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	Development of Framework for Real-Time Transport Information Systems for Public Transport in Greater Dhaka area.
Technical assistance reference number	CTCN 22-017
Country / countries	**Bangladesh People's Republic (Bangladesh)**
NDE organisation	Department of Environment, Ministry of Environment, Forest and Climate Change Email: dg@doe.gov.bd
NDE focal point	NDE: Dr Abdul Hamid, Director General Lao PDR Ministry of Environment (dg@doe.gov.bd) Focal person: Mirza Shawkat Ali, Deputy
NDE contact information	dg@doe.gov.bd
Proponent focal point and organisation	Colonel Zahid Hossain, Director (Technical) Bangladesh Road Transport Company (BRTC) Email: zahidbrtc@gmail.com
Designer of the response plan	Prof. Sungwon Lee, Korea National University of Transportation (KNUT). swl629@ut.ac.kr
Implementer(s) of technical assistance	Korea National University of Transportation
Beneficiaries	Bangladesh Road Transport Company (BRTC), Dhaka Transportation Coordination Authority (DTCA),

	Department of environment (DoE), Ministry of Environment, Forest & Climate Change
Sector(s) addressed	• Transport/ Land transport
Technologies supported	• Intelligent transport systems (ITS)
Implementation start date	*(10/30/2022)*
Implementation end date	*(12/31/2023)*
Total budget for implementation	*$270,000 USD*
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	1. *Establishing a baseline by collecting the information and data required* 2. *Design of the overall system architecture* ○ *Defining the technical and functional specifications* 3. *Costing* 4. *Webinar on Bus Reform (lessons from Korea)* 5. *Concept Note for the next steps of this Project.*
Methodologies applied to produce outputs and products	- *Research* - *Data analysis* - *Scenario development/planning* - *Cost estimation* - *GHG reduction analysis*
Reference to knowledge resources	*N/A*
Deviations	*N/A*
Anticipated follow-up activities and next steps	*The Dhaka Transportation Coordination Authority (DTCA) intends to apply for KOICA (Korean) funding for a related Bus Information and Management System (BIMS). This work will allow them to enhance their proposal.*

2. Lessons learned

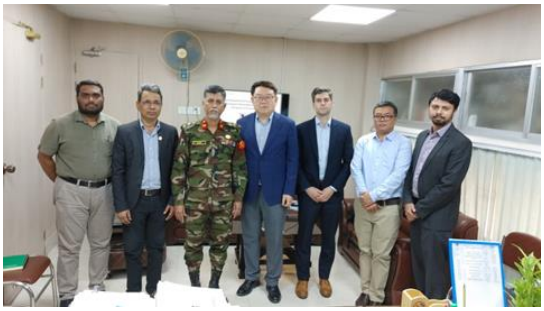
	Lessons learned	**Recommendations**
Lessons learned from the CTCN TA process	***1.*** *The NDE was initially contacted to get the project started, but neither had much time, involvement, or knowledge of the project and therefore were not the correct persons to contact.* ***2.*** *Ultimate the management agency lost interest/got busy and eventually stopped responding to our requests.*	***1.*** *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.* ***2.*** *The selected agency, which was not originally the request applicant, probably did not benefit directly from this TA. Therefore, it was not of much interest to them. In the future, the request should come directly from the most likely beneficiary.*
Lessons learned related to climate technology transfer	*Describe lessons learned, opportunities, and barriers for the use and deployment of the technology or technologies*	*We have found that Dhaka/Bangladesh is a good place for technology transfer, especially in their public transport systems. Their bus system is "primitive"*

	supported by the TA. The objective is to identify specific success factors for technology transfer	*in that it has practically no special or technological features, everything including scheduling is run "manually". Enhanced technologies like the BIMS described in this TA are sorely needed in Bangladesh. A socioeconomic business case should easily show that the benefits far outweigh costs given the enormous ridership of the existing bus system.* *Electrical and mobile telecommunications infrastructure is acceptable.* *Other barriers are largely institutional and financial:* - *Dhaka has many agencies that are tangentially related to public transport, but* ***no central governing for public transport operation and planning authority*** *who could potentially run the system.* - *Private operators would not be in a place to purchase the systems and install them, there is no financial incentive for them to do so. There is no guarantee of increased profit to operators because of the systems.*

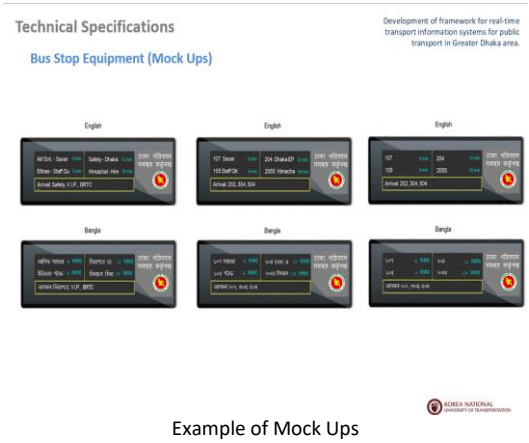
3. Illustration of the TA and photos

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.

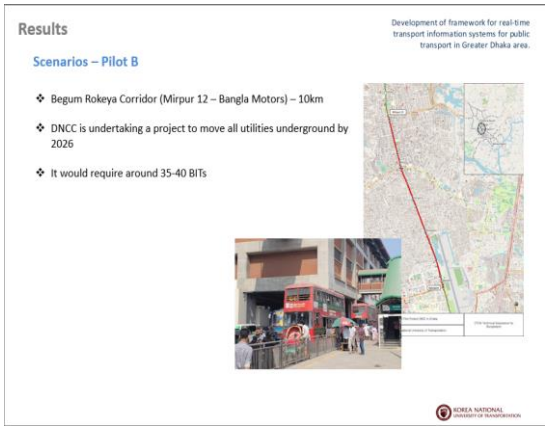
Initial Meeting and Site Visit in February 2023



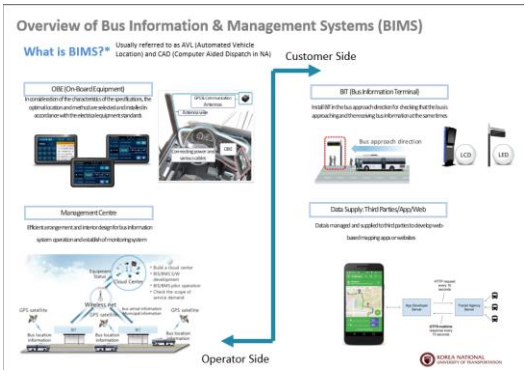
Initial Meeting and Site Visit in February 2023



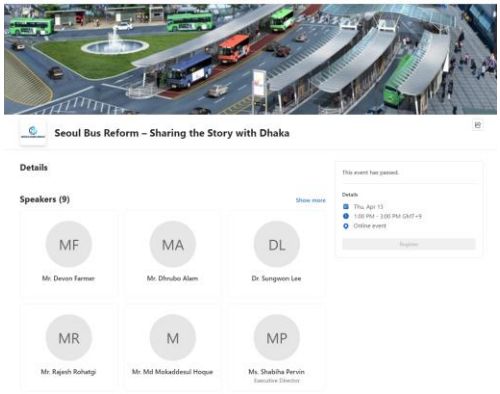
Example of Mock Ups

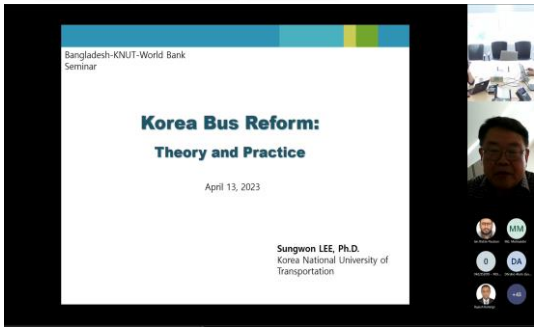


Example of Scenario development



Example of Scenario development





Webinar Undertaken in April 2023 with the WorldBank

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.

Challenge	*Dhaka is a megacity in Bangladesh home to over 21 million people in a relatively small area making it one of the most densely populated places on earth. With rising population and economic growth, the GHG emissions in Bangladesh from the transport sector have been increasing since at least 2013 and is responsible for at least 15% of CO2 emissions from energy-related sectors. Bangladesh is committed to reducing its GHG emissions in the power, industry, and transport sectors by 5% by 2030, or by 15% if sufficient and appropriate support is received from developed countries. The transport sector would contribute a 9% reduction in GHG emissions by 2030 or 24% if support is received from developed countries (Ministry of Environment, 2018). Further, the city suffers from incredible traffic congestion and the privately-operated bus-based public transport system is inefficient and insufficient for the city's population.* *The government of Bangladesh realizes the increasingly important need to incentivize the use of public transport system and control the permitted user of automobiles to materialize its mitigation goals and cater to the mobility needs of citizens. In particular, the service quality for public buses should be significantly improved by adopting information and digital technology in its operation and management. Encouraging use of the public transport system, over the use of a private transport, will require making the system more accessible, easier to use, and more convenient for users.*
CTCN Assistance	*The objective of this technical assistance is, in consultation with the Dhaka and Bangladeshi colleagues, develop all the necessary technical and functional system details and other design considerations including potential locations to implement a real-time monitoring system for the Dhaka public transport buses (Bus Management System, BMS) including potentially digital signs at stops displaying arriving times and other information (Bus Information System, BIS).* *As such Bangladesh is requesting the following TA:* 1. *Establishing a baseline by collecting the information and data required* 2. *Design of the overall system architecture* • *Defining the technical and functional specifications of an integrated information system* • *Deciding on the information offered and format* • *Selecting locations and media where information should be offered*

	3. *Development of the information services architecture in detail* • *Definition of the data to be acquired, managed, communicated, and displayed* • *Creating an operational scheme* • *Designing the software required* • *Defining the design and characteristics of how the data will be provided - interface for administrators and end-users* 4. *Costing but not limited to* • ***Equipment** (hard- and software) and design of websites, internet- and mobile-phone trip planning tools* • *Equipment for installation at stops, in stations and vehicles, which inform the users (e.g. signs, touch-screens)* • ***On-board equipment for buses and trams** (e.g. GPS) and a central real-time prognosis server to manage and provide real-time information (hard- and software)* • ***Installation costs** (e.g. installing real time signs, touch-screens, electrical supply to bus stops)* • ***Operation and management costs** (hardware maintenance, software license and operation, marketing and communication, costs for operations staff)* 5. *Webinar on Bus Reform (lessons from Korea)* 6. *Concept Note for the next steps of this Project. To be based on Green Climate Fund (GCF) Concept Note template.*
Anticipated impact	***ECONOMIC**:* *- Upon completion of this TA, Bangladesh 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. Specifically, with bus monitoring and tracking equipment, software, and systems described by the TA Framework. .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, Dhaka. If implemented, the equipment described will decrease the amount of time that bus passengers need to spend planning and waiting for transport, thereby allowing them to spend more time on economic activities. Given the massive increase in time savings due to the large number of daily bus users, the socioeconomic impacts are potentially quite vast, compared to the relatively small investment required.* ***SOCIAL**:* *The recommendations provided in the TA will allow Bangladesh to make the bus system more useful. This will 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. ***ENVIRONMENTAL**:* *- This will allow Bangladesh to cope with their increasing traffic congestion and air pollution problems, set-up expanded BRT, BIMS (Bus Information and Management System) 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.*
Co-benefits: Achieved or anticipated co-benefits from the TA	*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 Dhaka.* *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.* *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.*
Gender aspects of the TA	*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. Data shows that this is especially true in Bangladesh where men make significantly more trips per day than women, and are much higher represented on public transport systems.* *A disruptive market change through technology enhancements, could to an increasing women's participation in the transport sector and provide more socio-economic opportunities for women. For example, our recommendation in this TA is to provide real-time information to passengers through technological means, being the priority. By installing (physical) digital signage at numerous locations, women will directly benefit from increased access to information. Current bus tracking systems in Dhaka (for BRTC) require the use of a mobile phone only. Data also shows that women are less likely to have access to the internet/mobile phones in Bangladesh. Therefore, it is critical that an equitable distribution of information, in the format of physical signage, being undertaken (one of the critical components of this TA). Eventually, these signs could also be used to provide information about, for example, women-only buses to increase safety and well-being. The signs are customizable so*

	that information can be provided to people waiting at the bus stops.
Anticipated contribution to NDC	*Bangladesh has updated its Nationally Intended Contributions (NDCs) as of August 2021. These include pans to improve fuel efficiency of transport by 5% and address road congestion issues. In addition, Bangladesh' NDC document projects its total GHG emissions to increase from 169.05 MT CO2e in 2012 to 409.4 MT CO2e in 2030, of which transport would account for around 9%, under the Business as Usual (BAU) scenario. With mitigation policies and projects in place, Bangladesh assumes projects a total reduction of up to 21.85 MT CO2e by 2030 compared to the BAU scenario.* *This TA will contribute to the GHG reduction targets set by Bangladesh by targeting an increase in usage of the public transport network, which should lead to a "mode shift" from primarily fossil-fuel-based private or pseudo-private transportation to more efficient buses, as the public transport becomes more convenient and usable for potential users. At the same time, this TA will, because of the same reasons, help to tackle the extreme traffic conditions that consistently plague Dhaka.*
The narrative story	*This TA is a planning study, to develop an architecture plan including software, and placement plans for a bus management systems/bus information system in Dhaka. As such, this study allows for follow-on work to be undertaken using the architecture plan developed. Since this TA will develop costing estimates, and potentially funding arrangements, Bangladesh departments will be well-prepared to develop budgets, estimates, and tender documents to get potential private sector bidders to undertake the actual installation and development of the BIS/BMS.* *First, we will (1) understand the base conditions, including traffic congestion, travel times, understanding the bus networks, operating companies, and future plans for Dhaka. With this understanding, we can begin to develop and architecture and plan for the implementation of the real-time tracking systems. For example, if any such systems exist, what are their specifications and where are they being use? (2) We will then develop architecture plans and technical specifications for the equipment and software, which will be based on compatible Korean systems that have seen wide success here in Korea (3) We will develop reasonable capital and annual maintenance cost estimates for the equipment and software which will also be based on Korean experience. (4) We will host a webinar to discuss how the bus system can be reformed more generally, which may be required before a tracking system can be effectively used.* *Finally, we will report our results to the main client, the BRTC. However, it should be noted that the framework will consider that the system will be applied to all buses in the Greater Dhaka area, not just BRTC ones. Korean companies may be*

	well-poised to provide and install the equipment necessary for a modern and effective BIS/BMS system in Dhaka. Follow-on work involving our network of Korean companies could be undertaken.
Contribution to SDGs A complete list of SDGs and their targets is available here: https://sdgs.un.org/goals	***SDG #9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**: This TA will identify infrastructure needs in Dhaka, and provide opportunity for the private sector to implement the solutions, and innovate while doing so.* ***SDG # 11: Make cities and human settlements inclusive, safe, resilient, and sustainable**: The long-term impacts of this TA will bring the population in Dhaka 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 Dhaka public transportation system, sustainably (including sustainable revenue and environmental sustainability).* ***SDG # 13: Take urgent action to combat climate change and its impacts**: This TA will assist Bangladesh 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 Dhaka is far highly unsatisfactory, 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.* ***SDG 13.b - Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities**: This TA will assist Bangladesh in reducing its dependence of fossil-fuel-based transportation while promoting more efficient usage of their roadways.* ***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 Bangladesh. 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 Bangladesh 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** *Numerals only; disaggregates must sum to the total*	**Qualitative description** *List the various elements corresponding to the quantitative value as well as timelines and responsible institutions*
Total number of events organized by proponents and implementing partners	*3*	*1. Initial fact-finding/kick-off meetings held in Dhaka, in February 2023* *2. Webinar held in conjunction with the World Bank, in April 2023* *3. Invitation to DTCA for hybrid seminar in Seoul, November 2023*
Number of participants in events organized by proponents and implementing partners	*1. 10 (Bangladesh), 2 (Korea)* *2. 5 (Core), many (online), 2 (Korea)* *3. 1 (Bangladesh)*	*1. Initial fact-finding/kick-off meetings held in Dhaka, in February 2023* *2. Webinar held in conjunction with the World Bank, in April 2023* *3. Invitation to DTCA for hybrid seminar in Seoul, November 2023*
a) Number of men (Bangladesh side)	*1. 10* *2. 5/many* *3. 1*	*1. Initial fact-finding/kick-off meetings held in Dhaka, in February 2023* *2. Webinar held in conjunction with the World Bank, in April 2023* *3. Invitation to DTCA for hybrid seminar in Seoul, November 2023*
b) Number of women	*1. 0* *2. 0* *3. 0* *There are almost no women working in any government positions as far as we can tell.*	*1. Initial fact-finding/kick-off meetings held in Dhaka, in February 2023* *2. Webinar held in conjunction with the World Bank, in April 2023* *3. Invitation to DTCA for hybrid seminar in Seoul, November 2023*
Number of climate technology RD&D related events	*1*	*Invitation to DTCA for hybrid seminar in Seoul, November 2023*
Number of participants in climate technology RD&D events	*1*	-
a) Number of men	*1*	-
b) Number of women	*0*	-

Number of training organized by proponents and implementing partners	-	
Number of participants in trainings organized by proponents and implementing partners	-	-
a) Number of men	-	-
b) Number of women	-	-
Total number of institutions trained	-	-
a) Governmental (national or subnational)	-	-
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)	*2*	*2 Major reports*
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		
c) Number of other information materials strengthened, revised or created (For example training and workshop reports, Power Points, exercise docs etc.)	**1**	*1 PowerPoint summary of the TA*
Total number of policies, strategies, plans, laws, agreements or regulations supported by the assistance	-	-
a) Adaptation related	-	-
b) Mitigation related	-	-
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	*1*	*Ongoing efforts to reform the public bus system in Dhaka by DTCA*
a) Adaptation related	**0**	-
b) Mitigation related	**1**	*Ongoing efforts to reform the public bus system in Dhaka by DTCA*
c) Both adaptation- and mitigation related	-	-
Anticipated number of technologies transferred or deployed as a result of CTCN support	*1 major system (BIMS)*	*The BIMS system standardized and developed by Korea can be transferred to Bangladesh based on this TA*
Anticipated number of collaborations facilitated or enabled as a result of technical assistance	*1+*	*This TA will become a major work to be used to strengthen the bid by DTCA to obtain funding from KOICA (Korean government), which will be very useful for them.*
a) Number of South-South collaborations	-	-
b) Number of RD&D collaborations	-	-
c) Number of private sector collaborations	**1-5**	*Based on our recommendations, potential private sector partners for the BIMS could include numerous private companies from Korea, such as Neighbour Systems ITS, TRACOM, or others*
Number of countries with strengthened National System	**1**	*Bangladesh*

of Innovation as a result of CTCN support		
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 CO_2 equivalent (CO_2e) emissions reduced or avoided as a result of CTCN TA** *Please add your calculations in word or excel format as an Annex to this Closure Report, where applicable.*	
	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **on annual basis**	Anticipated metric tons of CO_2e reduced or avoided as a result of the TA **in total**
Quantitative value *(emissions reductions)*	*Total number (numerals only, no rounding or abbreviations)*	*Total number (numerals only, no rounding or abbreviations)*
Unit	tCO_2e	tCO_2e
GHG assessment boundary (project emissions) Identify expected post-TA activities, associated effects and assess boundary for quantification of GHG emission reductions	*63,000*	10-year assessment period: *630,000*
Baseline emissions Describe baseline scenario, baseline candidates, emission factors and emissions calculated	*Baseline = 169,000 ktCO2e in 2021* *17,000 ktCO2e from transport* *Source: Bangladesh Nationally Determined Contributions (2021)* *Link* *Reduction = -0.03% (total)* *-0.37% (from transport)*	*)*

Methodology

Explain the method or process of verifying the indicator and how data was gathered

The following formulas were used to calculate GHGs, in tonnes of CO2e, that would theoretically be removed (annually) as result of the proposed changes.

Eq. Set 1 (GHG reductions from passengers)

$$\boldsymbol{T_{ave}} = \frac{L_{ave}}{Speed_{ave}} * 60$$

$$\boldsymbol{\Delta D} = E * \frac{S}{T_{ave}} * D_u$$

$$\boldsymbol{CO2_e(kg)} = \left(\left(\frac{L_{ave}/100 * MC_{mc}}{OCC_{mc}} * FE_{mc} \right) + \left(\frac{L_{ave}/100 * MC_{car}}{OCC_{car}} * FE_{car} \right) \right) * \Delta D * CE$$

- Where T_{Ave}= Average travel time (of trips)
- Delta D = Change in demand
- CO2e = kg of GHG removed

Eq. Set 2 (GHG reductions from operators)

$$\boldsymbol{Op\ Savings} = Red * Op_{hours} * Speed$$

$$\boldsymbol{CO2_e(kg)} = \frac{Red}{100} * FE_{bus} * CE_d$$

Assumptions
Describe assumptions made during calculation and quantification of GHG reductions

Description		Value	Unit	Source
Perceived travel time savings for a presence of Bus Information System (RTPI)	S	-2.52	*Minutes/pax*	De Gruyter, 2018 Link
Value of time, middle income, Dhaka	VOT	~300	*Taka/hour*	Rahman et al. Link
Average trip length	Lave	5.6	*Km*	2035 Structure Plan for Dhaka (RDP) (2015 value)
Existing demand	D_u	6,000,000	*Daily passengers*	2035 Structure Plan for Dhaka (RDP) (2015 value)

	Average road speed of buses in Dhaka	Speed	8	*Km/hr*	2035 Structure Plan for Dhaka (RDP) (2015 value) & Google Maps API	
	Ave trip time	Tave	Varies	*Minutes*	Calculated	
	Elasticity of demand (time WRT demand)	E	-0.06	*% change in travel time/% change in demand*	Reported elasticity for Jakarta, Indonesia	
	Change in demand	ΔD	Varies	*people*	Calculated	
	Occupancy, motorcycle	OCC_{mc}	1.5	*people*	Assumption based on similar cities	
	Occupancy, car	OCC_{car}	2.2	*people*	Assumption based on similar cities	
	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	
	Mode choice car	MC_{car}	7.5% (75%)	Portion of all journeys (portion of motorized journeys)	2035 Structure Plan for Dhaka estimates	
	Mode choice motorcycle	MC_{mc}	2.5% (25%)	Portion of all journeys (portion of motorized journeys)	2035 Structure Plan for Dhaka estimates	
	Carbon equivalent of gasoline	CE	2.32	*Kg C02 / L gas*	U.S. Energy Information Administration	

Description		Value	Unit	Source
Reduction in operation distance from **BMS**	Red.	10%	*% of distance*	De Gruyter, 2018 Link
Total daily operation hours	Op_{hours}	60,291	*hours*	2023 GTFS Database
Average road speed of buses in Dhaka	Speed	8	*Km/hr*	2035 Structure Plan for Dhaka (RDP) (2015 value) & Google Maps API
Total daily operation distance	Op_{dist}	Calculated	*Km*	Calculated
Fuel economy bus	FE_{bus}	24	*L diesel/100 km*	Global Fuel Economy Initiative
Carbon equivalent of diesel	CE_d	2.68	*Kg C02 / L diesel*	U.S. Energy Information Administration

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** *Please provide a **qualitative** description of the anticipated impacts on the categories below*
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 Dhaka 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	*2-6 organizations*	*Dhaka Transportation Coordination Authority (DTCA), Bangladesh Road Transport Company (BRTC), Dhaka North City Corporation (DNCC), Dhaka South City Corporation (DSCC), Department of Environment (DOE) Ministry of Environment, Forest, and Climate Change*
Number of adaptation beneficiaries		*The TA is a planning study focusing on planning for the transport system sin the entire metropolitan region of Dhaka, a region with a population of approximately 22 million. In theory, this TA could affect city dwellers and visitors to this City, but mostly is affecting the bus users which number between 5,000,000 – 7,000,000.*
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	-	-	-	-
Anticipated amount of public funding mobilised from national/domestic sources	-	~$10m	-	-
Anticipated amount of public funding	$? (TBD)	$? (TBD)	-	-

mobilised from international/ regional sources				
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.