Terms of Reference (TORs) for

DISASTER RISK FINANCING

Position title: **Manager, Disaster Risk Financing (DRF)**

Duration: **Contractual Initially for 3 years' extendable performance based Contract.**

Location: **NDRMF Headquarters, Islamabad, Pakistan**

Reports to: **Group Head, Institutional Capacity Development Group**

A.   Purpose of the Role / Scope of Work:

The Manager will lead the work and mandate of NDRMF for implementing the "National DRF Strategy". The scope of work includes coordinating all stakeholders, leading research and development relating to develop & design of different Disaster Financing Instruments, review of policies & aligning developments of instruments accordingly. The Manager will also lead efforts in mobilizing funds, designing financial products, and building partnerships to support the DRF strategy.

B.   Duties / Responsibilities:

a) Implementation of DRF Strategy:
- Implement the disaster risk financing strategy aligned with NDRMF's strategic objectives.
- Lead on R&D work in determining the viability of different disaster financing instruments.
- Design and promote innovative financial products and mechanisms to support disaster risk reduction and resilience building.

b) Financial Product Design and Management:
- Lead work on developing the most viable methodology for the implementation of the Risk Layering approach.
- Lead development of Disaster Risk Financing instruments aligned wth the specific context of Pakistan.
- Design, implement, and manage financial instruments such as insurance schemes, catastrophe bonds, and contingent credit lines etc.
- Ensure that financial products are tailored to the needs of different stakeholders and are effective in managing disaster risks.

c) Research & Analysis
- Undertake Research & Analysis for preparing recommendations and options for identifying different financial instruments as specified in the DRF Strategy.
- Conduct research and analysis on disaster risk financing trends, best practices, and emerging issues.

- Produce reports, policy briefs, and other knowledge products to inform NDRMF's DRF strategy and activities.

d) Funding Mobilization:
- Identify and secure funding from various sources, including development partners, international organizations, and the private sector, to support DRF initiatives.
- Develop proposals and funding applications to attract financial support for NDRMF's programs and projects.

e) Stakeholder Engagement and Coordination:
- Engage with key stakeholders, including government agencies, development partners, NGOs, and the private sector, to promote and coordinate DRF initiatives.
- Facilitate partnerships and collaborations to enhance the effectiveness and reach of DRF mechanisms.

f) Capacity Building:
- Organize and deliver capacity-building programs and training sessions for NDRMF staff, partners, and stakeholders on DRF concepts, tools, and best practices.
- Provide technical assistance and support to stakeholders in designing and implementing DRF initiatives

g) Policy Advocacy and Development:
- Advocate for and contribute to the development of policies and regulations that support disaster risk financing at the national and local levels.
- Participate in policy dialogues and consultations to influence DRF-related policies and frameworks.

h) Monitoring and Evaluation:
- Develop and implement a monitoring and evaluation framework to assess the impact and effectiveness of DRF initiatives.
- Regularly review and update the DRF strategy and activities based on feedback and evaluation results.

i) Reporting:
- Prepare and present regular reports on DRF activities, achievements, and challenges to senior management and the Board of Directors.
- Document and share success stories and impact of DRF initiatives within and outside the organization.

C. Knowledge/Skills/Qualifications/Experience:

a) **Education**:
- Minimum 16 Years of Education in Finance, Economics, Business Administration, Risk Management or a related field of study. A PhD or other advanced degrees with specific research focused on Disaster/Climate Financing will be an added advantage.

b) **Experience**:
- Minimum 08 to 10 years' of professional experience with 02-03 years' of specific experience in disaster risk financing, financial management, climate finance or a similar role, preferably in the fields of disaster risk management, climate change, or development sectors.
- Proven experience in designing and implementing financial products and mechanisms for disaster risk reduction.
- Strong experience in funding mobilization and partnership building.

c) **Skills**:
- Excellent communication and interpersonal skills.
- Strong analytical and problem-solving skills.
- Proficiency in financial analysis and modeling tools.
- Strong project management skills with the ability to manage multiple initiatives simultaneously.
- Exceptional writing and presentation skills.
- Ability to work collaboratively with diverse teams and stakeholders

Terms of Reference (TORs) for NATCAT TEAM

Position title: Technical Team Lead – NATCat Risk Modelling & Data Centre (National).

Duration: Contractual Initially for 3 years' extendable performance based Contract.

Location: Islamabad.

Reports to: Chief Executive Officer NDRMF

D. Purpose of the Role / Scope of Work:

The role of the Technical Team Lead – NATCat Risk Modeling & Data Centre is to take responsibility for the operationalization of the NATCat Risk Modeling & Data Centre of NDRMF, being established at NUST-Islamabad. This includes designing and supervising all activities, managing day-to-day operations, establishing linkages with national and international data centers, incorporating AI/ML elements, and enhancing the efficiency of the 'Risk Calculator'. The Technical Team Lead will also lead in planning, designing, and implementing strategic plans to ensure the data center capacity meets current and future NATCat Model requirements.

E. Duties / Responsibilities:

1) Lead the development and evolution of NATCAT as the leading Climate and Disaster Risk Modelling Application in the country

2) Lead the integration of NATCAT with key and relevant national and international data systems with a view to enhance its applicability and usefulness

3) Lead the work on integration of new data and IT applications and tools, such as, AI and ML to create different data oriented applications specifically for risk informed policy making

4) Take responsibility for evolution of NATCat as a product and service for a range of users. Generate state of the art and out of the box solutions and applications building on the data and system of the NATCat

5) Ensure the security of Data Centre operations and implement appropriate controls.

6) Develop business cases in coordination with stakeholders for recommended architecture and infrastructure changes.

7) Strengthen the NATCat and NDRMF teams for a strong understanding of Hazards, Exposure, Vulnerability, and Risk Assessments/Loss Estimation Modules.

8) Lead the planning, development, and enhancement of the GIS Data Centre provision within overall business planning of NDRMF and contributing towards the risk informed development planning

9) Drive the planning and ongoing development of the NATCat Risk Modeling, applying Systems Thinking and Lean approaches for further efficiencies.

10) Provide technical management of the Data Centre, ensuring agreed service levels are met, and relevant policies and procedures are adhered to.

11) Ensure operational procedures and working practices, and NATCat user management align with NDRMF policies/SOPs.

12) Manage budgets for staffing, projects, and support contracts, ensuring compliance with council procedures.

13) Produce fortnightly/monthly progress reports of NATCat Risk Modeling Data Centre, including awareness and capacity-building activities.

14) Maintain the configuration management system, documenting details of all hardware/software changes for accurate records.

15) Develop policies, rules, and SOPs related to data accessibility and distribution for different user layers.

16) Develop/adopt Geo-Spatial & SDI Standards and Guidelines for data entry, storage, processing, visualization, and product development.

17) Ensure compliance with government guidelines and regulations regarding mapping and data center operationalization.

F. Knowledge/Skills/Qualifications/Experience:

a) Minimum 16 Years of Education in GIS & RS, Geo-informatics, Spatial Data Science, Hazard/NATCat Risk Modeling, GIS Development, and Programming, or related field of study. MS/PhD qualification will be preferred.

b) Minimum 08 to 10 years' of professional experience with a minimum of 03-05 years' industry experience in managing data centers or large-scale GIS/RS based risk assessment projects.

c) Expert in GIS/IT/SDI infrastructure, operating systems, configurations, and IT applications.

d) Prior expertise of similar projects (at least 5 years) in managing GIS / Spatial Data Centers and expert knowledge of Web-GIS, Mobile-GIS, AI, and ML applications.

e) Expertise in Hazards Modeling (Geophysical and Hydro-meteorological) and strong understanding of related GIS/RS tools and techniques.

f) Proficient in risk management methods, business impact analysis, countermeasures, and contingency arrangements.

g) Proficient in Configuration Management for precise control over GIS/IT assets and components.

h) Proficient in understanding GIS/RS Infrastructure Architecture, frameworks, and principles.

i) Proficient in cloud/virtualization principles and applications, including security implications.

j) Familiar with government, corporate, industry, and professional standards, policies, regulations, and codes of conduct.

k) Demonstrated ability to deliver high-quality outputs under pressure and within tight schedules.

l) Demonstrated ability to work effectively with Government officials, technical staff, and other stakeholders.

m) Strong written and oral communication skills, with the ability to make effective presentations to diverse audiences.

Terms of Reference (TORs) for NATCAT TEAM

Position title: Deputy Manager - GIS Developer / Modeling

Duration: Contractual Initially for 3 years' extendable performance based Contract.

Location: Islamabad.

Reports to: Manager NatCat -Technical Team Lead

A.   Duties / Responsibilities

- Work closely with Team Lead to understand stakeholders' requirements for the NatCat & incorporate modules for data modelling.
- Automate integration of diverse national and global data repositories of various formats, including spatial data, remote sensing data, tabular data, real-time data feeds, and external APIs, ensuring data accuracy, consistency, and interoperability within the dashboard.
- Developing and linking analytical models, AI models, and simulation tools into the NatCat dashboard/applications that allow users to interactively perform risk analysis, scenario planning, and predictive modeling based on their inputs and parameters.
- Implement geospatial analysis functionalities for end-users within the dashboard, enable users to overlay multiple layers of data, use geospatial tools (such as spatial queries, buffer analysis, overlay operations, network analysis, and terrain modeling), and generate customized maps and charts to support decision-making and scenario evaluation.
- Provide role-based data access to identified partners with all security and access protocols.
- Collaborate with cross-functional national and international development teams, including risk analysts, AI/data experts, software engineers, and domain experts, to gather requirements, exchange knowledge, and ensure alignment with NatCat goals.

B.   Knowledge/ Skills / Qualifications/ Experience

- Minimum 16 Years of Education in Geoinformatics, Computer Science, GIS Development and programming or related field of study.
- Minimum 06-08 years of professional experience with minimum 02-03 years of relevant expertise. Must have completed a minimum of 03 landmark national and international projects of similar nature.
- Expert in developing intuitive user interfaces and interactive visualizations for the dashboard using WebGIS technologies, such as JavaScript libraries (e.g., Node, Leaflet, OpenLayers), mapping third-party APIs (e.g., Google Maps API), and data visualization tools (e.g., D3.js, Chart.js).

- Expertise in linking appropriate AI technologies, frameworks like React, Angular, or Vue.js., and platforms like Google Earth Engine to meet the NatCat requirements and scalability needs.
- Demonstrated skills for developing the frontend components and backend libraries of the NatCat dashboard, while ensuring responsiveness and cross-browser compatibility.
- Expertise in implementing features for data querying, filtering, geoprocessing, charting, and custom map displays.
- Expert in automation of data preparation procedures though linking external databases, models, streams, etc.
- Proficient in establishing private/public cloud computing/virtualization (including ownership, responsibilities and security implications) and the use of tools and systems to manage virtualized environments.
- Experience in deploying OGC web servicers and related open technologies like Geoserver, PostGIS/Postgres, Tiling, and Dockerization.
- Expert in developing and accessing APIs, i.e., linking third-party APIs for NatCat utilization and developing NatCat APIs to be utilized by external organizations
- Expertise in developing custom plugins, extensions, or APIs to seamlessly integrate AI-based functionalities with NatCat.

Terms of Reference (TORs) for NATCAT TEAM

Position title: Deputy Manager – GIS, NatCat Data Centre.

Duration: Contractual Initially for 3 years' extendable performance based Contract.

Location: Islamabad.

Reports to: Manager NatCat -Technical Team Lead

A. Duties and Responsibilities

- Work closely with Team Lead to develop specialized dashboards for the NatCat solutions & applications for diverse range of users.
- Design and deploy data models, schemas, and databases for storing and retrieving spatial data from all other data centre within and outside the country.
- Implementing data sharing and exchange protocols to facilitate collaboration with external organizations and partners. Understating of data governance policies, standards, and best practices for spatial data management.
- Integration of new and evolving IT and GIS tools for development of applications for users.
- Support Team Lead for continuous improvements for the users, access and applicability of the system.
- Selecting and implementing GIS software and tools appropriate for NatCat requirements. Configuring and customizing NatCat applications to meet specific organizational needs.
- Implementing quality assurance procedures to ensure data accuracy and reliability. Ensuring data integrity, quality, and consistency through data validation and verification processes. Conducting regular audits and reviews to assess compliance with data quality standards and guidelines.
- Designing and creating maps, charts, and and reports to visualize and communicate analysis results to NatCat users in a clear and understandable format.
- Implementing spatial analysis and queries to support spatial analysis tasks within the NatCat environment, including identifying patterns, trends, and relationships through buffering, overlay analysis, proximity analysis, etc.
- Providing technical support and training to national organizations on NatCat usage and configurations.

B. Knowledge/ Skills / Qualifications/ Experience

- Minimum 16 Years of Education in Geoinformatics, GIS & Remote Sensing, Data Science or related field of study.

- Minimum 06-08 years of professional experience with with minimum 02-03 years of relevant expertise. Must have completed a minimum of 03 landmark national and international projects of similar nature.
- Proficiency in integrating heterogeneous datasets from multiple sources and formats, including vector data (e.g., shapefiles, GeoJSON) and raster data (e.g., satellite imagery, elevation models) from international data hubs and open data repositories.
- Understanding of spatial DBMSs (e.g., PostGIS, Oracle Spatial) and data interoperability standards (e.g., OGC standards) and experience with data transformation, conversion, and harmonization is essential.
- Expertise in designing GIS database schemas, schema transformations, optimize query performance, generating metadata, and manage large volumes of spatial data efficiently.
- Strong analytical skills for performing spatial analysis, geoprocessing, and spatial statistics using open-source GIS software (e.g., QGIS, GRASS) and programming libraries (e.g., GDAL, GeoPandas).
- Ability to derive meaningful insights from spatial data and apply geospatial analysis techniques to solve complex problems.
- Proficiency in data visualization techniques and tools for creating maps, charts, and interactive visualizations to communicate spatial data effectively. Experience with visualization libraries (e.g., D3.js, Leaflet, Mapbox) and designing user-friendly interfaces for exploring and interacting with spatial data and models.
- Understanding of open data principles, licensing terms, and policies governing the sharing and use of open geospatial data. Working experience with open data initiatives such as OpenStreetMap (OSM), Copernicus Open Access Hub, and government data portals.
- Proficiency in programming languages commonly used in GIS and data management, such as Python, R, SQL, and JavaScript. Ability to develop custom scripts, automation workflows, and web services for data processing, analysis, and dissemination.

Terms of Reference (TORs) for NATCAT TEAM

Position title: Deputy Manager – IT, NatCat Data Centre.

Duration: Contractual Initially for 3 years' extendable performance based Contract.

Location: Islamabad.

Reports to: Manager NatCat -Technical Team Lead

A. Duties and Responsibilities

- Installation and management of servers, storage systems, Cisco/Sangfor Firewalls, routers, WLC, TOR/Access Switches, power distribution units, Network security infrastructure to ensure optimal performance and security.
- Installation and configuration of Windows and Linux-based (Suse Enterprise) systems performing routine tasks, such as systems monitoring, OS patching and upgrading, upgrading administrative tools, performing security tasks, troubleshooting and root-cause analysis
- Managing and troubleshooting virtualization platforms, site-to-site and remote access VPNs, VMware virtualization environments, including vCenter, ensuring system availability and reliability.
- Administering backup and recovery solutions using Veeam/VMware Site Recovery Manager to safeguard critical data and ensure business continuity.
- Configure and maintain network infrastructure, including firewalls, routers, switches, and load balancers, to ensure reliable connectivity and data transmission within the data center and to external networks. Implement network security measures, such as access controls, encryption, and intrusion detection/prevention systems (IDS/IPS), to protect against cyber threats.
- Manage storage resources, such as SANs and NAS systems, to provide adequate storage capacity, data redundancy, and data protection mechanisms (e.g., RAID, backups, snapshots).
- Implement backup and disaster recovery solutions to protect critical data and ensure business continuity in the event of data loss, hardware failures, or natural disasters.
- Develop and maintain backup schedules, data retention policies, and recovery procedures to minimize downtime and data loss.
- Implement and enforce security policies, procedures, and controls to safeguard sensitive data, infrastructure assets, and intellectual property within the data center. Conduct regular security audits, vulnerability assessments, and penetration tests to identify and mitigate security risks.

B. Knowledge/ Skills / Qualifications/ Experience

- Minimum 16 Years of Education in computer science, information technology, electrical engineering, or a related field of study.
- Advanced qualifications or certifications in relevant areas such as network engineering, systems administration, or cybersecurity may be preferred.
- Relevant certifications of Windows/Linux/VMware/Cisco will be preferred.
- Minimum 06-08 years of professional experience with minimum 02-03 years of hands-on experience with Windows and Linux Systems, network designing and implementation, and VMware technologies.
- Previous experience working in data center operations, IT infrastructure management, or related roles is highly desirable.
- Experience with cloud computing platforms (e.g., AWS, Azure, Google Cloud) and hybrid cloud deployments is beneficial.
- Proficiency in server administration, including operating systems such as Linux, Windows Server, and virtualization platforms like VMware or Hyper-V.
- Experience with storage management technologies, such as SANs, NAS, RAID configurations, and data deduplication.
- Familiarity with backup and disaster recovery solutions, including backup software, tape libraries, replication, and snapshot technologies.
- Understanding of security principles, best practices, and tools for securing data center infrastructure, including firewalls, IDS/IPS, VPNs, and endpoint security solutions.
- Experience of deploying different cyber security tools and knowledge of information security standards, frameworks and policy implementation.

Terms of Reference (TORs) for NATCAT TEAM

Position title: Assistant Manager IT, NatCat Data Centre.

Duration: Contractual Initially for 3 years' extendable performance based Contract.

Location: Islamabad.

Reports to: Manager NatCat -Technical Team Lead

A. Duties and Responsibilities

- Installs, configures, tests and maintains servers, storage equipment, and related networking equipment.
- Monitors scheduled jobs and computer output for completeness, accuracy, and errors.
- Assist in performing all critical data backups and secures data according to established procedures.
- Installs firmware and security updates on servers, and related networking equipment.
- Configures and maintains Microsoft Active Directory.
- Installs, configures and maintains IPS/IDS, Firewall, Anti-Virus, Anti-Spam, Anti-Malware, etc. for maximum internal network protection.
- Maintains Unified Communications, VoIP, and any related equipment, services, and platforms.
- Troubleshoots and resolves issues in a minimum time to ensure system availability.
- Maintains all data used for redundancy efforts and assists with remediation efforts as result of test findings and risk assessments.
- Logs all servers, network and problems. Calls appropriate maintenance organizations and arranges for repair. Notifies supervisor of unusual problems.
- Assists with software upgrades and installations.
- Creates scripts for automation of common tasks.
- Provides IT support to all employees.
- Coordination with vendors and service providers to resolve issues.
- Any other tasks assigned by the seniors.

B. Knowledge/ Skills / Qualifications/ Experience

- Minimum 16 Years of Education in computer science, information technology, electrical engineering, or a related field of study.
- Advanced qualifications or certifications in relevant areas such as network engineering, systems administration or cybersecurity will be preferred.
- Relevant certifications of Windows/Linux/VMware/Cisco will be preferred.
- Minimum 03-04 year's of professional experience with minimum 01-02 years of hands-on experience with Windows and Linux Systems, network designing and implementation, and VMware technologies.

- Prior experience working in data center operations, IT infrastructure management, or related roles is highly desirable.
- Experience with cloud computing platforms (e.g., AWS, Azure, Google Cloud) and hybrid cloud deployments is beneficial.
- Proficiency in server administration, including operating systems such as Linux, Windows Server, and virtualization platforms like VMware or Hyper-V.
- Experience with storage management technologies, such as SANs, NAS, RAID configurations, and data deduplication.
- Familiarity with backup and disaster recovery solutions, including backup software, tape libraries, replication, and snapshot technologies.
- Understanding of security principles, best practices, and tools for securing data center infrastructure, including firewalls, IDS/IPS, VPNs, and endpoint security solutions.
- Experience of deploying different cyber security tools and knowledge of information security standards, frameworks and policy implementation.