

Technical Assistance Closure Report Template

Objective of the technical assistance (TA) Closure Report:

- To communicate publicly in one document a summary of progress made and lessons learned during the TA towards the anticipated impact (sections 1-4).
- To document qualitative and quantitative data collected during TA, for use in donor and UN reporting (Annex 1).

Steps for completing the TA closure report:

1. The lead TA implementer submits the closure report at the end of the technical assistance as a final deliverable. The TA closure report will capture outputs, outcomes and impacts of all activities conducted under the TA. Please copy and summarise relevant material from previous TA outputs/deliverables and the Response Plan, as relevant.
2. A CTCN Manager will review and revise the closure report before final approval by the CTCN Deputy Director.

Important note on public and internal use of the closure report:

Once approved by the CTCN Deputy Director, the TA closure report will be a public document available on the CTCN website www.ctc-n.org. Selected content will be used for targeted communication activities. Annex 2 is for internal use only and will not be publicly available.

Closure Report for CTCN Technical Assistance

1. Basic information

Title of response plan	Technical Capacity Enhancement for Planning Urban Public Transport System in Vientiane, Lao PDR
Technical assistance reference number	-
Country / countries	Lao PDR
NDE organisation	
NDE focal point	<ul style="list-style-type: none"> • NDE: Syamphone Sengchandala Lao PDR Ministry of Environment • Focal person: Souphany Heuangkeo, Deputy Director, Lao PDR
NDE contact information	<i>syamphone.s@gmail.com</i>
Proponent focal point and organisation	<i>Prof. Hyun Kim, Korea National University of Transportation (KNUT)</i>
Designer of the response plan	<i>Devon Farmer, Korea National University of Transportation (KNUT). dfarmer@ut.ac.kr</i>
Implementer(s) of technical assistance	<i>Korea National University of Transportation and Youngin ITS</i>
Beneficiaries	<i>Lao PDR Ministry of Public Works and Transport, Department of Transport (DOT)</i>
Sector(s) addressed	<i>Transport/ Land transport:</i>

Technologies supported	<ul style="list-style-type: none"> - <i>Intelligent transport systems</i> - <i>Bus Rapid Transit (BRT)</i>
Implementation start date	<i>(07/01/2022)</i>
Implementation end date	<i>(12/31/2023)</i>
Total budget for implementation	<i>233.33 million KRW (~\$176,200 USD as of 05.2023)</i>
Description of delivered outputs and products as well as the activities undertaken to achieve them. In doing so, review the log frame of the original response plan and refer to it as appropriate	<ul style="list-style-type: none"> - <i>Development of implementation planning and communication documents</i> - <i>Review of the Planned Urban Public Transport Network for Vientiane</i> - <i>Smart Public Transport Evaluation</i> - <i>Pre-Feasibility Study (for DRT in Vientiane)</i> - <i>Capacity Building for Lao PDR Public Officials</i>
Methodologies applied to produce outputs and products	<ul style="list-style-type: none"> - <i>Stated preference survey and related analysis</i> - <i>Transport network model (Emme)</i> - <i>Cost-benefit analysis</i> - <i>Multi-criteria analysis</i> - <i>Computer-based simulation (optimization algorithm)</i>
Reference to knowledge resources	<i>N/A</i>
Deviations	<p><i>Deviation:</i></p> <ul style="list-style-type: none"> - <i><u>Developed a computer-based simulation (based on a genetic algorithm) of the Vientiane network and demand for DRT – used this in the Pre-Feasibility study</u></i>
Anticipated follow-up activities and next steps	<ul style="list-style-type: none"> - <i><u>Proposal for a follow-up project, funded by Korea’s KOTRA agency, has already been submitted. This proposal was written in conjunction with KNUT and the Lao PDR DOT and, if accepted, will fund additional studies and a pilot project for ITS in Vientiane.</u></i> - <i><u>Lao PDR DOT to draft changes to legislation, based on recommendations in our report.</u></i> - <i><u>Additional proposals for DRT in Vientiane and other ITS pilot projects should be submitted to other</u></i>

2. Lessons Learned

	Lessons learned	Recommendations
Lessons learned from the CTCN TA process	<ol style="list-style-type: none"> <i>The NDE and project requestor were initially contacted to get the project started, but neither had much time, involvement, or knowledge of the project and therefore were not the correct persons to contact.</i> <i>As a pro-bono Korean-funded CTCN project with many stakeholders, we found that</i> 	<ol style="list-style-type: none"> <i>Encourage request applicants to put the contact information of the most likely actual focal person for the project on the Technical Request, rather than higher up NDE or even request applicants who may not have time to communicate or knowledge of the project.</i> <i>Understand that for future pro-bono Korean funded CTCN projects, changes to scope made after a request for</i>

	<p><i>making any changes to the scope and Response Plan, which differed from the Technical Request and therefore the proposal submitted to the Korean government by the implementor, was very difficult.</i></p>	<p><i>proposals from the Korean -government side will be very difficult or impossible to accommodate.</i></p>
<p>Lessons learned related to climate technology transfer</p>	<p><i>Describe lessons learned, opportunities, and barriers for the use and deployment of the technology or technologies supported by the TA. The objective is to identify specific success factors for technology transfer</i></p>	<p><i>- During the undertaking of this project, many lessons were learned about technology transfer. One of the most successful and effective parts of the TA was inviting the Lao PDR officials to Korea to witness and use the technologies first hand. This first hand experience allowed the officials to better understand what the technology is and how it works. That way, in future meetings and discussions they can understand exactly what we are talking about when we refer to specific transport/ITS technologies.</i></p> <p><i>- Additionally, we learned that frequent and convenient communication with the Lao side is great, but in general E-Mail is not widely used in Lao PDR. Messaging services like WhatsApp are far more effective and easy for them to use.</i></p> <p><i>- Finally, patience is required when making requests from the Lao side. Officials in the Lao PDR specifically are not compensated well at all in their official capacity, occasionally working other jobs just to survive. As a result, they may not have time to dedicate to this project. Finding creative ways for them to earn more income through our TA may be required to have a cooperative presence in the Lao PDR.</i></p>

3. Illustration of the TA and photos

For communication purposes, please provide 2-4 Power Point slides, including illustrations or charts, describing barriers, opportunities, methodology, activities, outputs and achieved results. The illustrations must be copied into the TA Closure report but must also be delivered as power point files. Also, please provide at least five high-resolution pictures in jpg format, capturing technical assistance. The pictures should illustrate how the TA has impacted the lives of the beneficiaries and the communities in general.



Initial Meeting and Site Visit in August 2022

Review of the VTMP

Public Transport Planning in
Vientiane, Lao PDR

Results of recommendations

- Our network changes provided minor improvements of around 5% in most cases
- However, travel times at NUOL could be reduced significantly (~-23%)

Item	JICA Network	KNUT Network	Difference
Service hours	349,216	333,236	-4.58%
Service kilometres	6,569,453	6,164,546	-6.16%
Passenger-hours	11,184,78	10,819,31	-3.27%
Avg. boardings per trip	1.42	1.5	5.63%
Total average impedance	67.71	65.49	-3.28%
Total average impedance 1 Zone 772 (NUOL)	81.95	63.31	-22.75%



Results of Part 2, reviewing the JICA-Produced VTMP

Lao PDR TA

Lessons Learned as a CTGN Project Implementer

Project	Short	Mid	Long
1. Upgrades to Existing Bus Information Systems (BIS)	✓		Upgrade the existing BIS, and switch to an open data standard (GTFS-RT).
2. Development of policies to legalize ride-sharing	✓		Develop policies to finally legalize ride-sharing and tax-hailing in Lao PDR based on Lao government developed standards.
3. Development of policies to support foreign and local investment in E-Ticketing, micro mobility, & Mobility as a Service (MaaS)	✓		Develop policies support and encourage private industry to develop standard ticketing systems for online ticketing of bus and train systems.
4. CCTV on buses	✓		CCTV on buses
5a/5b. Upgrades to the CBS	✓		Major project to focus on the CBS, the busiest bus stop/terminal in Vientiane with improved passenger amenities and information.
5c. Upgraded screens	✓		
6. Bus Information Terminals (BITs)	✓		
6a. Full replacement of the Bus Management System (BMS)	✓		Replace the existing JICA-developed system with a completely new and "smoother" BMS system.
6b. Next-stop signs and announcements on buses	✓		Invest in equipment and software to announce stops on buses in-cluding visually and with sound.
6c. Bus Information Terminals (BITs)	30%		When BMS system is replaced, BITs can be pursued, eventually target 100% of stops.
7. Electronic fare collection (EFC) by IC-card	✓		IC-card will significantly reduce the time to board buses. Target 100% of VCSBE fleet and BRT.
8. Transit service priority (TSP)	✓		Traffic congestion does not yet warrant TSP, perhaps, but by 2035 it might.
9. Wi-Fi on buses	✓		Free Wi-Fi aboard VCSBE Buses
10. Demand Responsive Transit (DRT) - Project to Enhance Songthaew Capacity	✓		See next section.



Results of Part 3, Evaluation of Options for Smart Transport in Vientiane



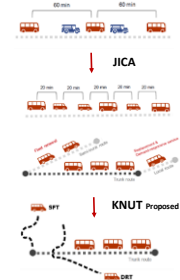
Capacity Building/Field Trip: I-MOD DRT system in Geomdan

Lao PDR TA

Lessons Learned as a CTGN Project Implementer

Songthaew (Paratransit) System in Vientiane

- JICA solutions
 - Integrate songthaew into public transit system
 - Use songthaew for local/feeder routes & VCSBE for trunk routes
- Our Proposed Solution
 - Songthaew as DRT
 - Parallel or feeders to BRT network



Results of Part 4, Pre-Feasibility study for DRT in Vientiane



Capacity Building/Field Trip: Gangseo-gu transport garage and EV bus charging station

4. Impact Statement

The information in the table below will be used to communicate results and anticipated impacts of this technical assistance publicly. Please copy information from impact statement developed in the M&E Plan and update as relevant.

<p>Challenge</p>	<ul style="list-style-type: none"> - <i>The current public transport system in the capital, Vientiane, is a very small and basic system with low patronage, amounting to no more than 1 -2 % of all trips. In the past, the Lao PDR has had outside assistance from several international organizations and has made some progress in upgrading its transport network, including planning for BRT.</i> - <i>Beyond the BRT project, the Lao PDR should plan for a future that includes more usage of public transport to meet its official SDGs and other goals including the use of modern technologies to enhance the appeal and efficiency of public transport in Vientiane. However, the Lao PDR currently still lacks the capacity to do so.</i>
<p>CTCN Assistance</p>	<ul style="list-style-type: none"> - <i>We will help the Lao PDR achieve its goals by developing, in conjunction with the ongoing work by JICA, a review of its future planned public transport network.</i> - <i>We will develop a basic plan and priority list for incorporating modern intelligent transport systems (ITS) into the Vientiane public transport network. We will also develop a pre-feasibility study for a single promising technology solution.</i> - <i>We will also implement a capacity building program with Lao PDR government officials to introduce them to advanced public transport technologies and planning processes in Korea</i>
<p>Anticipated impact</p>	<p>ECONOMIC:</p> <ul style="list-style-type: none"> - <i>Upon completion of this TA, the Lao PDR can focus on implementing public transportation service improvement projects that apply information and communication technology, modern transport planning standards, and modern administration based on knowledge transfer from Korea. By investing in such programs, the public transport system can become more competitive and convenient thus increasing its usefulness and impact, which is directly related to increase in accessibility to jobs, which will positively impact economic development in the Capital, Vientiane. For example, the DRT system envisioned in this TA would allow informal transport users to better plan their trips and have more information about travel times. Overall, this decreases the amount of time they need to spend planning and waiting for transport, thereby allowing them to spend more time on economic activities. Additionally, the public transport system would become more useful for tourists, who can take advantage of the public systems which can lead to increased tourism (and increased economic benefits for the operator) and therefore more economic opportunity for locals overall..</i> <p>SOCIAL:</p> <ul style="list-style-type: none"> - <i>The recommendations provided in the TA to the Lao PDR will allow them to make both the formal (conventional) and informal public transportation systems more useful. This will</i>

	<p><i>in provide affordable and accessible means of transportation for a larger portion of the population, especially those who cannot afford private vehicles. This enhances mobility for people who might otherwise face challenges in reaching education, healthcare, relatives and friends, and job opportunities. This, in turn, contributes to a more equitable distribution of resources and opportunities.</i></p> <p>ENVIRONMENTAL:</p> <ul style="list-style-type: none"> - <i>This will allow them to cope with their increasing traffic congestion and air pollution problems, set-up expanded BRT, BIMS (Bus Information and Management System), or Demand-Responsive Transport systems and, as a result, improve the public transportation mode share (or at minimum, maintaining the current levels) which can results in a decrease in private vehicle use and therefore traffic congestion and its associated air pollution, GHG emissions, and other pollutants.</i>
<p>Co-benefits: Achieved or anticipated co-benefits from the TA</p>	<ul style="list-style-type: none"> - <i>With investment in public transport, and transport more generally, there will be significant co-benefits in terms of increased economic opportunity which will lead to economic growth. This is especially true in places with underdeveloped public transport networks, like Vientiane.</i> - <i>Investing in transport infrastructure has long been shown to increase and enable economic activity. Mainly, this is caused by the “agglomeration effect”, meaning that as more people, jobs, materials, and places become better connected (due to enhanced transport activity) economic activity becomes easier and more efficient and more of it occurs.</i> - <i>Further, the environment will benefit from implementation of our recommendations since they will encourage a switch (or remaining) in highly efficient public transport versus private transport options, which are still very often using fossil fuels.</i>
<p>Gender aspects of the TA</p>	<p><i>In many countries, women are highly under-represented in decision-making with majority of the transport sector being managed and operated, and designed for, men. A disruptive market change more accessible transportation through technology enhancements, could to an increasing women’s participation in the transport sector and provide socio-economic opportunities in new businesses and business models as drivers, charging solution providers, fleet operators etc. For example, our recommendation in this TA is to provide real-time information to passengers through technological means, with the Central Bus Station (CBS) being the priority. By installing (physical) digital signage at the location, women will directly benefit from increased access to information . This stop is often used by women going to local nearby markets etc. in central Vientiane.</i></p>
<p>Anticipated contribution to NDC</p>	<p><i>Upon completion of this TA, the Lao PDR can focus on implementing public transportation service improvement projects that apply information and communication technology (ICT), modern transport planning standards, and modern administration based on knowledge transfer from Korea. This will allow them to cope with their increasing traffic congestion and air pollution problems, set-up expanded BRT, BIMS (Bus Information and Management System), or DRT and, as a result, improve the public transportation mode share.</i></p>

<p>The narrative story</p>	<p><i>Planning for the future Vientiane public transport may include the installation of Intelligent Transportation System (ITS) technologies, also known as Smart Transport. ITS can contribute to the transition from personal transport to buses by providing improved convenience for the end-user.</i></p> <p><i>In the ongoing Vientiane Transportation Master Plan (VTMP) being produced by JICA, the focus is on traditional infrastructure with some exceptions like TSP (on BRT corridors) and an IC card-based payment system. This TA will complement this ongoing work by focusing on a few key areas:</i></p> <p><i>(1). Providing a second look at the VTMP and providing any recommendations (2) Looking at and evaluating SmartTransport scenarios in Vientiane; (3) Building a pre-feasibility study for one SmartTransport feature in Vientiane, like DRT.</i></p> <p><i>We will provide additional recommendations for Smart Public Transport components that will enhance and improve both the existing, and proposed, public transport systems in Vientiane. Three scenarios, based on investment values will be considered for future implementation in Vientiane. These recommendations will increase the convenience and public perception of public transport in Vientiane, which is quite low and hopefully convince locals to start using buses instead of buying cars, or better yet, instead of using their cars or motorcycle that they already own. As a result, GHGs can be reduced overall in the country.</i></p> <p><i>However, such results can only be realized if the recommendations are actually followed, so care should be taken to provide a good base for future studies and funding for the projects and policies we are recommending in this TA.</i></p>
<p>Contribution to SDGs</p> <p>A complete list of SDGs and their targets is available here: https://sdgs.un.org/goals</p>	<p>SDG # 11: Make cities and human settlements inclusive, safe, resilient, and sustainable: <i>The long-term impacts of this TA will bring the population in Vientiane both economic and health benefits. The planning works in the TA will cover the public transport system, both formal and informal, and if implemented would contribute to establishing (and maintaining the exiting) the Vientiane public transportation system, sustainably (including sustainable revenue and environmental sustainability).</i></p> <p>SDG # 13: Take urgent action to combat climate change and its impacts: <i>This TA will assist the Lao PDR in reducing its increasing dependence of fossil-fuel-based private transportation while promoting more efficient usage of their roadways. Given that the current public transport system in Vientiane is far inadequate for the population, there is a substantial risk that the system will continue to be widely disused and inconvenient for locals. Improving the public transport system will improve the city’s ability to prevent locals from switching to private transport in great numbers.</i></p>

SDG #17: Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development.

The TA has strengthened and will continue to strengthen the relationship between Korea and the Lao PDR. Many of the recommendations in the TA will require substantial support from developed countries for technology transfer and equipment supplies. Korea is well prepared and eager to provide this support to the Lao PDR for a mutually beneficial economic relationship.

Annex 1 Technical assistance data collection

Please add quantitative and qualitative values for the indicators selected in the M&E plan and monitored throughout the technical assistance in the tables below. Indicators which have been monitored in addition to the proposed indicators below may be added at the end of table A. Non-relevant indicators should be left blank.

A. Output and outcome indicators

Indicator Please note indicators below highlighted as anticipated	Quantitative value <i>Numerals only; disaggregates must sum to the total</i>	Qualitative description <i>List the various elements corresponding to the quantitative value as well as timelines and responsible institutions</i>
Total number of events organized by proponents and implementing partners	4 formal + many informal	<ol style="list-style-type: none"> 1. Initial fact-finding/kick-off meeting held in Vientiane, August 2022 2. Pre-meeting and kick-off for survey period, help in Vientiane in February 2023 3. Capacity-building workshops/sessions, held in Seoul in June 2023 4. Final stakeholder meeting, held in Vientiane in August 2023 5. Meeting with Luang Prabang officials
Number of participants in events organized by proponents and implementing partners	<ol style="list-style-type: none"> 1. 7 (Lao), 2 (Korea), 1 (CTCN) 2. 3 (Lao), 3 (Korea) 3. 3 (Lao), 5 (Korea) 4. 9 (Lao), 4 (Korea) 5. 3 (Lao), 4 (Korea) 	<ol style="list-style-type: none"> 1. Initial fact-finding/kick-off meeting held in Vientiane, August 2022 2. Pre-meeting and kick-off for survey period, help in Vientiane in February 2023 3. Capacity-building workshops/sessions, held in Seoul in June 2023 4. Final stakeholder meeting, held in Vientiane in August 2023 5. Meeting with Luang Prabang officials
a) Number of men (Lao side)	<ol style="list-style-type: none"> 1. 5 2. 2 3. 2 4. 7 	<ol style="list-style-type: none"> 1. Initial fact-finding/kick-off meeting held in Vientiane, August 2022

	5. 3	2. <i>Pre-meeting and kick-off for survey period, help in Vientiane in February 2023</i> 3. <i>Capacity-building workshops/sessions, held in Seoul in June 2023</i> 4. <i>Final stakeholder meeting, held in Vientiane in August 2023</i> 5. <i>Meeting with Luang Prabang officials.</i>
b) Number of women	1. 2 2. 1 3. 1 4. 2 5. 0	-
Number of climate technology RD&D related events	-	-
Number of participants in climate technology RD&D events	-	-
a) Number of men	-	-
b) Number of women	-	-
Number of training organized by proponents and implementing partners	1	<i>Capacity Building Sessions in Korea for Lao PDR Government Officials for Public Transport</i>
Number of participants in trainings organized by proponents and implementing partners	3 (Lao)	-
a) Number of men	2	
b) Number of women	1	
Total number of institutions trained	1	
a) Governmental (national or subnational)	1	<i>Lao PDR Ministry of Public Works and Transport (MPWT), Department of Transport (DOT)</i>
b) Private sector (bank, corporation, etc.)	-	-
c) Nongovernmental (NGO, University, etc.)	-	-
Percentage of participants reporting satisfaction with CTCN training (from CTCN training feedback form)	-	-
Percentage of participants reporting increased knowledge, capacity and/or understanding as a result of CTCN training (from CTCN training feedback form)	-	-
a) Percentage of men	-	-
b) Percentage of women	-	-
Total number of deliverables produced during the assistance (excluding mission, progress and internal reports)	4	<i>2 major reports 1 stated preference report 1 transport model</i>

a) Number of communication materials, including news releases, newsletters, articles, presentations, social media postings, etc.	-	-
b) Number of tools and technical documents strengthened, revised or developed	-	<i>2 major reports 1 stated preference report 1 transport model</i>
c) Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	1	<i>1 Final Stakeholder Power point</i>
Total number of policies, strategies, plans, laws, agreements or regulations supported by the assistance	1	<i>Transportation Master Plan for Vientiane (2040)</i>
a) Adaptation related	-	-
b) Mitigation related	1	<i>Transportation Master Plan for Vientiane (2040)</i>
c) Both adaptation- and mitigation related	-	-
Anticipated number of policies, strategies, plans, laws, agreements or regulations proposed, adopted or implemented as a result of the TA	4	
a) Adaptation related	0	-
b) Mitigation related	4	<i>1. Modification to transportation master plan 2. Additional project plans 3. Feasibility plan or business case for DRT (Pilot Project) 4. Business case for public transport ITS</i>
c) Both adaptation- and mitigation related	-	-
Anticipated number of technologies transferred or deployed as a result of CTCN support	2-10	<i>Potential for many technologies in the plan to be transferred from Korea to Lao PDR</i>
Anticipated number of collaborations facilitated or enabled as a result of technical assistance	1+	<i>KOTRA Economic Innovation Partnership Program (EIPP) for Lao PDR was applied for with Korea National University of Transportation (KNUT) as a implementing partner together with the Lao PDR MPWT</i>
a) Number of South-South collaborations	-	-
b) Number of RD&D collaborations	-	-
c) Number of private sector collaborations	1	<i>Based on our recommendations, potential private sector partners for DRT and taxi-hailing legalization could include local</i>

		<i>Lao technology company LOCA, or Korean technology firm Kakao Mobility.</i>
Number of countries with strengthened National System of Innovation as a result of CTCN support	-	<i>Lao PDR</i>
Insert any additional indicators here	-	-

B. Core impact indicators

Please fill in the tables for anticipated impacts of the CTCN assistance. Every technical assistance should contribute to at least one of the indicators below. For guidance on how to report on core indicators see the [‘M&E Guidance Document for TA Implementers’](#).

Core indicator 1	Anticipated metric tons of CO₂e emissions reduced or avoided as a result of CTCN TA	
	<i>Please add your calculations in word or excel format as an Annex to this Closure Report, where applicable.</i>	
	Anticipated metric tons of CO ₂ e reduced or avoided as a result of the TA on annual basis	Anticipated metric tons of CO ₂ e reduced or avoided as a result of the TA in total
Quantitative value (<i>emissions reductions</i>)	<i>Total number (numerals only, no rounding or abbreviations)</i>	<i>Total number (numerals only, no rounding or abbreviations)</i>
Unit	tCO ₂ e	tCO ₂ e
GHG assessment boundary (project emissions) Identify expected post-TA activities, associated effects and assess boundary for quantification of GHG emission reductions	<i>57+ (Minor Changes) + 10,866 (ITS) + 400 – 1,366 (DRT) = 11,323 ~ 12,128*15 (maximum 12 ktCO₂e/year)</i>	<i>15-year assessment period 169,855 – 184,355</i>
Baseline emissions Describe baseline scenario, baseline candidates, emission factors and emissions calculated	<i>Baseline = 82,000 ktCO₂e in 2020 Source: Lao PDR Nationally Determined Contributions (2021) Link Reduction = -0.015% (annual)</i>	<i>~0.015%</i>
Methodology Explain the method or process of verifying the indicator and how data was gathered	<i>The following formulas were used to calculate GHGs, in tonnes of CO₂e, that would theoretically be removed (annually) as result of the proposed changes.</i>	

	$\Delta D = E * \frac{(TT_{JICA} - TT_{KNUT})}{TT_{JICA}} * D_{bus}$ $\Delta VKT = \Delta D * Dist$ $CO2_e (kg) = \sum \frac{\Delta VKT * MC_{car}}{OCC_{car}} * \left(\frac{1}{100}\right) * F_{am} * F_{daily} * FE_{car} * CE +$ $\sum \frac{\Delta VKT * MC_{mc}}{OCC_{mc}} * \left(\frac{1}{100}\right) * F_{am} * F_{daily} * FE_{mc} * CE$ <p>Data gathered from various sources, including UN values, previous models and reports for Vientiane (e.g. from JICA) (all sourced detailed below and in report), or standard values</p>																																																													
<p>Assumptions Describe assumptions made during calculation and quantification of GHG reductions</p>	<table border="1"> <thead> <tr> <th>Description</th> <th>VariabName</th> <th>Value</th> <th>Unit</th> <th>Source</th> </tr> </thead> <tbody> <tr> <td>Travel time, JICA (VTMP) scenario by OD</td> <td>TT_JICA</td> <td>Varies</td> <td>minutes, varies by OD</td> <td>Emme-based model</td> </tr> <tr> <td>Travel time, KNUT (VTMP) scenario by OD</td> <td>TT_KNUT</td> <td>Varies</td> <td>minutes, varies by OD</td> <td>Emme-based model</td> </tr> <tr> <td>Travel distance, by car or motorcycle (avg. of possible routes) by OD</td> <td>Dist</td> <td>Varies</td> <td>km, varies by OD</td> <td>Emme-based model</td> </tr> <tr> <td>Change in demand</td> <td>ΔD</td> <td>Varies</td> <td>trips, varies by OD</td> <td>Emme-based model</td> </tr> <tr> <td>Change in vehicle-kilometres travelled</td> <td>ΔVKT</td> <td>Varies</td> <td>km, varies by OD</td> <td>Emme-based model</td> </tr> <tr> <td>Occupancy, motorcycle</td> <td>OCC_{MC}</td> <td>1.5</td> <td>people</td> <td>Assumption based on similar cities (average of Bangkok, Hanoi)</td> </tr> <tr> <td>Occupancy, car</td> <td>OCC_{Car}</td> <td>2.2</td> <td>people</td> <td>Assumption based on similar cities (average of Bangkok, Hanoi)</td> </tr> <tr> <td>Fuel economy motorcycle</td> <td>FE_{MC}</td> <td>1.76</td> <td>L gas/100 km</td> <td>Global Fuel Economy Initiative (2022), for Vietnam</td> </tr> <tr> <td>Fuel economy light vehicle (car)</td> <td>FE_{Car}</td> <td>12.1</td> <td>L gas/100 km</td> <td>South Korean government target for average fuel economy, light vehicle</td> </tr> <tr> <td>Carbon equivalent of gasoline</td> <td>CE</td> <td>2.32</td> <td>Kg CO2 / L gas</td> <td>U.S. Energy Information Administration</td> </tr> <tr> <td>Elasticity of demand (time WRT demand)</td> <td>E</td> <td>-0.6</td> <td>% chg in travel time/% chg in demand</td> <td>Reported elasticity for Jakarta, Indonesia and</td> </tr> </tbody> </table>	Description	VariabName	Value	Unit	Source	Travel time, JICA (VTMP) scenario by OD	TT_JICA	Varies	minutes, varies by OD	Emme-based model	Travel time, KNUT (VTMP) scenario by OD	TT_KNUT	Varies	minutes, varies by OD	Emme-based model	Travel distance, by car or motorcycle (avg. of possible routes) by OD	Dist	Varies	km, varies by OD	Emme-based model	Change in demand	ΔD	Varies	trips, varies by OD	Emme-based model	Change in vehicle-kilometres travelled	ΔVKT	Varies	km, varies by OD	Emme-based model	Occupancy, motorcycle	OCC _{MC}	1.5	people	Assumption based on similar cities (average of Bangkok, Hanoi)	Occupancy, car	OCC _{Car}	2.2	people	Assumption based on similar cities (average of Bangkok, Hanoi)	Fuel economy motorcycle	FE _{MC}	1.76	L gas/100 km	Global Fuel Economy Initiative (2022), for Vietnam	Fuel economy light vehicle (car)	FE _{Car}	12.1	L gas/100 km	South Korean government target for average fuel economy, light vehicle	Carbon equivalent of gasoline	CE	2.32	Kg CO2 / L gas	U.S. Energy Information Administration	Elasticity of demand (time WRT demand)	E	-0.6	% chg in travel time/% chg in demand	Reported elasticity for Jakarta, Indonesia and	
Description	VariabName	Value	Unit	Source																																																										
Travel time, JICA (VTMP) scenario by OD	TT_JICA	Varies	minutes, varies by OD	Emme-based model																																																										
Travel time, KNUT (VTMP) scenario by OD	TT_KNUT	Varies	minutes, varies by OD	Emme-based model																																																										
Travel distance, by car or motorcycle (avg. of possible routes) by OD	Dist	Varies	km, varies by OD	Emme-based model																																																										
Change in demand	ΔD	Varies	trips, varies by OD	Emme-based model																																																										
Change in vehicle-kilometres travelled	ΔVKT	Varies	km, varies by OD	Emme-based model																																																										
Occupancy, motorcycle	OCC _{MC}	1.5	people	Assumption based on similar cities (average of Bangkok, Hanoi)																																																										
Occupancy, car	OCC _{Car}	2.2	people	Assumption based on similar cities (average of Bangkok, Hanoi)																																																										
Fuel economy motorcycle	FE _{MC}	1.76	L gas/100 km	Global Fuel Economy Initiative (2022), for Vietnam																																																										
Fuel economy light vehicle (car)	FE _{Car}	12.1	L gas/100 km	South Korean government target for average fuel economy, light vehicle																																																										
Carbon equivalent of gasoline	CE	2.32	Kg CO2 / L gas	U.S. Energy Information Administration																																																										
Elasticity of demand (time WRT demand)	E	-0.6	% chg in travel time/% chg in demand	Reported elasticity for Jakarta, Indonesia and																																																										

					other ASEAN bus systems
AM Peak – Daily factor	F _{AM}	~2.80	unitless, varies by OD	Calculated from 2021 OD survey	
Daily – annual factor	F _{Daily}	~300	unitless	Typical value	
Mode choice car	MC _{Car}	74.4%		2021 OD survey (JICA)	
Mode choice motorcycle	MC _{Mc}	26.6%		2021 OD survey (JICA)	
Assessment period		15	Years	Assumption	
Scenario		JICA Growth		Assumption	

Core indicator 2	Anticipated increased economic, health, well-being, infrastructure and built environment, and ecosystems resilience to climate change impacts as a result of technical assistance <i>Please provide a qualitative description of the anticipated impacts on the categories below</i>
Infrastructure and built environment Anticipated increased infrastructure resilience (avoided/mitigated climate induced damages and strengthened physical assets)	If recommendations from this project are implemented, public transport infrastructure would become more accessible and convenient for users, and additionally, some motorcycle or car users could switch to using the public transport system. This reduces the overall to invest in car-based infrastructure.
Ecosystems and biodiversity Anticipated increased ecosystem resilience (areas with increased resistance to climate-induced disturbances and with improved recovery rates)	Not likely to have any effect.
Economic Anticipated increased economic resilience (e.g. less reliance on vulnerable economic sectors or diversification of livelihood)	All recommendations come with socioeconomic benefits, which will overall benefit the Vientiane local economy by providing utility to public transport users. In some cases, this will be in the form of actual time savings (which can lead to additional economic benefits), while some are seen as “perceived” travel time savings meaning they make the journey more pleasant or satisfying, which can lead to economic benefits as it is akin to saving actual time.
Health and wellbeing Anticipated increased health and wellbeing of target group (e.g. improved basic health, water and food security)	The recommendations of this TA could include a modal shift to public transport, which would provide some minor health benefits to overall society as public transport users generally walk more and have healthier lifestyles than car or motorcycle drivers. Increased convenience of the public transport system would allow locals to have better access to healthcare and other wellbeing facilities thus increasing equity and overall well being.

Core indicator 3	Anticipated number of direct and indirect beneficiaries as a result of the TA
-------------------------	--

	Quantitative value	Means of verification
Total beneficiaries	1 (city)	Lao PDR Ministry of Public Works and Transport / City of Vientiane
Number of adaptation beneficiaries		The TA is a planning study focusing on planning for the transport system in the entire metropolitan region of Vientiane, a region with a population of approximately 1 million. In theory, this TA could affect city dwellers and visitors to this City.
Number of mitigation beneficiaries		-
Number of adaptation-and mitigation beneficiaries		-

Core indicator 4	Anticipated amount of funding/investment leveraged (USD) as a result of TA (disaggregated by public, private, national, and international sources, as well as between anticipated/confirmed funding)			
	Quantitative value confirmed in USD	Quantitative value anticipated in USD	Qualitative description List the institutions, timelines, and description or title of the investment	Methods Describe methods used for quantification of funds leveraged
Total funding	\$?	\$?	Additional funding has been <i>applied</i> for but not yet received for a continuation of the studies from this TA.	-
Anticipated amount of public funding mobilised from national/domestic sources	-	-	-	-
Anticipated amount of public funding mobilised from international/ regional sources	\$? (TBD) – EPIP has not announced funding yet	\$? (TBD) - EPIP has not announced funding yet	KOTRA/EPIP (Economic Partnership Program, from Korea) 2025-2025	Applied for 2025/2026 Economic Innovation Partnership Program (EIPP) Program together with Lao PDR MPWT
Anticipated amount of private funding mobilised from national/domestic sources	-	-		

Anticipated amount of private funds mobilised from international/regional sources	-	-		
---	---	---	--	--

Annex 2 (for internal use – to be filled in by the CTCN)

CTCN evaluation

This section will be completed by the relevant CTCN Technology Manager.

- Evaluation of the timeliness of the TA implementation as measured against the timeline included in the response plan;
- Evaluation of TA quality as defined in the response plan;
- Overall performance of the Implementers;
- Overall engagement of the NDE and Proponent;
- Lessons learned on the CTCN process and steps taken by the CTCN to improve.