

Chapter 2 Project Idea for Transport Sector

2.1 Brief summary of the Project Ideas for Transport

In order to overcome issues related to rising GHG emissions from the transport sector, congestion on roads and passenger safety concerns, efficient use of resources and management of traffic through use of advanced technology has become a necessity for Bhutan. In this context, Intelligent Transport Systems (ITS) used elsewhere has already proven their worth in effectively managing traffic, reducing congestion, increasing safety and attractiveness of public transport systems thereby allowing sustainable growth of transport sector as a whole and reducing GHG and other air pollutants.

The proposed project idea based on other parts of the TNA report suggests a set of activities to ensure successful implementation of ITS in the country by overcoming barriers identified in the course of the TNA exercise. The project idea primarily includes a detailed feasibility study on ITS application in Bhutan and preparation of a Detailed Project Report (DPR) for implementation of ITS project for Thimphu aimed at creating an enabling environment in the country for large scale ITS application in the country.

2.2 Specific Project Ideas

2.2.1 Introduction

Project title: Undertaking a feasibility study on ITS application in Bhutan and preparing a Detailed Project Report (DPR) for introduction of ITS in Thimphu City

Background and rationale

Transport sector accounts for highest energy related GHG emissions (44%) in Bhutan. Number of vehicles on road is increasing at a rate of 10% per annum which is leading to congestion, increased GHG emissions and creating safety issues. There has been significant shift towards private vehicles from public transport as seen in the rate of registered vehicles. Bad road quality, difficult terrain which hinders with road expansion also adds to complication in managing transport.

While supply of additional infrastructure may address the transport demand in short term, the immediate need in the country as identified by key stakeholders is the implementation of efficient transport management systems in various cities. In this context, use of intelligent transport systems (ITS) is a proven technology option applied worldwide and has also been prioritized during the TNA process in Bhutan. Based on the Technology Action Plan prepared for deployment of this technology option, the proposed project ideas includes a detailed feasibility study of ITS application in Bhutan and preparation of a Detailed Project Report (DPR) for the city of Thimphu which would primarily complement the existing Bus Rapid Transit System development plan of the city. The proposed project would create an enabling environment for deployment of ITS in the country by providing necessary information regarding the technology and application potential and also by assessing the capacity building and financial requirements. It also aims at implementing certain components of ITS as pilot projects in Thimphu based on the DPR for demonstration of technology benefits.

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2.2.2 Objectives

The project aims to achieve the following:

- Create awareness among various stakeholders including policy makers, transport authorities and traffic managers about ITS potential in transport sector in terms of managing traffic.

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- Assess skills and capacity building requirements of local level officials to adopt and manage these technologies.
- Identify required policy interventions, budgetary requirements and sources of funding for ITS implementation in Thimphu.

2.2.3 Project Outputs

Following measurable outputs would be resulted after the end of the program

- Prepare a roadmap for implementation of ITS in Bhutan based on a feasibility study
- Feasibility cum Detailed Project Report (DPR) for implementation of ITS project in Thimphu city. DPR to include the following:
 - ITS technology architecture and areas for implementation based on traffic demand models and other surveys, international experience and stakeholder consultation.
 - Institutional structure for implementation and management of ITS systems.
 - Overall financial requirements for implementation and
 - Training needs for managing ITS systems.
- Implementation of a pilot project based on the DPR of Thimphu
- A tool for quantification of congestion, GHG and air pollutant reduction from ITS projects
- Enhanced capacity of transport authorities on ITS benefits and limitations through
 - ITS project orientation workshops
 - One exposure visit of transport authorities comprising of RSTA, MoIC and other city officials to a city where ITS is already being used to manage traffic

2.2.4 Relationship to the country's sustainable development priorities

The proposed project will set up the required base for achieving the transport development and management goals of the Department of Transport as envisaged in their Integrated Strategic Vision and the 11th Five Year Plan. These plans clearly indicate country's ambition to improve public transport facilities through innovative management measures including ITS. The proposed project idea 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 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 ITS will assist the government in prioritizing the low carbon transport options in the country and develop appropriate strategies.

2.2.5 Project Benefits

The project will establish the potential of using ITS as a key transport management strategy by reducing congestion, making public transport attractive to users, increasing road safety, reducing emissions and air pollutants and also facilitating optimal use of existing resources such as land. There is limited understanding of how and where ITS technology can be utilized in Bhutan amongst key stakeholders. That is why it is important to take the first step in terms of detailed analysis of potential areas where ITS can make significant contribution as a key transport management strategy and understand its socio-environmental benefits. This project will involve detailed analysis of how ITS can solve issues currently faced by key cities in Bhutan.

The project specific benefits include the following:

- Based on the international experience of ITS implementation and feasibility studies identify right set of technologies and areas to be selected for ITS implementation in the country.

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- Reduction of GHG emissions from the transport sector due to reduction in congestion, increase in network speed and enhanced use of public transport. Under the project a tool would be developed which can provide an estimation of GHG reduction due to implementation of ITS measures.
- Enhance co-benefits in terms of reduction in local air pollutants, noise pollution and accidents.
- Enhanced understanding of city transport officials on ITS technologies through the demonstration project and exposure visits to cities with ITS infrastructure.
- Finally, the project will also lead to identifying the overall financial requirements for countrywide ITS implementation so that budget outlays and international financing requirements can be determined.

2.2.6 Project Scope and Possible Implementation

The ITS feasibility study would cover the entire country while the DPR would be prepared for the city of Thimphu only. Although one city is currently included in the scope for actual implementation, the implementation model and emission and cost-benefits assessment tool developed under this project can be utilized for other cities also. The project is linked with the existing surface transport master plan which includes introduction of Bus Rapid Transit System and upgrading the overall transport management system to reduce congestion in Thimphu. Therefore, the implementation potential is very high.

2.2.7 Project activities and timelines

The key project activities and timelines are shown in Table 2 below

Table 2: Proposed Project Activities- Transport Sector

S No	Activity	Sub-activity	Duration	Budget ('000USD)	Budget heads	Responsibility/Coordination agency	Measurement/Evaluation parameter	Potential Funding sources
1	Feasibility study for implementation of ITS in Bhutan	1.1 Background research of various technologies for ITS implementation <ul style="list-style-type: none"> • pros and cons of each technology in each transport area of implementation • overall technological frameworks, • cost impacts • case studies of actual implementations, 	6 Months	100	Cost staff/consultants	of RSTA	A roadmap for ITS implementation in Bhutan. Enhanced understanding of RSTA and MoIC officials regarding the various ITS technologies and application areas.	\$ Funds allocated under Bhutan's 11 th Five Year Plan; Technical assistance fund and debt fund support from ADB, World Bank

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									and KfW.
									§ For funding policy measures and other measures
									Nationally
									Appropriate
									Mitigation
									Actions (NAMAs)
									can be developed for the transport sector in
									Bhutan. These NAMAs can
2	Prepare a DPR for ITS implementation in Thimphu and implement a	2.1 Based on city traffic characteristics and travel demand model identify	12 Months	100	<ul style="list-style-type: none"> Cost of staff/consultants Travel, accommodation and other related 	RSTA		- DPR approved for implementation	

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demonstration
project

specific ITS
technologies,
systems and
integration
requirements,
technical
specifications of
systems, report
generation and
monitoring
parameters post
system
implementation.

2.2 Develop a tool
to assess the
impact of ITS
implementation
based on user
preference and
travel data
collected in
previous step. The
impact parameters
for analysis could
be safety
improvements,
network speed
reduction, increase
in public transport
utilization,

expenses

then
attract
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al),
bilateral
and
carbon
finance
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§ Green
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(GEF);
World
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Clean
Technol
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Fund;

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<p>increased in reliability of public transport systems, reduction in fuel consumption and GHG emissions.</p>	<p>2.3 Develop an implementation and management framework of ITS system in Thimphu.</p>	<p>2.4 Estimate financial requirements for implementation of ITS system in Thimphu</p>	<p>2.5 Implementation of pilot project in Thimphu based on the DPR</p>	<p>12 months</p>	<p>Will depend on the results of the DPR and technology selected for pilot</p>	<ul style="list-style-type: none"> • Equipments • Operation and management cost 	<p>Actual implementation of the key technology components</p>	<p>UNDP MDG Carbon Facility; ADB Climate Change Fund; International Climate Initiative;</p>
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2.2.8 Possible Complications/Challenges

The key challenges in the project are:

- High costs of these systems in absence of any financial incentives/support may result in limited implementation of these systems
- Lack of effective coordination between planning and implementing agencies with overlapping mandates between RSTA and City Planners can pose a challenge to overcome during the course of the project implementation
- General elections are being planned this year which may result in change in relevant ministries and transport department. This may result in delay in final approval subsequently delaying the project implementation
- A proposal has been made to government to include Department of Road Safety and Transport Authority (RSTA) under the Ministry of Human Works and Settlement. The department is currently under the Ministry of Information and Communication. If the change is approved, there could be some delay in the proposed project.