PROJECT INFORMATION SHEET

PIP No : **1255**

(To be allocated by MOP)

PART A : BASIC PROJECT INFORMATION

(Must be completed in all cases)

1. PROJECT NAME: **Introducing Electric Bus Systems in Siem Reap, Cambodia**

2. PROJECT DATES:

PROJECT START: **2/7/2026**

ESTIMATED COMPLETION: **3/30/2028**

3. TOTAL PROJECT COST: **$15,920,000**

4. RESPONSIBLE MINISTRY: **Ministry of Public Works & Transport**

RESPONSIBLE UNIT: **Department of Urban Public Transport/General Department of Land Transport**

អង្គភាពទទួលខុសត្រូវ: **នាយកដ្ឋានដឹកជញ្ជូនសាធារណៈក្រុង/អគ្គនាយកដ្ឋានដឹកជញ្ជូនផ្លូវគោក**

5. PROJECT STATUS: **Planned**

DETAILED PROJECT INFORMATION

6. TYPE OF PROJECT: **Investment project**

7. SOURCE OF PROJECT FUNDING: **Mix of RGC, Grant and Loan**

8. THE POLICY AREA OF THE PENTAGON STRATEGY PHASE I THAT THIS PROJECT FALLS UNDER:V

Side 2. Enhancement of Connectivity and Efficiency in Transport and Logistics, Energy, Water Supply and Digital Sectors

9. THE CONTRIBUTION OF THE PROJECT TO ACHIEVE THE ABOVE POLICY:

The project is to introduce and operate electric buses as means of public transportation in Siem Reap City. By introducing environmental and climate-friendly technologies for the suggested new bus system in the City instead of conventional diesel technology, and replacing private vehicles with the public transport, the project will reduce greenhouse gas (GHG) emissions, air pollution and noise level in the city, thus contributing to inclusive and sustainable development of Siem Reap City.
In addition, introducing ITS will alleviate traffic congestion in the city center by efficiently managing bus information and traffic flows.

10. SUPPORT TO CAMBODIA INDUSTRIAL DEVELOPEMENT POLICY:

Does this Project support to the implementation of the Cambodia Industrial Development Policy? **No**

11. SECTOR:

Transport

Roads
Public Electric Bus System

12. PROJECT LOCATION: (Describe the location of the project and its components.)

Siem Reap,

13. PROJECT OBJECTIVE: (Describe the major purpose of the project.)

The major purpose of the project is to provide low carbon public transportation services for the citizens and tourists in Siem Reap City, where there exists no public transport services at the moment.

Siem Reap is the second largest city in Cambodia with the population of 0.26 million (2019) and has the World Heritage Site of Angkor which is the most popular tourist destination in the Kingdom of Cambodia. Increased tourists pre-COVID19 have been generating negative environmental impacts to the local people and the historical monuments by increased air pollution, GHG emissions, as well as traffic congestion. The project aims to mitigate negative environmental impacts and alleviate traffic congestion, while creating positive economic co-benefits such as green job creation and green industry development.

Introducing public clean bus system will not only help the City to develop as a smart and sustainable city, but also contribute to improving the City's clean image to the wider population, as the bus lines will be connected to the World Heritage Site of Angkor and major tourist destinations.

14. PROJECT DESCRIPTION: (Provide a description of the project and all its components.)

The project is proposing introduction of electric buses to the three bus lines proposed by the DUPT and associated charging infrastructure (slow charger and fast charger).
-Line 1 (blue) is the National Road No. 6 connecting from Siem reap airport to the city center area, playing an important role in meeting tourists demands.
-Line 2 (pink) is a ring road around adjacent area of city center, CBD fringe and APSARA cultural/tourism zone. The line is also assigned as Siem Reap Bypass Road leading heavy vehicles to the bypass road instead of entering into Siem Reap City via NR6.
-Line 3 (yellow) will be utilized as a service road linking between CBD and world heritage areas including Angkor Thum and Phnom Kraom, formulating urban structure as a service town of the world heritage and also a tourist destination.
The pre-feasibility study proposes a battery electric bus (BEB) as the most optimal technology option for the City. In addition, the study suggests to introduce smart bus management systems as the next phase (or optional) in order to address traffic and environmental issues and enhance transport services in the city. The project includes the following investment components:
• 33 BEBs (10 buses plus 1 reserve bus per line) to three bus lines
• 33 slow chargers and 7 fast chargers in depots/terminals
• Battery replacement after 8 years
• (Optional) Intelligent Transport System
-1st phase: Advanced Traffic Management System (ATMS), Bus Information System (BIS), Bus Management System (BMS)
-2nd phase: Illegal Parking Enforcement System (IPES), Parking Management System (PMS)

15. PROJECT JUSTIFICATION: (Give reasons why this particular project is considered worthwhile.)

Currently there is no public transportation system available in Siem Reap City which has been causing inconvenience and inefficiency for the citizens and tourists as well as traffic congestion due to increase personal vehicles. Based on the survey, it is clearly showed that more than 95% of Siem Reap's citizens prefer to use private transportation, which leads to severe traffic congestion and high carbon emissions. Therefore, it is recommended to introduce and improve public transport services for solving the transportation problem and reducing carbon emissions in Siem Reap. In addition, the biggest problem in the transportation sector that citizens of Siem reap felt was the highest in frequent congestion at intersections and congestion on roadways, lack of parking spaces and facilities, non-recurrent congestion due to accidents or road construction, and lack of traffic information or inaccuracy of the information.
According to the pre-feasibility study, introducing the e-bus option (battery electric buses) to the suggested lines is environmentally, financially, and economically feasible compared to conventional diesel bus option, reducing total lifecycle costs and overall GHG emissions and environmental pollution.

16. BENIFITS: (Who will benefit, directly and indirectly, from the project?)

The project will benefit its population of 0.26 million people at the municipality level and 1.1 million people for provincial level and millions of the international tourists by providing convenient and clean public bus services, reducing traffic congestions and negative environmental impacts such as GHG emissions and air pollution, thus improving public health of the citizens.

The public bus operator will also benefit from introducing e-bus system reducing total lifecycle cost (capital cost and operation costs during the project lifespan) compared to potential costs to be incurred by introducing conventional diesel buses.

Through introducing Bus Information System (BIS) in Siem Reap, it is expected to provide convenient services to relevant stakeholders
• Bus users: Providing real-time bus information such as bus arriving time though mobile phone and terminal display equipment.
• Bus drivers: Driving buses safely and controlling bus service interval between buses through on-board equipment.
• Siem Reap government: Obtaining public data and managing public services efficiently.
• Bus companies: Providing efficient management conditions through real-time bus management and service information.

17. FEASIBILITY STUDY

Is a Feasibility Study for the project required? **Yes**

If YES, has it been carried out? **Is being prepared**

18. SOCIAL & ENVIRONMENT IMPACT: (Briefly describe the effects of the project, if any, on the people and the surrounding enviroment. Will the project assist in alleviating poverty?)

Introducing e-buses to the suggested lines will provide positive environmental and social impacts compared to the diesel baseline. According to pre-F/S, e-buses will reduce overall CO2 emissions including black carbon are by 43%, and PM2.5 and NOx emissions by 100% compared to the diesel baseline. Noise level is believed to be reduced by 50% approximately.
Economic assessment, which evaluates the overall economic feasibility from the perspective of the entire economy by monetizing benefits from emissions reduction, presents economic net present value of USD 3.3 million (net economic benefit over prosect lifetime).
On the other hand, the project would need to prepare to manage potential environmental and social risks such as unregulated battery disposal and impacts on local jobs (mainly tuk tuk drivers). To manage these risks, stakeholder consultations should be conducted to share potential project impacts on the local economy including local jobs and to discuss how to minimize negative impacts and maximize benefits to the local community. Also, the government can consider introducing e-bus lines in a phased approach and prioritize a bus line which has the least impact to tuk tuk drivers. As for the battery management, the government need to prepare a comprehensive battery recycle/disposal plan potentially in collaboration with battery recycling firms and/or battery suppliers.

19. CLIMATE CHANGE

a. Is any activity or output of the project related to Climate Change? **Yes**

If Yes, please indicate **Both**

b. How is the project relevant to Climate Change?

Please select a Climate Change related sector of the project and fill up the contribution of the climate change related expenditure compared to the total project cost.

Climate Change-Related Sector	Percentage	Climate Change Relevance
15. Road improvement (including Climate Change proofing)	**100**	**Very Significant**

20. DISASTER RISK REDUCTION

Is any activity or output of the project related to Disaster Risk Reduction? **No**

21. GENDER ANALYSIS: (How does the project affect the roles of the men and women in the project area? Will women be actively involved in the implementation of the project?)

Need to prepare gender inclusiveness plan such as allocating certain % of drivers/maintenance staff to female workers. More importantly, women, the elderly and the mobility impaired can safely travel to anywhere in the city.

22. CAPACITY TO IMPLEMENT: (Does the Ministry have the skills and experience required to implement the project?)

Global Green Growth Institute (GGGI) has been supporting the Government of Cambodia to promote green mobility through the deployment of e-motorcycles under the Green Climate Fund (GCF) readiness project, recognizing that the transport sector is expected to have the largest increase and share of GHG emissions by 2050 in the country. The Ministry of Public Works and Transport (MPWT) has cooperated with GGGI to assess the feasibility of introducing clean buses in Siem Reap, based on the technical quality of MPWT officials ,as well as GGGI's experience in assessing feasibility of introducing low carbon bus options for Nepal, Jordan, and Lao PDR.

Siem Reap City has neither public bus service nor transit authority that has experience and capacity in operating public bus systems. Lack of implementing entity/focal organization would be key risk as the project involves not only sustainable bus operations but also new technologies which require technical capacity and well-designed coordination with multiple stakeholders. Thus, the below capacity building activities would be required to implement the project:
• TA activities to build institutional capacity of the relevant authority to set up a dedicated transit authority/unit and operationalize the public bus services.
• Capacity building activities to train the e-bus/charging station operators, drivers, technicians for repair and maintenance, etc.

23. STATUS OF PROJECT IMPLEMENTION: (Provide a brief update on the progress of the project to date. Discuss any major problems causing delays in project implementation.)

The Agreement between the General Director Department of Land Transport (GDLT) and GGGI to support implementation of "Pre-Feasibility Assessment on Electric Buses in Siem Reap" as an investment project under the Department of Urban Public Transport ("the Agreement") was signed on 29 January 2021 after the meeting between the Department of Urban Public Transport (DUPT) and GGGI. Under the Agreement, GGGI has carried out the Pre-Feasibility Assessment, while the GDLT has provided the strategic oversight and supported the institutional coordination with relevant authorities and stakeholders. DUPT has provided the basic information of the three bus lines for GGGI to analyze, based on its "Feasibility study on Public Bus Transportation in Siem Reap" conducted in 2019-2020. GGGI and DUPT's joint mission trip to the Siem Reap City took place from 1 to 7 February 2021 to consult with the relevant authorities and stakeholders on provincial and municipal levels, collect local data, and conduct traffic and satisfaction survey in the project site.

24. PROJECT PRIORITY: (Please indicates the priority ranking of the project decided by the ministry/agency.)

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25. DONOR INVOLVEMENT: (Provide any information on current or potential donor involvement in the project.)

Under discussion, GGGI and KOICA provided funding for conducting pre-feasibility assessment.

PART B : PROJECT COSTS AND FUNDING SOURCES
(In US$'000)

INVESTMENT COST	2024		2025 Budget	2026 Estimate	2027 Estimate	2028 Estimate	3yr Total 2026-2028	Recurrent Cost Est.
	Budget	Actual						
Operational Expenditure	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Salaries	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Materials + Admin	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Capital Expenditure	0.0	0.0	0.0	692.6	1,321.0	1,328.4	3,342.0	0.0
Construction	0.0	0.0	0.0	192.6	321.0	128.4	642.0	0.0
Consultancy (i.e. TA) + Admin	0.0	0.0	0.0	400.0	0.0	0.0	400.0	0.0
Equipment+ Furniture	0.0	0.0	0.0	0.0	1,000.0	1,200.0	2,200.0	0.0
Training	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL COST	0.0	0.0	0.0	692.6	1,321.0	1,328.4	3,342.0	0.0

FUNDING SOURCES	2024		2025 Budget	2026 Estimate	2027 Estimate	2028 Estimate	3yr Total 2026-2028	
	Budget	Actual						
Project Revenue	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Government Funding	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Cash Input	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Other Resources	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Donor Funding	0.0	0.0	0.0	692.6	1,321.0	1,328.4	3,342.0	
Korea International Cooperation Agency	0.0	0.0	0.0	692.6	1,321.0	1,328.4	3,342.0	
TOTAL COMMITTED FUNDING	0.0	0.0	0.0	692.6	1,321.0	1,328.4	3,342.0	
FUNDING REQUIRED	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
(Total Cost - Funding Available)								

Seen and Approved by Minister

(Signature)

Date :