator

Item	Evaluation
Relevance	Medium
Coherence	High
Effectiveness	Medium
Efficiency	Medium
Impact	Medium
Sustainability	Medium

<b>Relevance</b>	Extent to which the aid activity is suited to the priorities and policies of the target group, recipient and donor.
<b>Coherence</b>	Consistency with the development cooperation policy of the Japanese government and JICA, synergies and interconnections with other JICA projects, and coherence of results with the support from other Japanese projects and aid from other organizations, as well as alignment with international frameworks and norms/standards/initiatives.
<b>Effectiveness</b>	Extent to which an aid activity attains its objectives.
<b>Efficiency</b>	Measure comparing the inputs, project period, cost estimations, and the actual results.
<b>Impact</b>	Positive and negative indirect and long-term effects caused by the development intervention.
<b>Sustainability</b>	<ul style="list-style-type: none"> <li>•Sustainability of the effects produced by the project.</li> <li>•Situation related to organizational and structural conditions, technical aspects, finances, environmental and social aspects, risk response, and operation and maintenance status.</li> </ul>

# 3. Project Evaluation

## Relevance: Medium

Relevance with development plans and needs:

- Vientiane has faced rapid changes in its urban area, population, and vehicle registrations, among other factors.
- Accordingly, Vientiane's transport system is anticipated to undergo significant changes in the future. Thus, the update of the 2008 MP was necessary.

Appropriateness of the project's plan and approach:

- The JCC of this project was designated as a subcommittee under the Congestion Traffic Management Committee (CTMC).
- However, scheduling adjustments at the level of CTMC officials and COVID-19 related restrictions complicated scheduling efforts.
- Thus, in the 6<sup>th</sup> JCC meeting members agreed to continue carrying out similar functions to the ones originally envisioned for the CTMC, to ensure the implementation of the current Master Plan.

# 3. Project Evaluation

## Coherence: High

Consistency with the Japanese Government/JICA development cooperation policy:

- Consistent with Priority Area 1, "Economic and Social Infrastructure Development," of the four priority areas (medium goals) listed in Japan's country aid policy for Laos.
- The project is expected to make a significant contribution to the development challenges facing Vientiane.

Consistency with other JICA projects and projects by other donors:

- This project is expected to generate a synergistic effect with other JICA projects and projects from other donors by sharing traffic data and knowledge gained by each party, making effective use of them, and addressing urban transport issues.
- Coordination has been undertaken with VCSBE and VSUTP to exchange information and avoid overlap of assistance between projects.

# 3. Project Evaluation

## Effectiveness: Medium

Project Purpose	The capacities of relevant institutions in charge of formulating the urban transport MP of Vientiane are upgraded, and their administrative and managing capacities for implementing urban transport policies from the MP are strengthened.	
Objectively Verifiable Indicator	<b>CPs who attended serial training sessions on urban transport MP</b> formulation improve their understandings on the issues, and <b>achieve over 70% on the post-training test scores</b>	<b>Achieved</b>
	<b>CPs who attended training (s) on the project implementation manual</b> improve their understandings, and <b>achieve over 70% on the post-training test scores</b>	<b>Achieved</b>
	<b>MPWT, DOT or any other relevant institution officially approves the urban transport MP and action plan</b> ("any other relevant institution" which is responsible for approving the MP and action plan" to be identified, if any).	<b>Achieved (Expected)</b>

- Regarding approval process, as accorded in the 6<sup>th</sup> JCC, the Laos side will continue with the necessary procedures for MP and action plan approval.
- In addition to the quantitative results, improvements in the capabilities of the counterparts were confirmed from a qualitative perspective.

# 3. Project Evaluation

## Efficiency: Medium

Efficiency is reviewed from the viewpoint of:

### I. Project Duration

- Originally scheduled from 2018/12-2021/12 (37 months), but due to complications caused by COVID-19 and border reopening restrictions, traffic survey and MP preparation delays, as well as report revisions, the project duration was extended, adding a total of 23 months.

### II. Project Cost

- The final project cost was 122% of original budget.
- Although travel costs decreased, because of switching to domestic assignments due to COVID-19 restrictions, costs increased due to the expansion of project sites/target area, Pilot Project costs, additional traffic survey needed to check impact of COVID-19, and increases in other costs.

Overall, the project cost was generally efficient. However, from the perspective of project duration, although some factors were out of control for the project, efficiency issues remained related to work progress.

# 3. Project Evaluation

## Impact: Medium

### **Possibility of achieving the overall goals of the project:**

- Project team and the counterparts worked closely with to discuss the contents of the project, and proposed the project based on feasibility, additionally CTMC activities will be carried out with the support of JCC members. Thus, there is high probability of achieving the overall goals explained in the Project Activities session.

### **Possibility of having positive/negative indirect effects:**

- Behavior changes such as citizens switching from using private cars to public transport will alleviate traffic congestion, reducing environmental impacts, and resulting in positive effects.
- Intersection improvements of changing the intersection shape under the pilot project initially caused confusion, thus, having a temporal negative impact.

### **Potential impacts on social systems and norms, people's well-being, human rights, gender equality, and the environment:**

- Appropriate traffic management by the Traffic Police is expected to reduce illegal parking, as well as improve pedestrian and road safety for people of all ages, gender, and people with disabilities.

# Project Design Matrix

## **Overall Goal (Target in Three Years)**

Evaluation Project will come in three years to assess the progress on this target.

Institutional measures and priority projects proposed in the urban transport master plan are implemented in Vientiane Capital under the leadership of GOL.

1. More than 3 projects and/or policies proposed in the master plan are reflected in the annual plans of MPWT, DOT, or other related agencies with budget allocations.

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5. The roles of "Steering Committee to Solve Congestion and Traffic-Management in Traffic Routes in the City of Vientiane Capital" (CTMC) are established and more than 2 issues regarding the implementation of the master plan are discussed annually in the CTMC meetings.

# 3. Project Evaluation

## Sustainability: Medium

### I. Organizational Aspects

- JCC members lead by DPWT will carry on with MP related discussions as a subcommittee of CTMC.
- Confirmation of future collaboration has been obtained from all counterparts.

### II. Technical Aspects

- Capacity of CPs have been strengthened through workshops and presentation of activities at JCC meetings.
- Collaboration with members of other organizations has been improved and active participation of CPs has increased throughout the project.

# 3. Project Evaluation

## Sustainability: Medium

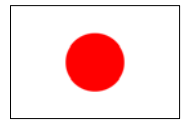
### III. Policy & Institutional Aspects

- Policy documents have been created in collaboration with CPs. Particularly, by focusing on “Behavior change,” an aspect that had not received much attention in the past, it is expected that the sustainability of the policy and institutional aspects of the master plan will be enhanced.

### IV. Financial

- Considering the current financial situation of the Lao government, projects that can be implemented with low budget have been proposed in the Master Plan.
- Cooperation from donors is also being considered, not just limiting to the financial measures of the Lao side but broadly exploring the possibilities of implementation.





**Thank you**



## Appendix 4 ビエンチャン都市交通マスタープランパンフレット





# Vientiane Capital Urban Transport Master Plan 2040 (VTMP 2040)

Vientiane Capital 2023



# What is the Urban Transport Master Plan?

The "**Urban Transport Master Plan**" is a vision for the future of the urban transport system developed by related organizations based on the results of a person-trip survey and other data, in addition to integrating the input from citizens and transportation operators in order to address current and future transportation issues in the metropolitan area.



## Target of the Master Plan

- Cover Area: Urbanized area in Vientiane Capital (780 km<sup>2</sup>)
- Population: 648,976 (2015 Census)



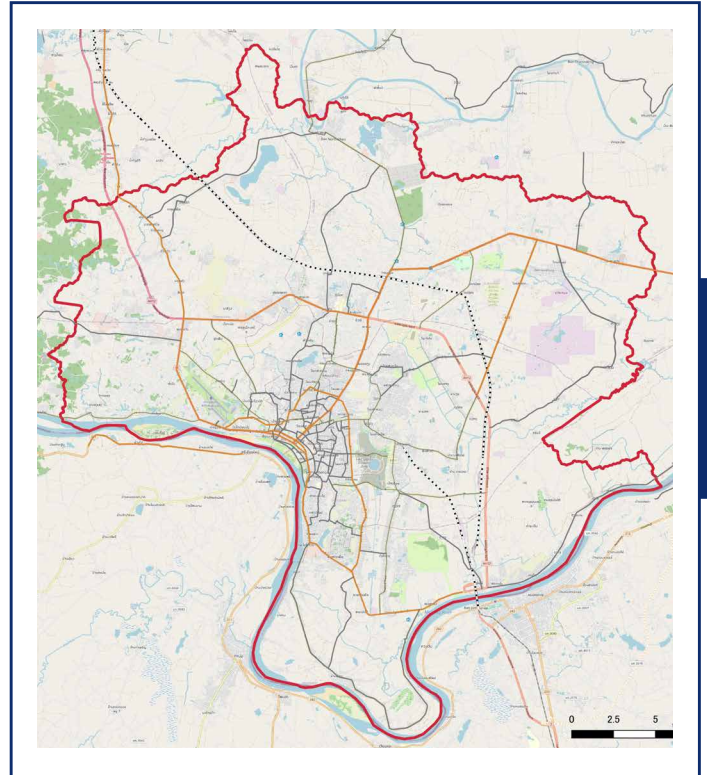
## Target Year

- 2040



## Responsible Organizations

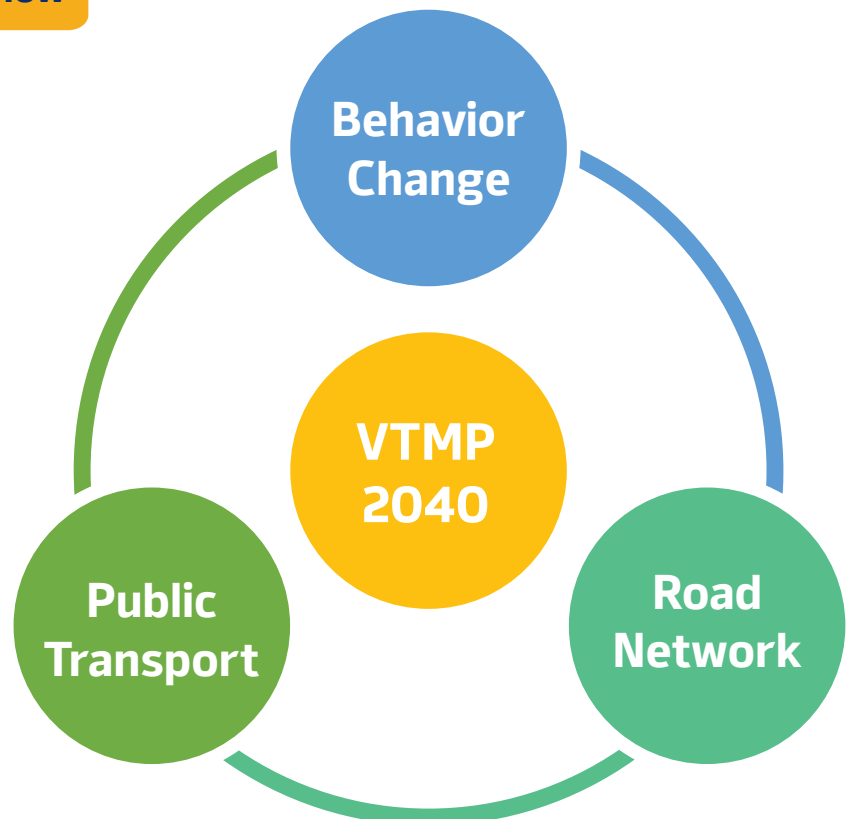
- Vientiane Capital
- Ministry of Public Works and Transport



Cover Area

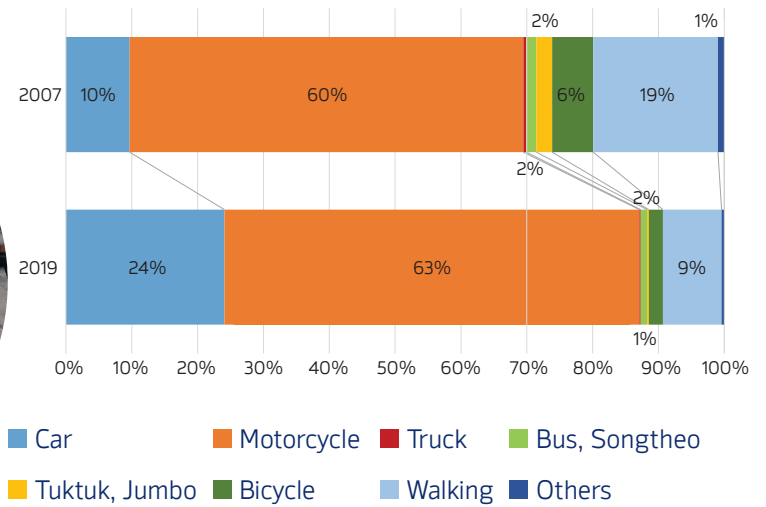


## Master Plan Development Flow



# Urban Transport Conditions and Challenges in Vientiane

Vientiane Capital is experiencing rapid motorization. Private vehicles have become the dominant mode of transport, while public transport share has decreased from 4.0% in 2007 to a mere 1.4% in 2019, resulting in traffic congestion occurring throughout the city.

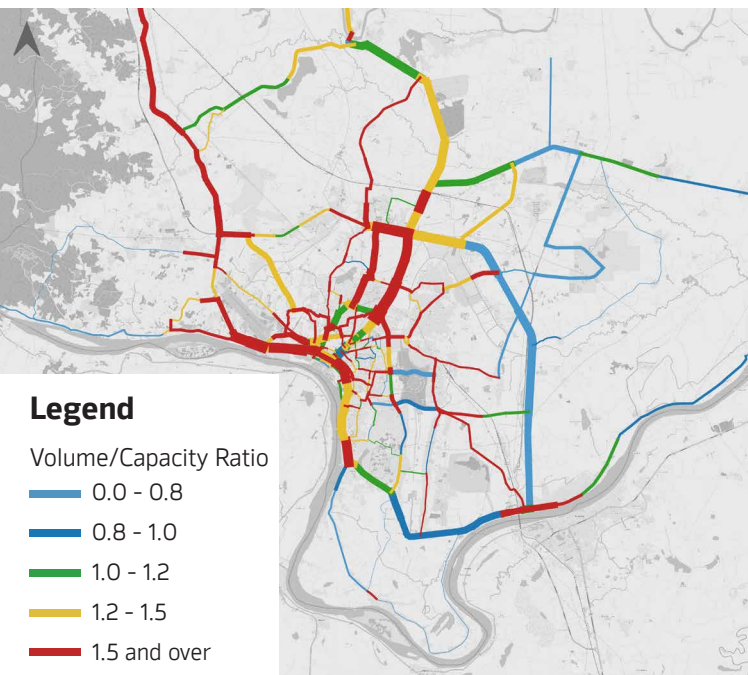


## Traffic Congestion in Vientiane

## Low Share of Public Transport (Target Area)

## Future Traffic Conditions in Vientiane

If nothing is done to address the challenges of public transportation, public transport share is projected to decline further, and traffic congestion will significantly worsen by 2040, as seen in other ASEAN cities.



Future Traffic Condition in Vientiane (2040 in Do-Nothing Scenario)

Consequences of Excessive Motorization without Proper Public Transport (Jakarta, Indonesia)



## Vision

Towards an Accessible, Livable and Sustainable City for Everybody in 2040

## Mission

Create an Inclusive, Sustainable and Modern Urban Transport System along with a Joyful Walkable Environment

## Goals



## Strategies

The pillar of Vientiane's urban transport strategy is restructuring the “**Public Transport**”. To support this, strategies for “**Road Network and Traffic Management**” were developed. The most important key to the sustainability of the new urban transport system is “**Behavior Change**”.





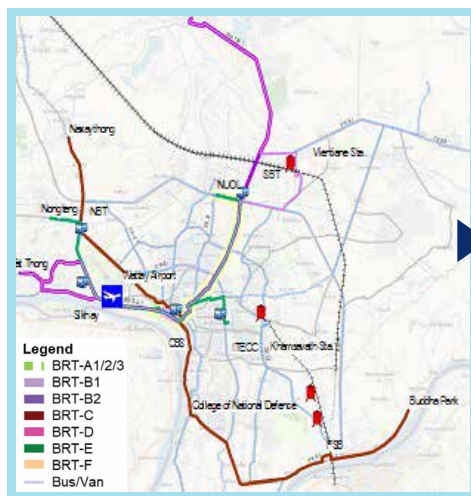
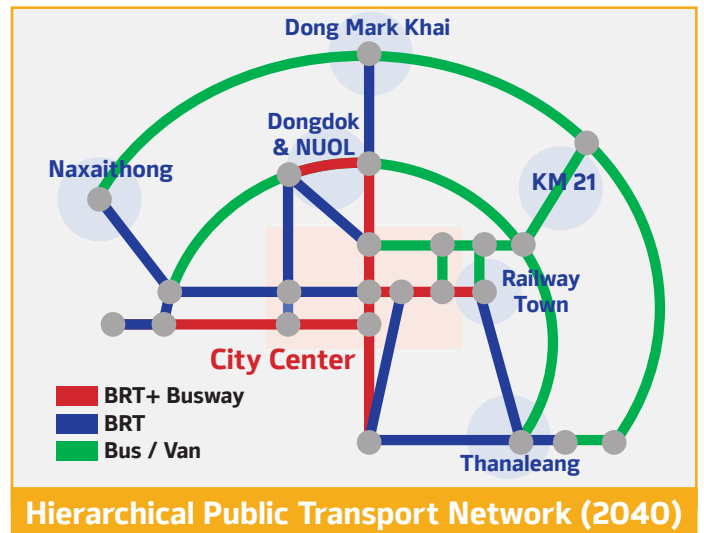
# BRT Development for Revival of Public Transport System

## Hierarchical Public Transport Network

Future public transport will form a hierarchical network consisting of multiple service types based on the BRT system, which will be the trunk transport system.

## Priority Project Package A: Public Transport System with BRT as Main Transport Axis

A group of projects aiming at reconfiguring the public transport network with BRT and feeder buses is positioned as Priority Project Package A.



## Phased Development of BRT System

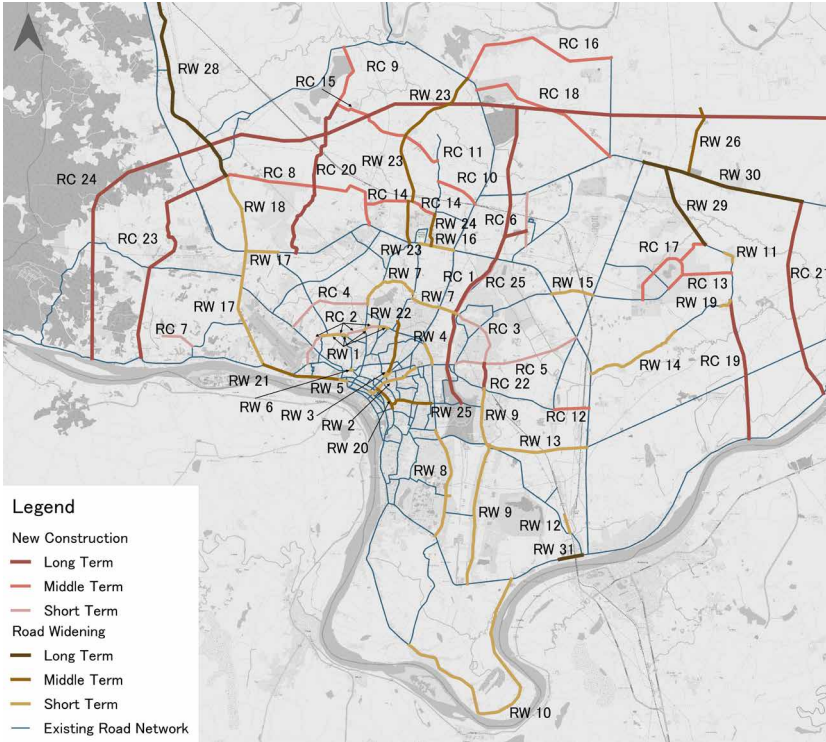
Projects / Activities	Short Term (up to 2027)	
	▼ BRT opening year (2024)	
Capacity development program of management entity (UTMS)	Establishment	Capacity Development
Regulation revision of new public transport operation		
Procurement of BRT/Bus/Minibus vehicles	BRT Line A1, B1, B2, D and Minibus	BRT Line C and Bus
Rearrangement of Bus/Songteo lines for BRT		
Development of depot & maintenance facilities and the control center		
Bus driver training		
Installation of busway and transit facilities	Transit mall (Samsenthai)	Fa Ngum Park to NUOL, CBS
PTPS, station service, fare system development		
Enhancement of traffic management & enforcement (capacity development)	Preparation/announcement	Implementation
Improvement of walking environment (barrier free)	Improvement of the existing including the transit mall	New installation (start from lane configuration re-arrangement)
Mobility management programs		
Branding of public transport services		
Modal shift programs with MM		



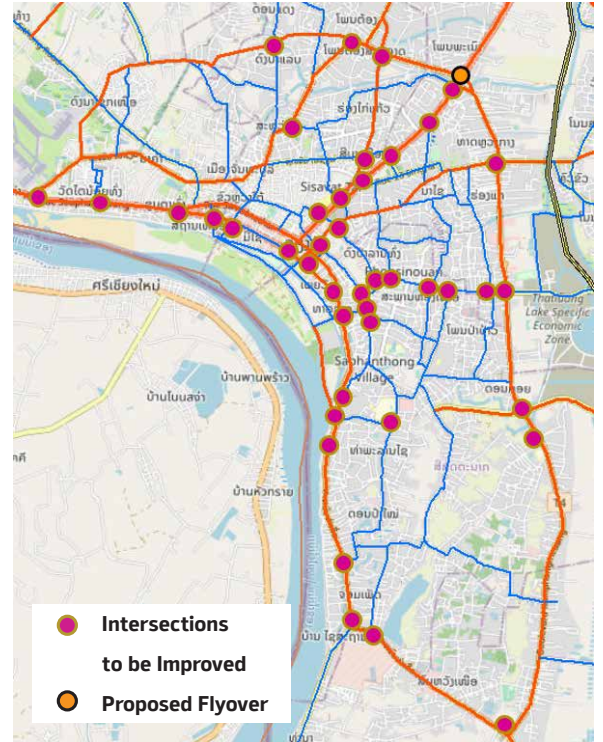
# Road Network Development to Support Public Transport

## Addressing Infrastructure Gaps for Public Transport

The road network development was planned to establish a hierarchical public transport network. It includes missing link connection (new construction), existing road widening, and intersection improvement.



Development of Road Network



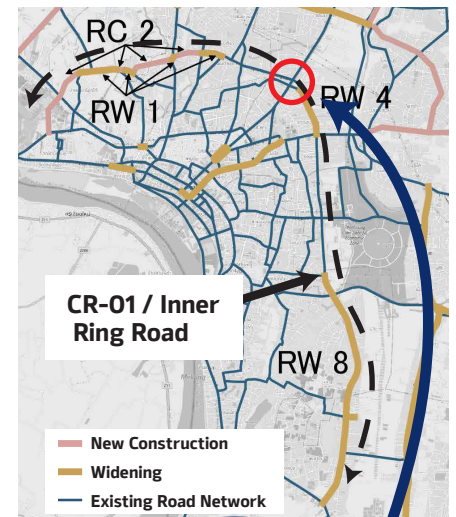
Location of Intersection Improvements

## Priority Project Package B: Circular Bus Route along Inner Ring Road

Priority Project Package B is a road network development package to create a circular bus route along the Inner Ring Road including missing link development, widening, and intersection improvement.

### Schedule of Package B

Projects / Activities	Short Term (up to 2027)	
	▼ BRT opening year (2024)	
New construction of Inner Ring Road (missing link connection)	[Progress bar from 2024 to 2027]	
Widening of Inner Ring Road (West side)	[Progress bar from 2024 to 2027]	
Widening of Inner Ring Road (ASEAN Rd., Riverside Rd. South)	[Progress bar from 2024 to 2027]	
Flyover bridge construction (Inner Ring Road and Kaysone Phomvihane Avenue)	[Progress bar from 2024 to 2027]	





# Traffic Management for a Better Life

## Quick Feasible Measures for a Better Traffic Environment for Both Drivers and Pedestrians

- Increase road capacity by eliminating on-street parking
- Improve public transport accessibility by eliminating parking around bus stops
- Create better walking environment by eliminating parking on sidewalks



## Eliminate Drunk Driving to Protect the Lives of Vientiane's Citizens

- Enforcement by Traffic Police
- Conduct campaigns to educate and raise awareness among citizens
- Extend operation hours of public transport services



**ຜົນເສຍຂອງທາດເຫຼົ້າຕໍ່ການຂັບຂີ່**

- ເຮັດໃຫ້ການເຮັດວຽກຂອງສະໝອງ ແລະ ການຕອບສະໜອງຊ້າລົງ
- ເຮັດໃຫ້ບໍ່ຮູ້ສຶກໂຕວ່າໃຊ້ຄວາມໄວເກີນໄປ
- ຄວາມຮັບຜິດຊອບໜ້ອຍລົງໃນທຸກໆດ້ານ
- ຄວາມສາມາດໃຫ້ການແນມເຫັນຫຼຸດລົງ
- ເຮັດໃຫ້ເຫງົາບອນ



**ຖ້າຕ້ອງການດື່ມແບບມ່ວນເດັ່ນທີ່ຄວນຫຼີກລ້ຽງການຂັບລົດເດັດຂາດ, ວິທີຫຼີກລ້ຽງ:**

- ບໍ່ເອົາລົດໄປ, ຈອດໄວ້ຢູ່ເຮືອນ
- ວາງແຜນເລືອກຽມເດີນທາງດ້ວຍວິທີອື່ນ
- ໃຊ້ບໍລິການ Taxi
- ນອນຢູ່ເຮືອນໝູ່ (ປອດໄພທີ່ສຸດ)
- ໃຫ້ໝູ່ຜູ້ທີ່ບໍ່ໄດ້ດື່ມຂັບແທນ
- ໃຫ້ໝູ່ ຫຼື ຄົນໃນຄອບຄົວມາຮັບ

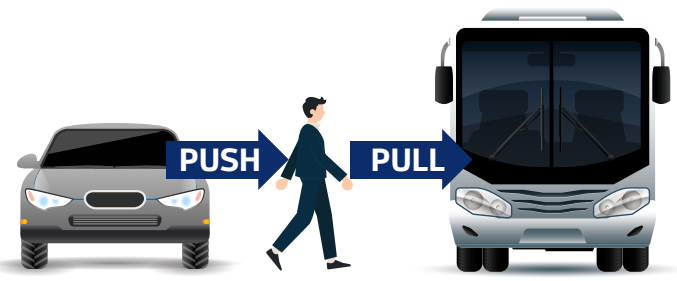


### PUSH & PULL Approach

To promote the use of public transport more efficiently, a PUSH & PULL approach should be employed.

Pull factors concern making public transport better by running buses more frequently, reducing fares, etc.

Push factors concern making driving harder through parking restrictions, congestion pricing, etc. It is essential to implement a smart combination of these measures.



**PUSH**  
Getting people out of cars  
e.g., parking restriction

**PULL**  
Getting people into public transport  
e.g., high service frequency

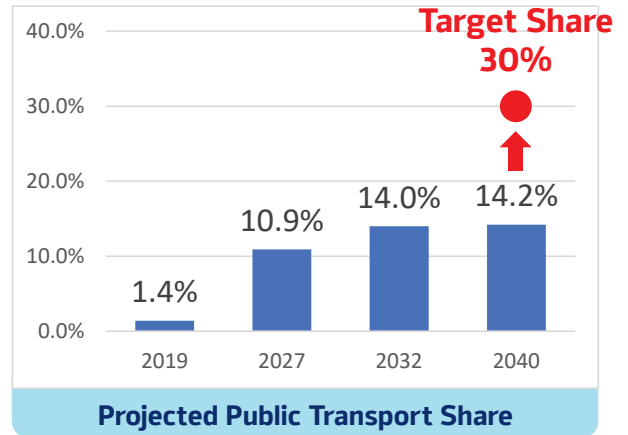
# Behavior Change as a Key to Success

## Importance of Behavior Change

With proper implementation of VTMP 2040, the vision of an accessible, livable, and sustainable Vientiane can be achieved in 2040.

However, without behavior change, the public transport share will remain at 14.2% in 2040, thus the target of 30% will not be achieved. Behavioral change is required from all of us to achieve the goal.

The significance of behavioral change lies not only in establishing public transportation systems but also in ensuring their sustained utilization. Even with well-developed infrastructure, without active participation, these systems could fade away. Hence, it is crucial to recognize the role of both administrative leadership and community support.



### Leadership Exemplification:

- ✓ Administrative bodies and leaders setting a good example for citizens by using public transport and ending on-street parking.

### Ongoing Assessment and Improvements:

- ✓ Gather user feedback and continually enhance services.

### Awareness and Education Campaigns

- ✓ Launch campaigns to educate about the usage and benefits of public transport.
- ✓ Organize events that offer a fun experience using public transport.

### Fare Incentives:

- ✓ Provide discounts and perks to encourage public transport use.

### Quality Enhancement and Last-Mile Solutions:

- ✓ Offer comfortable and reliable services, in addition to improving accessibility from nearby stations.



Leaders and New Buses

Photo: Masatoshi Ishida, Second secretary, Embassy of Japan in the Lao PDR



Bus Users' Behavior Survey



Educational Campaign for Students

Contact: Department of Public Works and Transport, Vientiane Capital  
Sethathirath Road, Keoyot Village, Sisattanak District, P.O.Box: 2787

Tel: 021-212 629



## Appendix 5 ビエンチャン都市交通マスタープラン

Lao People's Democratic Republic

# **URBAN TRANSPORT MASTER PLAN OF VIENTIANE CAPITAL**

## **FINAL REPORT**

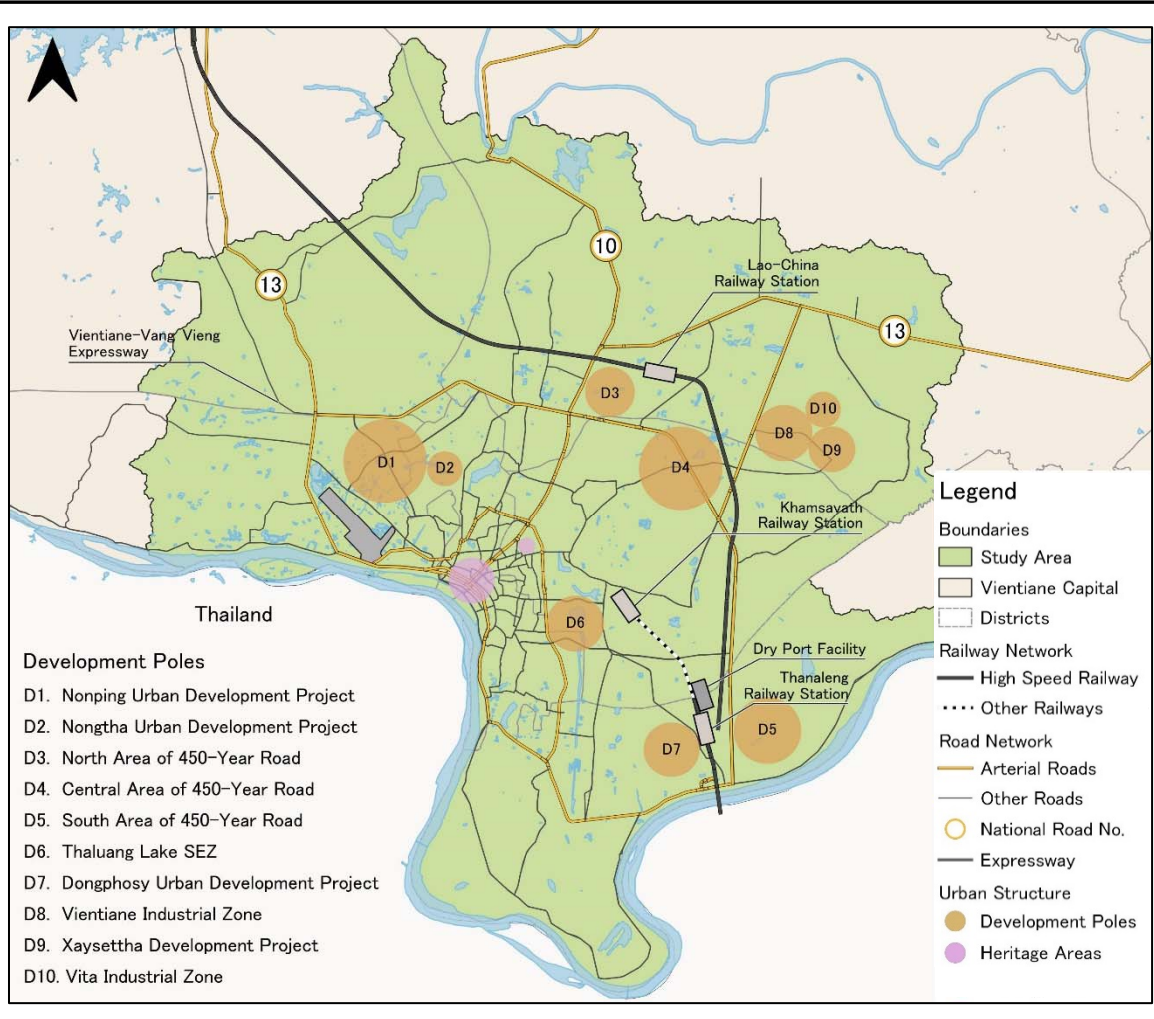
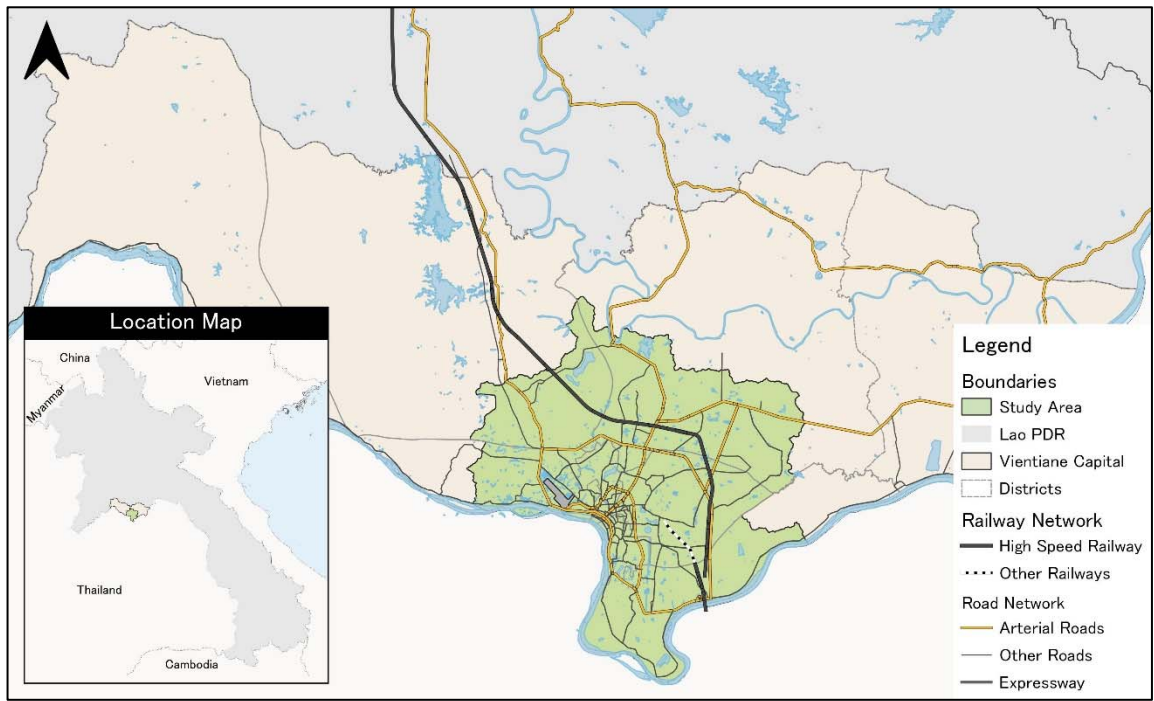
**AUGUST 2023**

**JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)**

**KATAHIRA & ENGINEERS INTERNATIONAL  
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN  
ORIENTAL CONSULTANTS GLOBAL**



# Location Map of Project Area







## URBAN TRANSPORT MASTER PLAN OF VIENTIANE CAPITAL TABLE OF CONTENTS

LOCATION MAP

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS

CHAPTER 1 INTRODUCTION.....	1-1
1.1 BACKGROUND AND PURPOSE OF THE URBAN TRANSPORT MASTER PLAN OF VIENTIANE CAPITAL (VTMP2040) .....	1-1
1.1.1 Economic Development and Urbanization in Vientiane Capital.....	1-1
1.1.2 Necessity of Updating the Urban Transport Master Plan.....	1-1
1.2 RELATIONSHIP OF THE DEVELOPMENT PLAN .....	1-2
1.3 OUTCOMES FROM 2008MP AND THE CONCEPT OF VTMP2040.....	1-3
1.3.1 Outcomes from 2008MP .....	1-3
1.3.2 Moving Forward with VTMP2040.....	1-7
1.4 OVERVIEW OF VTMP2040 .....	1-8
1.4.1 Scope of VTMP2040.....	1-8
1.4.2 Structure of the Urban Transport Master Plan.....	1-9
1.4.3 Urban Transport Master Plan Development Process.....	1-10
1.5 COMPONENTS OF THE MASTER PLAN REPORT.....	1-10
CHAPTER 2 DEVELOPMENT PLANS AND PROJECTS .....	2-1
2.1 DEVELOPMENT PLANS RELEVANT TO THE URBAN TRANSPORT MASTER PLAN .....	2-1
2.2 SUMMARY OF DEVELOPMENT PLANS.....	2-2
2.2.1 MPI/9 <sup>th</sup> 5-Year National Socio-Economic Development Plan (2021-2025) (NSEDP).....	2-2
2.2.2 Vientiane Capital/Vision 2030 of Vientiane Capital.....	2-2
2.2.3 Vientiane Capital/9 <sup>th</sup> 5-Year Socio-Economic Development Plan of Vientiane Capital (2021-2025) (VSEDP) .....	2-3
2.2.4 National Assembly/General Urban Plan of Vientiane Capital 2030.....	2-4
2.2.5 MPWT/Vision 2030 and 10-Year Development Strategy of PWT Sector (2016-2025).....	2-5
2.2.6 MPWT/5-Year Development Plan (2021-2025).....	2-6
2.2.7 DPWT/Direction of 9 <sup>th</sup> Five-Year Plan of DPWT in Vientiane Capital (2021-2025).....	2-7
2.2.8 Politburo of Central Party/Resolutions of Development of Vientiane Capital in 2030.....	2-7
2.2.9 JICA, MPWT/Comprehensive Urban Transport Master Plan in VC (2008 MP) .....	2-8
CHAPTER 3 PROFILE OF THE PROJECT TARGET AREA .....	3-1
3.1 PHYSICAL PROFILE .....	3-1
3.1.1 Meteorology .....	3-1
3.1.2 Topography.....	3-2
3.1.3 Hydrography.....	3-3
3.2 LAND USE AND URBANIZATION .....	3-4
3.2.1 Land Use.....	3-4
3.2.2 Urbanization Trends .....	3-12
3.3 CURRENT AND FUTURE SOCIO-ECONOMIC FRAMEWORK.....	3-14
3.3.1 Current Socio-Economic Conditions.....	3-14
3.3.2 Future Socio-Economic Framework.....	3-18

3.4	OVERVIEW OF URBAN TRANSPORT SYSTEM .....	3-22	
CHAPTER 4 PRESENT PUBLIC TRANSPORT .....			4-1
4.1	PRESENT PUBLIC TRANSPORT .....	4-1	
4.2	NUMBER OF PUBLIC TRANSPORT VEHICLES.....	4-1	
4.3	PUBLIC TRANSPORT ADMINISTRATION AND OPERATORS.....	4-2	
4.4	URBAN BUS SERVICE.....	4-3	
4.4.1	Bus Service Routes and Operation .....	4-3	
4.4.2	Bus Passenger Demand .....	4-4	
4.4.3	Bus Operator.....	4-5	
4.5	PARATRANSIT AND OTHER ROAD-BASED PUBLIC TRANSPORT .....	4-6	
4.6	PUBLIC TRANSPORT TERMINALS AND BUS STOPS .....	4-9	
CHAPTER 5 EXISTING ROAD NETWORK .....			5-1
5.1	ROAD CLASSIFICATION.....	5-1	
5.1.1	Functional Classification .....	5-2	
5.2	EXISTING ROAD CONDITION .....	5-3	
5.2.1	Cross Section.....	5-3	
5.2.2	Surface Type and Condition .....	5-4	
CHAPTER 6 TRAFFIC SITUATION.....			6-1
6.1	CURRENT CONDITIONS .....	6-1	
6.1.1	Outline of Traffic Surveys .....	6-1	
6.1.2	Traffic Survey Results .....	6-1	
6.1.3	Current Traffic Congestion.....	6-10	
6.2	WORSENING OF TRAFFIC CONGESTION IN THE FUTURE.....	6-11	
6.2.1	Traffic Situation for Do-Nothing Case .....	6-11	
CHAPTER 7 TRAFFIC MANAGEMENT AND TRAFFIC SAFETY .....			7-1
7.1	TRAFFIC MANAGEMENT.....	7-1	
7.1.1	Objectives of Traffic Management.....	7-1	
7.1.2	Current Congested Points .....	7-1	
7.1.3	Traffic Analysis Certificates.....	7-3	
7.2	TRAFFIC SAFETY .....	7-4	
7.2.1	Traffic Accident and Enforcement.....	7-4	
CHAPTER 8 SOCIAL AND ENVIRONMENTAL CONSIDERATION .....			8-1
8.1	ENVIRONMENTAL LEGISLATION .....	8-1	
8.1.1	Environmental Laws in Lao PDR.....	8-1	
8.1.2	Compensation and Resettlement in Development Projects in the Lao PDR.....	8-1	
8.2	ENVIRONMENTAL MANAGEMENT SYSTEM .....	8-2	
8.2.1	Organization .....	8-2	
8.2.2	Environmental Standards.....	8-2	
8.3	ENVIRONMENTAL CHARACTERISTICS IN VIENTIANE .....	8-3	
8.3.1	Protected Areas.....	8-3	
8.3.2	Natural Environmental Conditions.....	8-3	
8.3.3	Social Environmental Conditions.....	8-4	
8.3.4	Constraints on Urban Development .....	8-5	
8.4	GEO-DESIGN.....	8-6	
CHAPTER 9 FINANCIAL CONDITION .....			9-1
9.1	BUDGETARY SYSTEM .....	9-1	
9.1.1	Budget Law .....	9-1	
9.1.2	Budget Preparation .....	9-1	
9.1.3	The Role of Central Government in Local Government Finance.....	9-1	

9.1.4	Finance Arrangement for Urban Development .....	9-2
9.2	FINANCING AND RESOURCES FOR DEVELOPMENT .....	9-2
9.2.1	Macro-Economic Target .....	9-2
9.2.2	Public Private Partnership .....	9-2
CHAPTER 10 URBAN TRANSPORT ISSUES.....		10-1
10.1	PUBLIC TRANSPORT.....	10-1
10.1.1	Motorization, COVID-19, and Decreasing Public Transport Usage .....	10-2
10.1.2	Inconvenient and Unpredictable Public Transport Services.....	10-3
10.1.3	Uneven Delivery of Public Transport Services and Social Disparities .....	10-3
10.1.4	Vulnerabilities of Transport Network and Dependence on Individual Paratransit Operators .....	10-4
10.1.5	Fragile Governance System to Operate Public Transport and Coordinate Operators .....	10-5
10.1.6	Urban Sprawl and Lack of Integrated Strategies with Urban Development .....	10-5
10.2	ROAD NETWORK AND ROAD CONDITION.....	10-7
10.2.1	Issues of Road Network .....	10-7
10.2.2	Issues of Road Conditions.....	10-7
10.3	TRAFFIC MANAGEMENT AND PARKING .....	10-7
10.3.1	Issues of Traffic Management .....	10-7
10.4	TRAFFIC SAFETY .....	10-8
10.5	ENVIRONMENTAL ISSUES.....	10-8
10.5.1	Environmental Accountability.....	10-8
10.5.2	Urban Environmental Conservation.....	10-8
10.6	INSTITUTION AND LEGISLATIVE ISSUE .....	10-8
10.6.1	Knowledge Management:.....	10-8
10.6.2	Equipment: .....	10-9
10.6.3	Cooperative Structure of the Organization:.....	10-9
10.7	FINANCIAL CONDITON.....	10-9
10.8	BEHAVIOR CHANGE .....	10-9
CHAPTER 11 URBAN TRANSPORT MASTER PLAN STRUCTURE .....		11-1
11.1	VISION AND MISSION.....	11-1
11.1.1	Process of Formulating Vision and Mission.....	11-1
11.1.2	Urban Transport Systems and Measures Related to the Core Keywords .....	11-3
11.2	FUTURE DEVELOPMENT SCENARIO .....	11-5
11.2.1	Alternative Scenarios .....	11-5
11.2.2	Scenario Selection .....	11-7
11.2.3	Key Factors for Scenario 2 (Public Transport Intensive Scenario) .....	11-8
11.3	GOALS AND STRATEGIES.....	11-9
11.3.1	Overview of Goals and Strategies .....	11-9
11.3.2	Public Transport .....	11-9
11.3.3	Road Network and Traffic Management .....	11-19
CHAPTER 12 PROJECTS AND ACTION PLAN.....		12-1
12.1	PUBLIC TRANSPORT.....	12-2
12.1.1	Public Transport Development Plan.....	12-2
12.1.2	BRT Proposed Projects.....	12-11
12.1.3	Bus and Minibus Proposed Projects .....	12-15
12.1.4	School Bus Proposed Projects .....	12-17
12.1.5	Paratransit Proposed Projects .....	12-18
12.1.6	Governance System and Organizational Coordination Projects.....	12-19
12.1.7	Transit-Oriented Development (TOD) Projects .....	12-20
12.2	ROAD NETWORK AND TRAFFIC MANAGEMENT .....	12-21
12.2.1	Proposed Road Network and Road Projects.....	12-21



12.2.2	Intersection Improvement (Signalized Intersection and Flyover) .....	12-30
12.2.3	Proper Road Maintenance and Management.....	12-31
12.2.4	Traffic Control and Demand Management.....	12-32
12.2.5	Pedestrian Facilities and Environment .....	12-33
12.2.6	Promoting Non-Motorized Transport (NMT).....	12-34
12.2.7	Barrier-Free Access around Major Transport Hubs.....	12-35
12.3	BEHAVIOR CHANGE .....	12-37
12.4	ACTION PLAN .....	12-42
12.4.1	Short-Term Phase (up to 2027).....	12-42
12.4.2	Middle-Term Phase (up to 2032).....	12-49
12.4.3	Long-Term Phase (up to 2040).....	12-49
12.4.4	Monitoring and Minor Update on VTMP2040.....	12-50
12.4.5	Project List .....	12-51
12.5	EXPECTED FUTURE IMPROVEMENT IN TRAFFIC CONDITION .....	12-55
12.5.1	Traffic Situation under Complete Implementation of Urban Transport Master Plan.....	12-55
12.5.2	Traffic Situation under Minimum Network Improvements.....	12-59
12.6	ECONOMIC EVALUATION.....	12-63
12.6.1	Overview .....	12-63
12.6.2	Methodology .....	12-63
12.6.3	Result of FIRR.....	12-63
12.6.4	Investment Amounts Required for Project Implementation .....	12-63
CHAPTER 13 GEOGRAPHIC INFORMATION SYSTEM (GIS).....		13-1
13.1	GIS BASIC DATA .....	13-1
13.2	GIS DATA .....	13-1
13.3	VTMP GIS DATASET .....	13-1
CHAPTER 14 RECOMMENDATION.....		14-1

## List of Figures

Figure 1.2-1 Relationship of Existing Development Plans .....	1-2
Figure 1.3-1 Proposed Bus Network and Road Network in 2008MP .....	1-3
Figure 1.3-2 Exclusive Bus Lanes.....	1-4
Figure 1.3-3 Fund Requirement for Procurement of Buses.....	1-4
Figure 1.3-4 City Bus Ridership.....	1-4
Figure 1.3-5 Yearly Financial Record of VCSBE .....	1-4
Figure 1.3-6 Bus Network Proposed in 2008MP and the Current Bus Network.....	1-5
Figure 1.3-7 Road Network Proposed in 2008MP and the Current Road Network .....	1-6
Figure 1.3-8 Implemented Road in the Proposed Network .....	1-6
Figure 1.4-1 Target Area for the Urban Transport Master Plan 2040.....	1-8
Figure 1.4-2 Target Area of 2008MP, Land Use Plan, and Master Plan 2040.....	1-8
Figure 1.4-3 Target Year and Planning Periods .....	1-9
Figure 1.4-4 Structure of the Urban Transport Master Plan .....	1-9
Figure 1.5-1 Components of the Master Plan Report.....	1-10
Figure 2.1-1 Publication Year and Target Year .....	2-1
Figure 2.2-1 Vientiane BRT Conceptual Design .....	2-3
Figure 2.2-2 Vientiane-Vang Vieng Expressway.....	2-4
Figure 2.2-3 Lao-China Railway (Vientiane Station).....	2-4
Figure 2.2-4 Urban Central Area from Present to 2030 .....	2-5
Figure 2.2-5 Multi-Core Development Expansion of Urban Central Area up to 2050 .....	2-5
Figure 2.2-6 Sustainable and integrated transport system.....	2-5
Figure 2.2-7 From landlocked to land-linked: Integration and connectivity.....	2-5
Figure 2.2-8 Bus Improvement Activities .....	2-7
Figure 2.2-9 Development Conceptual Designs for VC.....	2-7
Figure 2.2-10 Short-, Middle- and Long-Term Road Network Proposed in 2008 MP.....	2-8
Figure 3.1-1 Target Area (TA).....	3-1
Figure 3.1-2 Climate Conditions in Vientiane.....	3-2
Figure 3.1-3 Topography and Slope Conditions in Target Area (TA) .....	3-3
Figure 3.1-4 Hydrologic Condition in Target Area (TA) (2021/2017).....	3-4
Figure 3.1-5 That Luang Marsh.....	3-4
Figure 3.2-1 Existing Land Use in the Target Area (TA) .....	3-5
Figure 3.2-2 Multicore Development Concept around Vientiane .....	3-6
Figure 3.2-3 Planning Zones in the Core Urban Area .....	3-7
Figure 3.2-4 Land Use Zoning Plan of Vientiane.....	3-9
Figure 3.2-5 Approved Areas for Development .....	3-10
Figure 3.2-6 Comparison of Land Use Between 2011 MP and VTMP's Land Use Data (2020) for the Urban Transport Master Plan .....	3-11
Figure 3.2-7 Composition of Land Use: Urban MP 2011 and VTMP's Land Use Data (2020) for the Urban Transport Master Plan .....	3-12
Figure 3.2-8 Recent Expansion of Built Area Between 2017 and 2021 .....	3-13
Figure 3.2-9 Composition of Land Cover Between 2017 and 2021.....	3-13
Figure 3.3-1 Population Density in 2015 .....	3-15
Figure 3.3-2 GDP of Lao PDR by Sector from 2012-2019.....	3-16
Figure 3.3-3 GRDP of Lao PDR by Sector from 2012-2019 .....	3-17
Figure 3.3-4 Number of Registered Vehicles in Vientiane Capital.....	3-18
Figure 3.3-5 Population Pyramids of VTMP Target Area in 2019 and 2040 .....	3-19
Figure 3.3-6 Population Density in 2019 (Base Year).....	3-19
Figure 3.3-7 Population Density in 2040 (Long-Term Target Year) .....	3-20
Figure 3.4-1 Access Transport Links and Major Facilities.....	3-22
Figure 3.4-2 Interconnection between Access Transport and Urban Transport.....	3-23
Figure 3.4-3 Major Transport Modes in Vientiane .....	3-23
Figure 4.1-1 Present Public Transport in Vientiane Capital .....	4-1
Figure 4.2-1 Number of Public Transport Vehicle Registration from 2010 – 2019 .....	4-2

Figure 4.4-1 Operational Routes of Urban Bus.....	4-3
Figure 4.4-2 Public Transport Share and Trips.....	4-4
Figure 4.4-3 Number of Annual Bus Passengers (VCSBE).....	4-5
Figure 4.4-4 Revenue, Cost and Profit of VCSBE.....	4-6
Figure 4.5-1 Photo of Songteo .....	4-6
Figure 4.5-2 Operational Routes of Songteo.....	4-7
Figure 4.6-1 Photo of CBS.....	4-9
Figure 4.6-2 Sikhay Songteo Terminal.....	4-9
Figure 5.1-1 Administrative Classification in 2017 .....	5-2
Figure 5.1-2 Administrative Classification in 2008 MP.....	5-2
Figure 5.1-3 Current Road Network.....	5-2
Figure 5.2-1 Cross Section of Lang Xang Avenue.....	5-3
Figure 5.2-2 Cross Section of Rue Dongpayna.....	5-3
Figure 5.2-3 Road Surface Classification in 2017.....	5-4
Figure 5.2-4 Road Surface Classification in 2008 MP.....	5-4
Figure 6.1-1 Average Household Size.....	6-1
Figure 6.1-2 Average Monthly Household Income.....	6-2
Figure 6.1-3 Car Ownership by Monthly Household Income.....	6-2
Figure 6.1-4 Comparison of Between 2007 and 2019 Modal Share.....	6-3
Figure 6.1-5 Average Travel Times by Trip Purpose.....	6-3
Figure 6.1-6 Distribution of Activities.....	6-4
Figure 6.1-7 Traffic Count Results at Cordon Line Survey Locations.....	6-4
Figure 6.1-8 Traffic Count Results at Screen Line Survey Locations (16-hours).....	6-5
Figure 6.1-9 Morning Peak Traffic Count Results (Outer Survey Locations).....	6-6
Figure 6.1-10 Morning Peak Traffic Count Results (Inner Survey Locations).....	6-6
Figure 6.1-11 Afternoon Peak Traffic Count Results (Outer Survey Locations).....	6-7
Figure 6.1-12 Afternoon Peak Traffic Count Results (Inner Survey Locations).....	6-7
Figure 6.1-13 Parking Purpose by Parking Type and Transport Mode.....	6-9
Figure 6.1-14 Parking Duration by Parking Type.....	6-9
Figure 6.1-15 Walking Distance to Final Destination by Parking Type.....	6-9
Figure 6.1-16 Traffic Situation: Base Year (2019).....	6-10
Figure 6.1-17 Traffic Situation in Central Vientiane: Base Year (2019).....	6-11
Figure 6.2-1 Traffic Situation: Do-Nothing Case (2027).....	6-12
Figure 6.2-2 Traffic Situation in Central Vientiane: Do-Nothing Case (2027).....	6-12
Figure 6.2-3 Traffic Situation: Do-Nothing Case (2032).....	6-13
Figure 6.2-4 Traffic Situation in Central Vientiane: Do-Nothing Case (2032).....	6-13
Figure 6.2-5 Traffic Situation: Do-Nothing Case (2040).....	6-14
Figure 6.2-6 Traffic Situation in Central Vientiane: Do-Nothing Case (2040).....	6-14
Figure 7.1-1 Current Congested Points.....	7-2
Figure 7.1-2 Traffic Analysis Certificates.....	7-3
Figure 7.2-1 Trend of Traffic Accidents.....	7-4
Figure 7.2-2 Trend of Injury/Fatality by Traffic Accident.....	7-5
Figure 7.2-3 Number of Injuries/Fatalities by Cause.....	7-5
Figure 7.2-4 Ratio of Traffic Accident by Age.....	7-6
Figure 7.2-5 Ratio of Traffic Accident by Road Type.....	7-6
Figure 7.2-6 Ratio of Traffic Accident by Type of Vehicles and Obstacles.....	7-6
Figure 7.2-7 Traffic Accident by Time.....	7-7
Figure 7.2-8 Trend of Traffic Violations.....	7-8
Figure 7.2-9 Ratio of Traffic Violations.....	7-8
Figure 8.3-1 Heritage Site in the Vientiane City.....	8-4
Figure 8.3-2 Heritage Sites in Central Vientiane Capital.....	8-5
Figure 8.4-1 Landscape Design Process (Steinitz et. al., 1996).....	8-7
Figure 9.2-1 Decree on Public-Private Partnership in Laos.....	9-2
Figure 10.1-1 Changes in Modal Share Due to Motorization and COVID-19.....	10-2
Figure 10.1-2 Adverse Feedback of Public Transport Decline.....	10-2

Figure 10.1-3 Inconvenient and Unpredictable Public Transport Services .....	10-3
Figure 10.1-4 Decreasing Number of Registered Vehicles after the COVID-19 .....	10-4
Figure 10.1-5 Direct and Indirect Impacts of Public Transport.....	10-5
Figure 10.1-6 Future Urban Development Projects .....	10-6
Figure 11.1-1 Keywords from Workshop Discussions .....	11-1
Figure 11.1-2 Keywords for the Vision and Mission .....	11-2
Figure 11.2-1 Established Scenarios .....	11-5
Figure 11.2-2 Relationship of the Scenarios .....	11-6
Figure 11.2-3 Congestion in Other Cities.....	11-7
Figure 11.2-4 Required Factors for Reshaping .....	11-8
Figure 11.3-1 Goals and Strategies of VTMP2040 .....	11-9
Figure 11.3-2 Relationship between Goals and Strategies .....	11-11
Figure 11.3-3 Population Coverage in 2019.....	11-12
Figure 11.3-4 Population Coverage in 2040.....	11-12
Figure 11.3-5 Positive Feedback of Public Transport Use .....	11-13
Figure 11.3-6 Mechanism of Mobility Management.....	11-13
Figure 11.3-7 Comparison of Transport Modes with their Passenger Capacity and Operation Speed .....	11-14
Figure 11.3-8 Functional Demarcation of Public Transport.....	11-15
Figure 11.3-9 Step-by-step Development of Trunk Public Transport Routes .....	11-16
Figure 11.3-10 Proposed Institutional Framework of Public Transport System in Vientiane Capital .....	11-18
Figure 11.3-11 Enhanced Feedback of Public Transport Usage through TOD .....	11-18
Figure 11.3-12 Relationship between Goals and Strategies .....	11-20
Figure 11.3-13 Road Hierarchy .....	11-20
Figure 11.3-14 Unclear Road Markings .....	11-21
Figure 11.3-15 Insufficient Road Drainage .....	11-21
Figure 11.3-16 Image of Proper Pavement Maintenance and Management.....	11-21
Figure 11.3-17 Illegal Parking at Bus Stop .....	11-21
Figure 11.3-18 Increase Parking Fee .....	11-21
Figure 11.3-19 Sheds and Tree Plantings .....	11-22
Figure 11.3-20 Pedestrian-Only Streets.....	11-22
Figure 11.3-21 Bicycle Lane .....	11-22
Figure 11.3-22 Blind Guidance Blocks .....	11-22
Figure 12.1-1 Long-term Network Vision of Future Public Transport Network.....	12-2
Figure 12.1-2 Step-by-step Development of Trunk Public Transport Route.....	12-4
Figure 12.1-3 Current Public Transport Network (2019).....	12-7
Figure 12.1-4 Phased Development of Public Transport Network in the Short-term (2027).....	12-7
Figure 12.1-5 Phased Development of Public Transport Network in the Middle term (2032) .....	12-8
Figure 12.1-6 Public Transport Network in the Long-term (2040).....	12-9
Figure 12.1-7 Completed Public Transport Network (2040).....	12-10
Figure 12.1-8 Fare Zone Structure .....	12-11
Figure 12.1-9 BRT Network in the Short-, Medium- and Long-term .....	12-12
Figure 12.1-10 Dedicated busway development .....	12-13
Figure 12.1-11 Conceptual Design of BRT Station.....	12-14
Figure 12.1-12 Depot Location .....	12-14
Figure 12.1-13 Image of Automatic Fare Collection System.....	12-15
Figure 12.1-14 New minibus vehicles donated by Japanese government.....	12-17
Figure 12.1-15 Image of Bus Location System.....	12-17
Figure 12.1-16 Example of a bus map including paratransit (Philippines) .....	12-19
Figure 12.1-17 Conceptual Image of NMT Vehicles (E-pedicab).....	12-19
Figure 12.1-18 Five-level Topology of MaaS .....	12-20
Figure 12.1-19 Area of TOD Proposed Projects.....	12-21
Figure 12.2-1 Proposed Road Network .....	12-22
Figure 12.3-1 Factors that Affect Behavior Change.....	12-37



Figure 12.3-2 Mechanism of Behavior Change .....	12-38
Figure 12.3-3 Example of MM.....	12-39
Figure 12.3-4 Example of Transit Mall in Denver, Colorado.....	12-40
Figure 12.4-1 Planning Zones in the Core Urban Area .....	12-49
Figure 12.4-2 Project Management Cycle and Organization in Charge.....	12-50
Figure 12.5-1 Traffic Situation in Vientiane (2027) .....	12-56
Figure 12.5-2 Traffic Situation in Central Vientiane (2027) .....	12-56
Figure 12.5-3 Traffic Situation in Vientiane (2032) .....	12-57
Figure 12.5-4 Traffic Situation in Central Vientiane (2032) .....	12-57
Figure 12.5-5 Traffic Situation in Vientiane (2040) .....	12-58
Figure 12.5-6 Traffic Situation in Central Vientiane (2040) .....	12-58
Figure 12.5-7 Traffic Situation in Vientiane: Do-Minimum Scenario (2027).....	12-60
Figure 12.5-8 Traffic Situation in Central Vientiane: Do-Minimum Scenario (2027) .....	12-60
Figure 12.5-9 Traffic Situation in Vientiane: Do-Minimum Scenario (2032).....	12-61
Figure 12.5-10 Traffic Situation in Central Vientiane: Do-Minimum Scenario (2032) .....	12-61
Figure 12.5-11 Traffic Situation in Vientiane: Do-Minimum Scenario (2040).....	12-62
Figure 12.5-12 Traffic Situation in Central Vientiane: Do-Minimum Scenario (2040) .....	12-62
Figure 12.6-1 Total Investment Amount.....	12-64
Figure 13.3-1 The Structure of VTMP GIS Dataset.....	13-1

## List of Tables

Table 2.1-1	List of Existing Development Plans.....	2-1
Table 3.1-1	Monthly Climate Data in Vientiane.....	3-2
Table 3.1-2	Summary of Elevation in Target Area (TA) .....	3-3
Table 3.2-1	Summary of Existing Land Use .....	3-5
Table 3.2-2	Orientation of Development Zones .....	3-7
Table 3.2-3	Subcenter Development Concept .....	3-8
Table 3.2-4	Summary of Land Cover Change Between 2017 and 2021 .....	3-14
Table 3.2-5	Major SEZ in Vientiane Capital .....	3-14
Table 3.3-1	Population Changes from 2005 to 2015 in Lao PDR and Vientiane Capital.....	3-15
Table 3.3-2	Employment and Enrolment in Lao PDR and Vientiane Capital in 2017 .....	3-17
Table 3.3-3	Population Forecasts for the Base Year and Target Years .....	3-18
Table 3.3-4	Adopted Economic Growth Rates for GDP and GRDP Forecasts .....	3-21
Table 3.3-5	GDP, GRDP, and Economic Structure in the Base Year and Target Years .....	3-21
Table 3.3-6	Forecasted Employment and Enrollment in VTMP Target Area (TA) .....	3-21
Table 4.3-1	Public Transport Administrations and Operators .....	4-2
Table 4.4-1	Urban Bus Routes and Timetable at Central Bus Station (VCSBE) .....	4-4
Table 4.4-2	Number of Current Buses Available for VCSBE's Operations .....	4-5
Table 4.5-1	Service Points in Vientiane.....	4-8
Table 5.1-1	Administrative Classification & Surface Type in Vientiane in 2017 (Including 9 districts; extension in km) .....	5-1
Table 5.1-2	Administrative Classification & Surface Type in Vientiane as of 2008 MP (Including 9 districts; extension in km).....	5-1
Table 6.1-1	Outline of Traffic Surveys.....	6-1
Table 6.1-2	Trip Rate Comparison Table (2019 and 2007 PT Survey) .....	6-3
Table 6.1-3	Comparison of Traffic Volumes at Traffic Survey Locations (2019-2020).....	6-8
Table 7.1-1	Objectives of Traffic Management and Typical Measures .....	7-1
Table 8.1-1	List of Recent Enacted Environmental Codes in Lao PDR.....	8-1
Table 8.1-2	Major Legal Codes of Land-Take and Resettlement.....	8-1
Table 8.2-1	Key Environmental Agencies and Institutions Within VTMP .....	8-2
Table 8.3-1	Description of Forests in Lao PDR .....	8-3
Table 8.3-2	List of Protected Areas in Vientiane Capital .....	8-3
Table 10.1-1	Public Transport Issues and Challenges .....	10-1
Table 11.3-1	Target Indicators .....	11-12
Table 11.3-2	Incremental Formalization Programs of Songteo Operators .....	11-17
Table 12.1-1	Route and Frequency Settings.....	12-6
Table 12.1-2	BRT Routes in the Short, Middle and Long-term .....	12-11
Table 12.1-3	BRT Proposed Projects.....	12-13
Table 12.1-4	Bus and Minibus Proposed Projects.....	12-16
Table 12.1-5	School Bus Proposed Projects.....	12-18
Table 12.1-6	Paratransit Proposed Projects .....	12-18
Table 12.1-7	Governance System and Organizational Coordination Projects.....	12-20
Table 12.2-1	List of New Road Construction Project .....	12-25
Table 12.2-2	List of Road Widening Project .....	12-26
Table 12.2-3	Cost Breakdown of Proposed Road Projects.....	12-29
Table 12.3-1	Behavior Change Projects .....	12-41
Table 12.5-1	Modal Share by Target Year under Full Implementation of Master Plan.....	12-55
Table 12.5-2	Modal Share by Target Year: Comparison of Full Master Plan Implementation and Do-Minimum Scenario.....	12-59
Table 12.6-1	Initial Investment in Master Plan .....	12-64
Table 12.6-2	Operation and Maintenance Costs in Master Plan .....	12-64
Table 12.6-3	Total Investment Amount Required for Master Plan.....	12-64
Table 13.3.1	Major Contents of GIS Data by Category .....	13-2



## LIST OF ABBREVIATIONS

ABM	Activity-Based Model
ADB	Asian Development Bank
ADS	Activity Diary Survey
ASEAN	Association of Southeast Asian Nations
Aw	“Equatorial, winter dry” classification of the Köppen-Geiger Climate Classification
BRT	Bus Rapid Transit
CBD	Central Business District
CBS	Central Bus Station
CDR	Call Detail Record
CP	Project Counterparts
CTMC	Steering Committee to Solve Congestion and Traffic Management in Traffic Routes in Vientiane Capital
DOT	Department of Transport, Ministry of Public Works and Transport
DPWT	Department of Public Works and Transport, Vientiane Capital
DTP	Department of Traffic Police
EIRR	Economic Internal Rate of Return
EST	Environmentally Sustainable Transport
FS	Feasibility Study
GDP	Gros Domestic Product
GIS	Geographical Information System
GNI	Gross National Income
GOJ	Government of Japan
GOL	Government of Lao PDR
GRDP	Gross Regional Domestic Product
GUP	General Urban Plan of Vientiane Capital 2030
HAI	Human Assets Index
IC card	Integrated Circuit card (contactless smartcard)
ICT	Information and Communications Technology
ITECC	International Trade Exhibit Convention Center
IRR	Internal Rate of Return
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
Lao PDR	Lao People’s Democratic Republic
LDC	Least Developing Country
LoS	Level-of-Service
LRT	Light Rail Transit
LSB	Lao Statistics Bureau
MLIT	Ministry of Land, Infrastructure and Transport
MM	Mobility Management
MOF	Ministry of Finance
MP	Master Plan
MPI	Ministry of Planning and Investment
MPWT	Ministry of Public Works and Transport
NBT	Northern Bus Terminal
NMT	Non-Motorized Transport
NPO	Non-Profit Organization
NR13	National Road No. 13



NSEDP	9th 5-Year National Socio-Economic Development Plan (2021-2025)
NUOL	National University of Laos
OD interview	Origin -Destination interview
ODA	Official Development Assistance
Off-JT	Off-the-Job Training
OJT	On-the-Job Training
P & R	Park & Ride
PDCA	Plan-Do-Check-Act
PDM	Project Design Matrix
PO	Plan of Operations
PPP	Public-Private Partnership
PT surveys	Public Transport surveys
PTRI	Public Transport and Research Institute
PR	Public Relations
R/D	Record of Discussions
RHS	Ride Hailing Services
SA	Study Area
SBT	Southern Bus Terminal
SDGs	United Nations Sustainable Development Goals
SNS	Social Networking Services
SP	Stated Preference
STRADA	System for Traffic Demand Analysis
S1	Scenario 1: Do-Minimum Scenario
S2	Scenario 2: Public Transport Intensive Scenario
S3	Scenario 3: Road Intensive Scenario
TA	Target Area
TAZ	Traffic Analysis Zone
TDM	Transport Demand Management
TOD	Transit-Oriented Development
TWG	Technical Working Group
UN	United Nations
UNFPA	United Nations Population Fund
Urban MP 2011	Vientiane Urban Development Master Plan in 2011
UTMS	Urban Transport Management Sector
VC	Vientiane Capital
VC Vision	Vision 2030 of Vientiane Capital
VCSBE	Vientiane Capital State Bus Enterprise
VSEDP	9th 5-Year Vientiane Capital Socio-Economic Development Plan (2021-2025)
VSUTP	Vientiane Sustainable Urban Transport Project
VSUTP PIC	Project Implementation Consultant for the Vientiane Sustainable Urban Transport Project
VTMP	Vientiane Urban Transport Master Plan Project
VTMP2040	Urban Transport Master Plan of Vientiane Capital 2040
WBS	Work Breakdown Structure
WG	Working Group
2008MP	Vientiane Capital Comprehensive Urban Transport Master Plan 2008

## **CHAPTER 1 INTRODUCTION**

### **1.1 BACKGROUND AND PURPOSE OF THE URBAN TRANSPORT MASTER PLAN OF VIENTIANE CAPITAL (VTMP2040)**

#### **1.1.1 Economic Development and Urbanization in Vientiane Capital**

Lao PDR has a total population of approximately 6.8 million, of which around 800,000 people are living in Vientiane Capital according to the 2015 Population Census data. The population of Vientiane Capital is forecasted to further increase to around 1.4 million by 2030. This increase in population along with urbanization and rapid motorization, resulted in traffic congestion on the main roads in the morning and evening peak hours.

Under this background, high level development plans have addressed this situation from different perspectives. Strategy relevant to infrastructure building was listed as a national development priority program in the national development plan “Vision 2030”. Additionally, traffic improvement, including traffic management, is one of the major issues identified in the “9th National Socioeconomic Development Plan (2021-2025)”. Moreover, the five-year plan of the Ministry of Public Works and Transport (MPWT), prescribes the improvement of public transport as one of the top priorities. Particularly, in the urban transport sector, Environmentally Sustainable Transport (EST) is advocated as a strategy to promote environment-friendly urban public transport. Furthermore, the 10-year strategy plan of MPWT specifically mentions the development of Vientiane Capital into a well-regulated city and a model for large-scale urban development nationwide, to be achieved through the implementation of a comprehensive urban transportation system that improves mobility, reduces congestion, enhances accessibility, and fosters sustainable growth.

#### **1.1.2 Necessity of Updating the Urban Transport Master Plan**

In the "Vientiane Capital Comprehensive Urban Transport Master Plan" (hereinafter referred to as 2008MP), formulated through the survey conducted in 2007-2008 with 2025 as the target year and supported by the Japan International Cooperation Agency (JICA), priority areas such as road network development, public transport improvement, and traffic management improvement were recommended. Based on the recommendations made in the 2008 MP, several projects aimed at improving bus services have been implemented since 2011, including the provision of large buses under the "Bus Transport Improvement Plan in Vientiane Capital (2011-2012)," and technical assistance through "The Project to Enhance the Capacity of Vientiane Capital State Bus Enterprise (VCSBE) (2012-2015)" and "The Project to Enhance the Capacity of VCSBE Phase 2 (2016-2020)". Moreover, a transport network (covering the expanded urban planning area) was proposed, and a land use plan was created in the "Vientiane Urban Development Master Plan Project (2010-2011)" and the "Lao National Government Development Project (2017)."

Despite the steady implementation of the projects proposed in the 2008 Master Plan, the traffic situation in Vientiane Capital has worsened. The number of registered vehicles has increased to approximately 690,000 units, far exceeding the 2025 forecast of 490,000 units made in the 2008 Master Plan. Moreover, usage of public transport has not increased as expected and instead has decreased, leading to a continuous rise in the reliance on private vehicles and presenting a significant challenge to sustainability.

On the other hand, the BRT system, which was also envisioned in the 2008 MP, is in the process of being introduced by the ADB, and as a result, it has become extremely important to update and reexamine the master plan from the perspective of building a sustainable transportation system.

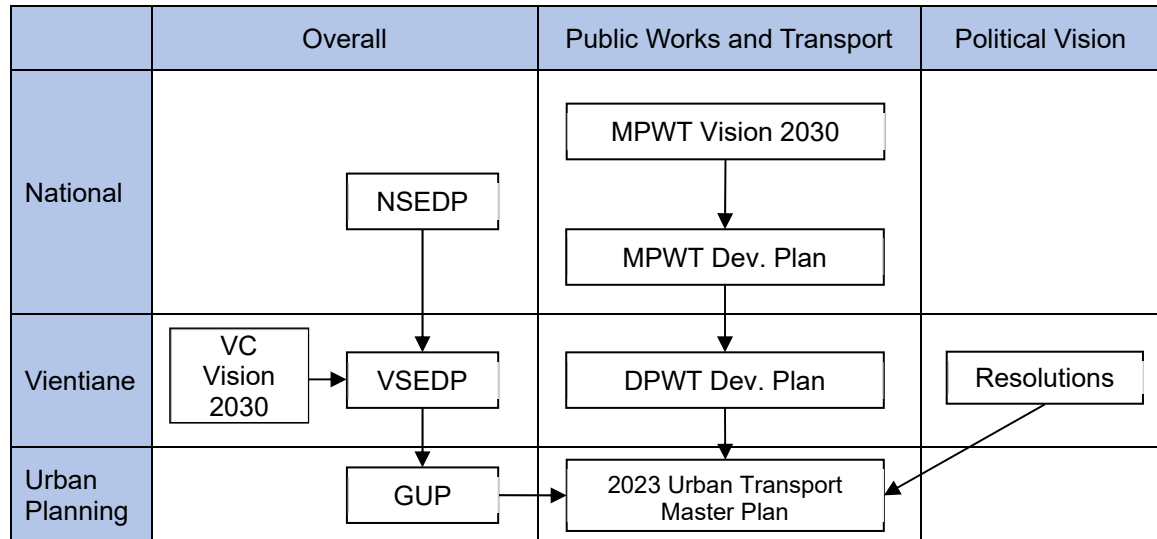
Furthermore, prior to the update of the Urban Transport Master Plan, the Vientiane Urban Development Master Plan has received approval from the Lao National Assembly and is set to be officially applied as the guiding principle for future urban development. In line with the overall Urban Development Master Plan for Vientiane, this Master Plan aims to supplement the urban transportation component of future planning and provide a more detailed depiction of anticipated

urban transport expansion.

Contents of the Urban Transport Master Plan were compiled by Lao members of relevant departments along with the JICA Expert Team, and are set to receive approval from Vientiane Capital promptly after their submission.

## 1.2 RELATIONSHIP OF THE DEVELOPMENT PLAN

Relevant development plans and their respective classifications are detailed below. A summary of each plan can be found in Chapter 2.



Source: JICA Expert Team

Figure 1.2-1 Relationship of Existing Development Plans

### 1.3 OUTCOMES FROM 2008MP AND THE CONCEPT OF VTMP2040

#### 1.3.1 Outcomes from 2008MP

##### (1) Summary of the 2008MP

###### Vision

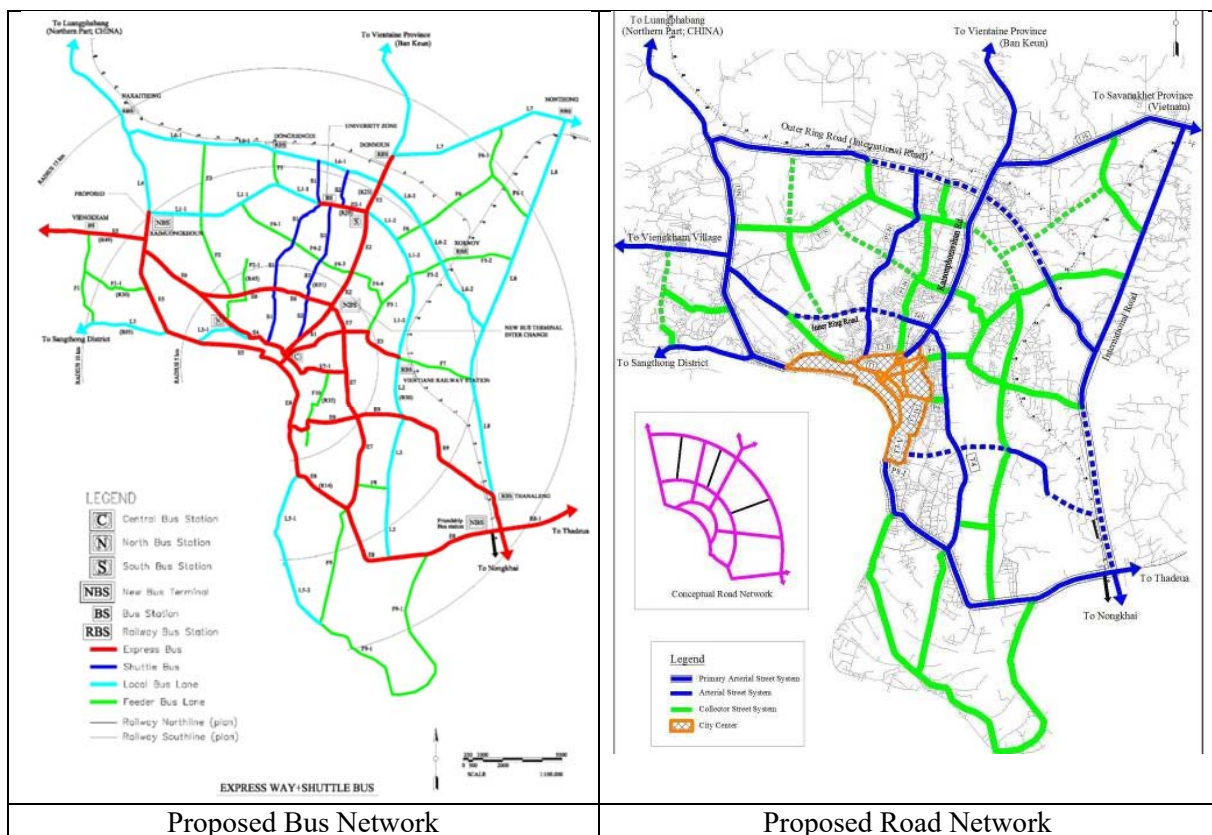
- Clean and safe city with the functions of a modern capital

###### Target

- Efficient/Effective: Smooth and safe traffic environment
- Livable: Good living environment
- Safe, Equitable: Safe and convenient transport for disadvantaged people
- Urbanized: Excellent urban amenities

###### Strategy

- Connected/Integrated: Development of transport network
- Improvement and upgrade of public transport system
- Improvement of traffic management
- Improvement of urban and traffic environment



Source: 2008MP

**Figure 1.3-1 Proposed Bus Network and Road Network in 2008MP**



**(2) Review of the implementations listed in 2008MP**

At the time of developing the 2008 Master Plan, road congestion in Vientiane was not considered as severe compared to other Asian capitals, making the need and urgency for road improvements relatively low. As a result, the 2008 Master Plan focused on "proactive measures," prioritizing the development of public transportation over the expansion of road capacity.

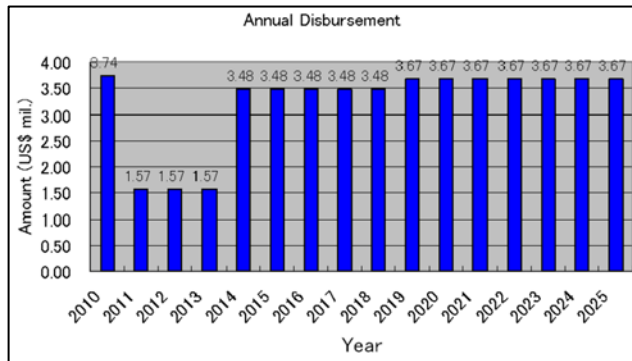


Source: 2008MP

**Figure 1.3-2 Exclusive Bus Lanes**

1) Public Transport

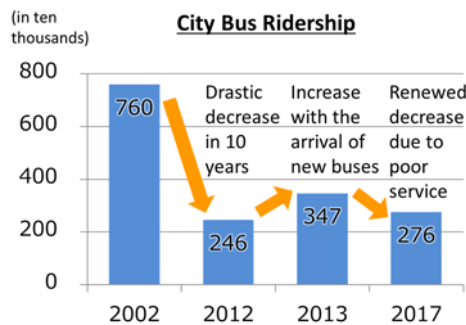
Proposed Measures: To enhance bus services, significant increases in the number of buses, improvements to bus stops, and the introduction of exclusive bus lanes were suggested, with the further aim of introducing Bus Rapid Transit (BRT).



Source: 2008MP

**Figure 1.3-3 Fund Requirement for Procurement of Buses**

Regarding the increase in the number of buses, the proposal initially calls for the addition of 100 buses, followed by an approximate purchase of 55 buses each subsequent year. By 2013, it is projected that there will be 264 buses in operation. The estimated cost for this initiative, as shown in Figure 1.3-3, ranges from USD 1.5 to 3.7 million annually. This amount is considered to be feasible for the Lao government. Furthermore, there was also a request from the then-Minister of Public Works and Transport (MPWT) to not only provide buses but also to strengthen the management capabilities of the bus companies.

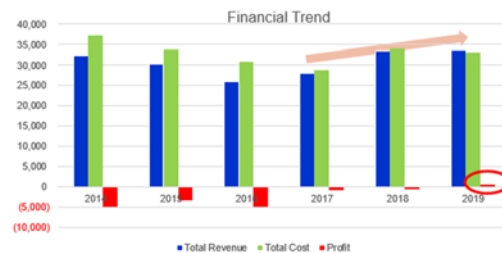


Source: VCSBE

**Figure 1.3-4 City Bus Ridership**

In response to the previously mentioned needs, 42 large buses were introduced in 2012 through a JICA'S grant aid program, which was soon followed by the initiation of a Bus Technical Assistance Project. As a result of this bus provision and the technical assistance, VCSBE experienced an increase in bus ridership.

	2014	2015	2016	2017	2018	2019	Flux
Total Revenue	32,241	30,337	25,865	28,012	33,464	33,735	271
Total Cost	37,226	33,703	30,910	28,801	34,042	33,150	△892
Net Profit/Loss	△4,985	△3,366	△5,045	△789	△578	585	1,163
Cost ratio (%)	115%	111%	120%	103%	102%	98%	



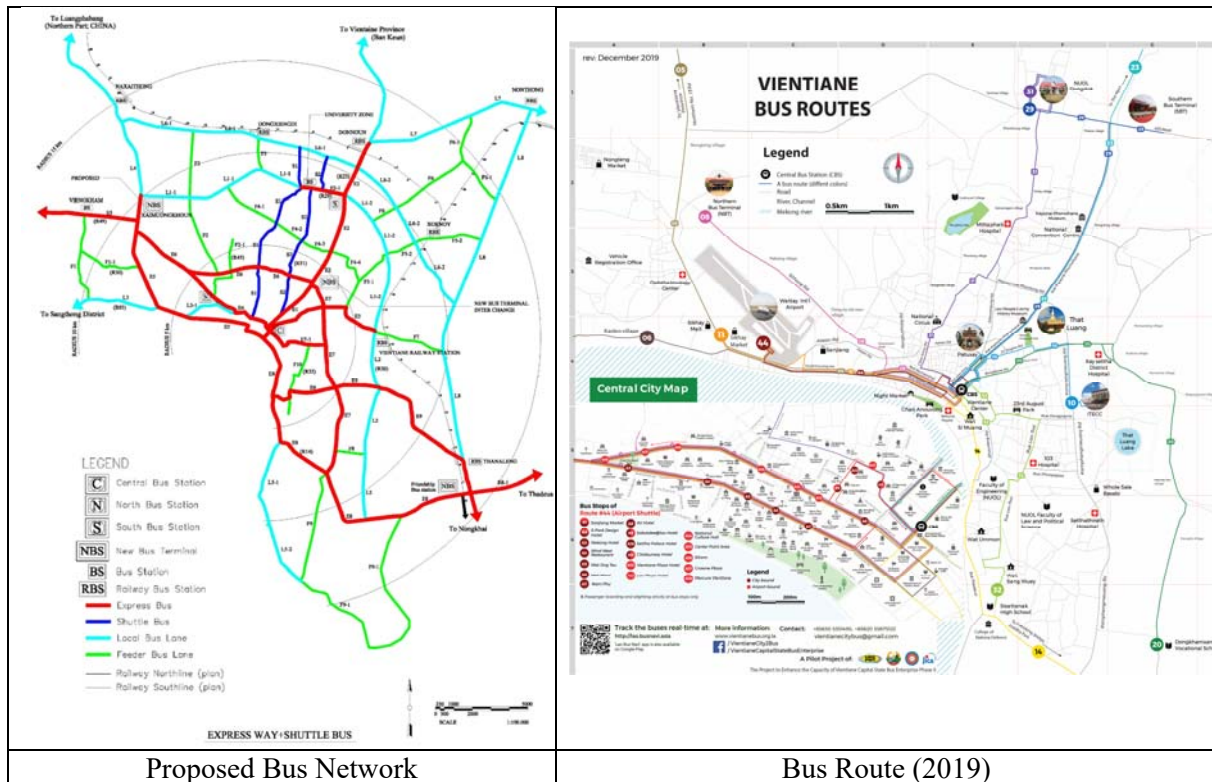
Source: The Project to Enhance the Capacity of Vientiane Capital State Bus Enterprise Phase II

**Figure 1.3-5 Yearly Financial Record of VCSBE**

However, due to a lack of funds for further purchases, the bus fleet remained stagnant at 42 vehicles, leading to a gradual decline in users over time. In addition, the bus company was operating at a loss amidst these challenges. Financial support from the Lao government was not a viable option, given the fiscal

constraints in the country. Therefore, achieving financial self-sufficiency became imperative for the improvement of bus services.

Capitalizing on the support from the Bus Technical Assistance Project, VCSBE undertook significant efforts to overhaul its financial standing and operations. These efforts bore fruit, as by 2019, the bus company successfully transitioned to profitable operations.



Source: 2008MP and VCSBE

**Figure 1.3-6 Bus Network Proposed in 2008MP and the Current Bus Network**

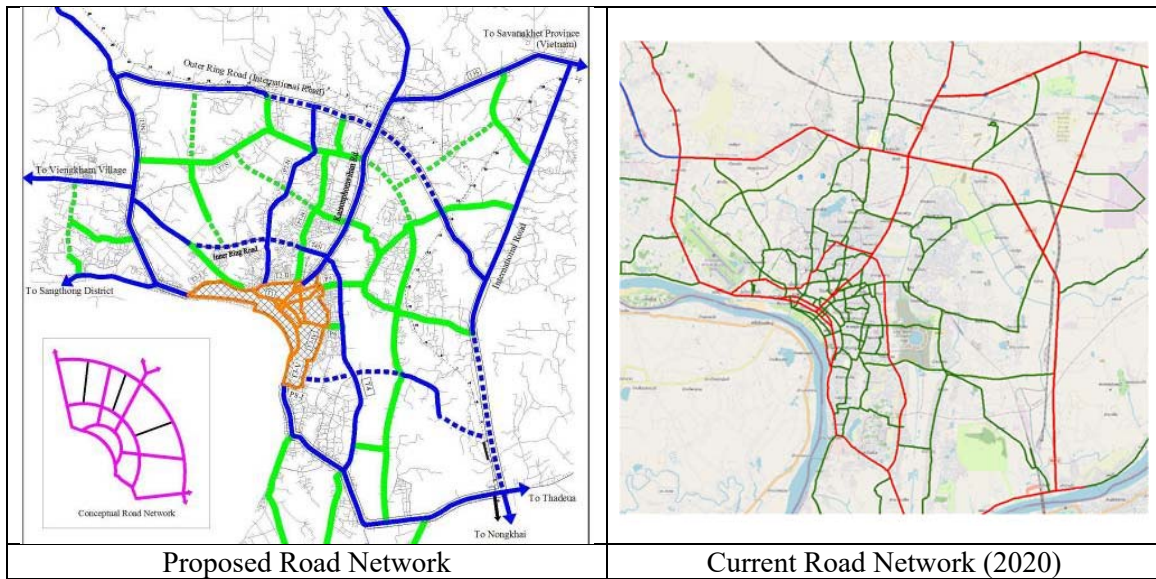
Despite these improvements, the number of public transit users remains low. According to a 2019 person-trip survey, the figure stands at a mere 1.4%, which is significantly below the target of 40% set for 2025.

Public Transportation Usage: Targets and Current Status

Proposed Target Ratio of Modal Share in 2025	40.0%
Actual Ratio based on the Person Trip Survey in 2019	1.4%

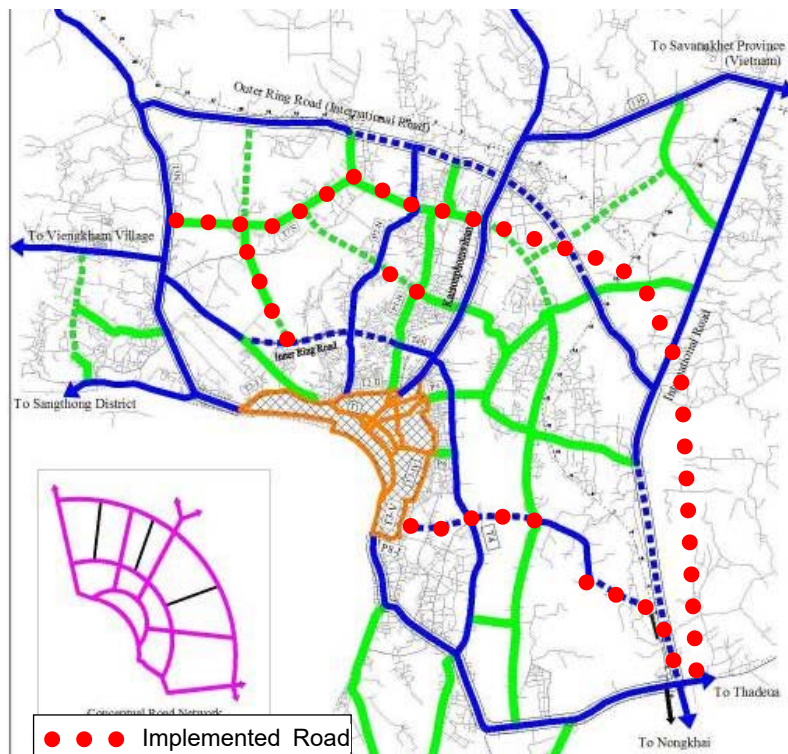
2) Road Network

In the realm of road projects, financial constraints present significant challenges. Nonetheless, with the cooperation of donors and the allocation of domestic budgets, some of the proposed road segments and the outer ring road have been completed.



Source: 2008MP and JICA Expert Team

**Figure 1.3-7 Road Network Proposed in 2008MP and the Current Road Network**



**Figure 1.3-8 Implemented Road in the Proposed Network**

### 3) Recommendations Based on 2008 Master Plan Review

Similar to the situation following the 2008 Master Plan, securing continuous investment through the national budget remains a challenging endeavor. Future initiatives will still plan for the development of public transportation and road networks. However, beyond the budget-intensive physical infrastructure, it's desirable to incorporate initiatives that encourage behavioral change among the citizens, utilizing local human resources. The conceptual framework for these initiatives will be outlined in the subsequent section.



### 1.3.2 Moving Forward with VTMP2040

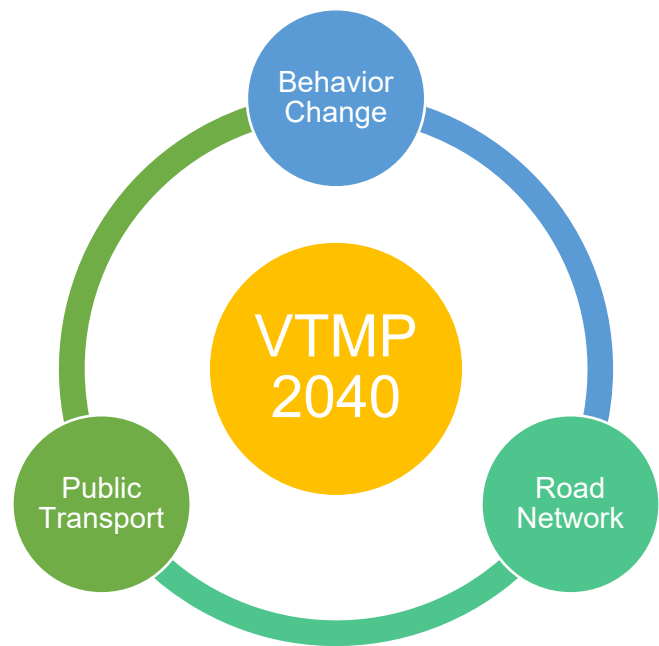
In the previous Master Plan (2008MP), proposals were made for road development and public transportation measures, but only a portion has been implemented. As a whole, progress has not been according to the planned schedule. Additionally, the unforeseen circumstances of the COVID-19 pandemic created periods when public transportation could not operate, causing significant damage to the expansion of public transport services.

Considering these circumstances, we have proceeded with the formulation of a new Master Plan. In discussions between Lao counterparts and the JICA Expert Team regarding the current situation and future vision it was concluded that the existing landscape and abundant greenery of Vientiane are part of its charm and should be maintained even during the

development of the transportation network. Therefore, future developments aim to minimize landscape changes caused by road network expansion while efficiently utilizing existing roads to increase traffic volume capacity through the development of public transport networks. In addition, for citizens, promoting the use of public transportation has ample advantages, such as reducing the environmental burden, easing traffic congestion, improving health, and reducing the burden of vehicle maintenance costs.

However, it is not enough to simply develop a public transport network; behavioral changes among citizens are necessary to maintain and increase its use. Therefore, the three pillars of future measures are behavior change, enhancement of public transport, and road network development.

Moving forward, it is desired to progress with improvements by utilizing both the national budget and support from donors. In addition, emphasis is given to strategies that can be executed steadily. In this Master Plan, the spotlight is on behavior change which is a lower-cost activity compared to infrastructure construction and equipment investment that can be carried out within Laos' own budget. The consideration of it is described in Chapter 11.



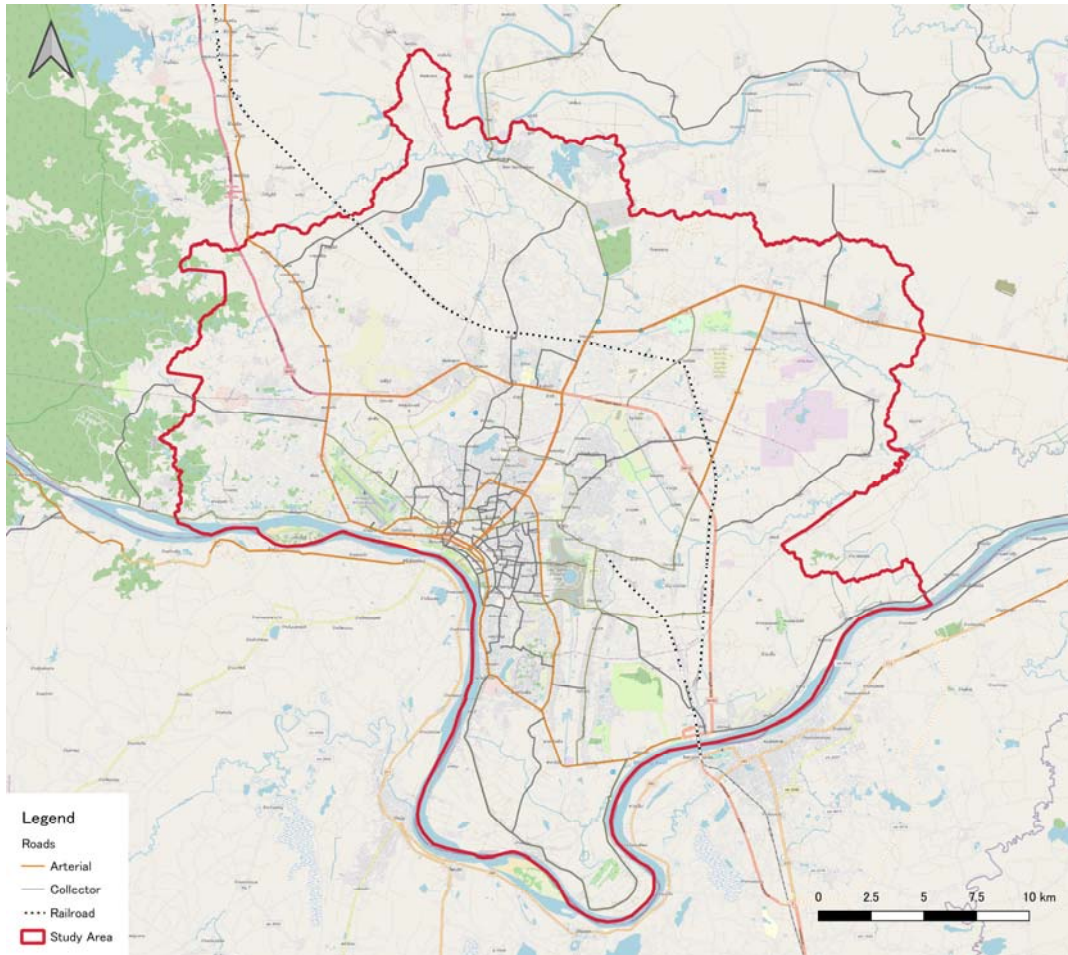


## 1.4 OVERVIEW OF VTMP2040

### 1.4.1 Scope of VTMP2040

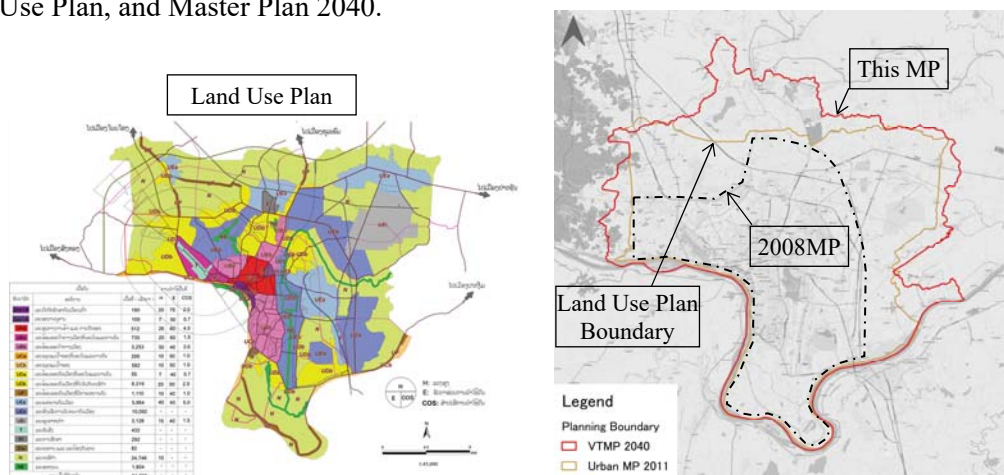
#### (1) Target Area

The target area for this Master Plan is shown in the figure below.



**Figure 1.4-1 Target Area for the Urban Transport Master Plan 2040**

The target area of this Master Plan is basically same as Land Use Plan. The Northern area of Vientiane (Tha Ngon), which is within the operation range of city buses is added. The boundary was adjusted based on the village boundary. Figure 1.4-2 shows the difference among 2008MP, Land Use Plan, and Master Plan 2040.



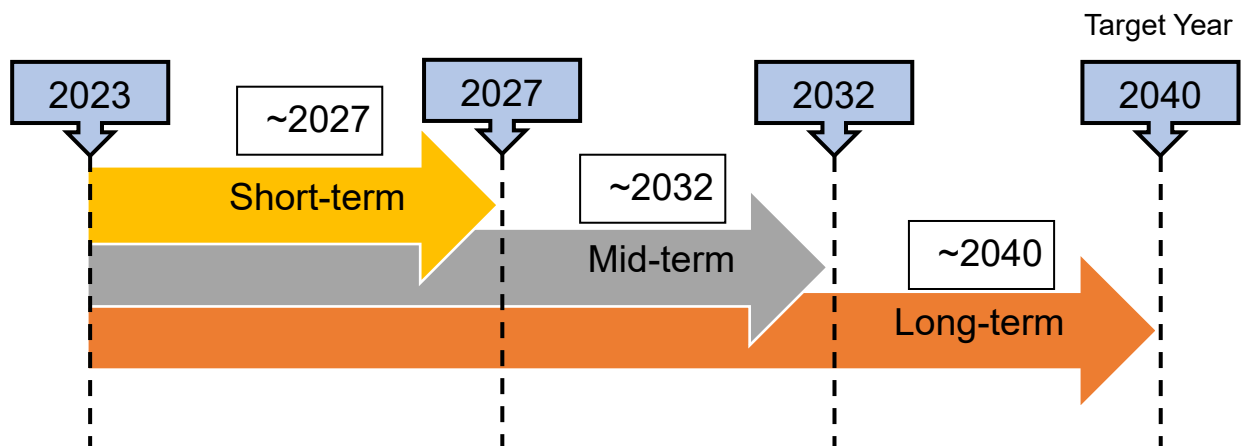
**Figure 1.4-2 Target Area of 2008MP, Land Use Plan, and Master Plan 2040**

**(2) Target Year**

The target year for this Master Plan is set as 2040, 17 years after its development, similar to how the target year of 2025 was set 17 years after the 2008 Master Plan. Moreover, as milestones, intermediate target years were set at five-year intervals, designating 2027 and 2032 as the short-term and mid-term targets, respectively.

Initially, the plan was to create the Master Plan by 2022, and accordingly, the short-term target was set as 2027, five years later. However, as the Master Plan was finalized in 2023, the short-term target resulted being four years later, in 2027.

A multitude of projects are proposed in this MP Monitoring the progress and changes in the situation at each milestone is recommended, with minor updates to the Master Plan as necessary.



**Figure 1.4-3 Target Year and Planning Periods**

**1.4.2 Structure of the Urban Transport Master Plan**

The Urban Transport Master Plan consists of a vision, mission, goal, and strategies. Based on the strategies, several projects are proposed, and an action plan has also been developed accordingly. The contents of each item are as follows.

- Vision: What kind of city do we envision Vientiane to be in the future?
- Mission: What is the role of the transport master plan in making the vision a reality?
- Goal: What are defined and measurable objectives that should be achieved? When should they be achieved?
- Strategies: How will we achieve the goals? What tactics should we include in the action plan?



**Figure 1.4-4 Structure of the Urban Transport Master Plan**

### 1.4.3 Urban Transport Master Plan Development Process

The Urban Transportation Master Plan was developed through dozens of discussions among the related organizations based on the results of a person-trip survey and other data, and with input from citizens and transportation operators in order to address current and future transportation issues in the target area.

Specifically, specialized discussions were frequently held at workshops for each area of responsibility, the results were summarized by Technical Working Group (TWG). In addition, Joint Coordination Committee (JCC) committee meetings were semi-annually held to explain and approve the future vision, strategies, and action plan on Vientiane's urban transportation planning.

## 1.5 COMPONENTS OF THE MASTER PLAN REPORT

This Master Plan report is structured as shown in the figure below, consisting of Basic Information, Current Situation, and Future Plans.

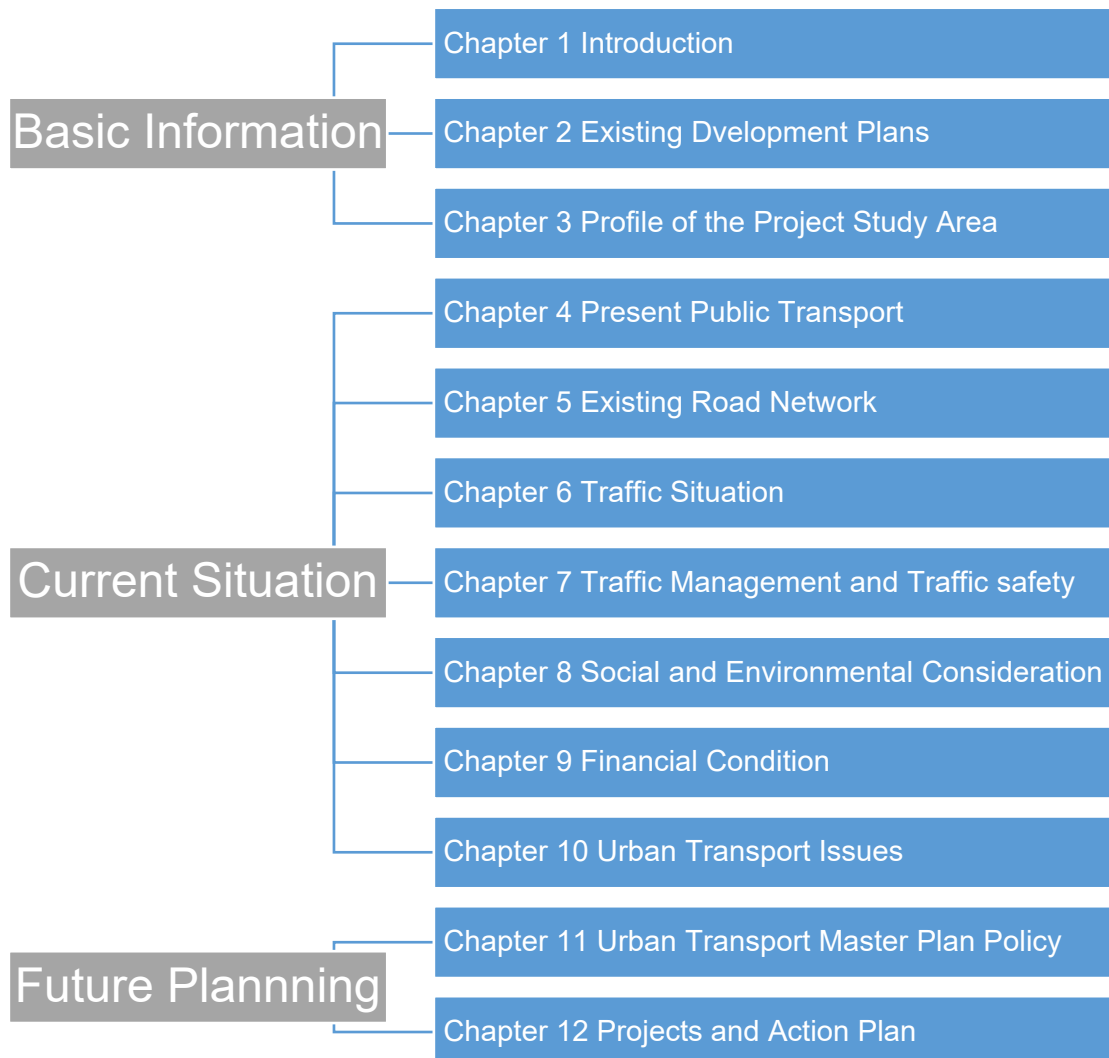


Figure 1.5-1 Components of the Master Plan Report

## CHAPTER 2 DEVELOPMENT PLANS AND PROJECTS

This chapter summarizes the development plans which are taken into consideration in formulating the Urban Transport Master Plan.

### 2.1 DEVELOPMENT PLANS RELEVANT TO THE URBAN TRANSPORT MASTER PLAN

The development plans relevant to Urban Transport Master Plan are as listed below. They are summarized in Chapter 2.

**Table 2.1-1 List of Existing Development Plans**

	Title of Plan	Short Title	Author	Publication Year
1	9 <sup>th</sup> 5-Year National Socio-Economic Development Plan (2021-2025)	NSEDP	MPI	Sep. 2020 (rev. May 2021)
2	Vision 2030 of Vientiane Capital	VC Vision 2030	Vientiane Capital	Aug 2018
3	9th 5-Year Vientiane Capital Socio-Economic Development Plan (2021-2025)	VSEDP	Vientiane Capital	Dec 2020
4	General Urban Plan of Vientiane Capital 2030	GUP	National Assembly	Nov 2020
5	Vision 2030 and 10-Year Development Strategy on Public Works and Transport Sector (2016-2025)	MPWT Vision 2030	MPWT	Dec 2016
6	5-Year Development Plan of Public Works and Transport Sector (2021-2025)	MPWT Dev. Plan	MPWT	Dec 2020
7	Direction of 9th Five-Year Plan of DPWT in Vientiane Capital (2021-2025)	DPWT Dev. Plan	DPWT	Mar 2021
8	Resolutions of Development of Vientiane Capital in 2020	Resolutions	Politburo of Central Party	April 2020
9	Vientiane Transport Master Plan 2008	2008 MP	JICA	Sep 2008

Source: JICA Expert Team.

The year of publication and target years of each of the development plans mentioned above are as shown in Figure 2.1-1.

Author	Plan	'08	...	'16	'17	'18	'19	'20	'21	'22	'23	'24	'25	'26	'27	'28	'29	'30
MPI	NSEDP							●	■	■	■	■	■					
VC	VC Vision 2030					●			■	■	■	■	■	■	■	■	■	■
	VSEDP							●	■	■	■	■	■	■	■	■	■	■
NA	GUP							●	■	■	■	■	■	■	■	■	■	■
MPWT	MPWT Vision 2030			●	■	■	■	■	■	■	■	■	■	■	■	■	■	■
	MPWT Dev. Plan							●	■	■	■	■	■	■	■	■	■	■
DPWT	DPWT Dev. Plan								●	■	■	■	■	■	■	■	■	■
CP	Resolutions							●	■	■	■	■	■	■	■	■	■	■
JICA	2008 MP	●	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

● : Publication  
 ■ : Target Year

Source: JICA Expert Team

**Figure 2.1-1 Publication Year and Target Year**



## **2.2 SUMMARY OF DEVELOPMENT PLANS**

The following section presents a summary of the development plans relevant to VTMP. It should be noted that the transport-related keywords (identified in bold) in each development plan were considered during the discussions on defining the vision of VTMP in Chapter 11.

### **2.2.1 MPI/9<sup>th</sup> 5-Year National Socio-Economic Development Plan (2021-2025) (NSEDP)**

#### **(1) Directions**

High-Quality, Green, Sustainable, and Focused Growth

#### **(2) Focal Points related to Transport**

- **Connected/Integrated:** Transform Lao PDR from landlocked to a land-linked country by implementing mega projects as well as constructing, upgrading, and maintaining 2,800 km of transport infrastructure along economic corridors
- **Clean:** Promote the use of clean energy vehicles such as electric vehicles that use hydro/solar energy, to reduce fossil fuel imports and greenhouse gas emissions
- **Efficient/Effective:** Improve public transport services in Vientiane Capital (VC) through the Vientiane Capital State Bus Enterprise (VCSBE) Reform Project to ensure service quality and universal access for commuters
- **Smart/Modern:** Undertake feasibility study for a smart city in Nongpan Village in VC

##### 1) Economic Targets

- Graduation from Least Developing Country (LDC) status
- Upper-middle income country by 2030
- 6.5-7% economic growth per year given a population growth rate of 1.7% per year
- GDP per capita of US\$4,000

##### 2) Transport Targets (national)

- Growth of transport volume of goods and passengers at 8% per year
- Increase the share of clean energy vehicles to 14%
- Focus on achieving United Nations (UN) Sustainable Development Goal (SDG) 11: sustainable cities and communities

#### **(3) Alignment of Development Plan with VTMP**

The directions and transport keywords identified in NSEDP were considered in setting the mission and vision of VTMP. The economic targets were considered in setting the socio-economic framework. The increase in transport volume and the usage of clean energy vehicles, along with achievement of SDG 11, were taken into account in formulating the VTMP.

### **2.2.2 Vientiane Capital/Vision 2030 of Vientiane Capital**

#### **(1) Vision 2030**

Peaceful city in the new era in terms of politics, social order, economy, social environment, livelihood and sustainable development

#### **(2) Strategic Goals related to Transport**

- **Efficient/Effective:** Smooth traffic flow with no congestion (sufficient transport infrastructure, public transport system responsive to people's needs, terminal and parking system for public and private vehicles, informational signages and public relations [PR] activities)
- **Safe:** Public safety (road safety for drivers, passengers, cyclists, pedestrians, etc.)
- **Equitable:** Happiness/well-being (good health/welfare)

##### 1) Targets

- Increase public transport use by 10% per year
- Reduce private vehicle share by 10% per year
- Increase bus terminals to 7 (5 sub-terminals and 2 large-scale terminals)
- Reduce work commuting time to no more than 45 mins

- Reduce speed limit to no more than 30 kph



Source: [Left] Institute for Transportation & Development Policy China (ITDP China); Asian Development Bank (ADB). (2014). Vientiane BRT Conceptual Design, Final Report. ITDP China; ADB. [Right] Ministry of Public Works and Transport (MPWT); Vientiane Sustainable Urban Transport Project (VSUTP). (2019). Updated Project Conceptual Design. MPWT; VSUTP.

**Figure 2.2-1 Vientiane BRT Conceptual Design**

### **(3) Alignment of Development Plan with VTMP**

The Vision 2030 and strategic transport-related goals were taken into account in setting the mission and vision of VTMP. The VTMP also incorporated the development plan's targets of promoting public transport use, reducing private vehicle share and improving commuting efficiency, even though the specific numerical targets were not explicitly considered.

## **2.2.3 Vientiane Capital/9<sup>th</sup> 5-Year Socio-Economic Development Plan of Vientiane Capital (2021-2025) (VSEDP)**

### **(1) Focal Points related to Transport**

- Modern, Efficient/Effective, Safe, Equitable: Improve the public transport system to be more modern, quicker, and safer, as well as meet the needs of the people and reduce the gaps in accessing infrastructure and services
- Connected/Integrated: Link infrastructure internally and to other regions and countries to facilitate production, services, trade, and investment

#### **1) Transport Targets (Vientiane)**

- 72 million public transport passengers in 5 years
- Average of passenger traffic volume of 16.16 million people/km

#### **2) Economic Targets**

- Total GRDP of 84,916 billion kip (2025)
- 7-8% economic growth per year
- GRDP per capita of US\$8,750
- Economic growth by sector:
  - (a) - Agriculture sector: 4-4.5% per year
  - (b) - Industry sector: 11.5% per year
  - (c) - Service sector: 6.5% per year

### **(2) Planned and Ongoing Projects in Vientiane**

VSEDP identified several planned and ongoing transport infrastructure projects in Vientiane, including the following:

- National Railway and Railway Station Construction Project in Vientiane Capital (Lao-China

Railway)

- Connecting Linkage Logistic Area Construction to Railway and Expressways Project
- Vientiane-Vangvieng Expressway Construction Project (BOT)
- Vientiane Expressway 1 Construction Project (BOT)
- Vientiane Expressway 2 Construction Project (Donnoun-Nakhounnoy Village) (PPP, BOT) (survey)
- Vientiane Expressway Construction Project (Vientiane Capital-Vientiane Province, along Road No. 10) (BOT) (survey)
- Vientiane-Thakhek Expressway Construction Project (BOT) (survey)
- 18. New Roads Construction for Development Promotion Project (connecting to the 450-Year Road and the airport, urban road access will be newly constructed). (PPP, BOT)
- New Ngum River Bridge Construction Project (PPP, BOT)
- Project for upgrading some old roads: Road from Sikhay T-junction, Sikhottabong District - Phonhong, Vientiane Province; Road from Hom-Thakhek Village, Hatxayfong District (ODA Loan)



Source: [Left] Mapillary/Wikipedia, [Right] JICA Expert Team

**Figure 2.2-2 Vientiane-Vang Vieng Expressway**



**Figure 2.2-3 Lao-China Railway (Vientiane Station)**

### **(3) Alignment of Development Plan with VTMP**

The transport projects identified in VSEDP were reflected in the VTMP. The goal of increasing public transport users and passenger volume was taken into account, but specific numerical transport targets were not explicitly considered in VTMP. Moreover, the economic targets in VSEDP were taken into account in setting the socio-economic framework.

## **2.2.4 National Assembly/General Urban Plan of Vientiane Capital 2030**

### **(1) Goal**

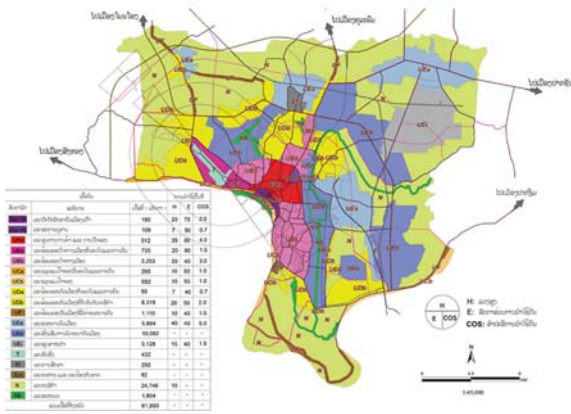
Creation of a General Land Use Plan for VC and Detailed Land Use Plans for the inner zone and historic area that are consistent with socio-economic development, architectural preservation, infrastructure development, and sustainability

### **(2) Development Directions**

Livable, Sustainable, Smart, Urbanized (same as Resolutions of Development in VC)

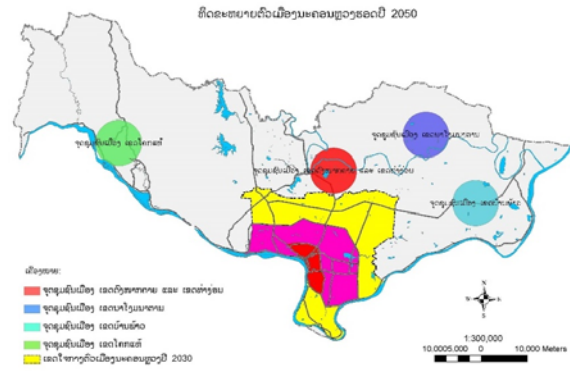
### **(3) Contents of General Urban Plan**

Allocation plans for land use zoning, road network, drainage system, parks, and green spaces.



Source: Vientiane Capital Urban Development Master Plan (JICA, 2011).

**Figure 2.2-4 Urban Central Area from Present to 2030**



**Figure 2.2-5 Multi-Core Development Expansion of Urban Central Area up to 2050**

**(4) Alignment of Development Plan with VTMP**

The General Land Use Plan was the basis for preparing the land use characteristics in the study area as well as setting the socio-economic attributes (e.g., daytime population, number of students, number of employees) in each traffic analysis zone. These attributes were integral in estimating the trip generation for the traffic demand forecast.

**2.2.5 MPWT/Vision 2030 and 10-Year Development Strategy of PWT Sector (2016-2025)**

**(1) Vision 2030**

Prioritize the development of the public works and transport sector as highly effective, modern, safe, climate-resilient, integrated and sustainable

**(2) Overall Directions**

- Safe, Efficient/Effective, Modern: Upgrade/construct infrastructure and transport systems that are high-quality, safe, green, sustainable, and in line with ASEAN standards
- Connected/Integrated: Improve the capacity of domestic transport to compete with neighboring countries and improve regional/international connectivity and integration

1) Target

- 20% of public transport share in VC (in 2025)

2) Current Condition

- 1.4% of public transport share in the Target Area (TA) in 2019

**(3) Alignment of Development Plan with VTMP**

The Vision 2030 and overall directions for the 10-year development strategy plan (e.g., transport-related projects) were taken into account in formulating the VTMP. However, the target public transport share to 20% in 2025 was deemed to be unattainable, so a more realistic target of 30% public transport share in 2040 was set in the VTMP instead.



**Figure 2.2-6 Sustainable and integrated transport system**



Source: MPWT/Vision 2030 and 10-Year development Strategy of PWT sector (2016-2025).

**Figure 2.2-7 From landlocked to land-linked: Integration and connectivity**



## **2.2.6 MPWT/5-Year Development Plan (2021-2025)**

### **(1) Vision 2030**

Prioritize the development of the public works and transport sector as highly effective, modern, safe, climate-resilient, integrated and sustainable

### **(2) Overall Goals**

- Regional connectivity, internal connectivity, efficient transport services, climate resilience, safety, sustainable urban development, social development, continuous economic growth, balanced socio-economic development, and environmental improvement

### **(3) Programs**

- Connected/Integrated: Infrastructure development for regional connectivity
- Efficient/Effective: Transport and logistics systems development
- Smart, Modern, Urbanized: Smart city development with comprehensive planning
- Safe, Livable: Road safety and traffic congestion improvement

### **(4) Policies**

- Transform the development model of public and transport infrastructure from wide to deep
- Improve transit services in terms of both quantity and quality by accelerating large-scale infrastructure projects such as railways, highways, transport systems, and transit stations

### **(5) Targets**

- 10% reduction in road accidents
- Annual GDP economic growth of at least 7%

### **(6) Alignment of Development Plan with VTMP**

The Vision 2030, overall goals, programs, and policies were taken into account in the setting the VTMP. Notably, the reduction in road accidents is addressed in the VTMP through the promotion of public transport use and replacement of aging public transport vehicles.

## 2.2.7 DPWT/Direction of 9<sup>th</sup> Five-Year Plan of DPWT in Vientiane Capital (2021-2025)

### (1) Development Directions

- Improvement and construction of road network and transport system to be modern, safe, comfortable, and convenient in line with sustainable development.
- Solving traffic congestion during the peak hours and illegal parking issues

### (2) Focal Projects

- Road and Bridge Management (23 projects with a total length of over 290 km)
- Transport and vehicle management
- Transport infrastructure enhancement
- Efficient/Effective: Public Transport Management Plan and allocation of service areas
- Equitable/Safe: Public awareness on road safety and promote public transport use
- Connected/Integrated: Smart urban parking projects

### (3) Target

- 30% reduction in road accidents

### (4) Alignment of Development Plan with VTMP

The development directions in the plan are aligned with the overall vision and contents of VTMP. In particular, the focal projects and target reduction in road accidents were considered in the VTMP action plan.



Source: JICA Expert Team.

**Figure 2.2-8 Bus Improvement Activities**

## 2.2.8 Politburo of Central Party/Resolutions of Development of Vientiane Capital in 2030

### (1) Perspective regarding Transport

To develop innovative and modern infrastructure and transport systems that are in line with standards of the Association of Southeast Asian Nations (ASEAN), in harmony with Lao architecture (preserved), and meets the needs of citizens

### (2) Development Directions

- Livable city (peaceful, clean, green, bright, charming and civilized; no traffic congestion)
- Sustainable city (resilient, equitable, environment-friendly)
- Smart city (use of ICT and advanced technology)
- Urbanized city (modern infrastructure, integrated public transport)

### (3) Targets

- Approach a development level similar to ASEAN capital cities with moderate modernization by 2030 (Vientiane's 470th anniversary)
- GRDP per capita of US\$10,000 in 2025 and US\$15,000 in 2030



Source: MPWT General Urban Plan of Vientiane Capital 2030.

**Figure 2.2-9 Development Conceptual Designs for VC**

**(4) Alignment of Development Plan with VTMP**

The transport-related perspective and development directions in the plan were considered in formulating the VTMP. Economic growth was also taken into account in the VTMP socio-economic framework setting even though the specific numerical targets for GRDP per capita stated in the plan were not explicitly considered.

**2.2.9 JICA, MPWT/Comprehensive Urban Transport Master Plan in VC (2008 MP)**

**(1) Vision**

Clean and safe city with the functions of a modern capital

**(2) Targets to Realize the Vision**

- Efficient/Effective: Smooth and safe traffic environment
- Livable: Good living environment
- Safe, Equitable: Safe and convenient transport for disadvantaged people
- Urbanized: Excellent urban amenities

**(3) Strategies to Attain the Targets**

- Connected/Integrated: Development of transport network
- Improvement and upgrade of public transport system
- Improvement of traffic management
- Improvement of urban and traffic environment

1) Targets

- Convert 40% of motorcycle and private car trips to public transport by 2025
- Procure 352 bus units to achieve target modal shift
- Implement 50 road projects, 5 bridge projects and 7 intersection improvement projects

2) Target Years:

- Short-term: 2009-2013
- Middle-term: 2014-2018
- Long-term: 2019-2025

**(4) Alignment of Development Plan with VTMP**

In the formulation of the VTMP, the contents of the 2008 MP were reviewed and some ideas were adopted in the VTMP. However, unlike the 2008 MP, the VTMP is a new master plan that considers not only the expansion of public transport and road network but also puts emphasis on behavior change (Further detailed in Chapter 11, 12). Thus, the new VTMP is deemed to effectively address and strategically adapt to the evolving transport challenges and changing characteristics and needs in Vientiane.



Source: “Vientiane Capital Comprehensive Urban Transport Master Plan” (JICA, 2008).

**Figure 2.2-10 Short-, Middle- and Long-Term Road Network Proposed in 2008 MP**

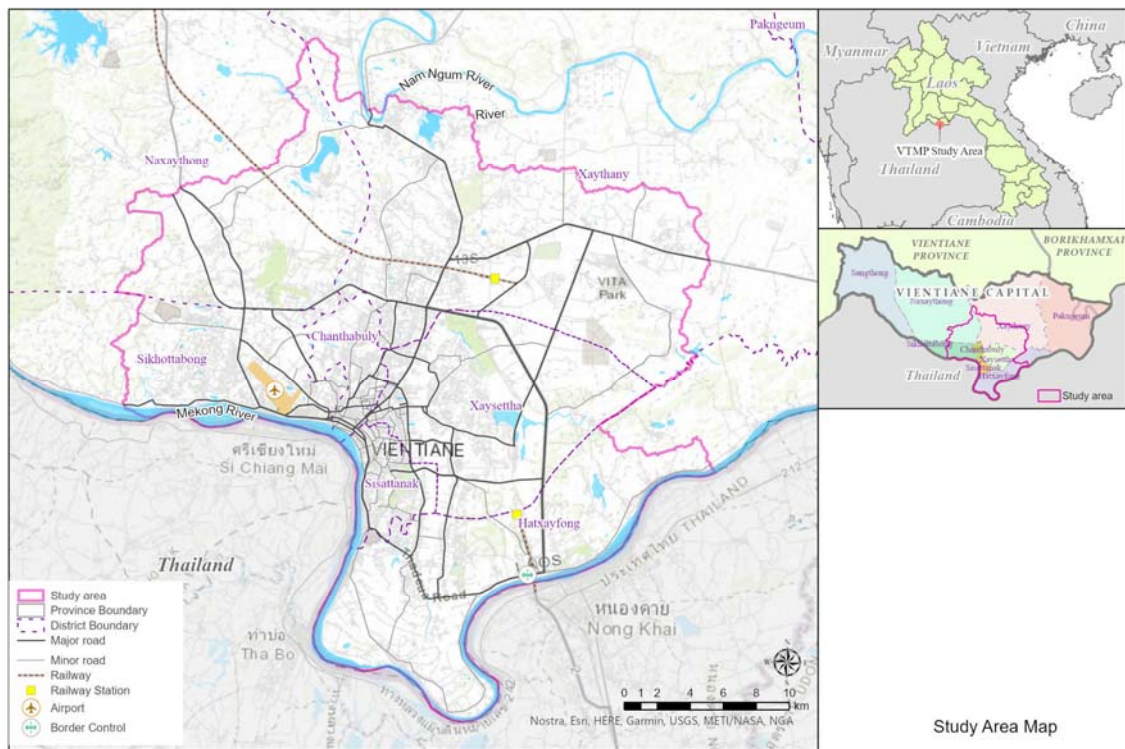
## CHAPTER 3 PROFILE OF THE PROJECT TARGET AREA

### 3.1 PHYSICAL PROFILE

The Target Area (TA) of this project consists of the existing urbanized area and areas available for possible urbanization in Vientiane, the capital and largest city of Lao PDR.

The TA not only has an international airport, as the largest city in the country, but also has border facilities for land transportation since it is adjacent to the Mekong River, which borders Thailand to the South. In addition, a railroad connecting China and Vientiane has already started operations in December 2021. Thus, these factors make the TA a gateway city for international transportation in Laos.

The TA covers an area of approximately 780 km<sup>2</sup> in total, which is equivalent to 21% of the total area of Vientiane Capital (VC). The TA covers 7 out of the 9 districts in VC, with three districts (Chanthabuly, Xaysettha, and Sisattanak) fully included in the Target Area and four districts, (Sikhottabong, Naxaythong, Xaythany, and Hatxayfong) partially covered by the project. Figure 3.1-1 shows an overview of the TA.



Path: E:\GIS\Laos\00 VTMP\99 ArcGIS Pro Project\99 FinalReport\01 Basic Maps\BM01 Study Area 20220328.aprx

Source: JICA Expert Team based on collected data from DPWT Vientiane Capital.

**Figure 3.1-1 Target Area (TA)**

#### 3.1.1 Meteorology

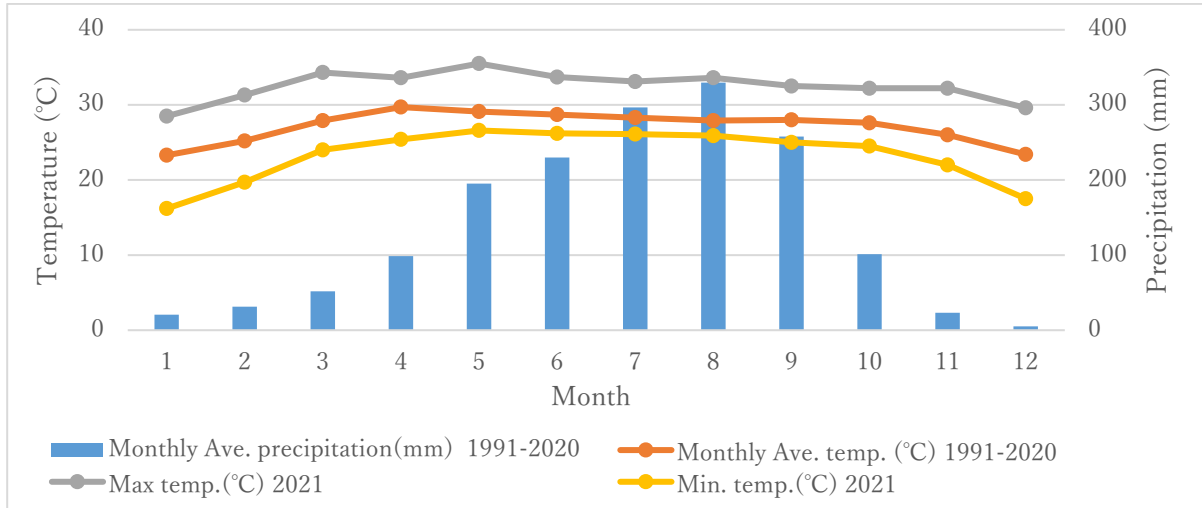
The TA is classified as "equatorial, winter dry (Aw)" based on the Köppen-Geiger Climate Classification. It is also generally recognized as a tropical monsoon climate.

From May to mid-October, the monsoon causes high precipitation in this area, which is the rainy season. Following the rainy season, between late October and February, is the dry season, during which temperatures are relatively low and the amount of precipitation is almost zero. Throughout



March and April, the hot and dry season continues until the start of the next rainy season in May.

Observing the data for the period of 1991-2020, the average annual temperature in the TA is 27.1°C, with the hottest month of the year being April and the coolest month being January. The average annual precipitation is 1641 mm, with about 85% of the annual precipitation recorded during the rainy season from May to October.



Source: ClimatView, <https://www.data.jma.go.jp/gmd/cpd/monitor/climatview/explanation.html>

**Figure 3.1-2 Climate Conditions in Vientiane**

**Table 3.1-1 Monthly Climate Data in Vientiane**

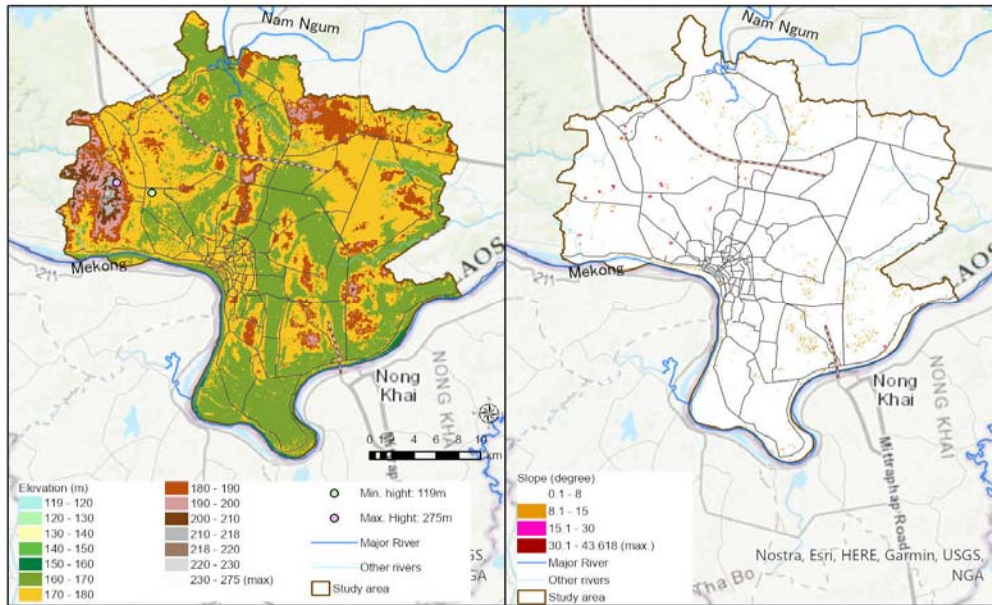
Month	Monthly Avg. Temp. (°C) 1991-2020	Max Temp. (°C) 2021	Min. Temp. (°C) 2021	Monthly Avg. Precipitation (mm) 1991-2020
1	23.3	28.5	16.2	20.6
2	25.2	31.3	19.7	31.4
3	27.9	34.3	24	51.7
4	29.7	33.6	25.4	98.6
5	29.1	35.5	26.6	195.1
6	28.7	33.7	26.2	229.9
7	28.3	33.1	26.1	296.6
8	27.9	33.6	25.9	329.5
9	28	32.5	25	257.7
10	27.6	32.2	24.5	101.2
11	26	32.2	22	23.3
12	23.4	29.6	17.5	5

Source: ClimatView, <https://www.data.jma.go.jp/gmd/cpd/monitor/climatview/explanation.html>

Note: Max temp June and Min. temp Feb and June are not available, the value of these months in the table uses data of year 2020

### 3.1.2 Topography

The target area is bordered by the Mekong River to the South and the Nam Ngum River to the North, although the Nam Ngum River is outside the TA. Approximately 85% of the TA is located at an altitude between 160 and 180 meters. The highest point in the TA is 275 m and the lowest is 119 m, with a median elevation of 173 m. Although there are some slightly hilly areas on the Western edge of the TA, there are very few steep hills with slopes exceeding 30 degrees and most areas within the TA are characterized by a flat topography with slopes of 8 degrees or less. The flat terrain makes the city favorable for the promotion of Non-Motorized Transport (NMT) such as bicycles.



Source: ALOS World 3D - 30m (AW3D30), Japan Aerospace Exploration Agency (JAXA), <https://www.eorc.jaxa.jp/ALOS/en/aw3d30/data/index.htm>, Slope computed by JET based on ALOS World 3D

**Figure 3.1-3 Topography and Slope Conditions in Target Area (TA)**

**Table 3.1-2 Summary of Elevation in Target Area (TA)**

Elevation(m)	Cell count	%
119 - 120	2	0.000%
120 - 130	6	0.001%
130 - 140	14	0.002%
140 - 150	28	0.003%
150 - 160	4,589	0.547%
160 - 170	336,038	40.039%
170 - 180	370,355	44.127%
180 - 190	94,020	11.202%
190 - 200	21,806	2.598%
200 - 210	9,399	1.120%
210 - 218	2,556	0.305%
218 - 220	185	0.022%
220 - 230	239	0.028%
230 - 275	49	0.006%

Source: ALOS World 3D - 30m (AW3D30), Japan Aerospace Exploration Agency (JAXA),  
 Note: cell size of ALOS World 3D is approximately 30m\*30m (1 arcsecond)

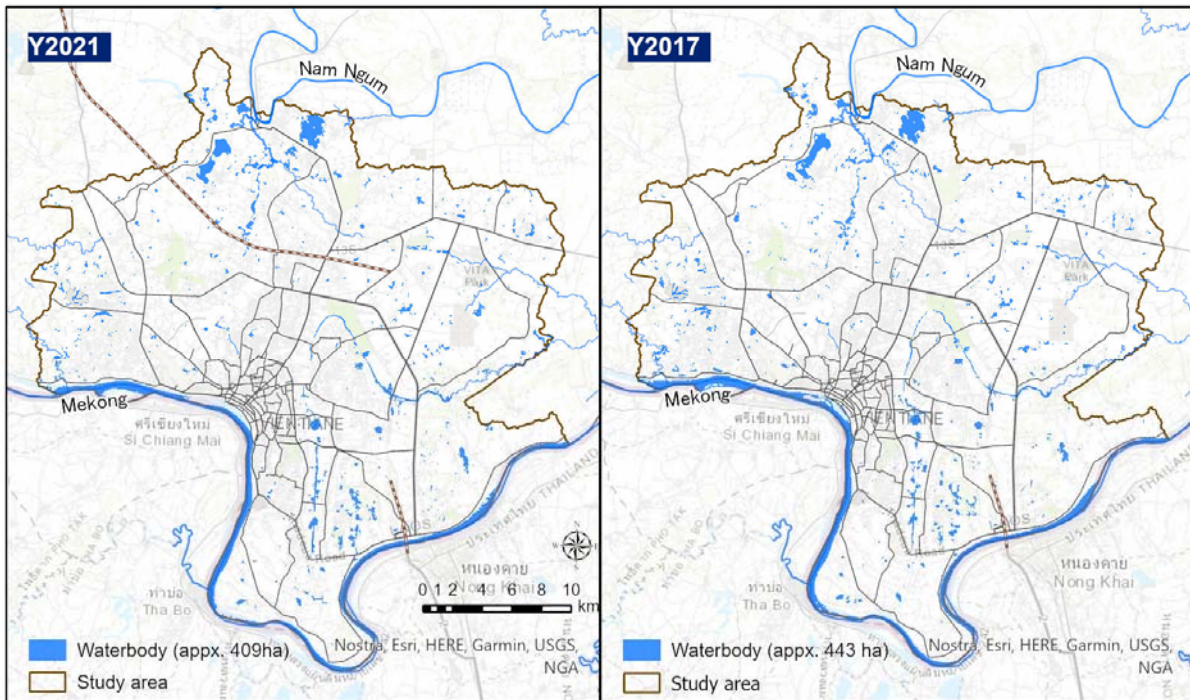
### 3.1.3 Hydrography

The TA is almost a flat plain with the Nam Ngum River to the North and the Mekong River to the South, with several channels and ponds, as well as natural rivers. These ponds and channels are mainly used for irrigation and agriculture, however, they also function as flood control measures.

Figure 3.1-4 shows the extension of waterbodies in 2017 and 2021, as well as river data from DPWT. Comparing the changes during this period, it is clear that waterbodies, especially ponds and channels, have changed in shape even in a relatively short period of 5 years.

In particular, the conditions of waterbodies around the That Luang Marsh area, shown in Figure 3.1-5, the largest wetland in VC located in the Southeast area of the TA, have changed significantly. The marsh plays an important role in flood mitigation and treatment of wastewater discharged into it from the city. However, the marsh changed its form in recent years because of urban development, expansion of agricultural areas, and the development of a central canal, intended to facilitate dry

season irrigation.<sup>1</sup>



Source: River data by DPWT and Land use data by JICA Expert Team based on land use data from “Vientiane Capital Urban Development Master Plan (JICA, 2011)

**Figure 3.1-4 Hydrologic Condition in Target Area (TA) (2021/2017)**



Source: Integrated Wetland Ecosystem Values into Urban Planning, The case of That Luang Marsh, June 2004, WWF Lao Program, [http://awsassets.panda.org/downloads/case\\_study\\_of\\_that\\_luang\\_marsh.pdf](http://awsassets.panda.org/downloads/case_study_of_that_luang_marsh.pdf)

**Figure 3.1-5 That Luang Marsh**

## 3.2 LAND USE AND URBANIZATION

### 3.2.1 Land Use

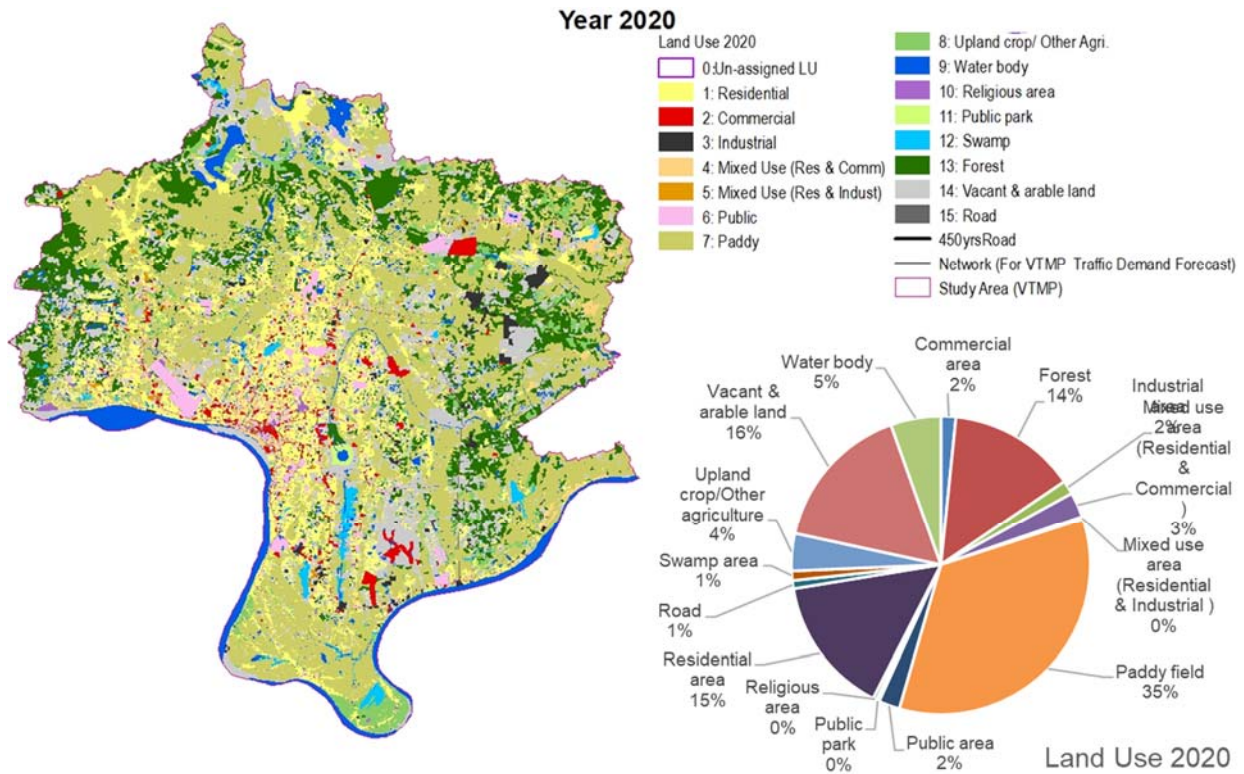
Land use and transportation are two important elements that constitute the physical spatial structure of a city. It has been widely recognized that the development of urban transportation facilities has a significant impact on the development pattern of urban areas, the distribution of urban activities,

<sup>1</sup> <https://wle.cgiar.org/thrive/2016/02/01/luang-wetland-development-and-livelihoods>



and the land use structure.<sup>2</sup>

The current land use data for the base year of this project was prepared by updating the then-current land use data prepared in the “Vientiane Capital Urban Development Master Plan 2011” (hereinafter referred to as Urban MP 2011), which was implemented by the Japan International Cooperation Agency (JICA)<sup>3</sup>. The updated land use data was used to identify possible locations where people currently live, commute, and go to school, as well as to support the creation of socioeconomic indicators by traffic analysis zone as input for the traffic demand forecast.



Source: Updated by JICA Expert Team based on land use data from “Vientiane Capital Urban Development Master Plan” (JICA, 2011)

**Figure 3.2-1 Existing Land Use in the Target Area (TA)**

**Table 3.2-1 Summary of Existing Land Use**

Land Use Category	Y2020 (ha)	Ratio
Commercial area	1,260.8	1.6%
Forest	10,814.9	13.9%
Industrial area	1,174.5	1.5%
Mixed use area (Residential & Commercial)	2,134.8	2.7%
Mixed use area (Residential & Industrial)	217.3	0.3%
Paddy field	26,894.2	34.5%
Public area	1,782.5	2.3%
Public park	255.3	0.3%
Religious area	303.3	0.4%
Residential area	11,629.1	14.9%
Road	685.5	0.9%
Swamp area	799.9	1.0%

<sup>2</sup> Adapted from: Giuliano, G. (1995) “Land Use Impacts of Transportation Investments: Highway and Transit”, in S. Hanson (ed) The Geography of Urban Transportation, New York: The Guilford Press, p. 307.

<sup>3</sup> The current land use data of Urban M/P2011 obtained for this project is based on satellite imagery taken between 2007 and 2008, with field surveys supplemented, and is therefore used in this project as land use data as of 2011.

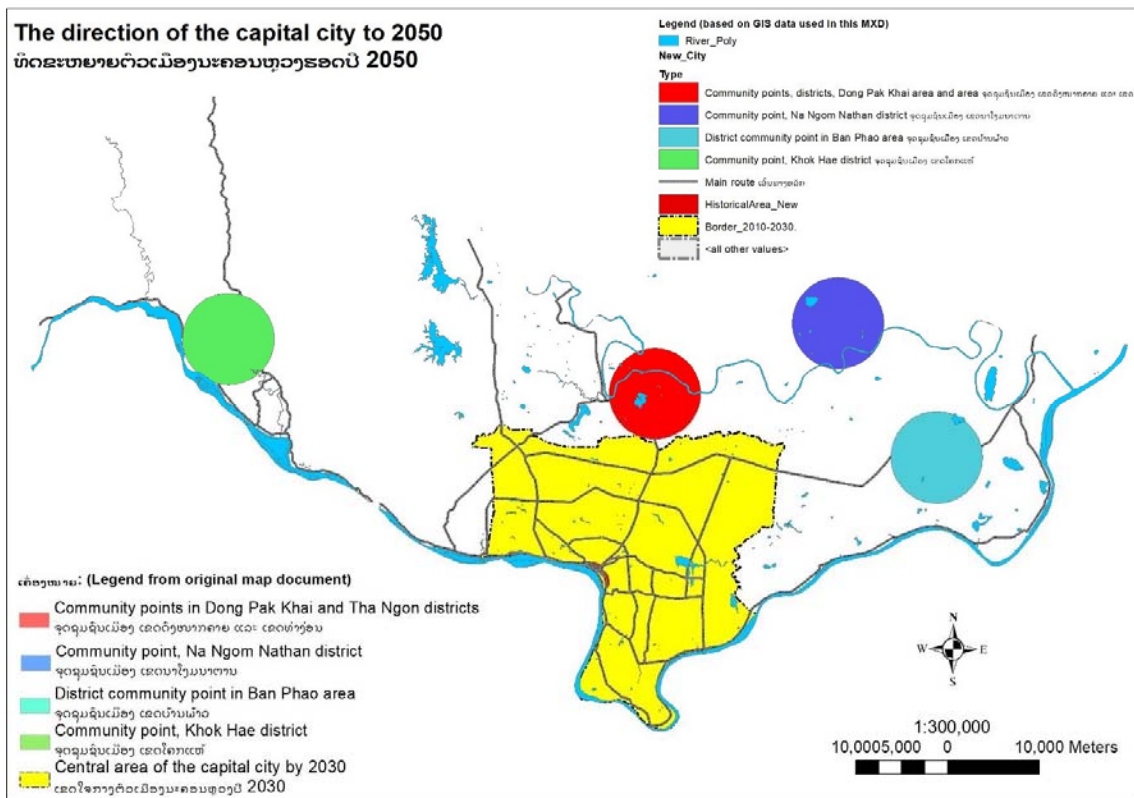


Upland crop/Other agriculture	3,175.7	4.1%
Vacant & arable land	12,613.9	16.2%
Water body	4,231.6	5.4%
Total (ha)	77,973.4	100.0%

Source: Updated by JICA Expert Team based on land use data from “Vientiane Capital Urban Development Master Plan” (JICA, 2011).

Vientiane City has urban planning and approved development plans. The following sections review these plans. We use this as preliminary information to project each district's nighttime and daytime population of each industry to forecast future traffic volume.

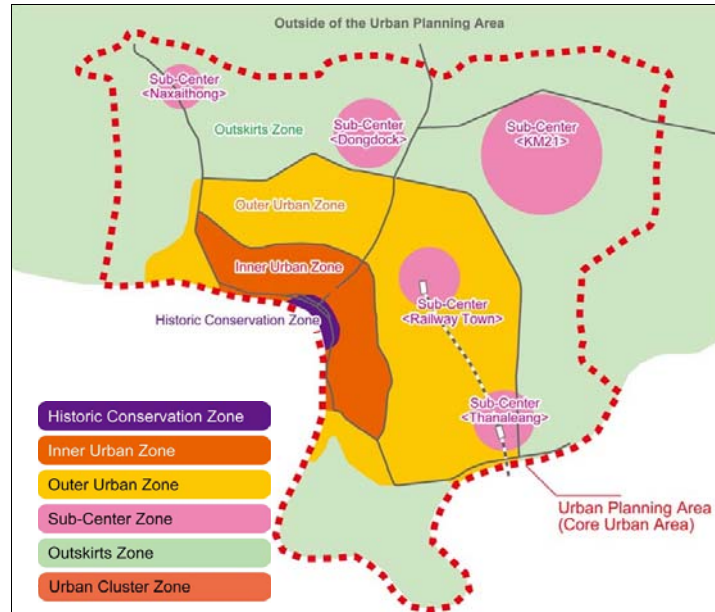
Based on the aforementioned plan, the development concept for the suburban areas of Vientiane is shown in the figure below. The four development areas are: i) Dong Pak Khai and Tha Ngon District, ii) Na Ngom Nathan, iii) Ban Phao, and iv) Khok Hae Khok. Those areas are planned to be developed as urban clusters outside of the core urban area. In the particular case of Na Ngom Nathan District, its addition as a development area was determined during the approval process of the Cabinet.



Source: DPWT.

**Figure 3.2-2 Multicore Development Concept around Vientiane**

The Urban MP 2011 divides the target area into four zones and sets out development policies for each of these zones as shown below.



Source: Final Report of “Vientiane Capital Urban Development Master Plan” (JICA, 2011).

**Figure 3.2-3 Planning Zones in the Core Urban Area**

In addition, subcenters are also established as the focal points of development. A summary of each zone is given in the table below.

**Table 3.2-2 Orientation of Development Zones**

Zone	Location	Main Use	Characteristics
Historic Conservation Zone	Inside the heritage area	Public offices, private offices, embassies, hospitals, large & tourist hotels, restaurants, cafés, souvenir stores, retail shops, colleges, temples	<ul style="list-style-type: none"> <li>- Many historic buildings</li> <li>- Densely constructed comparatively low-rise semi-detached buildings</li> </ul>
Inner Urban Zone	Outside the Historic Conservation Zone and inside the Inner Ring Road	Houses, commercial buildings, public offices, private offices, embassies, hotels, restaurants, collages	<ul style="list-style-type: none"> <li>- Commercial buildings located along main roads</li> <li>- Sparsely constructed low and middle-rise semi-detached and independent buildings</li> <li>- Greenery to be protected</li> </ul>
Outer Urban Zone	Mainly between the Inner Ring Road and the Outer Ring Road	Houses, commercial buildings, roadside stores, hotels, factories, conference halls, collages	<ul style="list-style-type: none"> <li>- Agricultural land</li> <li>- Urbanization rapidly in progress along main roads</li> <li>- Low-rise detached houses</li> <li>- Paved main roads and unpaved dirt feeder roads</li> <li>- Environmentally important water surfaces (That Luang Marsh, etc.)</li> <li>- Greenery to be protected</li> </ul>

Subcenter Zones	Specific zones in the Outer Urban zone and the Outskirts zone	Houses, Private offices, Roadside stores, Stadium, Universities	<ul style="list-style-type: none"> <li>- Agricultural land</li> <li>- Urbanization rapidly in progress along main roads</li> <li>- Paved main roads and unpaved dirt feeder roads</li> <li>- New large-scale infrastructure (450 Year Road, Railway, etc.)</li> <li>- Politically initiated new development</li> <li>- Foreign private investments</li> </ul>
Outskirts Zone	Outer side of the Outer Urban zone and inside the Urban Planning Area	Houses, roadside stores, agriculture-related buildings	<ul style="list-style-type: none"> <li>- Overwhelmingly dominated by agricultural land with typical Lao rural landscapes</li> <li>- Large-scale important greenery to be protected</li> </ul>

Source: Updated from the Final Report of “Vientiane Capital Urban Development Master Plan” (JICA, 2011).

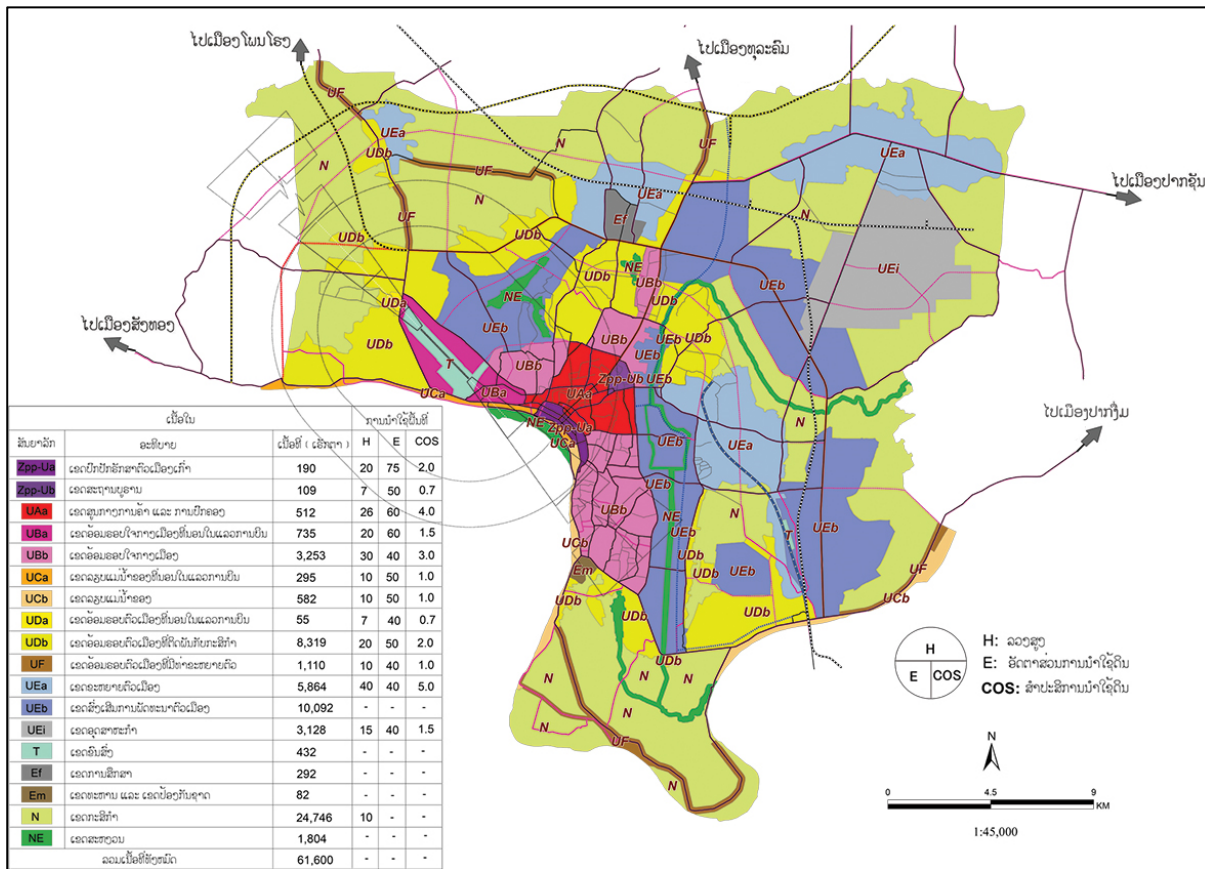
Furthermore, the five subcenters will be developed to take advantage of the following potential.

**Table 3.2-3 Subcenter Development Concept**

Name	Character
Naxaithong	The Naxaithong area is a district center. The area is located along NR13 North approximately 15 km from the core urban area of Vientiane. In addition, the area is adjacent to the entrance of the Vientiane–Boten Expressway. The area might have a development potential to be residential satellite town centering local public and commercial service functions in suburban Vientiane.
Dongdock	Dongdock area is an existing urban agglomeration specialized in higher education and research with new suburban residential areas. The area has large development potential due to proximity to the downtown of Vientiane and due to existing better living conditions. This special urban agglomeration will be a large development seed as a subcenter.
KM21	KM21 area has increased its development projects with the 450 Years Road as an important part of the freight transport network. Development projects include Vientiane Industrial Park, Vientiane Saysettha Development Zone, and Vientiane Station, a highspeed railway station. These development projects are suitable development seeds for a subcenter.
Railway Town	Khamsavath is expected to work as a railway transport hub/gateway connecting to Thailand after its start of operations in 2023. Therefore, the area will have commercial and residential development potentials based on its transport hub function. The area will be an urban core in suburban Vientiane.
Thanaleng	Thanaleng area is known as an international gateway to Thailand through the Friendship Bridge and Lao-Thai Railway. The development potential is further established by the implementation of development projects, such as Vientiane Logistics Park (VLP) and Thanaleng Commercial Complex. Thanaleng area is bound to focus on the handling of logistics and also function as a trade center for Vientiane.

Source: Updated from the Final Report of “The project for urban development master plan study in Vientiane Capital”.

Based on the development directions mentioned above, urban development regulations (land-use, building area ratio and floor area ratio) are defined in the target area. Land-use zoning plan is summarized below.

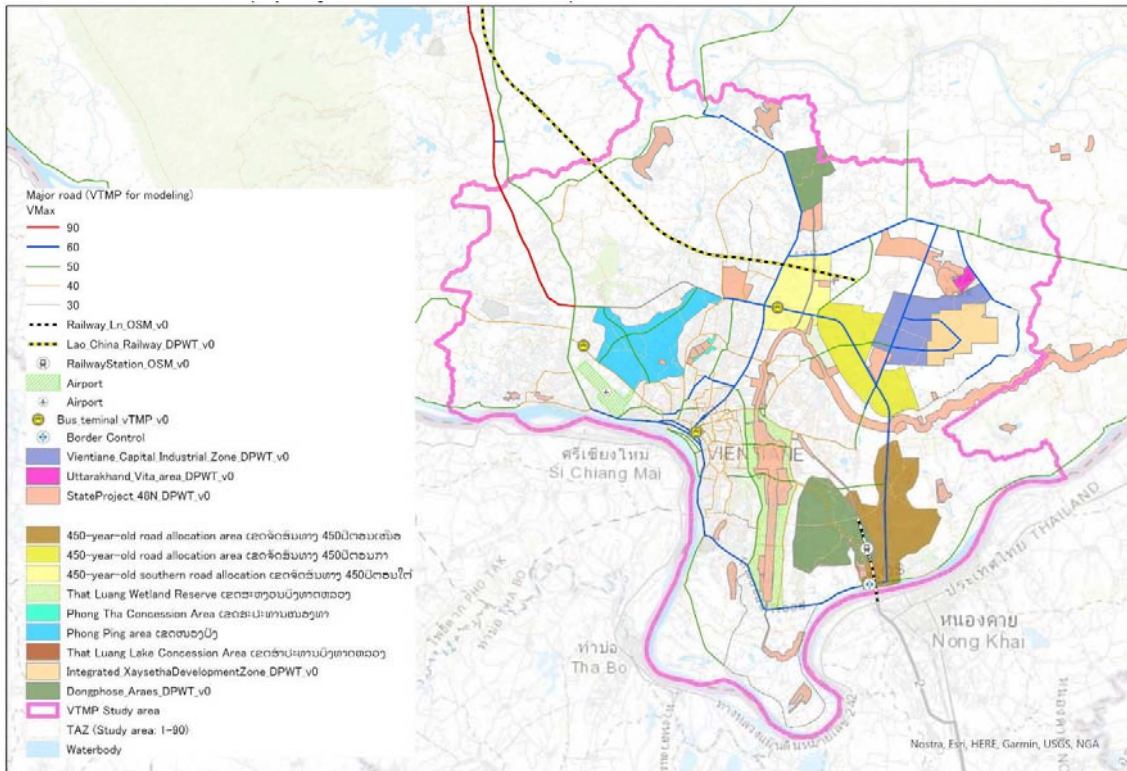


Source: Vientiane Land Use Regulation Approved in 2019

Figure 3.2-4 Land Use Zoning Plan of Vientiane

While land use plans indicate regulations, approved development plans already exist in Vientiane. In these areas, development is expected to proceed relatively quickly. The status and location of these approved development plans is shown in the diagram below.





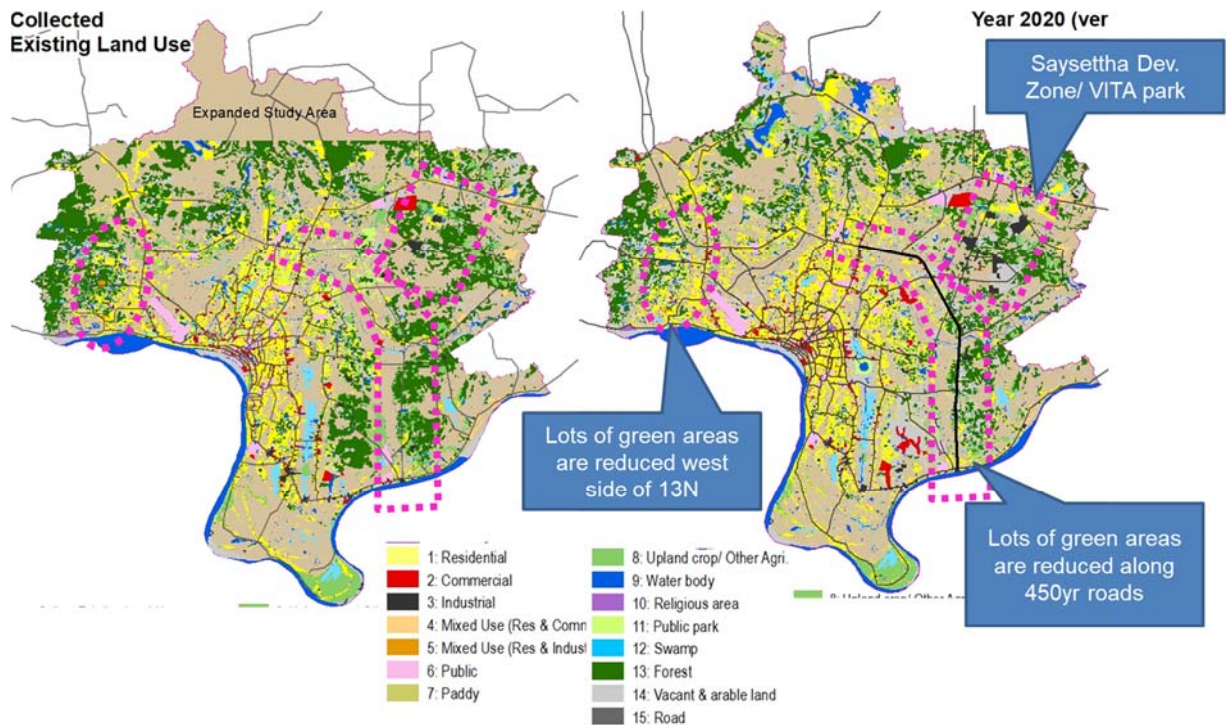
Source: DPWT.

**Figure 3.2-5 Approved Areas for Development**

The pre-updated land use data produced by Urban MP 2011 was developed from satellite imagery taken between 2007 and 2008 with supplemental information recollected from field surveys.

A comparison of Urban MP 2011’s land use data and the updated land use data in VTMP was conducted. However, since the Urban MP 2011 land use data area and the TA in this Project do not exactly match, the Northern area, which was added in VTMP’s initial stage, was prepared from scratch. Therefore, the areas compared do not encompass the entire TA of this project, instead the comparison consisted of areas where the Urban MP 2011 land use data overlap VTMP’s land use data.

Figure 3.2-6 shows land use data from Urban MP 2011 and the updated land use in VTMP. The two land use maps show a significant decrease in forest cover. In particular, significant changes have occurred around the 450 Year Road leading to the Thai border, the area where the Saysettha Development Zone and VITA Park is located. This in addition to the area on the West side of the NR 13 North.



Source: “Vientiane Capital Urban Development Master Plan (JICA, 2011) and JICA Expert Team

**Figure 3.2-6 Comparison of Land Use Between 2011 MP and VTMP’s Land Use Data (2020) for the Urban Transport Master Plan**

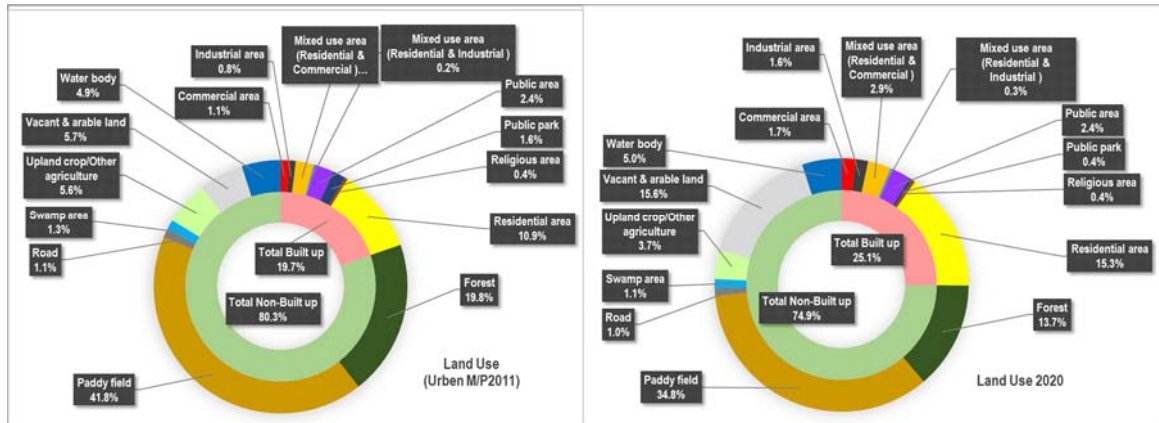
Moreover, the proportion of each land use category was compared between the land use data of Urban MP 2011 and VTMP’s land use prepared in 2020 for the Urban Transport Master Plan, as shown in Figure 3.2-7.

First, the land use categories were divided into “Built-up area” and “Non-built-up area”. Regarding to “Built-up area”, there was a significant increase, from 19.7% in 2011 to 25.1% in 2020. Translating the percentage increment into actual area, approximately 4,000 ha of land has changed from “Non-built-up” to “Built-up”.

Next, focusing on the categories that have seen significant changes, “Vacant” & “Arable” land has increased significantly from 5.7% to 15.6%. Since this category includes land that is being developed or under construction, it is highly likely that land in this category will also be developed in the near future.

On the other hand, “Paddy fields” and “Forests” show a significant decrease from 41.8% to 34.8% and from 19.8% to 13.7%, respectively.

The above changes in land use are the results of new urban development activities. Among these, we can observe many occasional phenomena where development has not been carried out in line with the land use plan and its concept. These points will be considered and included in the population projections for each area at a later stage. In addition, the JICA Expert Team adapted the aforementioned multi-core development and development policy for each area as a primary development orientation for planning road networks and public transport.



Source: “Vientiane Capital Urban Development Master Plan (JICA, 2011) and JICA Expert Team

**Figure 3.2-7 Composition of Land Use: Urban MP 2011 and VTMP’s Land Use Data (2020) for the Urban Transport Master Plan**

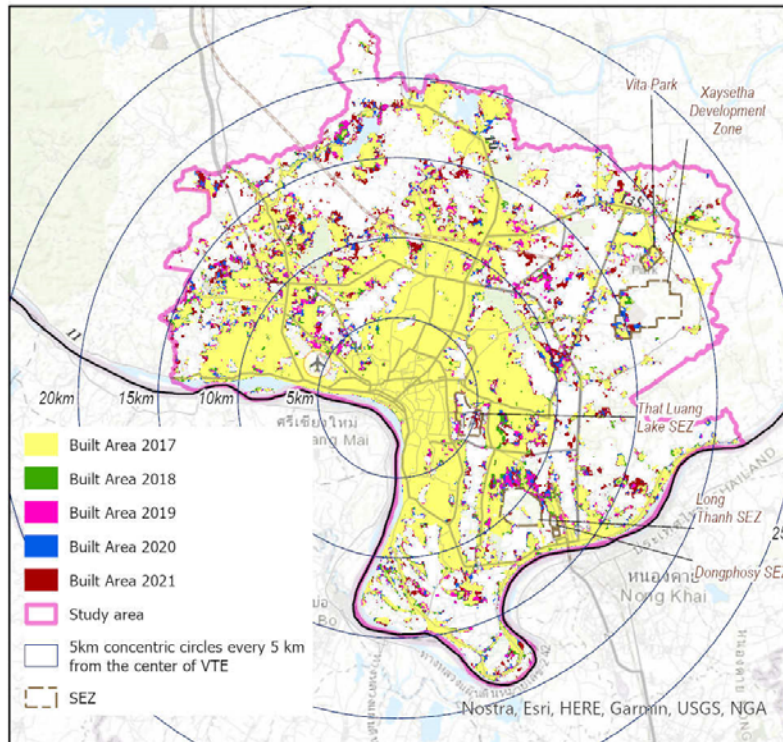
### 3.2.2 Urbanization Trends

In this section, urbanization trends are discussed over a five-year period (2017 to 2021) through expansion of the built area in the TA. Figure 3.2-8 shows the change in built area over this five-year period between 2017 and 2021. The original data obtained is worldwide land cover data from which Figure 3.2-8 shows only the built area from the original land cover data of each year.

The original land cover data is derived from Sentinel-2 satellite imagery at 10 m resolution. The land cover of each year is generated from Impact Observatory’s deep learning AI land classification model using a massive training dataset of billions of human-labeled image pixels developed by the National Geographic Society. The data is prepared at a cell size of 10 m.<sup>4</sup>

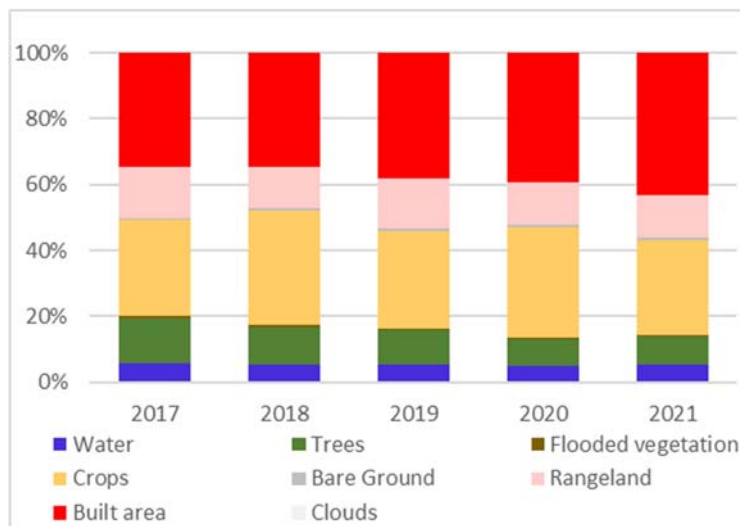
<sup>4</sup> Sentinel-2 10m land cover time series of the world from 2017-2021, <https://www.arcgis.com/home/item.html?id=d3da5dd386d140cf93fc9ecbf8da5e31>





Source: Sentinel-2 10m land cover time series of the world from 2017-2021. Produced by Impact Observatory, Microsoft, and Esri, <https://www.arcgis.com/home/item.html?id=d3da5dd386d140cf93fe9ecbf8da5e31>

**Figure 3.2-8 Recent Expansion of Built Area Between 2017 and 2021**



Source: Sentinel-2 10m land cover time series of the world from 2017-2021. Produced by Impact Observatory, Microsoft, and Esri.

**Figure 3.2-9 Composition of Land Cover Between 2017 and 2021**



**Table 3.2-4 Summary of Land Cover Change Between 2017 and 2021**

Landcover 2017 (ha)		Landcover 2021 (Ratio of change from Landcover 2017)						
		Water	Trees	Flooded vegetation	Crops	Built area	Bare ground	Rangeland
Water	4,427	78.3%	1.0%	1.6%	6.3%	6.3%	2.3%	4.1%
Trees	10,531	0.6%	58.1%	0.3%	13.8%	14.8%	1.3%	11.0%
Flooded vegetation	886	13.6%	4.3%	17.0%	42.4%	5.2%	0.2%	17.3%
Crops	22,515	1.1%	0.9%	0.2%	71.4%	17.1%	0.3%	9.0%
Built area	26,911	0.1%	0.3%	0.0%	1.6%	97.3%	0.1%	0.6%
Bare ground	497	7.7%	0.4%	0.4%	12.5%	30.4%	19.2%	29.4%
Clouds	0	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Rangeland	12,207	1.0%	1.7%	0.8%	31.6%	14.5%	0.5%	49.9%

Source: Sentinel-2 10m land cover time series of the world from 2017-2021. Produced by Impact Observatory, Microsoft, and Esri.

**Table 3.2-5 Major SEZ in Vientiane Capital**

	SEZ Name	Establishment year	Planned Land (ha)
1	Saysettha Development Zone	2010	1,000
2	Long-Thanh Vientiane SEZ	2008	557.75
3	VITA Park (Vientiane Capital Industrial and Trade Area)	2009	110
4	Dongphosy SEZ	2009	53.94
5	That Luang Lake SEZ	2010	365

Source: 1-4: Invest Promotion Department, Ministry of Planning and Investment, <https://investlaos.gov.la/where-to-invest/special-economic-zone-sez/>

Source: 4,5: Presentation material “SPECIAL ECONOMIC ZONES IN LAO PDR, SEZ” by Promotion and Management Office Ministry of Planning and Investment

### 3.3 CURRENT AND FUTURE SOCIO-ECONOMIC FRAMEWORK

The socio-economic framework establishes the context for the transportation master plan and serves as vital input for forecasting future traffic demand and needs. This section provides an overview of the present socio-economic conditions in the TA and describes the current and future socio-economic frameworks for the base year and target years of the Urban Transport Master Plan.

#### 3.3.1 Current Socio-Economic Conditions

The current demographic, economic and social conditions of VTMP’s TA, which is composed of the urbanized and suburbanized areas in VC, are described below.

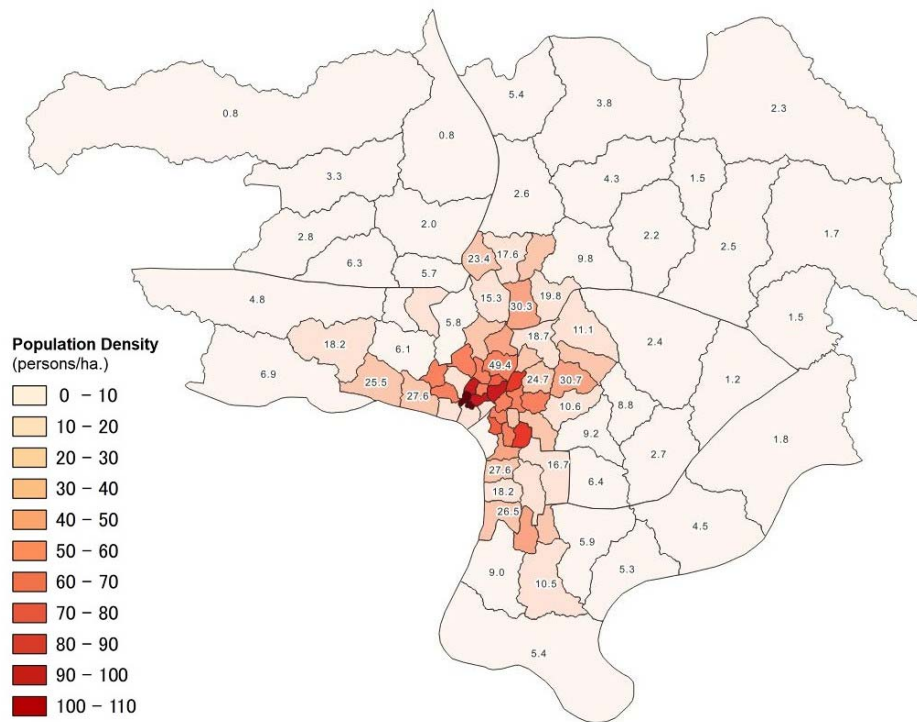
##### (1) Population

While Lao PDR and its capital Vientiane are facing considerable population growth, the population in the TA is growing at a slightly higher rate. Moreover, around 79% of Vientiane residents live in the TA. Table 3.3-1 shows the population in the two latest censuses (2005/2015).

**Table 3.3-1 Population Changes from 2005 to 2015 in Lao PDR and Vientiane Capital**

Administrative Unit	Population		Annual Average Growth Rate (%)
	2005	2015	2005-2015
Lao PDR	5,621,982	6,492,228	1.45%
Vientiane Capital	698,318	820,940	1.63%
-VTMP Target Area	547,238	648,970	1.72%
-External Zones	151,080	171,970	1.30%

Source: JICA Expert Team, based on the 2005 and 2015 Census and Village Population Data from the Lao Statistics Bureau (LSB).



**Figure 3.3-1 Population Density in 2015**

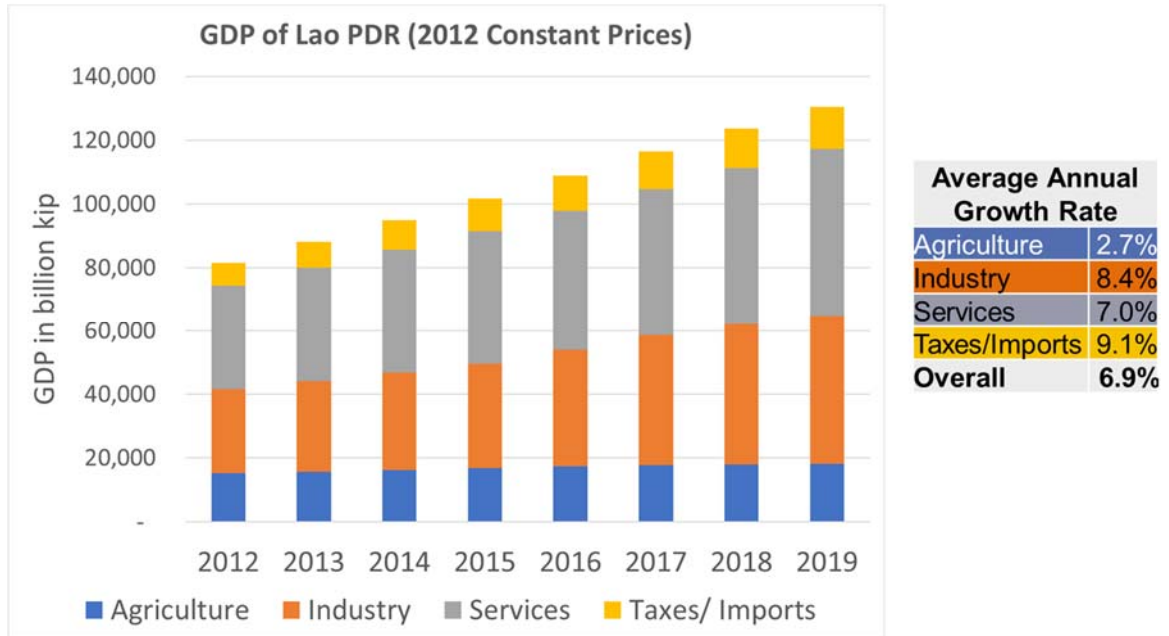
As shown in Figure 3.3-1, the population in the TA is concentrated in the central area, where economic and educational opportunities are abundant. Meanwhile, suburban areas are more sparsely populated. The overall population density of Vientiane is at 6.24 persons per hectare, but population density in the central areas reaches as high as 94.2 persons per hectare.

**(2) Economy**

1) Lao PDR

Lao PDR had been experiencing strong economic growth, with an average annual GDP growth of 6.9% per year from 2012 to 2019.

The figure below presents the historical GDP data for Lao PDR from 2012 to 2019. It indicates that the industry and services sectors are the dominant contributors to the country's GDP, exhibiting much higher growth rates compared to the agricultural sector.



Source: Bank of Lao PDR

**Figure 3.3-2 GDP of Lao PDR by Sector from 2012-2019**

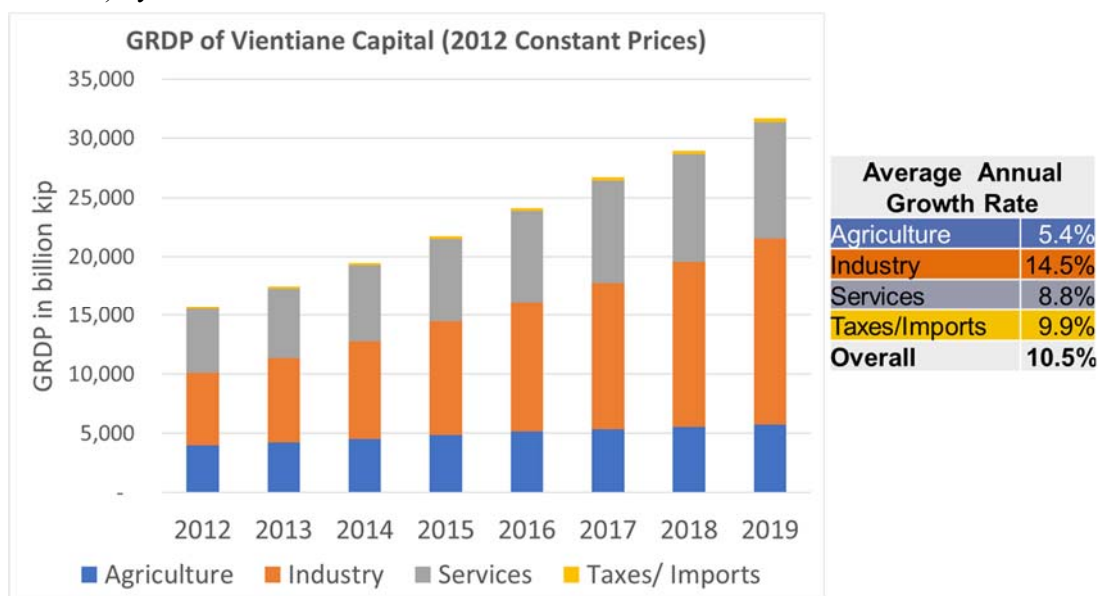
However, the COVID-19 pandemic has had a significant impact on the country's economic growth, resulting in a GDP growth of 3.3% in 2020 and 3.5% in 2021. The pandemic has also made it more challenging for the country to maintain macroeconomic stability and manage its national debt, which is around 70% of GDP due to the high amount of loans taken for large infrastructure projects. With limited fiscal space, it faces difficulties in achieving both macroeconomic stability and recovery from the pandemic simultaneously.

GDP growth in 2022 is projected at 4.2%, with potential support from private consumption and an increase in exports. The newly launched Lao-China highspeed railway in December 2021 and electricity exports are expected to contribute to economic growth. Furthermore, Lao PDR is likely to attract industries that require low-cost labor-intensive manufacturing. Although the tourism industry, which was a significant contributor to the country's service exports, has been gradually increasing activity since the borders were reopened in 2022, it is expected to remain below pre-pandemic levels until 2024.

It is also scheduled to graduate from its Least Developed Country (LDC) status in November 2026, which has been a long-term objective of the Government of Lao PDR. It has made significant progress in increasing its Gross National Income (GNI) per capita, and improving its Human Assets Index (HAI), which measures indicators such as health and education. However, it still faces challenges such as a high level of economic and environmental vulnerability, which can impede its development progress. Nevertheless, with the continued implementation of sound policies and strategies over the next few years, Lao PDR is well-positioned to graduate from its LDC status as scheduled.

## 2) Vientiane Capital (VC)

VC has experienced significant economic growth over the past decade especially in the industry and services sector, as indicated by the figure below showing the GRDP (Gross Regional Domestic Product) by sector.



Source: Lao Statistics Bureau, Vientiane Capital

**Figure 3.3-3 GRDP of Lao PDR by Sector from 2012-2019**

## (3) Employment/Enrollment

Employment and school enrollment are key factors in understanding commuting patterns. In 2017, there were 404,556 employed persons in Vientiane, with a higher labor force participation and lower unemployment rates compared to the national average. Moreover, there were a total 232,785 students at all levels in 2017, highlighting the importance of work and school commuting in the context of the Urban Transport Master Plan.

**Table 3.3-2 Employment and Enrolment in Lao PDR and Vientiane Capital in 2017**

Indicator	Lao PDR	Vientiane Capital
<b>Employment</b>		
Working Age Population (15+)	4,758,031	665,689
Labor Force Participation Rate	40.8%	62.6%
Labor Force Population	1,940,230	416,721
Employed Persons	1,757,733	404,556
Unemployment Rate	9.4%	2.9%
<b>Enrolment</b>		
Primary Education	788,248	76,535
Lower Secondary Education	447,767	60,432
Upper Secondary Education	223,307	33,148
Tertiary Education (Diploma, Bachelor's, Master's, Ph.D.)	114,960	62,670
Total	1,574,282	232,785

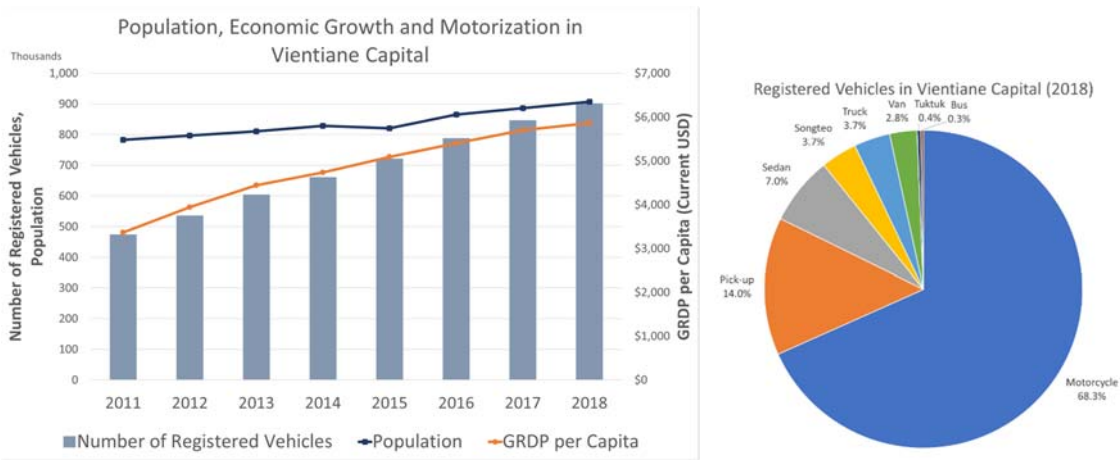
Sources: Lao Labor Force Survey 2017 (LSB/ILO), Lao Population Projections 2015-2045 (LSB/UN FPA), Annual School Census for School Year 2017-2018

## (4) Vehicle Registration

Vientiane Capital is experiencing rapid motorization due to its population growth and strong economic development which generated significant work and school commuting needs on one hand,



and a lack of high-quality public transportation options on the other hand. Motorcycles make up the largest proportion of registered vehicles, followed by private vehicles, such as pick-ups and sedans, while vehicles for public transportation are limited.



Sources: Lao Statistics Bureau, Vientiane Capital

Figure 3.3-4 Number of Registered Vehicles in Vientiane Capital

### 3.3.2 Future Socio-Economic Framework

This subsection presents the socio-economic framework adopted in the Urban Transport Master Plan for the base year (2019) and target years (short-term: 2027; medium-term: 2032, and long-term: 2040).

#### (1) Population

Population forecasts for Lao PDR and VC were adopted from the moderate growth scenario of the official population projections prepared by the United Nations Population Fund (UNFPA) and the Lao Statistics Bureau (LSB), which were based on previous census data and trends in fertility, mortality, and migration.

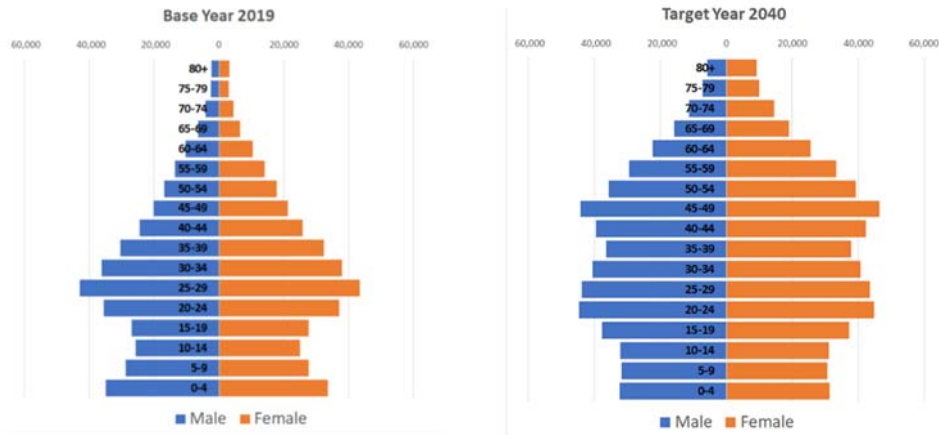
The JICA Expert Team prepared the population forecasts for VTMP’s TA (for each Traffic Analysis Zone [TAZ]) and the external zones based on the said population projections, village-level population data, demographics and land-use patterns. The results are outlined in Table 3.3-3.

Table 3.3-3 Population Forecasts for the Base Year and Target Years

	Population Forecast			
	2019 (Base Year)	2027 (Short-Term)	2032 (Medium-Term)	2040 (Long-Term)
Lao PDR	7,123,205	7,938,274	8,393,877	9,136,811
Vientiane Capital:	927,723	1,086,217	1,178,560	1,323,627
- VTMP Target Area (TA)	733,391	859,068	948,341	1,119,260
- External Zones	194,332	227,149	230,219	204,367

Sources: Population for Lao PDR and Vientiane Capital adopted from UNFPA/LSB Population Projections 2015-2045; Population for VTMP SA and external zones prepared by JICA Expert Team

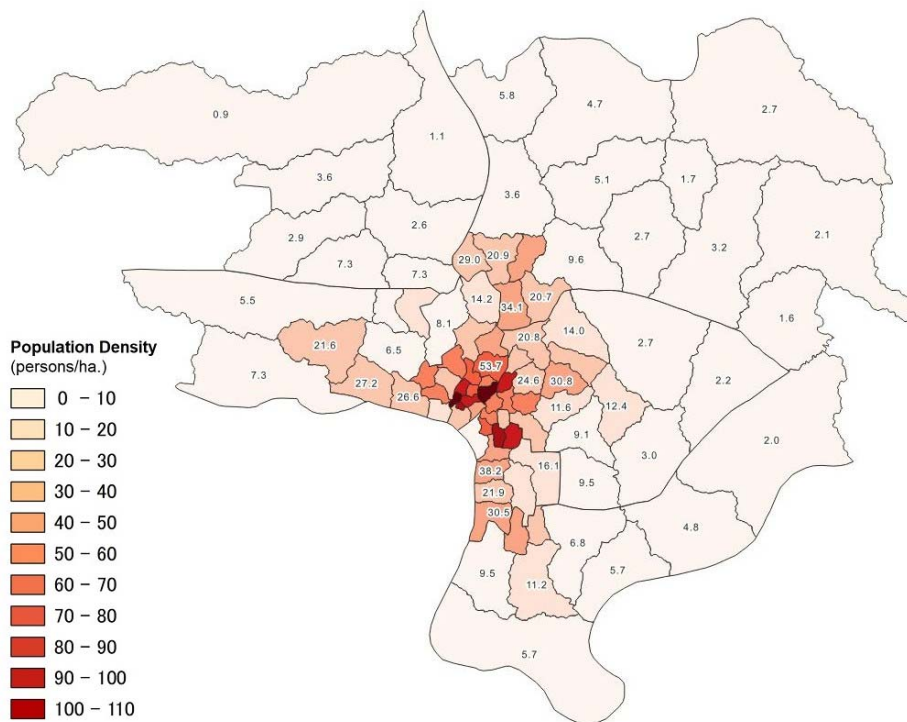
The population pyramids for the TA in 2019 and 2040 are shown in Figure 3.3-5. The population pyramid in 2019 shows a relatively young population with the largest age group being the 25- to 29-year-olds. However, the population pyramid in 2040 shows a significant shift towards an older population, although the young population remains significant. The gender difference in life expectancies is also reflected in the population pyramids, with women tending to live longer than men.



Source: JICA Expert Team

**Figure 3.3-5 Population Pyramids of VTMP Target Area in 2019 and 2040**

Moreover, a comparison of the population density maps in 2019 and 2040 reveals a significant increase in population density across all areas, including a spread from the central area to suburban areas, indicating urban expansion (Figures 3.3-6 and 3.3-7). While this expansion may provide opportunities for economic growth and development, it also poses significant environmental and social challenges, such as increased traffic congestion and air pollution, which the Urban Transport Master Plan aims to address.



**Figure 3.3-6 Population Density in 2019 (Base Year)**

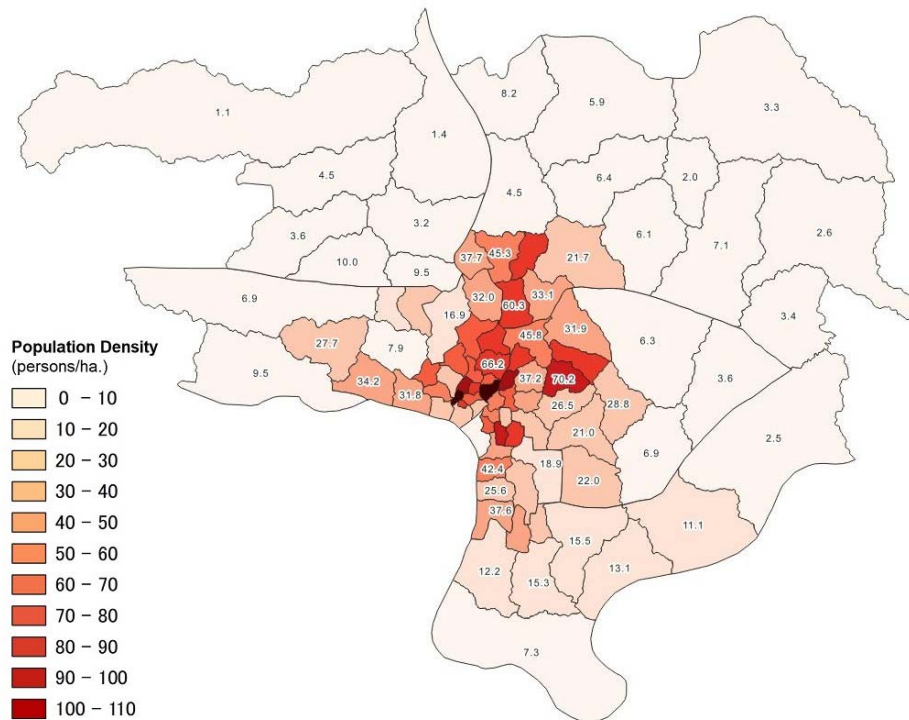


Figure 3.3-7 Population Density in 2040 (Long-Term Target Year)

**(2) Economy**

The growth rates for GDP in Lao PDR and GRDP in Vientiane Capital (VC) were adopted based on trend analysis of historical data and target growth rates indicated in the National Socio-Economic Development Plan of Lao PDR (NSEDP) and Vientiane Socio-Economic Development Plan (VSEDP) from 2021-2025. These socio-economic development plans indicate Lao PDR and VC are working towards achieving the following:

- Economic restructuring from resource-based economy to industrialization and modernization
- Economic diversification toward higher-productivity manufacturing and service sectors with more efficiency and value addition
- Adoption of high-yield technologies in agriculture and forestry
- Upgrades in capacities in manufacturing
- Promotion of the services industry to create more jobs

Local counterparts and relevant agencies (LSB and Vientiane Capital) were also consulted to ensure that the adopted growth rates are reasonable and in line with the development trajectory of Lao PDR and Vientiane Capital.

Considering the points above, the GDP and GRDP growth rates outlined in Table 3.3-4 were adopted. The resulting economic forecasts are shown in Table 3.3-5.

**Table 3.3-4 Adopted Economic Growth Rates for GDP and GRDP Forecasts**

Annual Economic Growth Rates	2021-2025 (NSEDV/ VSEDV Targets)	2026-2030 (JET forecast)	2031-2040 (JET forecast)
Overall GDP Growth Rate (Lao PDR)	4.7%	6.0%	5.1%
- GDP Growth Rate in Agriculture	2.5%	2.0%	1.4%
- GDP Growth Rate in Industry	4.1%	8.8%	6.4%
- GDP Growth Rate in Services	6.0%	4.5%	4.4%
Overall GRDP Growth Rate (Vientiane Capital)	8.8%	8.4%	8.0%
- GRDP Growth Rate in Agriculture	4.3%	3.6%	3.1%
- GRDP Growth Rate in Industry	11.5%	10.4%	9.4%
- GRDP Growth Rate in Services	6.5%	6.5%	6.0%

**Table 3.3-5 GDP, GRDP, and Economic Structure in the Base Year and Target Years**

Indicator	2019 (Base Year)	2027 (Short-Term)	2032 (Medium-Term)	2040 (Long-Term)
Total GDP of Laos (Billion Kip, 2012 constant prices)	130,450	190,664	251,174	373,862
Economic Structure (Sectoral Share in %)				
GDP per Capita (current USD)	\$2,628	\$3,769	\$4,869	\$7,038
Economic Structure by Sector				
- Agriculture	15.5%	12.7%	10.5%	7.9%
- Industry	39.8%	43.1%	47.6%	52.4%
- Services	44.7%	44.3%	41.9%	39.7%
Total GRDP of Vientiane Capital (Billion Kip, 2012 constant prices)	31,687	59,975	89,168	164,771
GRDP per Capita (current USD)	\$6,019	\$9,074	\$11,653	\$17,420
Economic Structure by Sector				
- Agriculture	18.3%	13.2%	10.5%	7.2%
- Industry	50.4%	59.8%	64.8%	71.6%
- Services	31.3%	27.0%	24.6%	21.1%

### (3) Employment/Enrollment

Employment was forecasted based on previous labor data, demographics, household interview survey results, and forecasted GRDP growth by sector. In line with the projected economic growth direction, workers in the industry and service sectors were forecasted to increase over time, while agricultural workers decrease. Meanwhile, student enrollment was forecasted based on previous enrollment data and demographics. The employment and enrollment forecasts are shown in Table 3.3-6.

**Table 3.3-6 Forecasted Employment and Enrollment in VTMP Target Area (TA)**

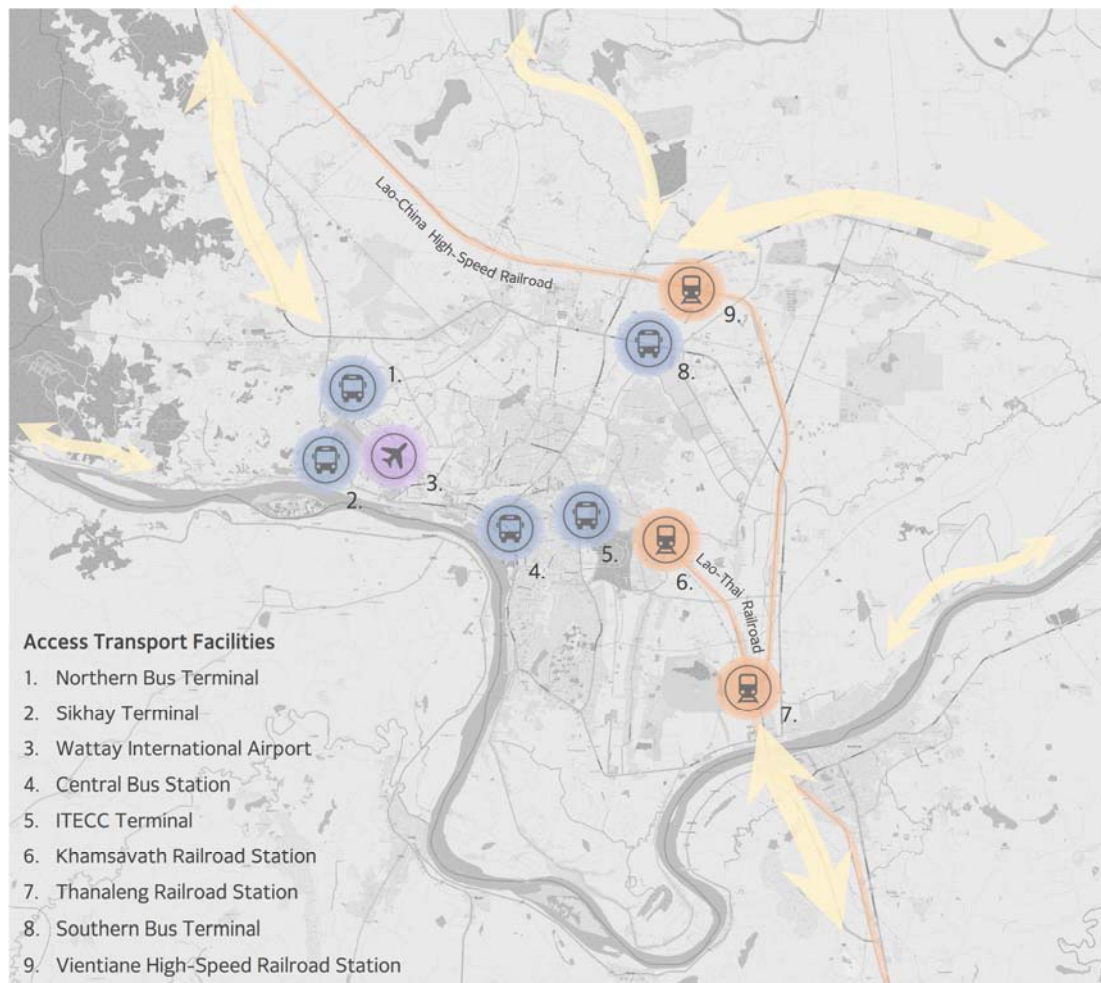
Indicator	Number of Employed Workers/Enrolled Students			
	2019 (Base Year)	2027 (Short-Term)	2032 (Medium-Term)	2040 (Long-Term)
Employment (VTMP TA)	374,432	437,311	481,941	545,260
- Primary (Agriculture)	13,392	12,196	11,140	9,381
- Secondary (Industry)	78,748	117,688	146,486	198,360
- Tertiary (Services)	282,292	306,064	320,602	336,941
Enrolment (VTMP SA)	166,527	199,401	213,367	218,370
- Primary Education	60,220	79,369	78,845	75,184
- Secondary/Tertiary Education	106,307	120,032	134,522	143,186



### 3.4 OVERVIEW OF URBAN TRANSPORT SYSTEM

The urban transport system of Vientiane Capital is primarily composed of road, air, and railroad transport. This mix of major transport types allows the city to link externally at the international and national level with access transport modes and internally through urban transport modes.

Major access transport links and facilities in Vientiane are presented in Figure 3.4-1. The most common way to access Vientiane from outside the city is by road, utilizing a variety of public transportation options such as intercity buses, international buses, vans, and paratransit services, as well as private cars. Additional transportation options include Wattay International Airport and rail services like the Lao-Thai Railway and the Lao-China High-Speed Railway (HSR), which connect Vientiane to other provinces and countries.



**Figure 3.4-1 Access Transport Links and Major Facilities**

At the interface between external and internal links, particularly for public transport modes, connections between access and urban transport modes are crucial for linking the city with outer regions. In the case of Vientiane, current connections allow for air, rail, and road transport to link with internal urban transport modes mainly consisting of urban route buses, paratransit services, and other modes such as taxis and ride-hailing services (RHS). Examples of these interconnections at major access transport facilities in Vientiane are illustrated in Figure 3.4-2.

Examples of Interconnection between Access Transport and Urban Transport



Figure 3.4-2 Interconnection between Access Transport and Urban Transport

Within Vientiane, the urban transport system is mainly composed of the mix of transport modes shown in Figure 3.4-3. This mix of modes ranges from typical motorized modes, such as cars, motorcycles, buses, and trucks, to train and other transport modes characteristic of Vientiane. For instance, tuk-tuk, jambo, and sonteo are all examples of transport modes that add a layer of uniqueness to Vientiane’s urban transport system. Furthermore, non-motorized alternatives such as cycling and walking also account for a share of people’s transport in Vientiane.



Source: JICA Expert Team. Bicycle and train photos retrieved from internet.

Figure 3.4-3 Major Transport Modes in Vientiane

Current conditions relevant to Vientiane’s urban transport system are further explored in detail in subsequent chapters from the viewpoint of public transport, road network, and traffic characteristics, as well as accounting for the related broader aspects of traffic management and road safety, social and environmental considerations, and financial conditions.

## CHAPTER 4 PRESENT PUBLIC TRANSPORT

### 4.1 PRESENT PUBLIC TRANSPORT

Public transport in Vientiane Capital is composed of access transport and urban transport. Vientiane capital offers various access transport options, including air transport through Wattay International Airport and railway transport, with the Lao-Thai Railway connecting with Thailand and the Lao-China High-speed Railway linking China. The Lao-Thai Railway completed Phase 1 and started operations in 2009, providing a connection from Thailand to Vientiane, while Phase 2 extends to Khamsavath Station, which opened in 2022. The Lao-China Highspeed Railway was completed in 2021 and has a total length of 422km. Additionally, road transport includes bus, van, and paratransit services operating from four terminals: Northern Bus Terminal (NBT), Southern Bus Terminal (SBT), Central Bus Station (CBS), and Sikhay Terminal.

Urban transport in Vientiane capital relies on a combination of urban bus (route bus) and paratransit services, which include songteo, tuk-tuk, and jambo. The Vientiane Capital State Bus Enterprise (VCSBE) is the sole company responsible for providing urban bus service. However, urban buses have limitations in terms of operating hours, routes, and frequency. Consequently, paratransit services complement the urban bus system while also competing for passengers. The competition between urban bus and paratransit services poses a challenge, particularly due to the financial issues faced by VCSBE. In the city center, a limited number of taxis and Ride-Hailing Services (RHS) like LOCA are primary utilized by businessmen, foreigners, and tourists for short-distance transport, including trips to their residences, Wattay International Airport, bus terminals, railway stations, and various attractions. Additionally, motorcycle-taxi operate in both the city center and suburban areas. Figure 4.1-1 shows public transport in Vientiane.



Source: JICA Expert Team

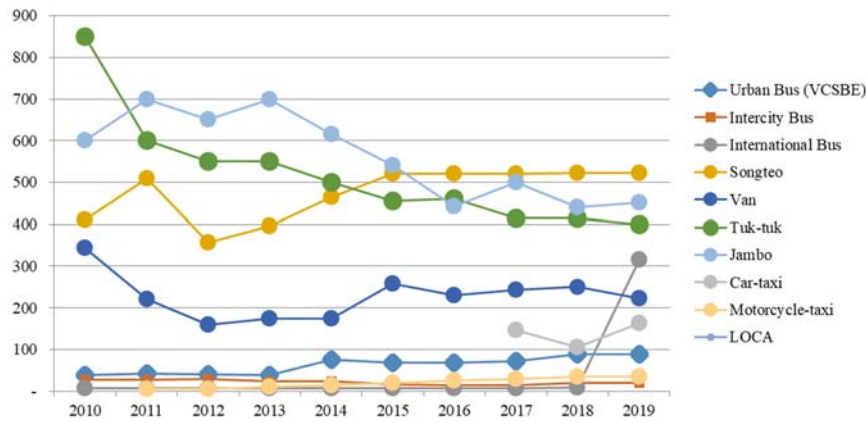
**Figure 4.1-1 Present Public Transport in Vientiane Capital**

### 4.2 NUMBER OF PUBLIC TRANSPORT VEHICLES

Based on data collected between 2010 and 2019, there have been notable changes in the number of registered public transport vehicles. The number of international buses increased from 6 to 315 vehicles, while intercity buses decreased from 28 to 19 vehicles, while the number of urban buses (operated by VCSBE) increased from 38 to 88 vehicles. As for paratransit services, the number of songteos has increased from 411 to 522 vehicles. However, the number of tuk-tuks and jambos decreased from 850 to 400 vehicles and 600 to 452 vehicles, respectively. This is caused by DPWT's suspension of new registrations for tuk-tuks and jambos from 2010, since it expects to shift these vehicles for use as tourism vehicles in designated areas in the future. Regarding the number of taxis, there was an increase from 146 to 164 vehicles, while motorcycle-taxis also



increased from 5 to 35 vehicles. Apart from these public transport vehicles, the number of vehicles for a ride hailing service (RHS), LOCA vehicles, has increased in the past decade. The total number of RHS vehicles in Vientiane capital is 670 vehicles with an average operating vehicle count of 341 vehicles. Figure 4.2-1 shows the number of public transport vehicles registration during 2010 to 2019.



Source: JICA Expert Team

Figure 4.2-1 Number of Public Transport Vehicle Registration from 2010 – 2019

### 4.3 PUBLIC TRANSPORT ADMINISTRATION AND OPERATORS

As shown in table below, public transport services in Vientiane capital are operated by multiple organizations and operators with different roles. MPWT plays the important role of formulating transport policy for all public transport and controlling regional public transport, such as international and long-distance public transport services. On the other hand, DPWT is responsible for transport policy relevant to urban public transport and controlling operators of urban public transport, including VCSBE and paratransit operators, as well as their respective associations.

Table 4.3-1 Public Transport Administrations and Operators

Name of Organization	Level of Government	Purpose	Functional Responsibilities
MPWT	Central	Regulator	<ul style="list-style-type: none"> <li>Approve and authorize public transport policy and services, as well as emit recommendations for all public transport services.</li> <li>Provide permits for international and long-distance public transport services.</li> </ul>
DPWT	Capital	Regulator	<ul style="list-style-type: none"> <li>Approve and authorize public transport policy and services, as well as emit recommendations for public transport in Vientiane Capital.</li> <li>Provide permits for urban public transport services.</li> </ul>
VCSBE	Capital	Operator	<ul style="list-style-type: none"> <li>Provide bus services to/from Vientiane capital.</li> <li>Determine bus fare, operational schedule, and policy relevant to bus users (controlled by DPWT and MPWT)</li> </ul>
Associations - Songteo, - Tuk-tuk and Jambo, - Van and rental vehicle, - Car taxi, and - Motorcycle taxi	Private	Operator	<ul style="list-style-type: none"> <li>Manage members and provide training on the rights, protection, and association benefits to members.</li> <li>Provide services to/from Vientiane Capital based on a system of waiting stations.</li> </ul>

Source: JICA Expert Team.



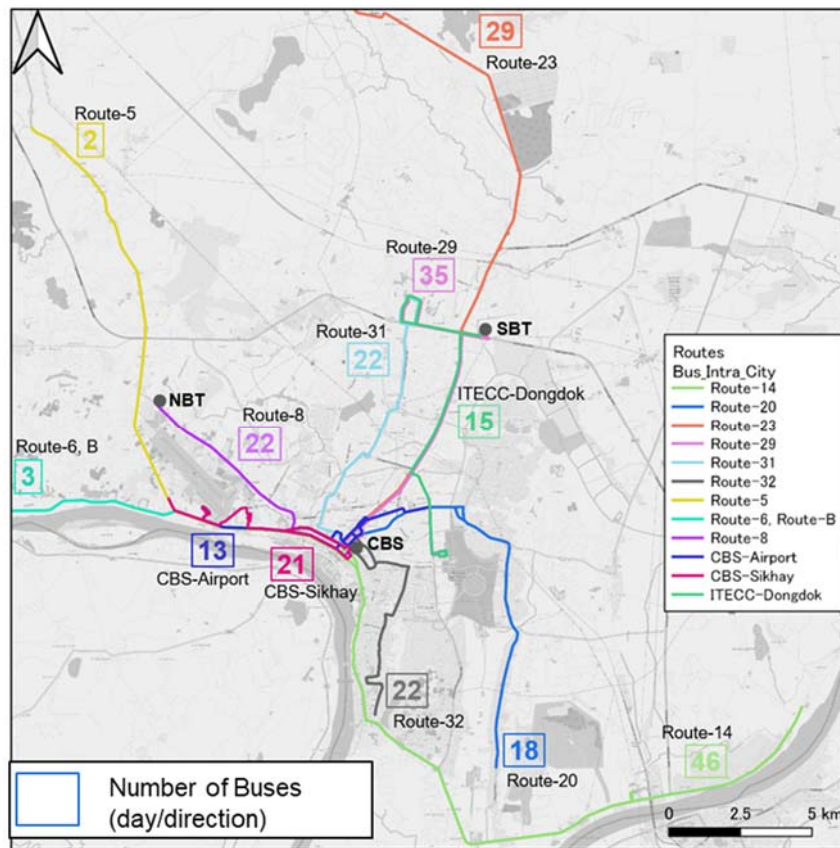
#### 4.4 URBAN BUS SERVICE

There are three types of bus services in Vientiane capital: urban, intercity, and international buses. VCSBE is the sole company responsible for operating the urban bus service. VCSBE has been authorized by the government to provide urban services in accordance with the Agreement of the Governor of Vientiane Capital on the organization, activity of Vientiane Capital State Bus Enterprise, as stated in document No.381/GOV, dated 3 July 2009. Intercity and international bus are operated by both VCSBE and private operators. These services have designated boarding and alighting points located at CBS, NBT, and SBT. All of these terminals are situated away from the city center, except for CBS.

##### 4.4.1 Bus Service Routes and Operation

###### (1) Bus Route Structure

Currently, the structure of all urban bus routes in Vientiane Capital is primary distributed along major national roads and main arterial roads. As shown in Figure 4.4-1, major bus routes in Vientiane are divided into three, corresponding to three main directions: North, East, and West. These routes include CBS to the National University of Laos in the North along National Road (NR) 13 South, CBS to the Friendship Bridge in the East, and CBS to Wattay International Airport in the West.



Source: 2019 data provided by VCSBE and edited by JICA Expert Team.

**Figure 4.4-1 Operational Routes of Urban Bus**

###### (2) Bus Operation Hours and Fares

As shown in Table 4.4-1, bus service starts at 5:30-6:30 and most buses stop running at 17:30-18:00 in the evening. The operation hours of most bus routes cover office hours in Laos which are generally 8:00-16:00, however, they are not well optimized for other transport purposes, such as returning home after going out for shopping, eating, and other private activities. Also, most bus operations are only provided along major routes where there are no other transport services to connect and transfer passengers to feeder routes, affecting access to bus services, especially for

passengers whose homes or workplaces are far from the pick-up and drop-off points on the serviced major routes.

**Table 4.4-1 Urban Bus Routes and Timetable at Central Bus Station (VCSBE)**

ID	Route Name	Operator	Seats	Fare (Kip)	Operation Hour (*1)	No. of operation /day/dir.	Frequency (min)	Distance (km)
BL-14	CBS–Friendship Bridge	VCSBE	45	6,000	5:35–18:00	4	(*3)	29
BL-20	CBS–Dong Kham Xang	VCSBE	45	5,000	6:00–16:40	18	40	15
BL-23	CBS–SBT–Tha Ngon	VCSBE	45	7,000	5:30–17:30	29	20	25
BL-29	CBS–SBT–Dong Dok	VCSBE	45	4,000	6:00–17:45	35	15-20	14
BL-31	CBS–Phontong–Dong Dok	VCSBE	45	4,000	6:15–17:30	22	20-30	13
BL-32	CBS–Donepamay	VCSBE	24	4,000	6:30–17:00	22	30	10
BL-5	CBS–Namsuang	VCSBE	24	12,000	10:30, 16:30	2	(*3)	48
BL-6	CBS–Sangthong	VCSBE	45	20,000	10:30, 16:30	2	(*3)	76
BL-8	CBS–NBT	VCSBE	45	5,000	6:00–16:30	22	30	15
BL-A	CBS–ITECC–Airport	VCSBE	24	19,000	8:20–19:40	15	30-60	12.5
BL-B	CBS–Pialath	VCSBE	45	15,000	13:30	1	(*3)	82
BL-F	CBS–Sanjieng–Sikhay	VCSBE	25		(*2)	13		-

\*1: Based on depart times at CBS, \*2: temporary operation in 2021, \*3: excluded due to limited number of operation  
 Note: This operational information is as of January 2021.

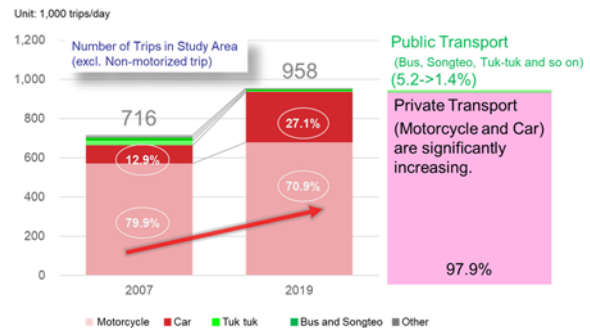
Source: JICA Expert Team

Another significant challenge is the inconsistency of bus operations and their timetable, this is partly caused by traffic congestion. Buses are often delayed from their scheduled timetable, resulting in long waiting times at bus stops. Additionally, some bus routes have limited operation and service hours that do not consider well typical office hours, making it difficult to rely on them for daily commuting.

#### 4.4.2 Bus Passenger Demand

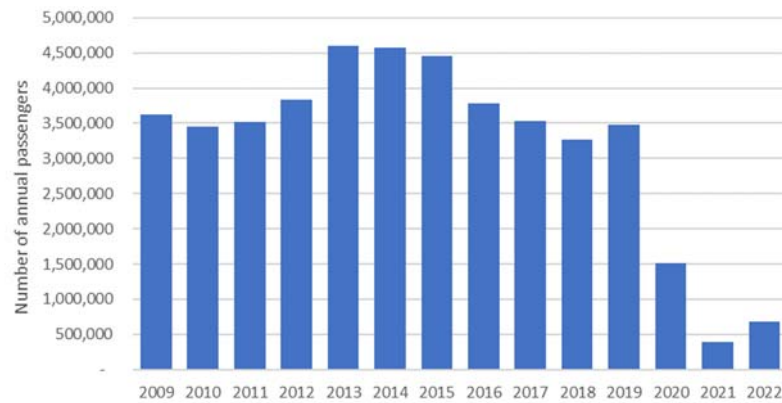
Figure 4.4-2 shows the comparison of the public transport share and daily trips between 2007 and 2019. The number of public transport passengers in Vientiane has gradually declined since 2007, with a public transport share of only 1.4% in 2019.

Figure 4.4-3 shows the annual bus passengers of VCSBE between 2009 and 2022. The figure shows its highest point in 2013 and a gradual decline since then. Following the COVID-19 outbreak in 2020, the decline has become more substantial, and the number of passengers has yet to recover to its previous levels. This is partly due to the suspension of unprofitable bus routes, work-from-home arrangements, and other factors that reduced opportunities to go out. However, even now that COVID-19 has settled down, passenger numbers have not returned to their pre-COVID-19 outbreak levels.



Source: JICA Expert Team

**Figure 4.4-2 Public Transport Share and Trips**



Source: VCSBE and edited by JICA Expert Team

**Figure 4.4-3 Number of Annual Bus Passengers (VCSBE)**

#### 4.4.3 Bus Operator

Bus operators in Lao PDR consists of VCSBE and private bus companies. All urban buses in Vientiane capital are operated by VCSBE, which follows agreements, contracts, and regulations set by DPWT. VCSBE is a fully state-owned enterprise with the primary responsibilities of providing bus services in Vientiane Capital. The headquarter office is in Watnak Village, Sisattanak District along Thadeua Road.

##### (1) Organization of VCSBE

As of July 2022, VCSBE has a total of 111 employees, from which 29 are women and 4 are contracted employees. The management is administrated by three Directors and is divided into six divisions: accounting, personnel administration, planning and transport, technical and maintenance, object and spare supply, and inspection.

##### (2) Number of VCSBE Buses

As of 2013 the number of existing vehicles for transport operation is 88 in total, this excludes buses that have been taken out of operation due end of service. Some of these decommissioned buses are in bad condition and cannot be repaired since the production of some spare parts has been discontinued. Table 4.4-2 shows the number of current buses available for VCSBE's operations.

**Table 4.4-2 Number of Current Buses Available for VCSBE's Operations**

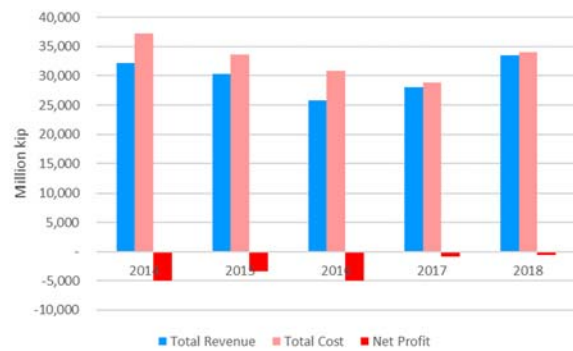
No.	Brand	Seat	Purchased Year	Existing Buses	Finance
1	ISUZU	45	2012 (42 buses)	17	Grant-Aid (GOJ*)
			2017 (4 buses)	4	
2	ISUZU	25	2017	5	Grant-Aid (GOJ*)
3	HYUNDAI	45	1999	1	Grant-Aid (GOJ*)
4	MITSUBISHI	25	2017	5	Grant-Aid (GOJ*)
5	MITSUBISHI	25	2023	52	Grant-Aid (GOJ*)
6	BYD	45	2022	4	Grant-Aid (GOC*)
-	<b>TOTAL</b>	-	-	<b>88</b>	-

Notes: The use of the buses provided by China has not yet been determined as of July 2023. \*GOJ: Government of Japan; \*GOC: Government of China.

Source: JICA Expert Team

### (3) Financial Condition of VCSBE

From 2014-2018 financial reports of VCSBE, the operator has not been profitable throughout this period. Although total revenue in 2017-2018 increased, total costs were still marginally higher and thus net profit remained negative. While the upward trend in revenue was very promising for the eventual return to profitability of VCSBE, suspension of services and increases in costs due to the COVID-19 outbreak are considered to have severely affected progress. However, this was not able to be confirmed since financial reports have not been made available since the COVID-19 outbreak at the end of 2019.



Source: Data provided by VCSBE and edited by JICA Expert Team.

**Figure 4.4-4 Revenue, Cost and Profit of VCSBE**

### (4) Government Assistance

VCSBE received several indirect supports from the Lao government in the form of land for establishing the company, stations/terminals, as well as arrangements for government officers to provide technical support in several sectors of VCSBE. Also, most busses and spare parts were provided by the Lao government which were received as grant aid from donor countries. Other favorable policies for VCSBE include cheaper gasoline prices and lower taxes in comparison to other private companies. However, despite receiving the aforementioned support, financial conditions remain poor and there are many issues to be addressed in order to continue the provision of transport services.

## 4.5 PARATRANSIT AND OTHER ROAD-BASED PUBLIC TRANSPORT

### (1) Songteo

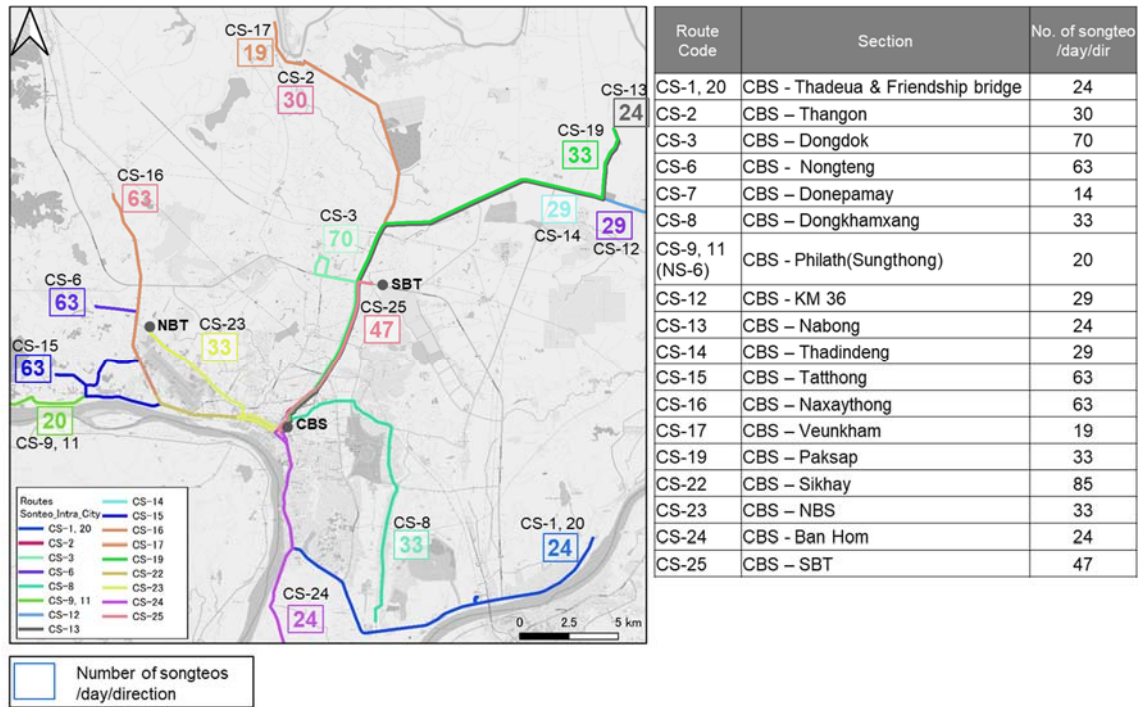
The operation of songteos is divided into two types, namely, regular and non-regular services. In both cases, songteos serve as a form of public transport that enables people to commute within the city center, suburban and rural areas, as well as between provinces in Lao PDR. In terms of service routes, songteos play a dual aspect within the urban transport system, acting as both a complementary service and a competitor to urban bus operations. This competition poses a challenge, especially considering the financial difficulties faced by VCSBE, and overall efficiency of public transport operation in Vientiane Capital. However, songteos also serve an important function by connecting smaller collector roads and areas that are not serviced by urban buses. This enables them to provide essential support to the public transport system, granting access to locations that buses are unable to reach. Figure 4.5-2 shows operational routes of songteo and number of daily operations.



Source: JICA Expert Team.

**Figure 4.5-1 Photo of Songteo**





Source: This figure was prepared by JICA Expert Team based on survey result in 2019 and registration data of DPWT.

**Figure 4.5-2 Operational Routes of Songteo**

Songteo operators are required to be members of a songteo association and need to register their operation route to DPWT. Mini trucks are also categorized as songteo and thus increase the overall number of registrations to associations. Songteo associations have been established in each region and songteo services are operated through cooperation among them. For instance, Vientiane’s association has an agreement with other relevant associations so that if a songteo is transporting passengers outside of its designated area, it can pick up passengers at the other association’s station for the return trip.

The primary function of songteo associations is to gather all independent songteo operators in a single group for running the business. To enter as a member of the association, an operator has to submit his application form along with identification documents, such as an identification card, home registry number, vehicle identification, technical inspection identification, insurance, and a driver license to initialize the member processing. Moreover, each member has to pay a membership fee of 120,000 Kip per year. Regulations under the association have to follow the Transport Law and its associated regulations.

The fares for songteo and bus are regulated by MPWT to ensure consistency for the same routes. However, songteo fares provide slightly higher flexibility compared to bus fares. This is because drivers and passengers have the opportunity to negotiate fares depending on the specific section and route they are traveling.

**(2) Tuk-tuk and Jambo**

Tuk-tuk and Jambo are authorized to provide transport services within designated service areas (districts), for which they have obtained operational permits from DPWT. Drivers wait at designated waiting stations near popular trip attraction, such as the Faculty of Medical Science, Lao-Thai Friendship Bridge, Talat Sao, CBS, NBT, and SBT. These waiting stations are reserved for registered members. The service areas in Vientiane capital, the number of designated waiting stations and registered vehicles are shown in Table 4.5-1.

**Table 4.5-1 Service Points in Vientiane**

	Service Area (District)	Waiting Stations (Riding place)	Registered Vehicles
1	Sisattanak-Hatsaifong	14 locations	166 vehicles
2	Xaysettha	4 locations	47 vehicles
3	Chanthaburi	24 locations	210 vehicles
4	Sikhottabong	14 locations	118 vehicles
5	Xaythany	3 locations	76 vehicles
	Total	59 locations	617 vehicles

Source: JICA Expert Team

The Tuk-tuk-Jumbo Association was established in 1986, in collaboration with DPWT, plays a key role in providing transport services in Vientiane Capital. The office is located in Hongkha village, Chanthabuly district, Vientiane Capital. The association is headed by a president, vice-president, and a team of seven office staffs. Additionally, two police officers are responsible for coordinating and monitoring operations at the waiting stations. These officers also handle training and issuing warnings to members who do not comply with regulations.

According to the financial report of the Tuk-tuk and Jambo Association, between 2013 and 2018, a total of 7 million passengers utilized tuk-tuk and jambo services in Vientiane capital. This resulted in a total revenue of 1,155 million kip, while the total expenses amounted to 1,143 million kip.

**(3) Van**

Vans primary serve intercity routes connecting NBT, SBT, Friendship Bridge, and Sikhay Terminal. The van and rental vehicle association was established in 2004, initially approved by the former Ministry of Communications, Post and Construction (presently called MPWT). Currently, the association operates under the approval of the Governor of Vientiane Capital and follows the guidance of internal organizations and DPWT. The headquarter office is located in Nonghai village, Hatxayfong District, and is administered by 5 board members. The main role of the association is to gather members and conduct trainings on the rights, protections, and association benefits to members.

**(4) Car Taxi**

Car taxis primarily provide services for short-distance trips in urban areas, although they sometimes offer services for intercity trip through a lump-sum system. There are seven main stations: Wattay International Airport, CBS (Khuadin Market), Talatsao Mall, Laos-China Railway Station, NBT, SBT, and Friendship Bridge. The taxi association was established in 2011 with the approval of the Governor of Vientiane Capital and it follows the guidance of internal organizations and DPWT. The association's headquarters is located in Wattay Village, Sikhottabong District, and is administered by three board members. The primary purpose of the association is to gather members and provide training on rights, protection, and association benefits to members.

**(5) Motorcycle Taxi**

Motorcycle taxis primarily provide services for short-distance trips in urban areas. All operators are managed by the motorcycle taxi association. Currently, there is only one main station located at CBS (Khuadin Market). This association was established in 2007 with approval from the Director General of DPWT and operates under the guidance of DPWT. The association's headquarters is located in Kao Yod Village, Sisattanak District, and is administered by three board members and provide training on member rights, protection, and the benefits of association membership.

**(6) School Bus**

In Vientiane capital, many students need to commute from areas beyond walking distance to attend school. However, due to the lack of a developed public transport system, it is challenging for children to travel to school independently. As a result, it is common for families to arrange transport for their children to and from school. This leads to traffic congestion around schools during peak

times at 8:00 am and 4:00 pm, coinciding with the start and end of the school day. This situation not only presents a transport challenge but also imposes constraints on parents' work schedules. To address this issue, MPWT has sought assistance from JICA to explore the feasibility of introducing a school bus system. The study, titled "Research & Experiment on School Bus System to reduce traffic congestion around school, 2020", aims to alleviate traffic congestion issues by introducing an efficient school bus system.

#### (7) Ride-hailing Service (RHS)

In 2013, a RHS service called Online Taxi was launched in Laos. It operates 24 hours a day, and users can connect with the service by opening an application on their mobile devices and pressing the call driver button. There were plans to expand the service in the future, however, it did not become widely available due to issues related to the lack of legal management and vehicle registration. LOCA was launched in 2018, and while it has continued to expand along with the Online Taxi's service, there are still concerns about insufficient legislation and issues with future institutional development. LOCA operates using privately registered vehicles (yellow-plated vehicles), which, like many new transportation systems, fall into a regulatory gray area. Therefore, the system needs to be properly regulated and established as soon as possible.

### 4.6 PUBLIC TRANSPORT TERMINALS AND BUS STOPS

#### (1) Public Transport Terminals

In Vientiane capital, there are four public transport terminals: CBS, NBT, SBT, and Sikhay. As per the sharing of terminal functions established by DPWT in 2014, CBS is primarily a bus terminal for urban bus services and a few international buses. It also functions as a connecting point to and from NBT and SBT, facilitating travel to other provinces or countries.

In terms of CBS's infrastructure, it is managed and operated by VCSBE. Due to limited space and the need to effectively utilize land in the city center, redevelopment of CBS has been under consideration. In the past, two renovation projects proceeded through concession agreements with Chinese companies, but both were unsuccessful due to financial constraints. Currently, Vientiane Capital is taking the lead in exploring new renovation plans for the terminal.

On the other hand, NBT, SBT and Sikhay are managed and operated by private companies. NBT mainly handles bus and songteo departures and arrivals for cities in Northern Laos, China, and Thailand. SBT primarily serves as a bus and songteo terminal for destinations within Southern Laos, Vietnam, and Thailand. As for Sikhay Terminal, only songteo services are operated.



Note: The photo was taken in January 2021  
Source: JICA Expert Team

**Figure 4.6-1 Photo of CBS**



Note: The photo was taken in January 2021  
Source: JICA Expert Team

**Figure 4.6-2 Sikhay Songteo Terminal**

In addition to the above, ITECC terminal was established in 2016 with the aim of providing an alternative to CBS. However, due to the outbreak of COVID-19 and financial challenges, it is currently not fully operational as a bus terminal. As for songteo services, in addition to NBT and SBT, Sikhay Terminal is utilized.

#### (2) Bus Stops

Bus stops are strategically located along major routes to ensure convenient access for passengers. While a small number of bus stops are equipped with shelters and benches, the majority simply consist of a bus stop sign. Due to this situation, the current challenge is the limited coverage of bus stops throughout the city. This has led to a common practice of passengers requesting boarding and alighting at non-designated locations, creating disorderliness and posing an increased risk of accidents. The absence of dedicated stops for these ad hoc pick-ups and drop-offs disrupts the smooth flow of traffic and compromises passenger safety. To address these issues, it is crucial to expand the installation of bus stops, providing passengers with clearly defined locations for boarding and alighting, thereby promoting order, efficiency, and overall transportation safety.



## CHAPTER 5 EXISTING ROAD NETWORK

### 5.1 ROAD CLASSIFICATION

Roads in Lao PDR are classified into six categories as stipulated in the Road Law.

- Roads in Lao PDR are classified into six categories stipulated in the Road Law. The Ministry of Public Works and Transport (MPWT) is responsible for “National Roads”, while the Department of Public Works and Transport (DPWT) is responsible for “Provincial”, “District”, “Urban”, and “Rural Roads”.
- The management of "Urban" and "Rural Roads" in Vientiane is primarily overseen by the Department of Public Works and Transport (DPWT), while road cleaning is the responsibility of the Vientiane Urban Development and Administration Authority (VUDAA). Roads categorized as "Special Roads" are mainly managed by the military, local communities, and private companies.
- The total length of roads in Lao PDR has increased from 1,866 km as of 2008 to 2,702 km in 2017, representing a 45% increase. The length of roads categorized by administrative classification has increased more than National Roads, resulting in Provincial and Municipality Roads comprising a larger proportion of the total length (from 35% to 45%).
- The length of most surface types of roads has increased, with concrete roads experiencing the largest increase at 30 times the length as of 2008. However, the length of gravel and earth roads has decreased.

**Table 5.1-1 Administrative Classification & Surface Type in Vientiane in 2017  
(Including 9 districts; extension in km)**

	Concrete	Asphalt Concrete	Paved	Gravel	Earth	Total
National Road	19.40	103.25	120.40	-	-	243.05
Provincial Road	71.53	5.30	80.02	131.90	-	288.75
District Road	57.14	-	142.53	262.29	10.00	471.96
Municipality Road	165.51	58.88	192.76	362.96	136.22	916.32
Rural Road	5.95	-	46.82	411.51	210.25	674.53
Special Road	4.23	-	13.70	67.30	22.10	107.33
Total Length	323.76	167.43	596.23	1235.96	378.57	2701.94

**Table 5.1-2 Administrative Classification & Surface Type in Vientiane  
as of 2008 MP (Including 9 districts; extension in km)**

	Concrete	Asphalt Concrete	Paved	Gravel	Earth	Total
National Road	1.80	31.30	137.10	62.50	15.00	247.70
Provincial Road	-	-	47.60	95.20	3.60	146.40
District Road	-	-	34.70	353.60	27.20	415.50
Municipality Road	7.70	36.00	138.80	213.80	109.40	505.70
Rural Road	-	-	5.60	330.80	160.30	496.70
Special Road	1.00	-	2.90	40.60	9.50	54.00
Total Length	10.50	67.30	366.70	1096.50	325.00	1866.00

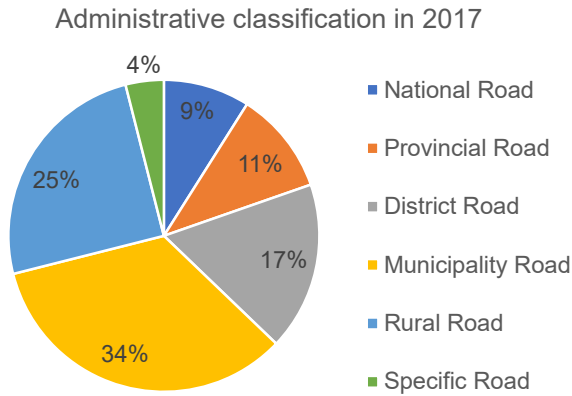


Figure 5.1-1 Administrative Classification in 2017

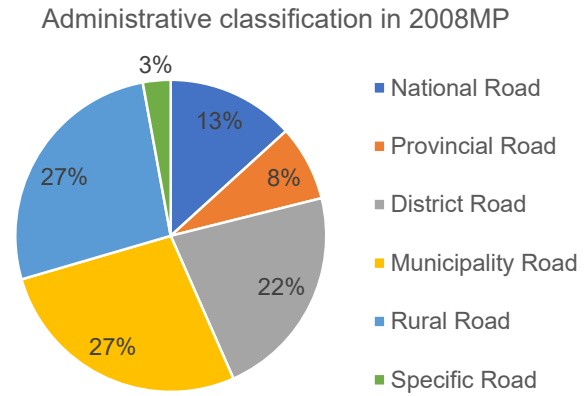
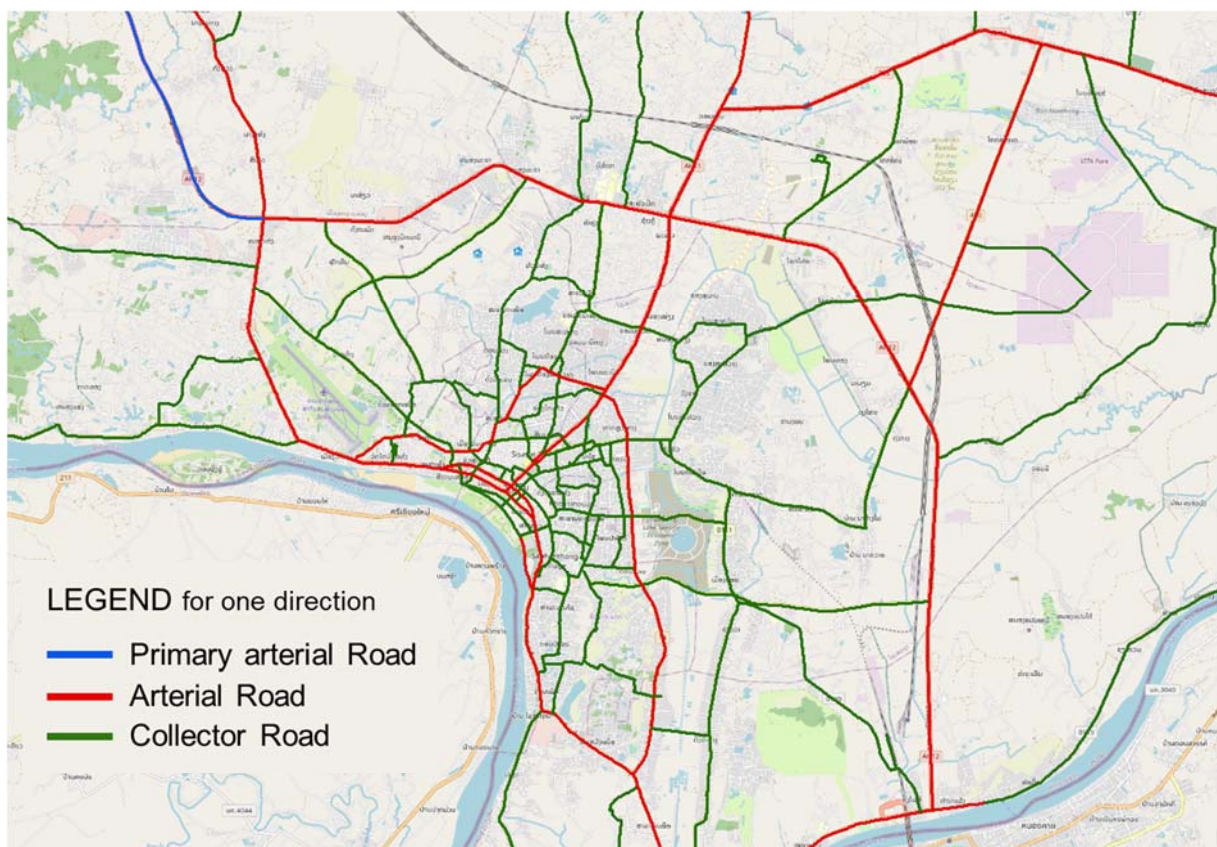


Figure 5.1-2 Administrative Classification in 2008 MP

### 5.1.1 Functional Classification

A road network needs to be balanced from the viewpoint of functional hierarchy. The road network in Vientiane Capital is divided into four functional classes: “Primary Arterial Road”, “Arterial Road”, “Collector Road”, and “Local Street”. Figure 5.1-3 shows the functional classification of the road network. In this classification, only expressways are designated as “Primary Arterial Roads”, and existing main ring and radial roads with multiple lanes are classified as “Arterial Roads”. “District Roads” are classified as “Collector Roads”, while “Urban” and “Rural Roads” are classified as “Local Streets”. However, “Local Streets” are not shown in Figure 5.1-3 because they are too detailed to be included.



Source: JICA Expert Team

Figure 5.1-3 Current Road Network

## 5.2 EXISTING ROAD CONDITION

### 5.2.1 Cross Section

#### (1) Primary Arterial and Arterial Road

- Primary Arterial Road is only allocated to expressways, which allow high-speed travel, full or partial access control, and can function even in emergencies.
- Most arterial roads have multiple driving lanes for both directions, with some sections having narrow lanes on both sides for slow-speed traffic, motorcycles, or as a shoulder.
- Road markings on the bituminous surface treatment are often worn out, non-existent, or not visible in reality.
- Sidewalks are generally provided in urbanized areas, but their width is not uniformly secured due to land limitations and adjustment with roadside conditions. However, they are not provided in suburban areas.
- In some cases, in suburban areas, a single lane is set up for each direction of the carriage way.

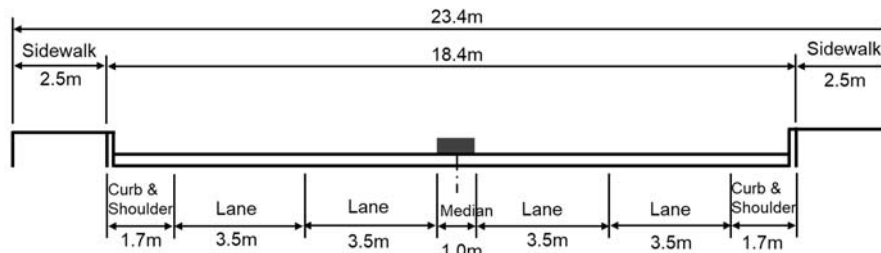


Figure 5.2-1 Cross Section of Lang Xang Avenue

#### (2) Collector Road

- Collector roads have partial access control.
- All road sections of collector roads consist of a single lane for each direction.
- Some collector roads do not have sidewalks. In these cases, the shoulder is sometimes utilized as pedestrian space.

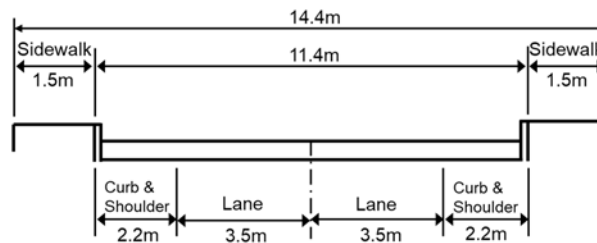


Figure 5.2-2 Cross Section of Rue Dongpayna

## 5.2.2 Surface Type and Condition

### (1) Primary Arterial & Arterial Road

- Bituminous surface treatment is mostly used as the main surface type on National Roads.
- In suburban areas, gravel surfaces were previously used as the main surface type. However, most parts of these surfaces have been upgraded to concrete, asphalt concrete, or pavement.
- Cement concrete pavement was only seen on Lane Xang Avenue before, but it is now also seen on some main roads, such as 450 Year Road.

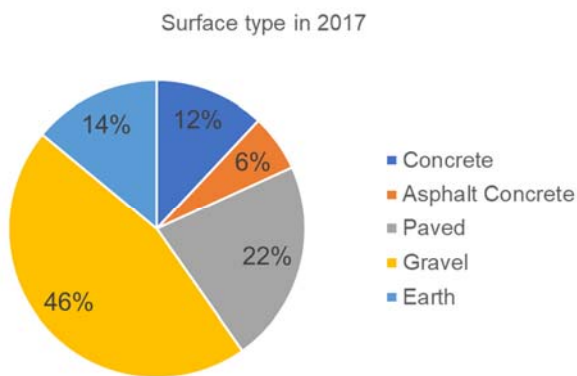


Figure 5.2-3 Road Surface Classification in 2017

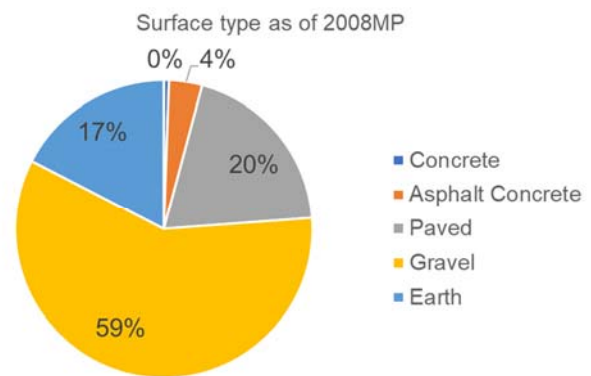


Figure 5.2-4 Road Surface Classification in 2008 MP