

Water Resources Department, Government of Bihar
Flood Management Improvement Support Centre
National Hydrology Project – Bihar Surface Water Component

Request for Expression of Interest
for

Designing, Developing and Deploying Structure of Master Module for Embankment¹ Asset Management System for River Basins in Bihar with Specific Data Population for Gandak Basin.

Ref No: IN-BIHAR/WRD/FMISC/NHP-SW/EOI/01/2018-19

1. This Invitation for Bid follows the General Procurement Notice for this Project that appeared in Development Business on 21/09/2016.
2. The Government of India *has received* financing from the World Bank toward the cost of the National Hydrology Project, and intends to apply part of the proceeds for the consulting services.
3. The consulting services (“the Services”) include **Designing, Developing and Deploying Structure of Master Module for Embankment Asset Management System for River Basins in Bihar with Specific Data Population for Gandak Basin** will cover the Gandak river and its tributaries starting from Indo Nepal border (entrance point of river Gandak in Bihar) upto its confluence point with river Ganga near Hajipur in Bihar. This is to be noted that EAMS for Bagmati-Adhwara basin and Kosi basin have already been developed. It is contemplated to go for developing a master module for an EAMS for all Bihar Rivers with population of data for river Gandak. Ideally The Consultant would develop a generalized model structure for ‘Bihar EAMS’ which would accommodate all modules already developed and to be developed in future, by reusing and modifying the existing Kosi or Bagmati EAMS whichever is agreed upon by both the parties. The objective of the consultancy is to prepare a comprehensive framework for Embankment Asset Management System (EAMS) for River basins of Bihar in general and to develop specific EAMS for river Gandak with population of database for Gandak Basin, supported by detailed modern river/embankment surveys, including visual and scientific inspection, of the status of embankments, bank protection works and river training works including spurs/groynes etc. in the Gandak basin which is almost fully embanked. The broad **scope of work** will include:
 - (i) Obtain all relevant data on Gandak basin, its embankments and other critical physical assets from the concerned Water Resources Department offices as well as other relevant organizations.
 - (ii) Collect data from relevant WRD offices and information on current maintenance planning and approval process including yearly expenditure on physical works, inspection and surveillance processes. Simultaneously to collect information on approved drawings at the time of construction of embankments, as built drawings, drawings of remedial measures for restoration/repair of embankment, information on effectiveness of repair/renovation measures. Digitization/Scanning of old drawings. Develop a database with ad-hoc query module to access the data so collected.

¹ Embankment includes Embankments, Zamindari Bunds, Bank Protection Works and River training works including spurs /groynes.

only

- (iii) Prepare inventory of the assets and classification of the assets based on actual field visits with photographs.
- (iv) Assess the desired maintenance plan for the assets including cost implications and community participation.
- (v) Design and develop a GIS-based Embankment Asset Management System with user friendly functional modules for various actions involved in embankment asset management. Prepare and integrate GIS and MIS data and develop management functional modules to the EAMS.
- (vi) Provision of live Video Streaming in an interactive mode.
- (vii) To develop standard protocols and formats for field office & community inspection/reporting.
- (viii) To enable generation of alerts/ reports based on input received from field offices/ community and prepare a platform for dissemination of these alerts to pre identified stakeholders by mobile based SMS/ EAMS platform.
- (ix) Develop Users' Manual, Technical Reference and Training Modules including detailed documentation of the software architecture.
- (x) Make recommendations for sustainable and effective use of EAMS
- (xi) Provide a master module of EAMS for enabling client to replicate for other river embankment systems in Bihar.
- (xii) Provide on-the-job training to field engineers on the development, management and implementation of EAMS with populating of data for at least one client identified River Basin by the trainees. The consultant will support the trainees with all assistance during this part of training.
- (xiii) The Duration of consultancy will be 15 months from date of signing of contract agreement plus five years back up support period. The provision of five years of back up support for proper functioning and troubleshooting of EAMS after deployment in Client's server, should be bifurcated into two parts:- two years of operation and maintenance and three years of maintenance support.

The general functionalities of the EAMS will include the following:

- Data viewer to display (graphical and Reports) and generate summary statistics on various user-selected databases.
- Generate dynamic spatial maps of various hydraulic data, engineering data (geo-referenced) and field reports. This may include colour markers reflecting critical embankment management parameters.
- Ability to upload and download various datasets (to be finalized in consultation with the WRD)
- Analytical module on maintenance scheduling, prioritization and monitoring of existing embankments based on historical data, existing or specifically developed algorithms, Preparation of templates for new flood protection schemes as per existing guidelines/SOP along with design tools in excel format for various flood management

gnp.

situations, comparison tool for different year's satellite images as well as embankment design and actual profile. The module should be able to produce maintenance, prioritization table based on criticality of the problem and generate alarm conditions.

- Ability to generate alerts/reports based on input received from field offices/community and has a platform for dissemination of these alerts to pre identified stakeholders by mobile based SMS/EAMS platform.
- The developed EAMS should have the ability or should have a separate module for accepting inputs from various stakeholders/community from pre-identified group of villagers and should incorporate the same in EAMS and based on the data received, it should also have a system for analyzing and initiating follow up response/verification of these community inputs and consequent dissemination to the input provider by SMS.
- The database will have a provision to integrate all the necessary and legacy data related to the Gandak embankments, historic and current data on river morphology, and historic and current rainfall and flood stage/discharge data, and current data on embankment, river and flood plain topography generated by ground-based and satellite-based surveys, etc.
- The database will be designed for updating with future spatial and non-spatial data.
- The system will have tools for 2D visualization of embankments as well as retrieving specified details or technical documents for any given location of Embankment.
- EAMS shall provide linkage to past and future physical modeling studies in the basin.
- The database framework shall be suitable for extending the methodology to other basins in Bihar.
- **The duration of the assignment is 15 months plus 60 months back up support period**

4. The Flood Management Improvement Support Centre (FMISC), Water Resources Department, Government of Bihar now invites eligible consultants to indicate their interest in providing the Consultancy Services for the above assignment. Interested Consultants must provide information indicating that they are qualified to perform the Services (brochures, description of similar assignments for flood / irrigation / drainage / road embankments in similar conditions, availability of appropriate skills among staff etc.). The criteria for short listing of the Consulting firms shall be as follows:
- a) The firms should have been in consulting business for at least 10 years; (Copy of the Certificate of Incorporation or Memorandum of Articles to be enclosed with EoI).
 - b) The firms should have at least one similar experience in GIS-based Embankment Asset management for flood and drainage works during the previous assignments. The bidder shall provide information about the organization strength viz. core staff,

Signature

- experience of the firm in similar works, experience in working externally assisted projects, , in case of foreign bidders, their experience in working in India etc.
- c) The firms shall be financially sound with an annual turnover of minimum INR 60,000,000 (US\$ 923,076) during the previous five years (2012-13 to 2016-17)
 - d) Availability of skills among staff (Team Leader/ Water Resources Expert, GIS Specialist/Geo-informatics Specialist, Maintenance Manager cum Data Liaison officer, System Analyst, Database Specialist, Software Developer/Software Engineer and Web Designer cum Developer).
5. The attention of interested Consultants is drawn to paragraph 1.9 of the World bank's Guidelines: Selection and Employment of Consultants [Under IBRD Loans and IDA Credits & Grants] by the World Bank Borrowers (Consultant Guidelines), setting forth the World Bank's policy on conflict of interest.
6. Consultants may associate with other firms in the form of a joint venture or a sub-consultancy to enhance their qualifications. No. of partners in a JV shall be limited to two including the lead partner. The minimum turn-over of lead partner should be 70 % whereas a member in Joint Venture other than lead member, minimum turn-over should be 40% of the required turn over for a firm as per 4 c above. .
7. A consultant will be selected in accordance with the **Quality and Cost Based Selection (QCBS) procedures** set out in the World Bank's "*Guidelines: Selection and Employment of Consultants Under IBRD Loans and IDA Credits & Grants by World Bank Borrowers-January, 2011 Revised in July 2014*". The Guidelines are available at www.worldbank.org/procure.
8. Interested Consultants may obtain further information at the address given below from 10.00 – 17.00 hours (IST) on all working days. This notice for Expression of Interest has also been posted on websites <http://fmis.bih.nic.in> and <http://wrd.bih.nic.in>.
9. Expression of Interest with all relevant information and documents must be submitted superscripted "Expression of Interest for **"Designing, Developing and Deploying Structure of Master Module for Embankment Asset Management System for River Basins in Bihar with Specific Data Population for Gandak Basin."** on top of a closed envelope to the address below by not later than 15:00 hours (IST) on **19th June 2018**. In event this last date being declared as holiday by the State Government, due date for submission of above EOI will be the next working day at the same appointed time. **The Expression of Interests received till the appointed time and date shall be opened same day at 15.30 hrs.**


Joint Director,

Flood Management Improvement Support Centre,
2nd Floor, Jal Sansadhan Bhawan,
Anisabad, Patna- 800002
Telefax : +(91)612-2256999
E-mail: biharswhp3@gmail.com