**NATIONAL RURAL INFRASTRUCTURE DEVELOPMENT AGENCY**
**MINISTRY OF RURAL DEVELOPMENT**
**GOVERNMENT OF INDIA**

# REQUEST FOR EXPRESSION OF INTEREST
# CONSULTING SERVICES

**Country**: INDIA
**Name of the Project**: Additional Financing for PMGSY Rural Roads Project
**Loan No./Credit No./Grant no**.: 8864-IN
**Assignment Title:** Invitation of Expression of Interest (EOI) for short listing of eligible consulting firms for "**Engagement of Consultant for Network Level Vulnerability Assessments of Roads and Bridges to Identify the Critical Road Sections and Bridges and Culverts Vulnerable to Climate Induced Events in Rural Roads Under the World Bank Funded Additional Financing Projects for PMGSY Rural Roads"**

**Brief Description of the Project.**
National Rural Infrastructure Development Agency (NRIDA) invites eligible consultants to indicate their interest for the "**Engagement of Consultant for Network Level Vulnerability Assessments of Roads and Bridges to Identify the Critical Road Sections and Bridges and Culverts Vulnerable to Climate Induced Events in Rural Roads Under the World Bank Funded Additional Financing Projects for PMGSY Rural Roads"**. Interested domestic consultants must provide information indicating that they are qualified to perform the services.

1. An estimated **86 (approximate) person months** of key professionals are anticipated to be required for this assignment over 12 months period for implementation of the project. Request for Proposal (RFP) shall be issued to the entities short listed from the EoI. Selection of consultant will be made on **Quality and Cost Based Selection method (QCBS) 80:20 in the RFP stage.** The EoI will be evaluated on the basis of the evaluation criteria given in Para 6 of TOR given in this EoI document.

a) Interested consultancy firms must include the documents and details as specified in Para 6 of this EoI document to be considered for the purpose of short listing under this EoI.
b) In addition to furnishing required supporting documents and details for fulfillment of the minimum eligibility criteria as specified in Para 4 of this EoI document, the interested consultancy firms should also provide details of consultancy services rendered by them in projects pertaining to road/infrastructure sector for the purpose of evaluation for short listing of eligible firms.
c) Interested consultancy firms should also provide a brief write up on the consultancy assignments undertaken by them and the number of years that they have been in the consultancy business.

2. Interested firms should submit their Expression of Interest at the address below not later than **27/08/2020 upto 2:30pm** in a sealed envelope clearly "**Engagement of Consultant for Network Level Vulnerability Assessments of Roads and Bridges to Identify the Critical Road Sections and Bridges and Culverts Vulnerable to Climate Induced Events in Rural Roads Under the World Bank Funded Additional Financing Projects for PMGSY Rural Roads"**The sealed envelope will be opened on **27/08/2020 at 4:00 pm.**

3. **Address:**
Shri B.C. Pradhan, Director (Tech)/ Team Leader, World Bank, National Rural Infrastructure Development Agency, 5th Floor, 15-NBCC Tower, Bhikaji Cama Place, New Delhi – 110066

The Expression of Interest (EoI), Terms of Reference and other details is available on the **CPP-Portal** , Homepage of PMGSY website (www.pmgsy.nic.in ) under "New" icon and https://rural.nic.in under Advertisement/Tenders section, Further clarifications can be obtained from the address and telephone numbers given below.

**Name of contact person:**
Shri B.C. Pradhan, Director (Tech)/Team Leader, World Bank-Projects, Phone No. 011-26109414, Email: *pradhan.bharat@pmgsy.nic.in*
Shri Satyendra Prasad, Joint Director (Technical& World Bank Projects), Phone No. 011-26179554, Email*: prasad.satyendra@pmgsy.nic.in*

4. National Rural Infrastructure Development Agency reserves the right to reject any or all EOI's without assigning any reason.

# Terms of Reference (ToR) for Engagement of Consultant for Network Level Vulnerability Assessments of Roads and Bridges to Identify the Critical Road Sections and Bridges and Culverts Vulnerable to Climate Induced Events in Rural Roads Under the World Bank Funded Additional Financing Projects for PMGSY Rural Roads

## 1. Background and Context

### 1.1. Road investment and network

1.1.1. India has a road network of over 5,903,293 kilometers (3,668,136 mi) as of 31 January 2019, the second largest road network in the world. At 1.70 Km of roads per square kilometer of land, the quantitative density of India's road network is higher than that of Japan (0.91) and the United States (0.989888) too, and far higher than that of China (0.46), Brazil (0.18) and Russia (0.08).

1.1.2. India's road network mainly consists of three categories of roads: (i) about 1,01,011 Km of National Highways;(ii) about 7,38,106 Km of the secondary system comprising State Highways and major district roads; and (iii) about 3.94 million Km of tertiary roads, mainly consisting of rural roads. Rural roads link rural communities with the highway network, providing access to higher agricultural incomes, employment opportunities, health and education services and social services. They represent about 80% of the network and carry about 20% of traffic. The decade of 2007-17 has seen ancentral investment of INR 12,300 billion in road development (excluding urban roads). The states have also been taking up road development programmes for state highways, district roads and rural roads.

1.1.3. The Ministry of Rural Development (MORD), Government of India is in the midst of implementing its US$35 billion flagship program "PMGSY-Pradhan Mantri Gram Sadak Yojana: The Prime Minister's Rural Roads Program" to empower rural India through the provision of all-weather road access to all habitations with population above 500 (250 in hill states, deserts, tribal and backward districts). It has a well- structured framework for delivery of rural roads based on sound principles including a core network for project selection; standardized procedures for preparation of engineering designs and contract execution; e-procurement; independent quality monitoring; 5-year inbuilt maintenance in the civil works contracts; a web-based On-line Management, Monitoring, and Accounting system (OMMAS); and a comprehensive Operational Manual defining all the processes and procedures. About 6,26,231Km rural roads have been delivered under PMGSY to connect 1,50,201 (out of total 178,000 eligible) habitations involving an expenditure of INR 1400 billion.

1.1.4 The World Bank is engaged in PMGSY since its beginning in 2000, through technical assistance and lending operations. The recent operation, known as PMGSY Rural Roads Project, has the objective of enhancing the systems and procedures of PMGSY through: (i) PMGSY program financing, to finance

civil works expenditures in the eight participating states (Bihar, Himachal Pradesh, Jharkhand, Meghalaya, Punjab, Rajasthan, Uttar Pradesh, and Uttarakhand) associated with providing new all-weather access to unconnected habitations and upgrading key through and important link routes in rural areas; and (ii) institutional strengthening, supporting a technical assistance program designed to strengthen the capacity of relevant agencies to implement the program. This operation has been successfully closed by achieving its project development objectives and has significant accomplishments in civil works, institutional strengthening and disbursement linked indicators.

1.1.5 MORD has requested the World Bank for an Additional Financing of PMGSY Rural Roads Project to receive continued Bank support to:(i) expedite implementation of PMGSY in slow moving states; (ii) enhance the quality of implementation of PMGSY II in states which have already completed PMGSY original targets; and (iii) provide technical assistance to all the states to support the ongoing institutional development agenda and second/third generation reforms. Agreed results for the project have been formulated as a series of Disbursement Linked Indicators (DLIs), which form the basis for disbursement of funds during the project life.

## 1.2. **Necessity of Vulnerability Assessment**

1.2.1. The road network in the Himalayan terrain, connecting remote villages either in the valleys or on the hill slopes, plays a pivotal role in socio-economic development of the country. The planning, development, construction and even maintenance of rural road networks in such precarious terrains are always a challenging task because of complexities posed by topography, geological structures, varied lithology and seismotectonic conditions. Increasing population, deforestation and unscientific construction of roads have led to destabilization of slopes, thus leading to mass wasting and movement. This is further aggravated by cloud bursts, unprecedented flash floods, landslides/mudslides and earthquakes. Frequent slope failures along various roads in mountainous terrains are common events almost every year.

1.2.2. In addition, the entire Northern India is highly prone to earthquakes which cause damage to road infrastructure due to surface fault rupture, soil liquefaction, settlement, slope failure, landslides and rockfalls in mountainous regions. Huge parts of northern India are also prone to floods/flashfloods which are known to wash away bridges and stretches of roads. In addition, droughts and high temperature cause road de-conditioning and cracking.

1.2.3. On the other hand, Southern India is highly prone to coastal hazards. Due to their geographical position coastal areas are prone to cyclonic storms of varying intensity. Due to Severe Cyclonic Storms of higher categories, losses to life and infrastructure are common. Coastal rural roads suffer damage and losses due to flooding caused by storm-surge, high tides and flooding/water logging due to heavy rainfall.

1.2.4. Keeping this in mind, the World Bank intends to analyze the risk of 5000 Km length of rural road network across 20 districts in following states – Assam, Himachal Pradesh, Odisha, Rajasthan, West Bengal and Uttar Pradesh. The risk assessment should cover following hazards: Geological hazards: Landsides, Earthquake, Tsunami inundation; Hydro-meteorological hazards: Floods/Flashfloods, Wind and Cyclone, Storm Surge, Temperature variation (Heatwave/Cold-wave), Snow, & exposure to Water logging and Submergence including impact of Climate Change on Hydrometeorological hazards .

## 2. Scope of Works

2.1. The objective of the project is to carry out a pilot project for rural road network for a total length of 5,000 Km across 20 districts in a minimum of 6 States mentioned above, covering various kinds of natural hazards and climatic zones, so that outcomes of this pilot, if found encouraging in mitigation of future losses can be extended to rural roads throughout India. The Ministry will provide base-data in GIS files to the consulting agency, wherever, it is available at the project Inception stage. The consultant is expected to review and improve this shared base-data in GIS, wherever, it is made available. For areas, where base-data is not available, consultant is expected to generate base-data in GIS including capturing all other road and road furniture attributes. The specific scope of the work for this pilot study is:

2.1.1. **Develop Hazard profile Database in the Target Districts**

As a first step the consultant should develop an understanding of the hazard in all the target districts. For all major hazards like earthquake, flood, cyclone, landslides, Tsunami, heavy rainfall, temperature variations, etc the assessments should be based on scientific methods adopted for risk assessment. The consultant will agree on the method to be adopted in consultation with the NRIDA and the Bank.

2.1.2. **Develop a Road Exposure Inventory and Condition Database.**

This should cover rural roads, bridges, culverts and road furniture used/constructed under PMGSY program. The consultant should use advance techniques, such as Video recording using on site based latest technologies to create the road network for the identified stretches in the districts. The consultant should use appropriate/scientific techniques for estimating the condition of various road infrastructure elements. Condition assessment of road should be an indexbased approach that categorizes the condition on a 1 to 5 point scale on the basis of pothole counts and withering of the road. In addition to the condition, consultant will capture all other attributes relevant for road risk assessment in the database for every road section through a android based mobile application or any other suitable means.

2.2. **Carryout a Vulnerability Assessment of theTargeted Road Sections**

Based on the information collected about the road network, bridges, culverts and road furniture, consultant should carry out vulnerability assessment. This should involve use of vulnerability functions specific to the Indian rural roads, bridges, and culverts condition. This activity will essentially develop the vulnerability function for roads, bridges, and culverts under varying intensities of the hazard.

2.3. **Representation of Risk in form of Maps and a Technical Report**

Consultant should conduct the risk analysis of the road infrastructure using the hazard intensities and vulnerability functions, since roads traverse through large areas, so a suitable approach should be applied for estimating the risk across different stretches of it to ensure the variability of the hazard across the stretches. The key output of the risk analysis should also be estimation of potential loss under various hazard intensities. The output will include risk maps for all road infrastructure elements.The risk maps along with the approach should be documented in a **Road Infrastructure Risk Assessment** report. In addition, consultants should provide measures to minimize the risk assessed.

2.4. **Web-GIS based road risk platform (with all key layers in GIS)**

The consultant should generate & incorporate all road inventory and condition database along with the hazard and risk maps on a Web GIS decision support platform. The decision support platform should be developed to visualize all the key layers of hazard, asset information along with a query module. In addition to this, the platform should have the ability to generate risk reports for various sections of the rural road infrastructure at block level.

2.5 **Development of User's Guide and Capacity Building of Local Staff**

The consultant should develop a User's Guide for using Web-GIS based road risk platform and conduct workshops to train 5-10 Master Trainers appointed by NRIDA for using Web-GIS based road risk platform.

**3. Expected deliverables**

3.1. Project Inception report - 1st month from start
3.2. Road infrastructure exposure database and condition database – 2nd month onwards till covering 5000 Km maximum upto 7th months
3.3. Draft Risk Assessment Report with measures to minimize the risk. Draft report to be submitted by the end of 8th Month
3.4. Beta version of Web-GIS based application and technical user guide-10th month from start
3.5. Final version of Web-GIS based application and Capacity building -12th month from start
3.6. Final Risk Assessment Report (State wise) - 12th month from start

**4. Estimated duration of the assignment**

4.1. **86 (approximate) person months** of key professionals are anticipated to be required for this assignment.The project has an estimated duration of **12 months** effective from the contract signing date, subject to satisfactory performance determined by the NRIDA/MoRD. Any change in the period of assignment will only be made after mutual review by both the parties..

**5. Type of Contract & Period of Assignment**

It will be a lump-sum contract for 12 months. Payments will be linked with acceptance of deliverables. The time period of acceptance will be 30 days from the date of submission of the deliverable.

**6. Eligibility & Evaluation Criteria -** The bidder should ensure the submission of the documents/details as given hereunder in order to be qualified for short listing in this EoI.

**6(a).**

| # | Eligibility Criteria | Supporting Documents to be submitted |
|---|---|---|
| 1. | The bidder should be a single Business Entity. (Any kind of consortium is not allowed) For the purpose of this EoI, a Business Entity shall mean a company registered in India under the Companies Act 1956, and operating for the last 05 years in Business Consulting as of March 31, 2019. | Self attested copy of Incorporation/Registration Certificate of the company |
| 2 | a) The bidder should have a minimum annual turnover of **INR 5.00 Crores** in the business of consulting services in each of the last three financial years (FY 2016-17,2017-18 & 2018-19) | Certificate from a registered Chartered Accountant (CA) certifying the turnover of the company as required. |
| 3 | The bidder should have a positive net worth during each of the previous three financial years (FY 2016-17,2017-18 & 2018-19) | Certificate from a registered Chartered Accountant (CA) certifying the net profit earned by the company during last 03 financial years |
| 4 | The bidder should have been working in the field of consultancy engagements for a minimum of preceding 5 years. | Self certificate to be given on the company's letter head by its authorized signatory. |
| 5 | Experience in undertaking Risk Assessment Projects:<br><br>**a)** The bidder must have completed at least 1 projects for providing Advisory/Consultancy services for risk assessment analysis/study/risk mitigation analysis on the project funded by World Bank, Asian Development Bank or any other external funding agency.<br><br>**b)** The bidder must have completed at least 2 projects for providing Advisory/Consultancy services for risk assessment analysis/study/risk mitigation analysis projects other than declared in Para 5 (a) of this section<br><br>**c)** Details of proposed key experts with their qualification and experience. | Self certificate to be given on the company's letter head by its authorized signatory with details of consultancy project cost.<br><br>Self certificate to be given on the company's letter head by its authorized signatory with details of consultancy project cost. |

| | | |
|---|---|---|
| | | CV's/Resumes of proposed key staff should be attached for evaluation w.r.t **Para 6(b).** |
| 6 | The bidder should not have been blacklisted by any State / Central Government / PSUs in India as on bid submission date for corrupt, fraudulent or any other unethical business practices or for any other reason. | Self certificate to be given on the company's letter head by its authorized signatory. |

**6(b). <u>Details of proposed key expert with their qualification and experience details:</u>**

**Manpower requirements and eligibility criteria of Key Personnel/Specialists:**
The consulting firm will be expected to deploy sufficient amount of manpower required to successfully deliver the tasks in time. An indicative manpower requirement for the assignment duration must include Key Experts of suitable qualifications and experience for the key positions as Tabulated below. In addition, consultant is expected to keep sufficient support staff as per the requirement of the assignment.

| Sl. No. | Position | Qualification | Required Experience | Min age of the Key expert (in years) | Maxi age of Key expert (in years) | Indicative person-months | Number |
|---|---|---|---|---|---|---|---|
| 1 | **Team Leader** | The candidate must be a **post graduate in** Civil Engineering/ Geology/ Geophysics / Hydrology/ Hydraulics. | 1. The candidate must have at least 20 years of work experience<br>2. With at least 2 years' experience of working on projects funded by international funding institutions<br>3. The candidate should have completed at least 1projects for providing Consultancy services for vulnerability and risk assessment of road /infrastructure sector.<br>4. The candidate should have completed at least 3 projects for | 42 | 65 | 12 | 01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | providing Consultancy services in Road/Infrastructure sector | | | | |
| 2 | **Hazard Risk Assessment Experts** (earthquake, flood, cyclone) | The candidate must be a **post graduate in** Geology/ Geophysics / Hydrology/ Hydraulics/ Environmental Engineering/ Oceanography | 1. The candidate must have at least 8 years of work experience<br>2. The candidate must have worked on project/projects related to earthquake/cyclone and storm surge/flood/ landslide and climate risk assessment & planning<br>3. The candidate must have worked on at least one project dealing with Hydraulic & Hydrological modeling<br>4. The candidate should have completed at least 1 project for providing Consultancy services in Road/Infrastructure sector | 30 | 60 | 12 | 02 |
| 3 | **Climate Change Expert** | The candidate must be a **post graduate in** Geophysics / Hydrology/ Hydraulics/ Environmental Engineering/ Oceanography | 1.The candidate must have at least 10 years of work experience<br>2. The candidate must have worked on project/projects related to Climate Change related aspects modeling for hydro-meteorological<br>3. The candidate should have completed at least 1 project for providing Consultancy | 30 | 60 | 08 | 01 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | services in Road/Infrastructure sector | | | | |
| 4 | **Physical Vulnerability Expert** | The candidate must be a **post graduate in** Civil Engineering | 1. The candidate must have at least 12 years of work experience in field of civil engineering<br><br>2. The candidate should have worked on at least 2 projects funded by international funding institutions.<br><br>3. The candidate should have completed at least 2 projects for providing Consultancy services in Road/Infrastructure sector | 32 | 60 | 08 | 01 |
| 5 | **IT Expert cum System Integrator** | The candidate must be a **graduate in** Computer Science/Information Technology | The candidate should have at least 10 years of experience in development of Catastrophe Risk Assessment/Analytical software/platforms/models | 30 | 60 | 12 | 01 |
| 6 | **GIS Specialist** | The candidate must be a **post graduate in** Remote Sensing or GIS/Geography | The candidate must have at least 10 years of experience in the application of remote sensing and GIS | 30 | 60 | 11 | 02 |
| | **Total** | | | | | **86** | **8** |

In addition to above experts, consultant should have support staff for carrying out field-surveys.

## 7. EOI evaluation criteria

The consultancy evaluation committee (CEC) constituted by procuring entity shall evaluate the consultants for short listing, inter-alia, based on their past experience of handing similar types of projects, strength of their man power and financial strength of the firm. Interested consultancy firms will be evaluated on the basis of Para 6 of this document**.**

Entities fulfilling all the minimum eligibility criteria for the firm and qualification along with minimum experience criteria for the proposed key experts would be eligible for RFP offer, subject to the approval of the competent authority in NRIDA. In case more than 8 consultancy firms fulfills all the minimum eligibility criteria, then top 8 consultancy firms in terms of average annual turnover of last three financial years will be short listed for issuing RFP.

Tentative evaluation sheet for short listing of interested consultancy firms is placed **Annexure-A**.

## 8. Location of services

The consultant is required to make its own arrangements for office space and other facilities such as office furniture, equipment, stationeries, photocopiers, telephones, web connections, facsimiles, etc. including maintenance thereof. (NRIDA will not be liable to provide any kind of office space and other official facilities to the consultant/key experts).

The Consultant may be required to undertake visits as per the directions of the NRIDA to the Project sites in the states where it is being implemented.

| Annexure-A | | | | |
|---|---|---|---|---|
| **S.No** | **Evaluation Criteria** | **Sub Criteria** | **Description of Evaluation** | **Yes/No** |
| 1 | Experience of consultancy firm | a) The consultancy firm must have completed at least 1 projects for providing Advisory/Consultancy services for risk assessment analysis/study/risk mitigation analysis on the project funded by World Bank, Asian Development Bank or any other external funding agency | Completed 01 Projects | |
| | | b) The bidder must have completed at least 2 projects for providing Advisory/Consultancy services for risk assessment analysis/study/risk mitigation analysis projects other than declared in Para 1(a) of this section | Completed 02 Projects | |
| 2 | Manpower Evaluation | Based on Qualification & Experience criteria published in Para 6(b) of ToR | Each proposed key expert should qualify the minimum eligibility criteria given in Para 6 (b) individually | |
| 3 | Financial Evaluation | Annual turnover of the firm for last 3 Financial Years (FY-2016-17, 2017-18 & 2018-19) should be 5 Cr. | 5 Cr annual turnover | |