

Ministry of Infrastructure and Transport, Royal Government of Bhutan
ACCELERATING TRANSPORT AND TRADE CONNECTIVITY IN EASTERN SOUTH
ASIA – BHUTAN PHASE 1 PROJECT
Terms of Reference for Consulting Services

Geotechnics and Climate Resilience Specialist
(individual Consultant for intermittent services)

1. Background

The deepening relationship among Bangladesh, Bhutan, India, and Nepal on regional trade and transport is reflected by the increasing number of regional and bilateral connectivity agreements. However, although trade between them has been increasing over the years, opportunities for growth through regional trade remain largely untapped.

Low regional trade reflects the high cost of connectivity. Several factors account for the high cost, including inadequate transport and trade infrastructure, cumbersome regulations, manual processes, and protective tariffs and non-tariff barriers. The Trade Restrictiveness Index, which captures the trade policy distortions that each country imposes on its import bundle, shows South Asia with the greatest protection compared to any other region.

However, despite the region's large road, rail, and waterway networks, the degree of multimodal freight movement is limited at the national level, and even less for cross-border freight traffic. Each of the modes of transport has largely evolved separately, with only nascent efforts to facilitate multimodal transport operations. An effort will, therefore, be required to strengthen the road, waterway, and railway networks and develop freight markets that allow more efficient coexistence and interfaces between the transport modes. This also entails providing last-mile connectivity by improving congested and less-developed road sections connecting to international borders and other trade gateways.

To overcome some of these impediments to regional trade and connectivity, the Royal Government of Bhutan (RGOB), with the financial support from the World Bank, has conceived a multi-phase project: Accelerating Transport and Trade Connectivity in Eastern South Asia (ACCESS).

The objective of the proposed project is to increase the efficiency and resilience of trade and transport along selected corridors in Bhutan. The proposed project is expected to reduce trade and transport costs through (i) an increase in throughput at priority border points; (ii) a reduction in average travel time for vehicles along selected regional corridors; (iii) a reduction in annual fatalities on program corridors; and (iv) increase the number of people provided with improved climate resilient road access along regional corridors.

Using a portion of Project Preparation Advance from the World Bank, the Department of Surface Transport (DOST) intends to contract an appropriately qualified individual interested to render consulting services on geotechnical and climate resiliency consulting services. The services will be procured following the World Bank's Procurement Regulations for IPF Borrowers, July 2016, And Revised November 2020.

2. Objectives

The objective of the consulting services is to support the Employer in reviewing proposals and designs submitted by different design consultants and provide slope stability and climate resilience-related technical backstopping during the construction of different roads.

3. Scope of Services

- Review the available secondary data on climate, topography, geology and seismicity to identify hazard trends, potential hazard locations and solution approaches.
- Review the reports, designs, estimates etc. from other consultancy firms from geotechnical aspects and ensure that the designs have high-quality outputs to ensure a safe foundation of roads and structures.
- Review the designed cut/fill slopes, retaining structures and bridges along road sections from slope stability and climate resilience perspective.
- Guide, train and support the Employer's technical staff and consultants on manual and software-based modelling for slope stability and design for lowering of water table, soil nailing, anchoring, rock-netting, and other advanced measures of enhancing slope stability.
- Help to introduce using reinforced earth technology in parts of Bhutan where material for conventional retaining structures is scarce.
- Suggest specific technical interventions, with priority given to nature-based solutions and adaptive measures along the road corridors, against climate change vulnerabilities.
- Help to identify high-probability locations due to climate change along roads, specifically from toe-cutting by rivers and design appropriate preventive measures.
- Help to identify locations for safe extraction of material from riverbeds and hill slopes for construction of roads.
- Review the technical guidelines and standards used by the Employer on slope stability and climate resilience and, if necessary, suggest policy-level interventions in planning, designing and constructing roads and bridges.
- Identify appropriate relevant training opportunities and field visits for the Employer's technical staff.
- Any other geotechnical and climate resilient related tasks requested by the employer.
- Visit sites to verify if needed or asked by the employer.

4. Qualifications

- Education: Bachelor's degree in civil engineering with a master's degree in geotechnical engineering preferred. A PhD or post-doctoral fellowship on relevant topics will be an advantage.
- Experience: Over 15 years experience in road construction, geotechnical investigation, slope stabilization analysis, hazard mapping, and design of stabilization measures for cut slopes as well as measures to protect against toe cutting by rivers. Specific experience in designing and construction stage backstopping of cut-slope stabilization, landslide stabilization, and river erosion control taking account of climate resilience in at least one country other than his/ her country of nationality.
- Language. Fluency in written and spoken English.

5. Duration of Services

The consultant will be selected for 1 year with intermittent input of 60 days within 12 months. The contract duration may be increased based on the need of the Project and the performance of the consultant.

6. Supervisor and Reporting Requirements

The consultant shall report to the Project Director/Component Manager. He/she shall prepare reports and slide presentations on the assigned tasks.

7. Remuneration and Compensation

The consultant shall be provided with the remuneration and benefits as per the contract.

The contract will mention a daily or hourly input per year, which shall include all his overhead, social charges and other associated costs and insurance premiums.

The international and local travel as well as accommodation during visits to Bhutan and the logistics for the training rendered locally shall be reimbursed. Any income tax or other direct tax to be paid by the consultant in Bhutan shall also be reimbursed.

Training and study visits organized for the Employer's technical staff shall be paid separately.

8. Facilities to be provided by the Employer

The consultant shall be provided with working space at the DOST office with basic furniture, internet access, stationery and photocopying facility during his/her stay in Bhutan.

The Consultant is expected to bring his/her own laptop with the required software to render the expected services.

9. Selection Process

Selection of the consultant will be carried out in accordance with the approved selection methods for Individual Consultants as stated in the "World Bank's Procurement Regulations for IPF Borrowers, September 2023.