APPENDIX A- TERMS OF REFERENCE

Hiring of Consultant for Designing Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS) Under NCRMP Phase II

Introduction & Background

1. 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.
2. Disaster Management Act, 2005 provides a strong institutional backing for financing Disaster Risk Management (DRM). Sections 46, 47, and 48 of the Act mandates setting up funds for disaster management at all levels—National, State and District—for both disaster response and mitigation. The National and State Disaster Response Funds are the primary instruments for financing relief and response efforts in the country. States carry out expenditures through their respective State Disaster Response Fund (SDRF) and if this exceeds their allocated SDRF, they request Central Government assistance through the National Disaster Response Fund (NDRF) by submitting Memorandums to Government of India (GoI).
3. Between 2013 and 2018, States had spent[7] altogether Rs. 78,891 crore through the SDRF and their own (State) resources. In addition, Government of India (GoI) has released Rs. 36,726 crore through the NDRF to the States during the same period. The total expenditure on disaster relief and response across all the States during this period has been INR 115,617 crore. In addition to SDRF and NDRF, States are mobilizing/ channelling funds "ex-post" from other sources including the Chief Minister's Relief Fund, and own (State's) budget. After the floods in Kerala in 2018, Government of Kerala raised[8]Rs. 4,227.33 Cr in the Chief Minister's Disaster Relief Fund. At least six states- Assam, Bihar, Haryana, Karnataka, Madhya Pradesh, and Rajasthan - have allocated more than Rs. 1,000 crore each from their own budgetary resources to supplement the expenditure on response and relief. Other states such as Odisha, Chhattisgarh, Jammu & Kashmir, Uttarakhand and West Bengal have also allocated more than Rs. 500 crore each from their own resources to meet disaster expenditures. GoI and State governments also access resources from International Financial Institutions for financing recovery and reconstruction work, for example, the World Bank has provided loans exceeding USD 1 billion for various disaster recovery and reconstruction projects during the last decade.
4. Yet, despite the recognition of adverse fiscal, economic, and social consequences of natural disasters, there is no formal ex-ante disaster risk financing mechanism in place and instead an over-reliance on post-disaster funding. For example, between 2015 and 2018, States received[9] only 19 percent of the financial assistance they had sought from GoI on drought relief. While there's more focus on the need for financing all stages of Disaster Risk Management (DRM) (and not just response), concrete mechanisms and instruments for doing this are yet to emerge. Disaster Risk Financing that addresses the underlying drivers of contingent liabilities emerges as a big gap in India.

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[7]UNDP (2018) DISASTER RISK FINANCING IN INDIA: Risk-based Allocation, Differentiated Disaster Risk Management Funding and Functions, and Market Instruments (Unpublished)
[8]As on July 4, 2019 https://donation.cmdrf.kerala.gov.in/index.php/Dashboard/allType_transaction
[9]Ministry of Agriculture and Farmers Welfare as quoted in The Hindu, February 11, 2019, *Centre approves just 19% drought relief funds for States*

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5. It is towards developing this repertoire of complementary options for different aspects of DRM that the National Disaster Management Authority (NDMA) seeks to develop a Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS). Disaster risk financing strategies could help the Governments, primarily the State Governments address efficiently the potential resource gaps in the aftermath of a natural disaster. A review of the governments existing budgetary resources (and possible post-disaster budget reallocation), information on existing public risk financing and private risk transfer mechanisms could serve as a basis for the State Governments to identify its own risk financing needs, to identify options for the development of a Disaster Risk Financing Strategy involving both the public and private sectors.

Objectives of the Consultancy

The overall aim of this process is to contribute towards establishing a robust Disaster Risk Financing Strategy for the targeted States, and possibly developing a Multi-State disaster risk insurance pool that accounts for a federal country and the complex risk context of India.

Scope of Work and Tasks

Specifically, this assignment will have three components 1) developing a database of economic and financial losses caused by selected hazards; and 2) developing catastrophic risk profiles for multi-hazard risks. The outputs of these will feed into a third element 3) developing disaster risk financing and insurance strategy.

The disaster risk financing and insurance strategy will include a) state specific disaster financing mechanism; and b) pooling of disaster risks of multi-states.

Given that the country has a well-developed system in the form of the NDRF and SDRFs for financing disaster relief and response, including mechanisms for co-financing between Central and State governments, the focus of the proposed work will be primarily on financing post disaster recovery and reconstruction activities.

The study will be guided by the disaster risk financing framework developed and implemented by the World Bank. This framework is based upon three pillars:

i. *Assessing disaster risk exposures.* The contingent liability of the government due to natural disasters is often implicit, as the law usually does not clearly define the financial responsibility of the government when a disaster hits the country/ State. The government thus acts as a (re)insurer of last resort, without knowing precisely its disaster risk exposure. By understanding the loss potential of natural disasters and the extent of public intervention in recovery efforts, it can ascertain the contingent liability carried by the government.
ii. *Promoting domestic property catastrophe risk insurance markets.* The government should encourage private competitive insurance solutions for the transfer of catastrophe risks. This can be done by creating an enabling environment that allows private insurers and reinsurers to offer competitive products and, where deemed necessary, facilitate the establishment of catastrophe insurance programs based on public-private partnerships (including catastrophe insurance pools).
iii. *Financing sovereign catastrophe risk.* The government can manage its remaining contingent liability arising from natural disasters by promoting the insurance of public assets and by protecting its budget against liquidity crunches through sovereign risk financing.

Geographical Coverage

6. The CMhRFS will be made for following four States: -
    a. Uttarakhand
    b. Odisha

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c. Kerala
d. Gujarat

Scope of work

7. **Component – 1**: Developing database of economic and financial losses caused by selected hazards

7.1 Key activities of Component 1

i. Review damage assessment reports, insurance reports, etc.
ii. Develop a consolidated database of economic losses caused by natural disasters, possibly by economic sector. The economic losses will be provided in national currency and US$, adjusted from inflation and/or currency exchange rate.

The resulting database will serve to support and calibrate the probabilistic catastrophic risk models.

7.2 Expected outputs of Component 1

a. Database of historical economic and financial losses caused by past natural disasters.
b. A technical report describing the data collected and their limitations.

8. **Component – 2**: Developing catastrophic risk profiles for multi-hazard risks, for each of the four States covered under the consultancy.

8.1 Key activities of Component 2

i. Review scientific studies performed on the severity and frequencies of major perils for all the four states (Kerala, Gujarat, Odisha, and Uttarakhand)
ii. Develop hazard modules for each of the selected perils
   a. State-specific hazard modules (Note: State specific hazard modules already exists for entire State of Uttarakhand, and for Cyclones risks for Coastal States – Kerala, Gujarat, and Odisha)
      ✓ Discussion of the underlying equations used in the hazard module for each of the perils
      ✓ Determination of frequency and severity of adverse natural events
      ✓ Generating stochastic event sets which define the frequency and severity of thousands of adverse natural events
iii. Develop loss profiles for the States
   a. Vulnerability module
      ✓ Estimation of assets at risk by class of major perils and by risk zone
   b. Damage module
      ✓ Assessment of direct economic loss estimates by class of major perils
      ✓ Assessment of population losses by class of major perils and by risk zone
      ✓ Assessment of emergency losses by class of major perils using (i) direct economic loss estimates and (ii) population loss estimates.
iv. Calibrate the models based on historical events.

The loss assessment includes, but is not limited to: annual expected loss (AEL), loss exceedance curve and its associated PMLs (50, 75, 100, 150, 200, and 250 year return periods). These loss estimates may not include potential post-event increase in costs due to demand surge.

Risk modelling should depend on actual data from past disasters, insurance industry data on hazards and losses, recent scientific findings and other relevant factors, including forecast trends (e.g., inflation and changes in exposure over time). The model should enable validation against past events.

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8.2 Expected outputs of Component 2:

a. A report presenting the risk profile by risk zone (e.g., hazard, direct losses, population losses, agricultural losses, and emergency losses) of the four States (Kerala, Gujarat, Odisha, and Uttarakhand)

b. Brochures on catastrophe risk profiles for the States drafted from this report in a didactic manner to inform and sensitize policy and/or decision makers (e.g., visuals, hazard maps, risk maps).

A template will be developed by the Consultant and approved by the Client. Once the template is approved by the Client, the brochure will be professionally edited and provided in both electronic copy and paper copy.

9. **Component – 3**: This consists of two sub-components – 3a) developing disaster risk financing strategy; and 3b) identification of risk transfer instruments. This component to be jointly developed with the World Bank Group.

9.1Key activities of Component 3

i. To develop disaster risk financing strategy for each of the four participating States which will take into account existing budgetary resources (and possible post-disaster budget reallocation). The DRF strategy should be a higher level policy document where the States set out their priorities for disaster risk finance which will then inform the risk transfer instruments

ii. Conduct actuarial analysis of disaster risk pooling benefits – measure the possible impact of diversification benefit on indicative insurance premium working together, risk pooling amongst States, the State(s) could potentially reduce the cost of their indicative risk premium by up to XX percent compared to purchasing catastrophe risk insurance individually

iii. Identification of risk transfer instruments – this should attempt to identify cost-effective options and facilitate comparison across proposed catastrophe risk financing instruments

It is envisioned that the proposed Comprehensive Multi-hazard Risk Financing Strategy (CMhRFS) will:

- be informed by international good practices on risk-layering and financing, but situated in the Indian public finance management and market context;
- be synchronised with the ongoing deliberations and emerging recommendations of the 15th Finance Commission on disaster risk management;
- be based on a quantification of risks and State specific catastrophe risk profiles;
- identify financial instruments for layers of impact, taking into account the scale of funding required for each layer of impact, the speed with which disbursement of funding is required and the relative cost-effectiveness of alternative instruments for specific layers of impact;
- take into account the distribution of disaster risk financing responsibilities between different levels of Government and between Government, the private sector, and civil society, including business, farmers and households as well as sovereign and international stakeholders;
- take into consideration the risk appetites at various levels of Governments and private sector, risk absorption capacities, risk transfer mechanisms and outer limits of transfers, and risk retention capacities;
- draw from the gaps and DRM needs across multiple risk profiles (coastal risks, landlocked hill-States, drought-prone regions etc.) and sectors (infrastructure, livelihoods, social sectors etc.).

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The financial instruments can focus on specific States or group of States and should include the custodians and management of these instruments, the target groups/ communities, scale of implementation, criteria, data needs, and other relevant information.

9.2 Expected outputs of Component 3

a. A report highlighting the Disaster Risk Financing Strategy for each of the four participating States, which also details the layering of risks and associated financial instruments for each of the layered risks
b. An actuarial report on Disaster Risk Pooling amongst the participating states, highlighting both the financial and operational benefit of pool vs. state specific disaster risk financing model.

Deliverables

10. The primary output from this exercise is the Comprehensive multi-hazard Risk Financing Strategy for selected four States. To complete these deliverables, interim outputs are also required, which are noted in the table below:-

Deliverable	Contents	Timeline
Deliverable-1	**Inception Report** (i) As-is assessment of the fiscal risk governance context in India (ii) Design of Strategy and Instrument Development Process: framework of analysis, methodology, tools/events (iii) Roadmap and timeline for preparation of the strategy and development of instruments	2 months from signing of contract
Deliverable-2	**Interim Report on** (i) Exposure data, Hazard Model and Methodology (ii) Proposed Strategic Framework	4 months from signing of contract
Deliverable-3	**Report on** (i) Fiscal risk estimation and analysis for four participating States (ii) Proposed suit of financial instruments	6 months from signing of contract
Deliverable-4	Report on Risk of individual State and Risk pooling impact of 4 States based on actuarial analysis	8 months from signing of contract
Deliverable-5	Report on Multi hazard risk financing strategy	10 months from signing of contract
Deliverable-6	Report on suit of Financial Instruments	12 months from signing of contract

11. The copyright of all data/products/models related to all deliverables shall remain with NDMA.

The period of consultancy shall be 12 months.

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Language and Documentation

12. Language to be used for the Consultancy will be English. However the executive summary of the final report, summary of State specific report and brochure on catastrophe risk profiles for States will also be prepared in the relevant regional language.

Quality Assurance

13. The Consultant will be responsible for quality and authenticity of all documents, reports, figures etc. to be submitted to the client PMU, NDMA.

Ownership and Confidentiality of Data

14. The ownership of the raw data collected by the Consultant during the course of the study and the deliverables including documents, processed data, reports etc. will rest with the client. The Consultant will keep the data and work products confidential and will share them only with the express permission of the client.
15. Team leader and other experts/specialists are required to be present in all review/progress meetings as and when required.

Reporting, Review & Monitoring of Consultant's Work

16. The Consultant will be reporting to the Project Management Unit (PMU), NCRMP, NDMA on monthly basis but client can ask for reporting as and when required.
17. Consultant will be submitting deliverables to PMU, NCRMP, NDMA as per the time schedule. PMU will get the deliverable reviewed by a Review Committee, duly constituted for the assignment and confirm the acceptance/ non-acceptance to the Consultant. Invoice will be initiated by the Consultant only after the acceptance of the deliverable.

Role of Client

18. 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. PMU, NDMA will be facilitating acquisition of data from Govt. agencies.

Manpower requirements and list of suggestive Key Personnel and Specialists

The development of this strategy will require a diverse team with multiple skill-sets, including experience in public finance management in India, probabilistic risk modelling and development of innovative financial instruments. Specific qualifications expected in the team are mentioned below:

19. **Eligibility Criteria of Key Personnel/Specialists: (Designation of key experts should align with ToR)**

Sl. No.	Position	Number
1	**Team Leader** (Post graduation in relevant area with at least 15 years experience in areas related to Financial Risk Management, Disaster Risk Financing, Public finance management)	01
2	**Disaster Risk Management Specialist** (Post graduation in Environmental Engineering/ Urban Planning/ Geospatial Analysis/ Natural Sciences/ Catastropes or equivalent with at least 10 years experience in Disaster Risk Management)	02
3	**Engineering Specialist** (Post graduation in Civil/ Structural/ Seismic/ Earthquake Engineering/ Engineering Geology or equivalent with at least 10 years experience in Disaster related field)	01

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4	**Hazard Vulnerability Expert** (Post graduation in fields related to natural hazards with at least 10 years of experience in vulnerability assessment, damage assessment caused due to natural hazards)	02
5	**Actuarial/ Insurance Expert** (Post graduation in finance/ commerce/ economics/ actuarial science or equivalent with at least 7 years of experience in the field of insurance modeling, actuarial analysis, probabilistic risk modeling, public finance management)	02
6	**Financial Management Expert** (Post graduation in Financial management/ Business Economics or equivalent with at least 7 years of experience in the field of financial engineering, insurance modeling, probabilistic risk modeling, public finance management)	02
	Total	**10**

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