CTCN Technical Assistance
Request Submission Form

Please fill in the form in the grey spaces, by following the instructions in italic.

Country:	Bhutan	**Date**	*22 Feb2016*

Title	**Improving Urban Transport for Key municipalities in Bhutan for Reducing GHG Emissions : Capacity Building and Piloting of Intelligent Transport Systems**

Contact information:

Please fill in the table below with the requested information. The request proponent is the organization that the request originates from, if different from the National Designated Entity (NDE).

	National Designated Entity	**Request Proponent**
Contact person:	Mr. Karma Tshering	Mr. Lham Dorji
Position:	Officiating Chief, PPS and NDE Focal Person	Director General
Organization:	National Environment Commission Secretariat	Road Safety and Transport Authority
Phone:	+975 2 323 384	975-2-321282
Fax:	+975-2-323385	975-2-321281
Email:	ktshering@nec.gov.bt	dg@rsta.gov.bt
Postal address:	P.O. Box 466, Thimphu	P.O Box 196

Geographical focus:

{Select below the most relevant geographical level for this request:}

☐ *Community-based*
☐ *Sub-national*
☒ *National*
☐ *Multi-country*

{If the request is related to the sub-national or multi-country level, please indicate here the areas concerned (provinces, states, countries, regions, etc.)}

Theme:

{Select below the most relevant theme(s) for this request:}

☐ *Adaptation to climate change*
☒ *Mitigation to climate change*
☐ *Combination of adaptation and mitigation to climate change*

Sectors:

{Please indicate here the main sectors related to the request. e.g. energy, industry, transport, waste, agriculture/fisheries, forestry, water, ecosystem/biodiversity, coastal zones, health, education, infrastructure/human settlement, tourism, businesses, early warning/disaster reduction, institutional design and mandates, cross-sectorial}

Transport

Problem statement *(up to one page):*

*{Please describe here the **difficulties and specific gaps** of the country in relation to climate change, for which the country is seeking support from the CTCN. Please only provide information directly relevant to this request, and that justifies the need for CTCN technical assistance.}*

Transport sector in Bhutan is characterized by the dominance of road transport. Air transport is also assuming greater importance with the introduction of domestic air service and also addition of another private operator operating international flights. Diesel, gasoline, and aviation turbine fuel are the main fuels consumed in the sector. Except for the years 2012 and 2013,the number of vehicles is also growing at 9-10% per annum and the consumption of petroleum products for surface transport is likely to grow 3 times the current level of petroleum product consumption by 2020. There are over 75190vehicles in the country as of December 2015. Out of this only a meager 1% comprises of public passenger buses.
Transport sector also accounts for highest energy related GHG emissions for Bhutan at 44% of all energy related emissions and over 7% from the sector in the overall GHG emissions There has been significant shift towards private vehicles from public transport as seen in rate of registered vehicles on road (see table-i). Bad road quality, difficult terrain which hinders road expansion also adds to complication in managing transport.

Table – i: Motorization Trend (2005-2013)

Year	No. of motor vehicles	% Increase
2005	29,914	-
2006	33,241	11.12
2007	35,703	7.41
2008	40,659	13.88
2009	45,819	12.69
2010	53,282	16.29
2011	62,697	17.67
2012	67,449	7.58
2013	67,926	0.71
2014	69602	2.48
2015	75190	8.03

Percentage increase in 2013 was insignificant due to the import ban imposed by the Government. However, the ban has been lifted from July 2014 and the vehicle registration is increasing every month, with over 700 vehicles registered in the month of December 2015 and the figure is expected to further increase..

As the public transport system is not adequate, taxis and personalized vehicles serve the travel needs of the majority. This has resulted in traffic congestion and increase in vehicular emissions.

Past and ongoing efforts *(up to half a page):*

*{Please describe here **past and on-going processes, projects and initiatives** implemented in the country to tackle the difficulties and gaps explained above. Explain why CTCN technical assistance is needed to complement these efforts, and how the assistance can link or build on this previous work.}*

Therefore, to make efficient use of resources, **managing traffic through use of advanced technology** was recommended during stakeholder's consultation through the Technology Needs Assessment Project. These technologies used elsewhere has already proven their worth in effectively managing traffic, reducing congestion, increased safety and increased attractiveness of public transport systems thereby allowing sustainable growth of transport sector as a whole and reducing GHG and other air pollutants.

The Road Safety and Transport Authority is mandated to manage public transport services operated on around 120 route network throughout the country. Rural accessibility assumes huge importance to provide travel needs for the rural population and also enable marketing of agricultural products.

The **Transport 2040: Integrated Strategic Vision** study conducted by the Asian Development Bank in 2010-2011 recommended Public Transport Strategy for improving public transport system and encourages use of sustainable modes of transport including use of clean fuel and development of facilities for non-motorized transport.

The **main bottlenecks identified** are:

- Difficulty in providing un-disrupted services to remote rural locations due to low volume of passenger flow. Provision of subsidy to non-profitable routes is a huge burden on the government revenue.
- Lack of proper information systems, bus stops and waiting facilities along the route networks is another bottleneck.
- Lack of knowledge of officials in properly managing public transport is another major bottleneck hindering provision of efficient public transport service.
  Recommendations through the Intelligent Transport Systems Feasibility Report.

The feasibility study conducted by the sector on Intelligent Transport Systems recommended three phase actions, Short Term, Medium Term and Long Term. Some of the important recommendations are as follows.

(1) Short Term Actions (2015-18)

a) Establish an appropriate Institutional Framework to guide and overseas the implementation of the Action Plan
b) Development of Urban Transport Policy Plan
c) Raising of Community Awareness on ITS
d) Training in Traffic Engineering and ITS Development and implementation
e) Sourcing of funding to implement pilot and signature projects
f) Improve Public Transport network and facilities.

(2) Medium Term Actions (2018-23)

a) Training in Traffic Engineering and ITS
b) Recruitment of Traffic Engineer and Transport Planner
c) Roll out Bus Information System in City Bus Services
d) Roll Bus Bays and Bus Stop Shelters
e) Introduce electronic ticketing system and smart cards
f) . Introduction of parking guidance system
g) Establish Automatic Passenger Counting capability for City Bus Services
h) Introduce point-to-point Speed Cameras at selective areas where road safety is a problem
i) Possible introduction of Transit Signal Priority (TSP) if traffic signals are installed
j) Automation of multi-level car parks
k) Automation of City Parking Collection Charges
l) Provision of 2 Weight-in-Motion stations

m) Establishment of Vehicle Fitness and Emission Testing Centres.

(3) Long Term Actions (beyond 2023)

Long Term actions are some sort of guessing game and therefore, more theoretical in nature.

Assistance requested *(up to one page):*

*{Please describe here the **scope and nature of the technical assistance requested** from the CTCN and how this could help address the problem stated above and add value vis-à-vis the past and on-going efforts. Please note that the CTCN facilitates technical assistance and is not a project financing mechanism.}*

Table-ii: Type of Request and Expected Activities

Sl#	Output	Activity	Quantity	Fund Required (USD)	Remarks
1	Preparation of Mobility Plan for Thimphu City	(i) Travel Demand Surveys (ii) Traffic Surveys (iii) Analysis of Surveys (iv) Preparation of Transportation Network Plan	1 LS	50,000	
2	Detailed Project Report for ITS implementation in Thimphu	(i) Detailed Engineering of ITS system (ii) Detailed Specifications for ITS equipment's	1 LS	60,000	
3	Building Professional Capacities on Managing and Operating Intelligent Transport System	(i) On job training in Management and operation Intelligent Transport Systems (ii) Course / Programs on ITS / Transport Planning (ii) Expert support and guidance in implementation of pilot ITS in Bhutan	10 person months 1 LS 2 person month	22,500 10,000 5,000	On site training in Asian Cities Asian Experts
4	Pilot of ITS for Thimphu	(i) Provision of GPS system for real time tracking in City Buses in Thimpu . (ii) Provision of CCTV on Thimpu city (iii) Control Room (Computer, GPS locator etc)	25 information 15 CCTV cameras 5 control centres	30,000 13,000 45,000	CCTV on Bus stops, and Buses to be covered as part of procurement of respective tenders
5	NDE Coordination	(i) Organisation of meetings for information dissemination and consultation (ii) Meetings for information dissemination and consultation	5 person months 1 LS	5,000 10,000	
	Total			**250,500**	

Expected benefits *(up to half a page):*

*{Please outline here the **medium and long-term impacts that will result** from the CTCN technical assistance, including how the assistance will contribute to mitigate and/or adapt to climate change.}*

The **project-specific benefits** would include the following:

- Officials and managers would have enhanced their knowledge and skills in public transport management and use of ITS;
- Reduction in GHG emissions due to improved public transport and increased ridership-greater level of mode switching from harmful modes to more cleaner modes of transport;
- Enhance co-benefits in terms of reduction in local air pollutants, noise pollution and road crashes;
- Enhanced understanding of transport officials in public transport management;
- Enhanced understanding of private bus operators in public transport operations.

Post-technical assistance plans *(up to half a page):*

*{Please describe here **how the results of the CTCN technical assistance will be concretely used** by the applicant and national stakeholders, to pursue their efforts of resolving the problems stated above after the completion of the CTCN intervention (list specific follow-up actions that will be undertaken).}*

The project will establish the potential of using better information provision and management in public transport services. Use of better information and trained manpower would make public transport more attractive to users, road safety would be improved, and congestion and vehicular emission would be reduced due to switching from personalized mode of transport or taxis to public transport. Capacities of the managers and officials of the authority would be substantially enhanced. Private bus operators would have enhanced their capacities in public transport operations, thereby improving efficiency in service as well as fare levels.

Key stakeholders:

*{Please list in the table below the **main stakeholders** who will be involved in the implementation of the requested CTCN technical assistance, and what **their role** will be in supporting the assistance Please indicate what organization(s) will be the **main/lead counterpart(s)** of CTCN experts at national level, in addition to the NDE.}*

Stakeholder	Role to support the implementation of the assistance
Ministry of Information and Communications	Policy and Planning
Road Safety and Transport Authority (main counterpart)	- approve passenger transport services routes, fares; - approve bus standards; - provide public transport facilities (bus terminals, bus sheds and bus stops and shelters); - issue driving licenses, - conduct inspections on bus conditions (regular pre-departure inspections)
Municipalities	Construction and maintenance of urban roads, provision of parking.
Private Bus Operators	Operate public passenger service
Traffic Police	Enforcement
Department of Roads	Construction and maintenance of road network

Alignment with national priorities *(up to half a page):*

*{Please demonstrate here that the technical assistance requested is **consistent with documented national priorities** (examples of relevant national priorities include: national development plans, poverty reduction plans, technology needs assessments (TNAs), LEDS, NAMAs, TAPs, NAPs, sectorial strategies and plans, etc.). For each document mentioned, please **indicate where the priorities specifically relevant** to this request can be found (chapter, page number, etc.).}*

The project will set up the required base for achieving the transport development and management goals of the Department of Transport as envisaged in the Bhutan Transport 2040: Integrated Strategic Vision and the 11th Five Year Plan of the Department. These plans clearly indicate country's ambition to improve public transport service through building capacities of the public transport managers and operators.

The proposed project will also contribute to the strengthening of the transport department and its personnel in acquiring necessary skills and resources in terms of implementing transport management and Intelligent Transport systems. The transport sector has been identified as a key sector contributing to rising emission growth of the country in the communication to UNFCCC. The framework to assess the emission reduction and other co-benefits through promotion of public transport will assist the government in prioritizing the low carbon transport options in the country and develop appropriate strategies.

Public transport system will be revamped and its efficiency will be improved with use of technology and by building the capacities of the public transport managers.
The request is in line with transport sector's outcome-1 for the 11th Five Year Plan "Access to adequate, sustainable and inclusive public transport". It is also in-line with the overall national goal for 11th Plan "Self-reliance and Inclusive Green Socio-Economic Development" .

Development of the request *(up to half a page):*

*{Please explain here **how the request was developed** at the national level and the **process used by the NDE to approve** the request before submitting it (who initiated the process, who were the stakeholders involved and what were their roles, and describe any consultations or other meetings that took place to develop and select this request, etc.)}*

The Road Safety and Transport Authority under the Ministry of Information and Communications has been selected as the focal agency as it is responsible for provision and management of public transport service. Multi-criteria decision analysis was used to prioritize technologies through a process that was country-driven, participatory and involved a number of stakeholders. A three-days workshop for criteria weighting and technology prioritization was held at Paro, Bhutan from 6 to 8 February 2012, where 22 members of the TNA taskforce participated. The participants selected the following technologies as below (see table-iii):

Table-iii: Final List of Prioritized Technologies for Transport Sector

Non-motorized Transport and Mass Transit
Transport Management Systems
Fuel-efficient Cars

Non-motorized Transport and Mass Transit
Mass transit is one of the main components in a sustainable, low-carbon transport future and covers modes of public transport such as light rail (or trams), bus rapid transit and electric trolley buses. Since

mass transit moves more people at less cost, it leads to reduced private vehicle use, thereby causing reductions in greenhouse gas emissions and traffic congestion. The mass transit system is usually accompanied by non-motorized transport such as walking, cycling and its variants such as cycle rickshaws, skates, push scooters to and from transit stations. Since non-motorized transport does not make use of motorized vehicles, it prevents the combustion of fossil fuels and results in no GHG emissions. Non-motorized transportation can be encouraged by improving sidewalks, crosswalks, paths, bicycle lanes and networks, pedestrian-oriented land use and building design, traffic calming, streetscape improvements, traffic speed reductions, vehicle restrictions etc.

Transport Management Systems
Transport management system basically refers to the application of information and communication technologies to vehicles and to transport infrastructure. Some examples of transport management systems include electronic road pricing, online travel information, computerized traffic signaling and eco-driver assistance.

Fuel-efficient cars
Fuel efficient cars use less fuel per unit distance travelled, thereby reducing the GHGs emitted in the atmosphere. Bhutan is primarily an importer of cars; hence the degree of fuel efficiency in cars would primarily depend on the level of technology advancement in other parts of the world. A prudent step for Bhutan to induce fuel efficiency in cars would be to impose stringent standards for cars imported in Bhutan.

Expected timeframe:

*{Please propose here a **duration period** for the assistance requested.}*

July 2016- July 2017

Background documents:

*{Please list here **relevant documents** that will help the CTCN understand the context of the request and national priorities. For each document, provide weblinks if available, to attach to the submission form while submitting the request. Please note that all documents listed/provided should be mentioned in this request in the relevant question(s), and that their linkages with the request should be clearly indicated.}*

- Kingdom of Bhutan (March 2013): Technology Needs Assessment And Technology Action Plans For Climate Change Mitigation <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/628d7bee2ff34f808b52ccfb4463ed10.pdf>
- Kingdom of Bhutan (March 2013): Technology Needs Assessment And Barrier Analysis And Enabling Framework Report Mitigation <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/920d1c33293f475b9eccb949e0f1d8c0.pdf>
- Kingdom of Bhutan (March 2013): Technology Needs Assessment And Technology Action Plans For Climate Change Mitigation <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/1fec56055224463c96e94fa6a23e125d.pdf>
- Kingdom of Bhutan (March 2013): Technology Needs Assessment And Project Idea Report Mitigation <http://unfccc.int/ttclear/misc_/StaticFiles/gnwoerk_static/TNR_CRE/e9067c6e3b97459989b2196f12155ad5/89fc5e6982db4e75a76c555fdc596be3.pdf>
- Asian Development Bank (June 2013): Bhutan Transport 2040: Integrated Strategic Vision <http://www.adb.org/sites/default/files/pub/2013/bhutan-transport-2040.pdf >
- Bhutan (October 2013): 11th Five Year Plan, Volume 1 <http://www.gnhc.gov.bt/wp-

content/uploads/2013/11/Eleventh-Five-Year-Plan.pdf>
- Bhutan (October 2013): 11th Five Year Plan, Volume 2 <http://www.gnhc.gov.bt/wp-content/uploads/2011/04/11th-Plan-Vol-2.pdf>

Monitoring and impact of the assistance:

{Read carefully and tick the boxes below.}

☒ By signing this request, I affirm that processes are in place in the country to monitor and evaluate the assistance provided by the CTCN. I understand that these processes will be explicitly identified in the Response Plan in collaboration with the CTC, and that they will be used in the country to monitor the implementation of the CTCN assistance.

☒ I understand that, after the completion of the requested assistance, I shall support CTCN efforts to measure the success and effects of the support provided, including its short, medium and long-term impacts in the country.

Signature:

NDE name:	Karma Tshering
Date:	March 9,2016
Signature:	

THE COMPLETED FORM SHALL BE SENT TO THE CTCN@UNEP.ORG

Need help? The CTCN team is available to answer questions and guide you through the process of submitting a request. The CTCN team welcomes suggestions to improve this form.

>>> Contact the CTCN team at ctcn@unep.org