

**Consulting Services for Designing
National Seismic Risk Mitigation Programme (NSRMP)**

Terms of Reference

Introduction & Background

During 2011, Govt. of India, Ministry of Home Affairs, launched a National Cyclone Risk Mitigation Project – I (NCRMP-I) in Andhra Pradesh and Odisha with an objective to protect the vulnerable coastal communities from frequent cyclones and minimize loss of lives and assets through multiple mitigating measures. Subsequently, during 2015, NCRMP-II was launched in six other coastal States viz. Goa, Gujarat, Maharashtra, Karnataka, Kerala and West Bengal towards the same purpose.

2. One of the agreed components under NCRMP-II is about Design of a National Seismic Risk Mitigation Programme (NSRMP) as a futuristic step and funds have been demarcated for this purpose. Accordingly, PMU, NDMA has now decided to hire a Consultant firm for preparing: Investment Proposals, Detailed Project Reports, Project Appraisal Document etc. for Earthquakes, formulating implementation arrangements and preparing necessary documentation such as environment and social assessment, operation manual, bidding documents etc. required for proposing potential financing from multilateral institutions particularly the World Bank.

3. About 58.6% of Indian land mass is prone to earthquake (Zone III, IV and V). Unpredictability of earthquake hazard, vulnerability of structures/infrastructure along with lack of preparedness combined with poor local emergency response capacity leads to damages and losses in the event of such a disaster.

4. Proposed NSRMP is to be designed with a view to address the earthquake risk in the country. In the first phase, the implementation of the project will be in high risk states.

Aims & Objectives of NSRMP

5. The objective of the NSRMP is to reduce vulnerability of communities and their assets to natural disaster by taking appropriate mitigating measures and to strengthen the capacity of National and State entities to effectively plan for and respond to earthquakes.

States Covered Under NSRMP

6. The following eight high risk States have been included in the Phase-I of the project:-

- i. Assam
- ii. Bihar
- iii. Himachal Pradesh

- iv. Jammu & Kashmir
- v. Manipur
- vi. Meghalaya
- vii. Tripura
- viii. Uttarakhand

7. Other States/ UTs, prone to earthquake, will be included in subsequent phases.

8. Components of NSRMP:-

- Component A- A-1:Earthquake Early Warning Dissemination System & A-2-Enhancing Emergency Response Capacity
- Component B- Multi-Hazard Risk Mitigation of Infrastructure
- Component C- Technical Assistance to Improve Disaster Risk Management.
- Component D- Project Management, Monitoring and Implementation Support.

Component A:

A-1: Earthquake Early Warning Dissemination System (EWDS)

A-2: Enhancing Emergency Response Capacity

9. The objective of this component is to enhance the emergency response capacity of local governments and other agencies involved in disaster response in highly earthquake hazard prone areas.

- Relevant/ available data from the Govt. agencies/ Depts. will be provided to the Consultant on request. For this purpose, the Consultant will have to co-ordinate with the concerned Govt. agency/ Depts. for obtaining data in the required format. NDMA will be facilitating procurement of data from Govt. sources.

10. This component will focus on:

- a. Design/Development of Earthquake Early Warning Dissemination System (EWDS) based on latest technology, allowing people and systems to take actions to protect lives and property and also to alert the Emergency Response System.
 - Under this component, Consultant is required to recommend Technology Option consisting of detailed design of early detection of earthquake, alert creation and dissemination to the community to reduce loss of life and property. Integration with already existing national network is to be designed/suggested, taking in to account compatibility issues, wherever possible.
- b. Upgrading existing and providing additional search and rescue equipment for: State Disaster Response Forces, Fire & Emergency Services and other emergency/first responders.
 - Consultant is expected to suggest the latest list of Search & Rescue equipment taking into account the existing inventory and the required ones in addition.

- c. Training and capacity building programme for emergency/first responders.
 - A manual for training and capacity building is required to be prepared by the Consultant.
- d. Augment the disaster risk management capacities of the communities.

Component B- Multi-Hazard Risk Mitigation of Infrastructure

11. This component will focus on reducing structural risk, mainly due to earthquake disaster, from critical infrastructure and public buildings to protect communities, assets and emergency response capabilities. However, the infrastructure should be able to withstand other disasters which are prevalent in the site/ location/ State. This will include:

- a. Retrofitting of selected critical infrastructure such as given under but not limited to:
 - Lifeline buildings, structures and critical facilities like schools, colleges and academic institutions; hospitals and health facilities, tertiary care centres, community centres
 - Important buildings that ensure governance and business continuity like offices of the district collector and superintendent of police in districts; Fire stations, communication buildings, Panchayat Office and Post Office buildings
 - Structures designated to be used for post-earthquake temporary rehabilitation of affected persons and operations
 - Buildings of national importance like Secretariats, historical monuments, museums, heritage buildings, strategic assets and vital installations
 - Any other structures as deemed fit to be worked as lifeline by State Government such as critical links- bridges, data centres, emergency installations, transport terminals etc.
 - Consultant in consultation with SPIU and other concerned State Departments to identify the critical infrastructure needing retrofitting- type and extent.
- b. Retrofitting and/or constructing evacuation roads, bridges, landing strips and helipads and multi-hazard shelters.
- c. The scope of retrofitting would include Structural Design Based Report (SDBR) after detailed survey, conditional assessment, and Non-destructive testing along with detailed analysis. The Consultant will determine suitable tests required and will carry out the tests as per the requirement, will adopt standard procedure and document the findings.
- d. The performance level of the retrofitted structures is to be ensured based on the utilization/importance factor of the structures and needs of the concerned State Governments.
- e. Retrofitting should adhere to the National Building Codes/BIS/NDMA Guidelines and consistent with the international best practices. Wherever applicable, International Codes may be adopted for design and construction.
- f. Constructing small Technology Demonstration Units of critical infrastructure such as schools, hospitals etc.
 - The Technology Demonstration Unit will be identified by the State. The size and location of TDUs will be decided in consultation with State authorities.

Consultant will develop design (new/retrofit) and construction drawings, prepare DPR and Bid Documents for the investment.

{Total tentative size of the NSRMP is approximately Rs. 5000 Cr. out of which approximately Rs. 3700 Cr. is meant for Component-B (Risk Mitigation Infrastructure) in 08 States. DPRs/Bid Documents for approximately Rs.1850 Cr. (+/-10%) for Component-B (including seismic retrofitting and new investments) will be prepared by the Consultant.}

Component C-Technical Assistance to improve Disaster Risk Reduction/ Management with Emphasis on Earthquake Risk

12. The objective of this component is to improve the capacity of States to manage the risks associated with their risk profile. It would include development of a policy and platform to share and use information for risk management, detailed vulnerability assessment, setting up of accreditation programmes for engineers, architects, mason and construction workers etc.

13. Activities proposed under this component could include:-

- a. Preparing a model bill for National Council of Professional Engineers (NCPE) by Studying the existing materials/draft Bill from the perspective of seismic risk mitigation/ disaster risk reduction and providing inputs/s suggestions for incorporation in the draft Bill.
- b. Strengthening/Establishing Seismic research and development program across country including setting up a centre of excellence.
- c. Curriculum revision for introduction of Earthquake Engineering topics in Engineering, and Architecture education.
- d. Formulation and implementation of Techno-legal Regime for structural design reviews, implementation monitoring and licensing of professionals.
- e. Documenting, improving and encouraging Traditional Earthquake Resistant Construction.

{For activities listed from b to e above, Consultant will undertake an assessment of the current status of the proposed activities, document the key findings of assessment (including key challenges and gaps, role of key institutions, entry points for implementation) both at National and State level. Based on the analysis, Consultant will further create a set of document for each activity which will include but not limited to defining the scope, concept, approach and defining the steps for implementation, preparing ToRs for Consulting Services, developing relevant Procurement Documents, Work Plan etc. for implementation of these activities.}

- f. Development of large scale standardized information, education and communication (IEC) material including audio-visual and print materials from existing materials and preparation of new material wherever not available for sensitization programmes of communities.
- g. Preparing ToRs for Consulting Services for formulation of training modules after assessing the existing modules available, if any, for training and capacity building of

engineers, architects, masons, State & Municipal bodies; and suggesting approach/modalities for implementation.

Component D- Project Management & Monitoring

14. This could include program implementation, monitoring and evaluations, staff capacity building and training including preparation of requisite training materials;; preparation of project manuals, design, documentation, quality monitoring, project management support (including environment and social monitoring) to the participating States and the PMU, NDMA.

Objective of the Assignment for the Consultant

15. The present assignment is to support formulation, appraisal and implementation of NSRMP. The specific objectives for the proposed Project Consultant are as follows:-

- i. To support the PMU, NDMA in preparing and appraising the Projects.
- ii. To assist the State entities in formulating the investment program and preparing implementation ready proposals/projects with full detailing including social and environmental assessments.
- iii. To provide technical assistance and training to States on technical, financial, environment, social management and fiduciary aspects.

Scope of Work

A. Project preparation

16. The scope of work will include working on components A, B & C for 08 States namely Assam, Bihar, Himachal Pradesh, J & K, Manipur, Meghalaya, Tripura and Uttarakhand and with NDMA.

17. The Role of the Consultant would broadly comprise planning, preparing Detailed Project Report (DPR) and other supporting documents for NSRMP and inter-alia would broadly comprise preparing the following:-

- a. Inception report
- b. Investment plans for all components
- c. Outline and detailed implementation arrangement structure and ToRs for specific positions
- d. Detailed project reports for at least 50% (priority) investments - Phase I investments. While preparing DPR of identified work, the Consultant may consult relevant line Depts. of State Govt. through SPIU. However, responsibility for conducting required test/ preparing DPRs remains with the Consultant.
- e. Procurement manual in line with World Bank's Procurement Regulations 2016 for the proposed investments and consultancies

- f. Project Procurement Strategy for Development (PPSD) and initial procurement plan
- g. Financial Management Manual
- h. Environmental & Social Management Instruments that, includes (i) an Environmental and Social Commitment Plan, (ii) Environment and Social Management Framework; (iii) Environment and Social Assessment Reports for sub-projects; (iv) Environment and Social Management Plans for sub-projects - as needed, following the requirements set forth in the Environment and Social Standards under the Bank's Environment and Social Framework.
- i. Results Framework
- j. Project Management and MIS tool
- k. Project Operation Manual
- l. Project Appraisal Document
- m. Consultations and participation of key stake holders in formulation of plans and designs, including systematic documentation of the same
- n. IEC and Communication strategy and package
- o. Information Disclosure of environment and social instruments, including translation of key/summary documents in vernacular

The consultant will also help coordinate with various stake holders such as – MHA, MoUD, DEA, IMD, NIDM, NDRF, SDRFs, Fire Cell – MHA, Fire & Emergency Services, IITs, BIS, participating State Disaster Management Authorities, Academic/Technical Institutions, etc.

B. Scoping of Component A, B and C

18. Undertake in-depth analysis and consultations with the State to arrive at the scoping and investment for **Component A-1:** Earthquake Early Warning Dissemination System, **A-2:** Enhancing Emergency Response Capacity, **Component B:** Multi-hazard Risk Mitigation Infrastructure & **Component C:** Technical Assistance to Improve Disaster Risk Management.

19. Identification of investment proposals across Component A, B and C. The list includes but is not limited to the following:

- i) Development of Alert System/EWDS for Earthquakes in India and recommend technology options and feasibility of the options for both regional and local earthquake alert system (*system to alert citizens and institutions immediately on the onset of the event and not forecasting the earthquake event*).
- ii) Retrofitting for critical infrastructure and buildings.
- iii) Earthquake risk mitigation and preparedness measures including emergency shelters, landing strips/ helipads on safe grounds for evacuation and enhancing Search and Rescue capacity.
- iv) Upgradation requirements (human resources, equipment, training needs) of SDRF, and the State/City level Fire & Emergency Services to meet search and rescue standards

- v) Detail out the existing status of all activities highlighted in Components A, B & C and propose implementation plan for – national and state level seismic policy formulation, national probabilistic seismic hazard mapping, institutional strengthening, code enhancement and implementation, training and capacity building of professionals and building construction sector, public awareness and outreach
- vi) Identify all Technical Assistance (TA) support, scope the Request for Proposals (RFPs) and investments in terms of concept plan, physical work, detailed engineering plan and bidding documents
- vii) Meet to the DEA Project Readiness Checklist for Projects aided by Multi-lateral Financing Institutions (MFIs)
- viii) Preparation of Detailed Project Reports for at least 50% contracts for civil works (*risk mitigation infrastructure*); and DPRs for remaining components (*DPRs will include safeguard assessments*). Documents should be in the 'Ready for Bid' stage (*Note: for the balance 50%, State Project Implementation Units will be encouraged to prepare the DPRs*).

C. Procurement Management

- Developing Procurement Manual in line with Procurement Regulations 2016 including PPSD as per World Bank Guidelines
- Provide training, support and advise to the State Project Implementation Unit SPIU/State Govt. concerned line Depts./ PMU, NDMA on procurement functions. The Consultant will impart training for 02 days on each Manual in each State and one day on each Manual at PMU, NDMA. Venue/equipment for training will be provided by the State/NDMA. However, cost of resource persons and training material etc. are to be borne by the Consultant.
- Preparing Procurement Documents for activities to be implemented at national and state levels and provide technical/capacity building assistance to project implementing units (PIU) to finalize procurement documents
- Preparing Procurement Plan for complete project

D. Financial Management

- Designing Financial Management system and flow of funds and assist PMU, NDMA in establishing the project level Financial Management System
- Framing detail monitoring and reporting mechanism & auditing requirements
- Integration of the Financial Management System functions with the overall project MIS
- Preparing an overall Investment Plan
- Developing Financial Management Manual
- Provide training, support and advice to the State Project Implementation Unit SPIU/State Govt. concerned line Depts./ PMU, NDMA on Financial Management functions. The Consultant will impart training for 02 days on each Manual in each State and one day on each Manual at PMU, NDMA. Venue/equipment for training will be provided by the State/NDMA. However, cost of resource persons and training material etc. are to be borne by the Consultant.

E. Environment & Social Management

- Preparation of an Environment and Social Management Framework (ESMF)
- Conduct Environment and Social Assessments for sub-projects that are identified for investment under the proposed project
- Preparation of Environment and Social Management Plans for sub-projects that are identified for investment under the proposed project
- Conduct formal consultations and ensure participation of key stakeholders in formulation of plans and designs, including systematic documentation of the same
- Preparation of an Environmental and Social Commitment Plan
- Prepare Communication and information dissemination strategy
- Translate key/summary documents in vernacular
- Facilitate disclosure of information of the project as well as environment and social management instruments prepared for the project
- Develop training material and provide training to the State Project Implementation Unit SPIU/State Govt. concerned line Depts./ PMU, NDMA on application and implementation of Environment and Social Management Framework (ESMF).
The Consultant will impart training for 02 days on each Manual in each State and one day on each Manual at PMU, NDMA. Venue/equipment for training will be provided by the State/NDMA. However, cost of resource persons and training material etc. are to be borne by the Consultant.
- Integrate/reflect environment and social management results appropriately in the Procurement Plan and Operations Manual.

The requirements set forth in the Environment and Social Standards under the Bank's Environment and Social Framework are to be used for delivering the outputs mentioned above. The ESF will be in force from October 2018 onwards and can be accessed/ referred at the link <http://www.worldbank.org/en/projects-operations/environmental-and-social-framework>. The consultant needs to ensure that the environment and social management instruments are aligned to the specific needs of the project and commensurate to the nature and scale of proposed interventions.

F. Management Information System

- Designing internet based/electronic MIS System/ software/mobile application for the Project in consultation with subject experts (Procurement Specialist, Financial Management Specialist, Project Management Specialist, Monitoring and Evaluation Specialist, Safeguards Specialist etc.)
- Identifying human resources and IT equipment resources for PMU, NDMA and PIUs
- Prepare technical specifications and procurement documents for MIS hardware/software

The Consultant will be required to design and develop internet based MIS System/Software as well as Mobile Application based on the open source platform. The consultant will also suggest the specifications and configurations of the hardware to be procured for optimum efficiency and speed of MIS software.

- Development of training modules and imparting training to the Officials of NDMA/PMU and SPIUs, will also be the responsibility of the Consultant. The Consultant will impart training for 02 days on each Manual in each State and one day on each Manual at PMU, NDMA. Venue/equipment for training will be provided by the State/NDMA. However, cost of resource persons and training material etc. are to be borne by the Consultant.

Manpower Requirements

20. The estimated positions and estimated time requirement for the given manpower considering the scope of work is as follows:

S. No.	Position	Number (Tentative)	Person months (Tentative)
1.	Team Leader (MBA, preferably with Civil Engineering qualification with at least 20 years' project management experience in similar large scale projects)	01	12
2.	State Coordinators (Masters in Earthquake Engineering/ Structural Engineering/ Geology/ Seismology/ Geo-Technical engineering with at least 15 years' experience in projects (consultancy or construction))	08 (State Coordinators)	12x8=96
3.	Structural Engineering Specialist (Masters in Structural/Earthquake Engineering with minimum 10 years' experience in design of seismic retrofitting of public infrastructure (buildings/transport/etc.))	08 (One in each State)	12x8=96
4.	Telecommunication/Instrumentation Engineer (Bachelors in Communication/ Electronics/ Instrumentation/ Similar field with minimum 10 years experience in development early warning equipment)	01	04
5.	Procurement Specialist (Bachelor's degree with minimum 7 years' relevant experience on preferably in externally funded projects)	01	04
6.	Finance Specialist (M. Com/ICWA/ CA with minimum 10 years' relevant experience on World Bank Projects)	01	04
7.	Environmental Specialist (Master's in Environmental Sciences/Engineering/Planning/Environment Management with minimum 7 year's relevant experience on externally funded projects)	02	10x2 = 20
8.	Social Specialist (MSW or equivalent with	01	04

	minimum 7 year's relevant experience on externally funded projects		
9.	MIS/IT Specialist (M Tech./MCA with minimum 7 years' experience)	01	04
10.	Communications Specialist (Master's Degree in Communication or equivalent with 7 years of relevant experience in developing disaster risk management information products for wide range of stakeholders)	01	04
11.	Capacity Development Specialist (Master's Degree in Engineering / MBA with 7 years of experience in capacity building programmes - needs assessment, design and delivery mechanisms)	01	04
	Total	26	252

*One State Co-ordinator and One Structural Engineer will be in each of the eight Project States. Both State Co-ordinators and Structural Engineers in State will be operating from their own offices in State Headquarters provided by the Consultant. They will be working in co-ordination with State Project Implementation Unit (SPIU)/ Nodal Deptt.. Monitoring and supervision of Consultants work/ deliverables will be done by SPIU/ Nodal Department at State level and by PMU, NDMA at National level.

Consultants will assess requirement and propose additional personnel requirement (non-key experts) and mobilize as necessary to fulfil the obligations at their cost.

Deliverables & Time line

21. The deliverable and the timeline would comprise the following:

S.No.	Deliverables	Timeline
1.	Inception Report	15 days from start date of the contract
2.	Initial Project Scoping Report	2 months from the date of the contract
3.	Project Investment Plan – component wise and state wise and with agreed Project Scope (subproject listing)	4 months from the date of the contract
4.	Draft ESMF	4 months from the date of contract
5.	DPR for identified 50% of risk mitigation measures with complete environment and social assessment, impact assessment and other required documents	8 months from the date of the contract
6.	Draft EIAs/SIAs/EMPs/RAPs	7 months from the date of the contract

7.	Draft ESCP document	8 months from the date of the contract
8.	Project Appraisal Document	9 months from the date of the contract
9.	Web based Project MIS	10 months from the date of the contract
10.	Finalise and disclose all environment and social management instruments/ documents	10 months from the date of the contract
11.	Project Operation Manual	12 months from the date of the contract
12.	Capacity development plan, training and complete set of ToRs/ RfPs/ Bidding Documents	12 months from the date of the contract

Time Schedule, Type of Contract & Payments

22. The contract period will be for 12 months. It will be a lump-sum contract where payments will be linked with submission and acceptance of deliverables and in instalments.

Review & Monitoring of Consultant's Work

23. The Consultant will be reporting to PMU at NDMA. Status of the project shall be communicated to PMU through fortnightly/monthly brief progress report (10-15 pages) by the Consultant and specific meetings as needed with the Consultant. **The review meetings will be attended mandatorily by the Team Leader and State coordinators. However, the Consultant may invite any other member of the Team as on required basis.**

Consultant's performance and quality of work will be reviewed by a Review Committee set up by PMU, NDMA including representatives from participating States.

Assistance Requirements for Foreign Consultants

24. PMU, NCRMP, NDMA will facilitate all necessary clearances from the Project State Govt .agencies./Departments for the visit by foreign consultants for the study on written request from the contracted consultant firm. However, travelling, residential and office accommodation, equipment, transportation arrangements etc will have to be made and related expenses to be borne by the contracted consultant firm.