

## **Terms of Reference for R&D Project**

### **Water Resources Department**

#### **Project Title: Study of Mitigation Strategies for Coastal Hazards Specific to Indian Coastlines**

##### **1. Background:**

**1.1** India's extensive coastline is vulnerable to various coastal hazards including cyclones, sea-level rise, coastal erosion, and tsunamis. These hazards pose significant risks to life, property, and the environment. The mitigation of these risks is essential for the safety of coastal communities and the sustainability of coastal ecosystems. This subject is also identified in SNAP 2022-27 for the formulation of standard.

**1.2** Advancements in coastal processes & engineering, environmental sciences, and adaptation to climate change offer new methods and technologies for hazard mitigation. However, there is a lack of comprehensive strategies that specifically address the unique challenges along the Indian coastline.

**1.3** The project recognizes the need for localized, effective coastal hazard mitigation strategies that integrate current scientific understanding, technological advancements, and community needs. This initiative aims to provide a unified resource for coastal managers, policymakers, engineers, researchers and decision-makers by enhancing their understanding of the sustainable development and management of the coastal areas.

##### **2. Objectives:**

**2.1** To conduct comprehensive research on current local, national, and international standards, technical regulations, and best practices, evaluating their applicability to the Indian context.

**2.2** To consolidate existing knowledge on coastal hazard mitigation strategies, considering national and international standards and best practices.

**2.3** To formulate user-friendly guidelines catering to a broad audience, including government agencies, local communities, and relevant stakeholders.

**2.4** To explore innovative and sustainable mitigation strategies, considering environmental, economic, and social factors.

##### **3. Scope of Work:**

**3.1** Review and analysis of existing literature, including international standards, research papers, and guidelines from regulatory bodies, relevant reports, and case studies along the Indian coastline carried out till date.

**3.2** Collection, compilation, and analysis of data of stakeholders from research institutes such as IITs, CSIR-NIO, NCCR, NRSC-ISRO, technical regulations, and applicable international standards followed in countries on coastal hazard mitigation practices.

**3.3** Comparative analysis with local, national, and international standardization bodies to identify best global practices and technical regulations.

**3.4** Engagement with stakeholders within relevant organizations, industry experts, and government bodies to gather insights and feedback.

**3.5** Assessment of the sustainability impact of coastal hazard mitigation strategies.

**3.6** Development of a comprehensive report outlining findings, recommendations, and an action plan.

**3.7** Innovative coastal protection measures along with a pilot plant after comprehensive investigation.

#### **4. Research Methodology:**

**4.1** Literature review including National & international standards, research publications, and guidelines from regulatory bodies such as Central Water Commission, Ministry of Environment, Forest & Climate Change, & Coastal Regulation Authorities.

**4.2** Data collection through structured questionnaires.

**4.3** Focused group discussions /workshops in a structured format covering all the maritime states.

**4.4** Observation and data collection of at least 2 coastal hazard mitigation sites and processes.

#### **5. Deliverables:** The project will yield the following key deliverables:

**5.1** Guidelines for Mitigation of Coastal Hazards with detailed content incorporating feedback from stakeholders.

**5.2** A report highlighting key findings, challenges, and solutions during the guideline development process.

**5.3** Comprehensive report on the current state analysis, gap assessment, and recommendations for improvements.

**5.4** Documentation of workshops or training sessions conducted.

#### **6. Timeline and Method of Progress Review:**

**6.1** Month 1 & 2: Project Initiation, Planning, Preliminary Data Collection, and Stakeholder Engagements.

**6.2** Month 3: Field Surveys, Stakeholder Engagements, and In-depth Data Analysis.

**6.3** Month 4: Comparative Analysis, Sustainability Assessment, and Report Drafting.

**6.4** Month 5: Project Review, Feedback Incorporation, and Final Deliverables.

**6.5** Month 6: Final Documentation, Report Submission and Project Closure

The project duration is 6 months from the project award date, with regular review provided at 4 to 6 weeks' intervals (*refer* R&D Guidelines issued by SCMD, BIS).

## **7. Support by BIS**

7.1 BIS will provide access to latest available editions of Indian standards and/ or international standards relevant to the project, on request.

## **8. Relevant sectional committee and Nodal officer from BIS**

8.1 Sectional committee: WRD 28 (Coastal Zone Water Management Sectional Committee)

8.2. Nodal officer: Mr. Navdeep Yadav, Scientist-B/ Assistant Director – Member Secretary WRD 28

8.3. Email: [wrd@bis.gov.in](mailto:wrd@bis.gov.in)

*NOTE: The proposer should collect and rely on the primary data to the extent possible and may also use peer reviewed published data to support the finding, wherever necessary.*